LEARNING TO EXPLOIT: THE SOCIALIZATION OF ANIMAL SCIENCE UNDERGRADUATES

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A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Sociology—Master of Arts

2021

ABSTRACT

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Animal scientists work closely with the animal agriculture industry and often perform research, influence policy, and create information that is eventually disseminated to the public. While the public generally seems concerned about animal welfare, animal scientists also have internal motivations to care about animal welfare. Welfare measures may impact the tradition and profits of animal agriculture, creating contradictory pressures on animal scientists. This paper, based on observations of an introductory animal science course on-site at a land-grant university's farming facilities, examines how animal welfare is constructed in order to socialize students into a discipline and eventual occupation. Attention is paid as to how animal scientists construct animal welfare through various forms of pedagogy that juxtapose welfare with captivity, confinement, research interests, profit, and social acceptability. Observations suggest that animal welfare is constructed as control over animals and the assurance that this control is humane. The dual mechanisms of control and comfort socializes students to raise animals for slaughter and not see this process as violent.

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Introduction

Animal consumption continues to grow worldwide and persists as the dominant source of calories in contemporary Western diets (Neo and Emel 2017). This trend continues despite potential impacts on climate change and other environmental issues, broad concerns with animal welfare in the production of animals for meat, and negative health effects of a diet that includes substantial meat consumption (Neo and Emel 2017). Animal agriculture and meat eating are heavily promoted and normalized, and animal welfare constructions play a major role in legitimizing these practices. The animal agriculture industry and those in the field of Animal Science are nearly always part of debates about meat-based diets and the treatment of farm animals. Developing a better understanding of how they construct concepts of animal welfare is crucial to understanding these debates.

Animal Science is a scientific discipline and occupation that is primarily concerned with the production of animal products in both quality and quantity. While Animal Science concerns itself with a range of practices based on animal use, animal agriculture occupies a central role. Traditionally the field has strived for ever increased efficiency of production (Koknaroglu and Akunal 2013). This has often led to animal welfare being overlooked in favor of economic concerns, but this can also create a negative reaction from the public which can threaten profitability. Consequently, animal scientists increasingly aim for their practices to be socially acceptable. Animal Science is not distinct from human sociality but reflects social attitudes and beliefs and promotes normative ways for humans and (certain) animals to interact.

A profession needs to have its members well informed about the rules, regulations and norms that govern its practices and ongoing role in society. This is perhaps especially a challenge in Animal Science as animal agriculture concerns the public, is controversial and has a substantial body of rules, regulations and standards. This is perhaps illustrated most acutely by

animal welfare. Therefore, the purpose of this study is not to examine the ethical critiques of the animal science approach to welfare, but to examine how the concept of animal welfare is constructed in the particular subculture of Animal Science education as a means of socializing students into the Animal Science discipline and profession.

Here I take a sociological approach in showing how the construction of animal welfare functions to socialize students into the norms and practices of a profession that is at the intersection of contrasting social and economic pressures. I investigate the following research questions: (1) how is animal welfare constructed within an introductory animal science class? And (2) how does this particular construction contribute toward socializing students into Animal Science? It is important to note that while animal welfare may be socially constructed, the results of any particular construction of welfare have material consequences for real animals. Following York and Longo (2017), emphasis is placed on recognizing animal welfare as more than mere social construction, but rather provides part of the foundation on which animal production processes and consumer purchasing trends are built.

Animal Science departments often act as a pipeline for students into the animal agriculture industry and animal scientists often work to directly promote the industry (Pedersen 2019; Heleski and Zanella 2006). Thus, the question of how welfare is constructed within an animal science class containing a substantial focus on animal welfare is interesting because understanding welfare discourse within animal science elucidates the logic of one key set of participants in societal debates about the treatment of animals. To do this, I first provide a brief overview of the literature on socialization. Then I outline the study and method, followed by my general observations of an animal science class. Finally, major themes are drawn together and

explained in light of underlying theories as they contribute to constructing animal welfare and socializing animal science undergraduates.

Two points about animal welfare should be clarified. First, the term animal welfare refers to two interrelated concepts. One is the current state of well-being of an individual animal, specifically that their physical and mental needs are met (Broom 1991). In animal science, this term is different from the related yet distinct terms of stewardship or animal husbandry (Seamer 1998). The other meaning of the term animal welfare is a field of study, research, teaching, and regulation intended to deal with the condition of the animals. In this paper, the term *animal welfare* refers to the material condition of an animal and is not taken to be socially constructed; *animal welfare science* refers to the socially constructed field concerning animal welfare within animal science.

The second point is that animal welfare is distinguishable from animal rights; each represents a position in the debates about human treatment of animals (Bekoff 2013). Welfare proponents believe in the use and consumption of animals as long as certain provisions are met. Which provisions are met, and how, are far from standardized and can vary by species, location/region, or other factors (e.g., religion) but are generally set to determine practices for handling, housing, and nutrition. Rights proponents believe that animals have the right to be free from human use, and especially harm, except perhaps in extreme circumstances where pressing human or animal needs can only be met through the use of nonhuman animals. However, both welfare and rights proponents generally agree that many animals could be treated better.

Literature Review

The field of animal welfare science is readily understood as being socially constructed (Fisher 2019; Suzuki and Taylor 2009) whereas the condition of the animal is not in the sense that the animal has a material reality (York and Longo 2017). According to Mark Fisher (2019:170), the construction of animal welfare science is "evident in the social initiatives involved (e.g. legislation and codes, animal advocacy interests, transnational governance, business opportunities)." Animal welfare scientists are consistently informed by public perceptions and attitudes towards animals and frequently seek out such attitudes (Ryan, Frasier, and Weary 2015; Verbeke 2009; Coleman 2007). Although it is accepted that animal welfare science is socially constructed, little research has looked into how it is constructed through teaching as a way of socializing undergraduates into the discipline.

This study is guided by the theoretical framework of socialization, and in particular, the socialization of undergraduates into an academic discipline. I view animal welfare as a primary vehicle for this socialization because animal scientists have to continuously socialize new members of the profession into the current social albeit ever evolving conceptualizations of animal welfare. Students come into the class and the field with perhaps some general ideas about what animal welfare means but must become socialized into how the *discipline* thinks about and views animal welfare. Previous views may or may not align well with the disciplines', but they do reflect previous socialization (Berger and Luckmann 1966; Becker et al. 1961). Ideological alignment of students and instructors instills a sense of cohesion, consistency, and continuity within a discipline.

