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Witnessing Pandora: Doing “Undone Science” at Chicken Sanctuaries

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Abstract

Farmed animal sanctuaries rescue, rehabilitate, and care for animals bred for use in agriculture. Because of the structure of veterinary training, regulations on species considered agricultural, and for other reasons, rescued animals such as chickens fall out of spaces of veterinary care and medical knowledge production. Given these knowledge and research gaps, this paper investigates how sanctuaries develop medical knowledge about chickens, focusing on hens bred for egg production. I develop the concept of "witnessing" as it has been used in science studies, feminist theory, and animal activism, arguing that sanctuary science and medicine can be understood as queer witnessing. Then, I discuss how sanctuaries put queer witnessing into practice, through aspirational archiving, transposition, and reorienting health. Though queer witnessing has its limits and problems, it offers a way of doing activist science, at sanctuaries and beyond.

Keywords

activist science, animal sanctuaries, chickens, feminist science, queer ecology, witnessing

Introduction

Pandora is on birth control. Pandora is a hen. Found outside a gas station one winter, Pandora was brought to a farmed animal sanctuary. Sanctuary staff

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quickly learned that Pandora was among the many hens bred to lay eggs almost daily. Because of this, she is prone to developing cancer and other health problems. At the sanctuary, Pandora and those supporting her struggle with this embodied, often deadly legacy. Originally developed for ferrets, hormonal birth-control-like implants are one strategy farmed animal sanctuaries pursue, though they are a controversial, expensive, and limited solution.

The past tense *farmed* and the term *sanctuary* connote a sense of the animals there experiencing a radical departure from their previous lives as commodities or producers of commodities (Donaldson and Kymlicka 2015; Baur 2008). And indeed, the mission of many farmed animal sanctuaries includes rescuing and caring for formerly farmed animals—animals bred for food but no longer to be used as such. Yet, as in Pandora's case, much of the work that takes place at sanctuaries entails negotiating and struggling against animals' commodified lives. For chickens, as the most modified, the most populous, and frequently the least well-regarded of farmed animals (Potts 2012), these challenges are especially acute.

Sanctuary affiliates describe the state of medical knowledge for sanctuaries using phrases like "in the stone age," "like the wild west," and "where human medicine was in the nineteenth century" (personal communication, August 2017). Regardless of which, if any, of these terms are the most appropriate, this paper discusses how sanctuaries develop medical knowledge, focusing on hens bred for egg production and sanctuaries in the United States.[1] In the following section, I outline the contours and significance of the problem: how chickens have fallen out of spaces of knowledge production, and why implanting Pandora was not simply a matter of following existing procedures or formal norms. Next, I synthesize and queer understandings of witnessing from activism and science studies. I propose queer witnessing is how much of sanctuary science works and discuss how it is practiced at sanctuaries, along with some of its limits. In the conclusion, I speculate on the significance of queer witnessing at sanctuaries and more broadly. This paper is based on fieldwork, including volunteering at sanctuaries, conducting over sixty interviews with sanctuary affiliates and veterinarians, and participating in sanctuary digital communities.

Falling Out

Through a series of political economic, regulatory, and cultural decisions, sanctuary chickens have fallen out of spaces of knowledge production that govern and support other animals. As a former executive director of Farm Sanctuary, the oldest farmed animal sanctuary in the United States, states, "these animals have been bred and raised to be killed. So the vets are used to supporting industry, they know a lot about it, but they don't have experience with animals that are given the blessing and benefit of living their lives out to their fullest" (personal communication, July 2017). This statement encapsulates and contextualizes many of the health problems faced by sanctuary chickens.

The statement "living out their lives to the fullest" gestures toward the significant differences in lifespan for production chickens relative to those at sanctuaries. Egg-laying hens are killed when production decreases, usually at twelve to eighteen months (Potts 2012). However, while farmed animals at sanctuaries can have the opportunity to live longer and very different lives than they would at a farm, they are prone to illness because of breeding. Pandora was bred to produce large quantities of eggs, and this causes many of her health problems. Thus, it is precisely what makes her profitable that makes her sick.

Additionally, there is simply no veterinary specialty that focuses on chickens outside of a production context. Veterinary schools track students into large, small, and sometimes avian or exotic animal specializations (UC Davis Veterinary Medicine 2018a, 2018b). Large animal veterinarians, often described as farm vets, focus on livestock. This track developed in the 1940s, alongside the rise of factory farming. Though farm vets do receive some training in chicken care, this training has emphasized production and managing populations. "Cull the bird" or part of the flock is a common response to health problems, as sick individuals impinge on profits. In addition to their focus on populations rather than individuals, large animal veterinarians are untrained in care for older chickens, as they are less productive (in a capitalist sense) (