The concept of socialization has frequently been used to study transition processes within a range of social situations (Barnes 2015; Hall 1987; Bess 1978). For the present study,

socialization into higher education (Hamzah and Kamalahasan 2019; Gardner 2007; Tierny 1997; Weidman 1989; Bess 1978) and the medical profession (Menchik 2014; Simpson 1967; Becker et al. 1961; Merton et al. 1957) are pertinent. The fields of medicine and Animal Science share several similarities. Doctors and animal scientists are attendant to the well-being of others and must adapt to constantly changing technological and social landscapes (Fisher 2019; Becker et al. 1961). Additionally, both sometimes undertake what could be perceived as violent actions to professionally attend to those under their purview. For animal scientists, this may include intensive confinement and dehorning; for doctors, examples include performing amputations or invasive surgeries. One fundamental difference is that the ultimate goal of doctors is to avoid the death of their patients, whereas an animal scientist working with animals raised for food knows that the eventual but inevitable result is the intentional death of an animal at a slaughterhouse.

Definitions of socialization vary in their precise wording but resemble each other in content. Fundamentally, socialization is understood to be a *process* whereby individuals acquire characteristics—values, norms, beliefs, skills, etc., what Merton et al. (1957: 287) call the "culture"—specific to one or more groups. As applied to an occupation, socialization refers to an individual being shaped by a professional culture and developing a sense of self in reference to one's occupation (Merton et al. 1957). The socialization process can be continuous and gradual or punctuated by periods of rapid transition. The process consists of stages, although the differentiation between stages is not well defined. Generally these could be described as: (1) anticipation, where the individual is concerned with what the norms of a specific group are and may begin to imitate them; (2) experience and knowledge acquisition, i.e., learning the ways of a particular group from a set of established members of that group; and, (3) internalization and adoption of the values and behaviors of the group (Simpson 1967). These stages repeat as one

leaves and enters various roles throughout the lifecycle. While this description may make socialization sound linear and processual, Tierney (1997) encourages a view of socialization as dynamic and interpretive. That is, socialization involves a give-and-take between authority figures, novices, and social context in the co-generation of meaning.

Berger and Luckmann (1966) give a detailed discussion of socialization in terms of acquiring knowledge and defining reality. The authors posit two forms of socialization, which they term primary and secondary socialization. Primary socialization refers to a general socialization of a child into society. This must occur before secondary socialization which further socializes an individual into specific sectors of society (Berger and Luckmann 1966), e.g., an occupation. Not only does primary socialization occur first, but it also sticks more fundamentally in the mind. Thus, secondary socialization must contend with previous internalizations. This point is particularly salient regarding animal welfare as students' previous conception of welfare may be challenged.

Merton (1968) conceived of the socialization into occupations against the backdrop of bureaucracy. He saw bureaucracy as a social structure which bears "upon the development of an occupational personality" (Merton 1968:118). The effectiveness of such structure relies on its ability to "infus[e] group participants with appropriate attitudes and sentiments" (Merton 1968: 154). This is echoed by Hall (1987) who says that behavior transitions from being exploratory before socialization, to being routinized and scripted afterwards. In other words, the efficacy of a bureaucracy (or an occupation) can be gauged by the degree to which it socializes its members. While Merton focuses on socialization as a means of organizing society through the promotion of conformity for social cohesion, Menchik (2014) finds that socialization of medical trainees has less to do with conformity than with interactions between personal interests and tasks.

Socialization is useful to the present study because the setting is an introductory undergraduate animal science class which may represent the first-time students are formally introduced to the concept of animal welfare. This is also the moment when students embark on a journey that may lead to a change in social status from a lay citizen to a college-educated professional. As students are socialized into a discipline, their successful disciplinary membership also provides a sub-culture from which the individual is seen as a contributing member of society (Weidman 1989). Although the present paper is concerned only with socialization as displayed by an Animal Science department and its immediate campus environment, there are also additional and ongoing means of socialization at work. Some of these may be off-campus influences such as that from family, community or wider society (Weidman 1989), or on-campus socialization beyond a specific department such as that into the wider culture of higher education (Boden, Borredo, and Newswander 2011).

Primary socialization is dictated by "significant others" (usually parents) who define a child's social reality based on their own socialization and social location (Berger and Luckmann 1966). The foods one eats while growing up is one component of primary socialization. Through continued consumption, the cultural acceptability of such foods becomes internalized. Each culture has a set of animals deemed suitable for food, but there also exist differences in preferences and prohibitions (pork for some religions, etc.) which can create subcultures. However, which particular animals are considered "food" varies between cultures as well as within each society (Harris 1985). In contemporary Western agriculture, the term "agricultural animals" usually refers to animals raised on farms and designated acceptable for human consumption. For this paper, "agricultural animals" refers specifically to sheep, cows, poultry, and pigs.

Methods and Overview of Study

To observe how students are socialized into an understanding of animal welfare, I participated in class visits, called "labs," to a university's farm facilities that are part of the introductory undergraduate animal science course at a midwestern land-grant university. The class is the initial course required for all Animal Science majors or minors and animal welfare is a core area of study within the Bachelor of Science program. Although offered by the Animal Science department, the course also enrolls students in the pre-veterinary program, zoology, and other similar majors. The course is offered each semester, enrolling approximately 100-150 students per offering. The pedagogy of the course is based on three 50-minute lecture sessions each week and labs once a week. Labs took place on Tuesdays and were repeated three times throughout the day so that each student has the opportunity to attend each week's lab. Quizzes are given in lecture every Friday that cover material from that week's lab. The quizzes prepare students for the cumulative final lab test which is given in addition to the course's written final examination at the end of the semester.

As Animal Science is an applied discipline, observing labs rather than lecture is important for multiple reasons. First, instruction is given and demonstrated by Animal Science professionals on real, live animals. This provides an opportunity to see how professional Animal Scientists speak about and handle animals. Secondly, the labs offer real-time opportunities for *students* to obtain hands-on experience working with livestock in an animal science setting. As revealed by Menchik (2014), socialization frequently takes the form of learning from significant others "on the job" by performing tasks and receiving feedback. The labs are where students being socialized into the Animal Science approach to welfare are shown, literally, what the term means. Therefore, my attendance of these labs allows for direct observation of the mechanisms

involved in the socialization of animal science students as they are transferred, in practice, from teacher to student. Actual practice is important to observe as it can differ from what appears in books, lecture, or on tests (Menchik 2014).

I attended the third (and last) lab of the day on Tuesdays from February 5 to April 23, 2019. I revealed myself as a graduate student in need of fulfilling a requirement for a graduate animal studies course stipulating that I spend time around real animals. Permission was obtained from the chair of the Animal Science department as well as the course instructors to attend the labs as though I were a student in the class. I was also given a syllabus for the course. To my knowledge, my identity was not revealed to the students. IRB approval (study ID 2931) was obtained through the university in which the research took place. Data was recorded in field notes written both while attending the labs as well as immediately after the labs.

Labs consist of either tours or handling. For this paper, a "tour" refers to a guided walk around a facility and a "handling" visit refers to a lab that incorporates animal interaction. Most facilities have two visits on consecutive weeks. The first visit to a facility consists of a building-by-building tour of the grounds by a knowledgeable guide in which students are told about the day-to-day operations and given a general description of productive and reproductive processes that occur on-site. The second visit to each facility consists of animal handling activities. If there is only one visit to a facility, the first part of that visit consisted of a tour and the second part consisted of a handling activity. For handling activities, lab guides first demonstrate some form of animal care and then students are given the option to try that skill themselves.

At various times, labs were led by farm employees, Animal Science instructors, or Animal Science graduate students of the university. For confidentiality, in the remainder of this paper, anyone who led a lab is referred to generally as a "lab guide." I was present for all ten of

the farm animal labs amounting to 15 hours in the field. In order, these labs were horses (1 lab), sheep (1 lab), beef cattle (2 labs), dairy cattle (2 labs), poultry (2 labs), and pigs (2 labs). Horses and the horse lab provide a point of distinction from the rest of the animals which are used for food. This is consistent with Heleski and Zanella (2006) who hypothesize that animal science students view horses more as pets than as "food" animals.

My research protocol did not include speaking to students, and therefore demographic or background information on the students was not obtained. However, the majority of students in the labs I attended were female (exactly which students attended which lab varied some from week to week preventing precise numbers, but it was approximately 75%). However, from my fieldnotes and what was able to be overheard, students did not seem to possess much outside knowledge about farmed animals. A general hesitancy to volunteer answers to lab guide questions or to partake in animal handling suggests a lack of previous experience with farmed animals. This aligns with current trends that fewer incoming animal science undergraduates come from families involved in animal agriculture than previous generations in similar programs (Heleski and Zanella 2006; Mortensen, Thoron, and Miot 2015:76-77).

The focus of each facility is on university teaching and research needs, with income generation subordinated to these two overarching goals. When possible, animals and animal products are sold to generate revenue (some products are used in the university's cafeterias) but the small size of the facilities do not have the economies of scale typical of much animal agriculture in the contemporary U.S. Thus, the facilities are largely subsidized by the university budget. Perhaps due in part to this, the facility operators are under less pressure to minimize costs of welfare practices because their ultimate goal is not profit. All facilities allow visits by members of the general public. Some, such as the horse and dairy cow facility, are available to

the public for walk-in self-guided tours. Others, such as the pig facility, require prior notification of the farm manager as disease prevention requires biosecurity measures before anyone can enter the facility.

There are of course limits to this analysis. As this is an introductory class, students may have diverse previous experiences with farmed animals. As mentioned, the toured facilities focus on teaching and research over profit. Some facilities were in the process of a transition in husbandry practices due to pressure from humane groups and state and federal legislation. The particular university under study may have a different approach to animal welfare than at other land-grant universities, especially in states where animal production is more central to overall agricultural production or state revenue, or where legislation governing the humane treatment of agricultural animals differs. Thus, as with any field study, my findings may not generalize to other sites.

Results

This section presents an overview of each lab, with a focus on handling activities, to set the context of what the labs entail. Then I offer some observations that apply across all labs before returning the paper's main argument which is expanded upon in the discussion.

At the horse facility, horses are bred to be show horses or for university teaching and research. During the tour, it was stated that foals "need to learn to be adult horses" in reference to getting used to wearing harnesses, bits, saddles, and leads at a young age. There were also multiple references to "controlling a 1000+ lb wild animal" (Field notes, February 5) and students were praised when they successfully controlled a horse, such as leading them through the barn. At the end of the tour, in the main barn, students were given opportunities to handle horses. Students are divided into three groups and the handling activities are preceded by basic instruction and comprise the following:

> Taking vital signs: what they were, what they should be, and how to take them. Students had the opportunity to take vital signs on a horse but no one volunteered.
>
> Bridle and leading: Shown how to apply a bridle, ways to manage a horse to inspect them, and how to lead a bridled horse. Students had the opportunity to bridle a horse and lead them up and down the aisle in the barn. Most students did this but not all.
>
> General health assessment: Had a sheet with various "feel" measurements that could be taken and degrees of how fat/bone/muscle should feel by hand. Students are given the opportunity to perform some of these checks on a horse (as well as invited to pet the horse) to evaluate the horse's health. All students did this.
>
> (Fieldnotes, February 5)

For sheep, students are guided through the ewe (adult female sheep) barn and given an overview of the lambing cycle, and the feed and energy use of ewes. They then walk into the lambing barn where they are told about the different ear tags used to monitor the sheep, tail docking for newborns, potential health problems, and about the processing of sheep for meat. In the lambing barn, students have the opportunity to hold and take pictures with baby sheep. For approximately twenty minutes, lambs are passed between students who take pictures of each other holding and cuddling lambs. Most students had their picture taken while holding a lamb.

For beef cattle, students herded cows into a metal walkway that guides cows into what is called a "squeeze shoot." A squeeze shoot is a piece of technological machinery meant to restrain a cow by compressing their body to calm them when handled (Grandin 1992). The squeeze shoot was at the end of two lanes of metal fencing that funneled cows into a single lane to be let into the shoot one at a time. The shoot has three doors, one each on the front, back, and side. When the front and back doors open, the next cow in line can enter the shoot. Cows were often hesitant to move into the shoot and when they did, they moved quickly as if trying to walk right out the other side. Before they could do so, and when a cow was fully in the shoot, the operator (a lab guide) closes the doors blocking the cow in from the rear and closing the front door around their neck. The front door has padding on either side to lessen the shock for the cows. Yet, the quick closing of the door around the cow's neck stopped cows from exiting the shoot rather jarringly and appeared to often startle the cows. The operator can then maneuver the cow's head side to side mechanically for a preferred angle.

While in the squeeze shoot, lab guides show students how to give a vaccination shot for scours (a term for diarrhea) in the cow's neck as well as how to draw a blood sample from the base of a cow's tail. Students are given the opportunity to practice both procedures on a cow.

The students each took turns in administering each shot. The lab guides informed the students that injections cause scar tissue which damage the meat and decrease profit, but this does not matter much because the neck contains low quality cuts of meat. Much like blinders on a horse, flaps attached to the front end of the shoot (where the cow's head sticks out) prevent the cow from seeing what the person controlling the machine is doing. The side door allows for a person to enter the shoot toward the back end of the cow to perform requisite procedures.

Handling of dairy cattle consisted of orally administering nutrition pills, watching a lab guide disbud a calf (buds hover above a calf's skull and provide the foundation upon which horns grow and disbudding prevents horns from developing) and learning about how a cow's stomach works. This included reaching inside a cow fitted with a cannula (a surgically created opening into the digestive tract that allows access to a cow's rumen for research) to remove some partially digested feed from the cow. The students were split into three small groups that rotated through each activity. While students were not allowed to participate in disbudding, every student reached inside the cow's rumen, and only two students (out of about ten) volunteered to give a cow a nutrition pill. The lab guide informed the students that dairy cows live up to six years and then are sent into the food chain. This is because their feed is expensive, and this is weighed against the potential profit of a cow. When they produce less milk to where the farm's profit suffers, the cow is sent to become meat. However, some cows are selected for research (mostly on digestion) and surgically fitted with a cannula. Cows fitted with a cannula stay on the farm for 10 years which was said to be a "good thing for them" (Field notes, March 12). Since this university's farms also function as research facilities, the dairy facility has a higher proportion of cannulated cows than a typical commercial farm.

On the dairy facility, calves are individually housed in hutches surrounded by fencing from when they are one day old until they are five weeks old. The lab guide informed the students that calves are "taken really well care of" compared to veal calves. Although the lab guide drew this comparison, there was no mention of the details of veal production nor the public perception of veal, which has a particularly negative reputation among those concerned with animal welfare (Burros 2007; Harrison 1964). From the topic outline in the course syllabus, such information was likely covered in lecture. The lab guide informed students that separation and sequestration of calves provides multiple benefits for the calves. The fencing and hutches protect the calves from inclement weather and from predators; calves are not nursed on their mother's milk because of potential contamination, and if one calf develops an infection, they cannot infect others (Field notes, March 12). On the campus diary facility, nearly all calves are female because they contribute to the sustainability and profitability of the farm by producing offspring and milk. Besides retaining a few males as sources of semen or for research, male calves are sent to the campus's beef facility within a few days after birth.

The disbudding of a calf was performed in front of the students as part of their handling visit. There are a variety of tools used for this task. For their demonstration, the lab guide used a handheld tool that generated sufficient heat with which to burn the bud and prevent it from growing. It is explained by the lab guide that disbudding is performed while the calf is young because buds attach to the skull later in life which would make them more painful to remove. Students witnessed the following demonstration of disbudding:

> The calf is given short- and long-term pain medication orally. After approximately two minutes, the calf's snout is placed in a metal muzzle secured to a fence. This holds the calf's head in place. The disbudding tool, which resembled a flameless torch, and the tip

> of which looked like a car cigarette lighter, was used to burn off a silver-dollar sized portion of the bud. After the heat was applied once, the lab guide encouraged students to look at the visible ring of the calf's now exposed skull. The lab guide put heat to the calf's bud several more times to finish disbudding. With each application, the calf jerked rather forcefully and tried to pull away from the heat source and muzzle.
>
> (Field notes, March 19)

Throughout this process, students were quiet and slightly fidgety, but their faces appeared stoic. Perhaps due to the calf's reaction, the lab guide mentioned a few times that the calf could hardly feel the heat.

For chicken handling, students are first given a short lecture in chicken anatomy and embryology. The lab guide then proceeded to demonstrate how to dissect a chicken. Then, in three groups of approximately ten students, students dissected a chicken to look at its anatomy. Only a couple students from each group volunteered to dissect their group's chicken, while the rest of the group watched. Finally, students cracked open twenty-one eggs, one for each day in embryo development, and laid their contents out on a table to see each stage.

Lastly, the pig tour consisted of being shown four rooms. These consisted of the boar room, gestation room, farrowing room, and the finishing room. The boars' attributes were described such as their weight and ages, as well as the sanitation system that collects and carries away solid and liquid waste from the facility.

When female pigs ("sows") are pregnant they are kept in single metal stalls called gestation crates which are not much larger than the pig herself. In an informal chat with one of the lab guides I was told that gestation crates are preferred over group housing "for the sows' protection" because they will fight and kill each other in close quarters over competition for food

or water (Field notes, April 23). Such competition can lead to death either through bouts of violence or pigs can get too worked up from the stress, build up lactic acid and "die on the spot" (Field notes, April 23). Gestation crates, however, take up less space than group housing, allowing each animal to be looked after individually so that managers to make sure each pig's needs are met. The stalls are also said to provide pigs with opportunities to exercise their natural behaviors. Pigs are well known as social and intelligent animals and since the crates consist of metal bars, pigs can still socialize with neighboring pigs through the space between the bars.

Towards the end of the tour, students were shown the farrowing room. This is where mother pigs nurse their young. This part of the tour consisted of being shown how to pick up and put down a piglet.

> Students were instructed that the proper way to pick up a piglet was by the back leg, not a front leg as it could become dislocated and then the piglet would be euthanized. A piglet is put back the same way for the same reason. If we picked up a piglet, we were instructed to not move from where we picked them up because piglets need to be kept in the same stalls they came from. If they end up in another stall, they would have to be killed.
>
> (Field notes, April 16)

Students were invited to try this themselves and take pictures of each other holding baby pigs. Most students practiced picking up a piglet and had their picture taken. The students were told that farrowing crates are designed to protect the piglets from being accidentally crushed by the mother as well as to monitor each litter and provide the sow with as much food as she desires. Allowing the sow to eat constantly increases milk production which enhances the health of her piglets (Field notes, April 16).

The last room of the tour of the pig facility was the “finishing” room. This is where pigs are held while awaiting sale. Students were informed that “valuable” pigs can bring in $130-140 each and the room is thoroughly washed after each “batch” of pigs is sold.

Pig handling consisted of breaking students into two groups and rotating through the activities at the two stations. First, semen collection from boars is demonstrated and the artificial insemination procedure is described. This was done by the lab guides only. The second station is the gestation room where students are shown how to check for pregnancy using three different electronic devices and given the opportunity to use each of them on a pregnant pig. Every student participated, taking turns using each of the three devices.

On each facility tour, the lab guides had three major talking points: (1) the reproductive cycle of the animals, (2) the productive and economic value of raising that particular type of animal, and (3) animal welfare measures. While the first two talking points were not surprising, the prevalence of references to animal welfare were contrary to my expectations. Given the economic and research focus of the farming facilities, I anticipated welfare would have been noticeably subordinated to other concerns. But the constant mention of welfare as tied to economic and research concerns suggests that animal scientists do care about welfare as they define the term. Good welfare requires rather constant attention to the animals through the use of all the senses except taste. In each facility the group of students are told that to assess animal welfare, first visually inspect animals for sores, an awkward gait or unusual behavior. If an abnormality is noticed, the animal is individually inspected to see if a veterinarian is required or perhaps just a simple change to their environment.

It was clear that lab guides expected the students to be intrigued by and enjoy being in contact with the animals. This was evidenced by students taking frequent pictures at various

locations on the tour, sometimes before the lab guide invited them to. That lab guides welcome photographs and videos to be taken, which very well may end up on social media sites or otherwise shown to others, suggests a significant degree of pride and confidence animal scientists have in their practices. While taking pictures *of* the animals was allowed and often encouraged by lab guides, for horses, sheep, and piglets, students were given time specifically to touch, hold and take pictures *with* these animals, usually toward the end of a lab. The only opportunity for students to touch cows—either beef or dairy—was purely as a means of technical evaluation. With chickens, students are only permitted to touch carcasses via dissection with one exception; on the farm tour, if a chick escaped their cage, students were told to pick them up and put them back.

Discussion: Control and Comfort

Following Becker at al. (1961), this discussion is primarily concerned with what the students learn beyond technical knowledge and skills regarding agricultural animals. From my observations, the singular theme of *control* emerged as the dominant discourse of animal welfare. Indeed, from the examples above, the teaching of animal welfare regarding agricultural animals appears largely reducible to the control over all aspects of the animals' lives. Further, this control is legitimized through rhetoric which can comfort the students by alleviating any perceived concerns they might have over the control being viewed as inhumane. Thus, control and comfort interact with each other to construct animal welfare. I use the term "control" to encompass the instrumentality of animal lives and bodies for production (economic) or research purposes. "Comfort" refers to rhetoric from lab guides assuring students that animals are cared for and that what was done to or with the animals was beneficial to them, to humans, or both. Rhetoric is especially important because speech occupies a privileged position in the socialization process (Berger and Luckmann 1966).

Not only was discussion of animal welfare a constant recurrence in each of the labs but welfare was almost always mentioned in relation to the control that the farming facilities have over the animals. Control was manifestly obvious and normalized by the presence of cages, fences, stalls, buildings, harnesses, ropes/chains, and many other technologies and apparatuses. Every agricultural animal is confined to particular spaces for particular lengths of time. Control is exercised over feed composition and timing, housing conditions, length of time in particular locations, reproductive activity, and when animals are to be born, sold or slaughtered. Importantly, control was consistently legitimized through reassuring rhetoric that the treatment of the animals was for their own good.

Through field observations, it became apparent that the sequence of facility visits was in order of increasing intensity of confinement and control. Concomitantly, comfort rhetoric became more prevalent as control increased. The effect on socialization may be to ease students into accepting the practices of Animal Science by starting with animals who are clearly less restricted (the very first lab of the semester, which I did not attend, was on dogs and cats) and gradually increasing student tolerance for control over animals. The ordering of the labs suggests two things. One is that instructors may assume that students' views on animal welfare may not initially align with that of the discipline and, second, at least some of the students' views may change throughout the course as they develop a perspective that is appropriate to the animal science field (Becker at al. 1961).

My field notes contain evidence for both suggestions. Revealing a potential discrepancy between student and instructor views on welfare, during the second pig lab, the lab guide asked students what their favorite and least favorite labs of the semester were. One student replied that her least favorite was the chicken facility because the chickens "are so intensely confined" (Field notes, April 23). That this instance happened late in the semester may also be suggestive that not all students are strongly socialized after an initial semester in Animal Science. But this example does show that students, at least as beginning undergraduates, may have perspectives more closely aligned with that of the general public than with Animal Science (Becker et al. 1961).

Becker et al. (1961) suggest that medical students, over the course of their medical school education, develop a perspective that might vary considerably from that of the layperson but is nevertheless appropriate to the discipline of medicine and the profession of a doctor. Medical students come to view dead bodies and body parts professionally and in a dispassionate manner. Likewise, my observations of Animal Science students show that lab guides try to instill a

similarly impersonal perspective into their undergraduates. During chicken dissection, students are confronted with bodies of dead chickens and told to cut them apart. Students were very hesitant to do this with only one student in my group taking an active role in dissecting the group's chicken, and even so, only timidly. This pattern was found across all groups as the lab guide frequently told the whole class "don't be scared, they're already dead and can't feel it!" (Field notes, March 26). After four or five more nudges to "just get in there and cut" from the lab guide, the student doing the dissecting finally said "screw it!" and began cutting and removing body parts much more aggressively (Field notes, March 26). Thus, students are taught to view animal bodies (dead or alive) as a means by which to acquire information they may need to know for examinations or skills for their future profession (Becker at al. 1961:423; Merton 1968).

The theme of confinement illuminates how control and comfort work together to construct welfare. For instance, the squeeze shoot represents total control over an animal's body. Once contained, the cow cannot move in any direction. The cows were said to be relaxed during what could be perceived as a stressful procedure (funneled together, physically handled and given shots). Echoing Grandin (1992), the lab guide likened this to humans being hugged and how this can have a calming effect when we feel stressed. That the cows were able to look straight ahead at the pasture was said to further contribute toward calming the cows, decreasing their stress and thus improving their welfare. This was highlighted by the lab guide as a way of reassuring the students that the cow was relaxed in the shoot because they could gaze on a peaceful setting. Thus, complete control is "softened" through comfort rhetoric that the animal is not distressed thereby legitimating such control.

Gestation and farrowing crates for pigs provide further examples of confinement and are a particularly controversial issue in animal welfare (Centner 2010). The crates completely

control a pig's behavior; they allow pigs to only stand or lay down. A pig does not leave their crate unless moved to another part of the facility by a farm employee. As described above, there is a list of benefits given for this control. This justification of crates provides comfort as every point made by the lab guide explicitly calls attention to welfare. If the crates appear inhumane, this is counterbalanced by allowing operators to look after each pig's individual needs. Therefore, for animal scientists, gestation and farrowing crates represent a superior form of care for pigs. So not only was the handling experience a poignant lesson in animal welfare, but the information provided on gestation and farrowing crates exemplified control justified by comfort rhetoric.

Confinement was also featured in a general sense of animals being contained on a farm, with captivity presented as beneficial. For instance, students are told of the dairy cows "They're all comfy, they have their own beds" and that when cows are allowed on pasture they will not run away (Field notes, March 12). In watching the process of mechanical milking that takes place on the dairy facility, students were informed that the cows are "happy to come in and get milked, they like it." Thus, milk produced for sale and human consumption is constructed as something the cows *do* and not something done to them. This rhetoric is accompanied by a sign above the milking station that reads: "Cows are milked two times a day at 3:00 AM and 2:00 PM. Cows never take a vacation and are even milked on holidays!" Dairy cows are portrayed as willing participants in milk production and content with their captivity. Because notions of happiness and free-will are invoked, the cows' welfare is constructed as "good" and helps to ease any concerns by the students that there is any force or coercion present. It is important to point out that the milking routine is a form of control. The cow's milking schedule, repeated every day, invokes Foucault's notion of "time tables" as a means to create and control docile bodies

(Foucault 1975). The overall message is that not only is captivity on a farm good for the cows, but the cows themselves consent to it and enjoy it.

General captivity on the dairy farm is further promoted through distancing the housing of calves on the farm from that of veal calves. This reassures students that if the housing and treatment of calves at the dairy facility appears inhumane, their treatment is at least superior to an alternative that is perceived to be much worse. Here, welfare functions in a qualitative sense—dairy calves are treated *better* than veal calves. Moreover, welfare in captivity is *better* than in the wild: "We put them in captivity to protect them from predators" (Field notes, March 19). Thus, potential negative welfare assumptions regarding sequestration and confinement are couched in terms of improved welfare for the animals.

The calves' permanent separation from their mothers starting at one day old is also accompanied by comfort rhetoric. Although the cow-calf bond is known to be particularly strong, the lab guide said that they "take cows from their mother so [facility operators] can raise them better." This rhetoric centers on humans being able to provide superior protection for calves than a calf's mother could. This is achieved through disbudding, calculated feed rations, and shelter from the elements (captivity). Each of the above examples with calves has the effect of portraying good welfare—these calves are not veal calves and every part of their situation is attended to with well-being as a primary concern and justification for control.

The disbudding of dairy calves helps to illustrate how control and comfort coalesce around welfare. The calf's bodily movement is largely constrained via the muzzle. All through this procedure, after each application of heat to the bud, the lab guide assured students that the calf did not feel much pain even though the calf twisted and writhed each time the heat was applied. Presumably students were told this to comfort them after witnessing the calf's reaction.

It is also noteworthy that the calf displayed considerable resistance to having the muzzle attached to her snout at the beginning. As with the comparison of dairy calves as better cared for than veal calves, welfare is again presented in a comparative sense in that disbudding at a young age is *better* than dehorning later. After the disbudding, it was also stated that calves are dehorned for protection against themselves and so that humans and other cows are not impaled by horns. This functions as a reminder that disbudding is done with the cow's welfare in mind.

Control functions differently with horses than with food animals. Lab guides made multiple explicit references of the human control of horses. This is due to the important distinction that in the U.S. horses are generally not consumed as food. Rather, students are told that "Horses are athletes" (Field notes, February 5) and lab guides often described the horses as "wild." Agricultural animals were clearly constructed as food animals or food producing animals and contrasted from wild animals. Calling their horses "wild" is curious because all horses on the farm are born and raised in captivity and come from long breeding lines. Their wildness is thus constructed in relation to human interactions with individual horses through humans teaching horses how to be tame, not "wild". Horses at this facility are bred to be show horses. Like dog shows, horse shows center around the ability of a trainer to teach a horse to act in certain ways in order to win awards. Such a practice is built around human control of a horse. Perhaps because they are not raised to be eaten, comfort rhetoric was not a significant feature of the horse lab.

Animal handling activities involve emotion management (Ellis and Irvine 2010). Regarding the touching of animals, Helena Pedersen (2019:39) observes, "The transformation of affection into an analytic event is one form of socialization into the animal caretaker profession." Handling was generally done in the context of scientific and economic assessment of the animal and not out of affection. Thus "begins the socialization of becoming a 'professional' and gaining

access to a community of animal caretaker colleagues" (Pedersen 2019:39), a profession in which care, welfare and affection are constructed through—and as—control. That is, each animal existed in a state of good welfare because the animals' lives were controlled for their own benefit. They are free from external sources of harm (predation, hunting), weather exposure, disease and starvation. In this way, welfare is constructed as control because many violent and unpleasant situations that exist outside of captivity are sequestered from these animals' experience through captivity and confinement. As examples above suggest, control is asserted as care by looking out for each animal's welfare. These findings parallel what Ellis and Irvine (2010) call redemption narratives which are narratives used to reduce personal emotional struggles over being involved in what might be seen as (potentially) harmful practices.

Despite the lab guides' defense of their current welfare practices, the university's chicken facility is transitioning to cage-free housing and the pig facility is transitioning from gestation crates to group housing, both due to pressure from animal protection organizations and the public (Field notes, April 2 & 23). Changes in animal welfare practices sometimes results from animal science's own culture and sometimes the discipline responds to societal pressure. In a span of just forty days, chickens are grown to a weight four times as heavy as they were fifty years ago, and this leads to various leg disorders (Knowles et al. 2008). Such injuries can make chickens less lucrative and so animal scientists must either improve chicken welfare or change the trajectory of this trend. Keeping pigs for their entire lives in crates scarcely larger than their bodies has been deemed largely unacceptable by the American public (Centner 2010). Without enough consumers, the pork industry could face significant decreases in profit. A recently passed law will require egg-laying hens in Michigan to be cage-free and will prohibit the sale of non-cage-free eggs by December 2024 (Selasky 2019). The facility's decision to move to cage-free

systems precedes this law. Lab guide discussion of these laws and the corresponding changes to campus farming facilities highlights the role society plays in shaping how animal science students are socialized (Merton et al. 1957:63).

The move to cage-free systems for poultry is an industry wide initiative, while the move away from gestation crates is required by Michigan law effective in 2020 (Centner 2010). Although the pig facility is exempt because they are a research facility, the farm's operators are voluntarily making the switch as a public relations strategy as group housing is perceived as better than gestation crates by the public (Field notes, April 23). It is interesting to note that even with industry and social pressure to move to cage-free systems for chickens, the lab guide for the poultry facility informed students that an "enriched colony" system is better for the birds' welfare. While cage-free housing allows chickens more freedom of movement, they are also more prone to injury (Field notes, April 2; see also, Enriched Colony 2016).

Overall, from my observations, welfare was generally discussed as a concept that is rather dichotomous. More specifically, it was implied that the condition(s) of animals on farming facilities are ideal for them; any other option which afforded animals more freedom would, apparently, impinge upon their welfare. Notions of freedom from farmed life for animals were occasionally mentioned but always in a derogatory way. For example, students were told, sardonically, that "Animal rights people want to free the cows but the breeds used for dairy [primarily holsteins] were never wild so cows cannot just be released" (field notes, March 12). By offhandedly framing animal rights activists as unreasonable, farmed animal welfare is constructed to be optimal when animals are confined for production purposes. This notion of animal welfare was continually reinforced throughout the labs. Although there were no explicit mentions of "absolute" welfare metrics, the students were told, for example, that the welfare of

confined animals is “better” than that of wild animals because of protection from violent encounters. So, the wild is “bad” for welfare and captivity constitutes “good” welfare. Undoubtedly welfare is more complicated than this, but this is the overarching discourse when students are initially socialized into the discipline.

Conclusion

Through attending labs with an undergraduate introductory animal science class of a university's farm animal teaching and research facilities, this study presented observations of the social construction of animal welfare from the point of view of socialization into a discipline. Animal welfare constitutes a pivotal dimension of animal agriculture and is a key element of socialization into the animal science profession. Students were socialized through being shown farm sites, demonstrations of animal handling, and by having opportunities to try procedures themselves. Another dimension of their socialization was the dual workings of control and comfort. As observed in the labs, animal welfare was constructed through control. Rhetoric comforting the students that animal welfare is a significant concern helps to legitimize control.

In general, welfare in captivity was pitted against welfare in "nature," with captivity stated as the better way to promote welfare. Welfare is perceived as comparative (perhaps necessarily unless one idealizes some theoretical state of being) but the comparison is with some hypothetical "wild"—a curious construct for animals that have coevolved with humans for so many centuries and generations (Fisher 2019). While the focus of animal science has always been on efficiently producing animal products, welfare discourse has slowly become more prominent. Lab guides did make occasional mention about how standards are changing through laws created from social pressure.

Introductory animal science undergraduates are socialized into a certain understanding of welfare that arises from multiple motivations that sometimes contradict one another. Welfare discourse is simultaneously entrenched in rhetoric of increased production, profit, and scientific research knowledge. Welfare is essentially constructed as animals being free from certain things (predators, disease, etc.) and recipients of others (feed, water, shelter, etc.) and always in relation

to industry sustainability. What things animals receive, how much and when, is dictated in part by social attitudes and norms.

Following a materialist approach (York and Longo 2017), let us not forget that the animals themselves are important actors in terms of how welfare is constructed. Animals contribute towards the construction of their own welfare because animal welfare science is said to be crafted around the needs of animals (Fisher 2019). For example, pigs are social animals and their well-being depends on being able to communicate with other pigs. Chickens (and other fowl) have a pecking order so each chicken in a facility has a relationship with every other chicken. The pecking order is a structured hierarchical system worked out by the chickens themselves through social interaction. Mother cows bond closely with their calves; and baby sheep play together. All these behaviors are taken into account in socializing animal science students into a particular construction of animal welfare, even if some behaviors appear to be ignored or attended to in ways that seem confusing.

Further research along this line of interest could utilize interviews with animal science students and faculty to obtain faculty justifications for their pedagogical methods and students' specific perspectives at various points in their animal science education, as well as comparisons of constructions of animal welfare to other animal-use industries.

REFERENCES

REFERENCES

Barnes, Medora W. 2015. "Anticipatory Socialization of Pregnant Women: Learning Fetal Sex and Gendered Interactions." *Sociological Perspectives* 58(2): 187-203.

Becker, Howard Saul, Blanche Geer, Everett C. Hughes, and Anselm L. Strauss, eds. 1961. *Boys in White: Student Culture in Medical School*. Chicago: University of Chicago Press.

Bekoff, Marc, and Carron A. Meaney. 2013. *Encyclopedia of Animal Rights and Animal Welfare*. Abingdon, UK: Routledge.

Bess, James L. 1978. "Anticipatory Socialization of Graduate Students." *Research in Higher Education* 8(4): 289-317.

Boden, Daniel, Maura Borrego, and Lynita K. Newswander. 2011. "Student Socialization in Interdisciplinary Doctoral Education." *Higher Education* 62: 741-755.

Broom, Donald M. 1991. "Animal Welfare: Concepts and Measurement." *Journal of Animal Science* 69(10): 4167-4175.

Burros, Marian. 2007. "Veal to Love, Without the Guilt." *The New York Times*, April 18. Accessed December 11, 2019. (https://www.nytimes.com/2007/04/18/dining/18veal.html).

Centner, Terence J. 2010. "Limitations on the Confinement of Food Animals in the United States." *Journal of Agricultural and Environmental Ethics* 23(5): 469-486.

Coleman, Grahame. 2007. "Public Perceptions of Animal Pain and Animal Welfare." *Proceedings of the Australian Animal Welfare Strategy Science Summit on Pain and Pain Management* 27(1): 1-8.

"Enriched Colony, Free Run and More: Allow Us to Eggsplain How Hens are Housed." 2016. *Burnbrae Farms*, November 15. Accessed December 11, 2019. (https://www.burnbraefarms.com/en/blog/enriched-colony-free-run-and-more-allow-us-to-eggsplain-how-hens-are-housed).

Fisher, Mark. 2019. *Animal Welfare Science, Husbandry and Ethics: The Evolving Story of Our Relationship With Farm Animals.* Sheffield, UK: 5M Publishing.

Foucault, Michel. 1975. *Discipline and Punish: The Birth of the Prison.* New York: Pantheon Books.

Gardner, S. K. 2007. "'I Heard it through the Grapevine': Doctoral Student Socialization in Chemistry and History." *Higher Education* 54(5): 723–740.

Grandin, Temple. 1992. “Calming Effects of Deep Touch Pressure in Patients with Autistic Disorder, College Students, and Animals.” https://www.grandin.com/inc/squeeze.html. Accessed October 23, 2019.

Hall, Douglas T. 1987. “Careers and Socialization.” *Journal of Management* 13(2): 301-321.

Hamzah, Hasniyati and Kamalahasan Achu. 2019. "Professional Socialisation (PS) of Malaysian Real Estate Undergraduates." *Pacific Rim Property Research Journal* 25(1): 1-19.

Harris, Marvin. 1985. *The Sacred Cow and the Abominable Pig: Riddles of Food and Culture*. New York: Touchstone Books.

Harrison, Ruth. 1964. *Animal Machines: The New Factory Farming Industry.* London, UK: Vincent Stuart Ltd.

Heleski, Camie R., and Adroaldo J. Zanella. 2006. “Animal Science Student Attitudes to Farm Animal Welfare.” *Anthrozoos*, 19(1): 3-17.

Knowles, Toby G., Steve C. Kestin, Susan M. Haslam, Steven N. Brown, Laura E. Green, Andrew Butterworth, Stuart J. Pope, Dirk Pfeiffer, and Christine J. Nicol. 2008. "Leg Disorders in Broiler Chickens: Prevalence, Risk Factors and Prevention." *PloS One* 3(2): e1545.

Koknaroglu, H., and T. Akunal. 2013. "Animal Welfare: An Animal Science Approach." *Meat Science* 95(4): 821-827.

Menchik, Daniel A. 2014. “Decisions About Knowledge in Medical Practice: The Effect of Temporal Features of a Task.” *American Journal of Sociology* 120(3): 701-749.

Merton, Robert K., George Reader, and Patricia L. Kendall, eds. 1957. The Student Physician: Introductory Studies in the Sociology of Medical Education. Cambridge, MA: Harvard University Press.

Merton, Robert K. 1968. *Social Theory and Social Structure.* New York: The Free Press.

Mortensen, C. J., A. C. Thoron, and J. K. Miot. 2015. "Current Learning Styles of Undergraduate Animal-Studies Students in a 2-Year and 4-Year Degree Program." *NACTA Journal* 59(1): 75-80.

Neo, Harvey, and Jody Emel. 2017. *Geographies of Meat: Politics, Economy and Culture*. Abingdon, UK: Routledge.

Pedersen, Helena. 2019. *Schizoanalysis and Animal Science Education*. Bloomsbury Publishing.

Robbins, J. A., B. Franks, D. M. Weary, and M. A. G. Von Keyserlingk. 2016. "Awareness of Ag-gag Laws Erodes Trust in Farmers and Increases Support For Animal Welfare Regulations." *Food Policy* 61: 121-125.

Ryan, E. B., David Fraser, and D. M. Weary. 2015. "Public Attitudes to Housing Systems for Pregnant Pigs." *PLoS One* 10(11): 1-14.

Seamer, J. H. 1998. "Human Stewardship and Animal Welfare." *Applied Animal Behaviour Science* 59(1-3): 201-205.

Selasky, Susan. 2019. "Only Cage-free Eggs to be Sold in Michigan under New State Law," *Detroit Free Press*, November 22. Retrieved December 11, 2019. (https://www.freep.com/story/life/food/2019/11/22/cage-free-eggs-michigan-law/4270929002/).

Simpson, Ida Harper. 1967. "Patterns of Socialization into Professions: The Case of Student Nurses." *Sociological Inquiry* 37(1): 47-54.

Suzuki, David, and David Taylor. 2009. *The Big Picture: Reflections on Science, Humanity, and A Quickly Changing Planet*. Vancouver, CA: Allen & Unwin.

Tierney, W. G. 1997. "Organizational Socialization in Higher Education." *Journal of Higher Education* 68(1): 1–16.

Verbeke, Wim. 2009. "Stakeholder, Citizen and Consumer Interests in Farm Animal Welfare." *Animal Welfare* 18(4): 325-333.

Weidman, John. 1989. "Undergraduate Socialization: A Conceptual Approach." Pp. 289-322 in *Higher Education: Handbook of Theory and Research*, Vol. V., edited by C. Smart. New York: Agathon Press.

York, Richard, and Stefano B. Longo. 2017. "Animals in the World: A Materialist Approach to Sociological Animal Studies." *Journal of Sociology* 53(1): 32-46.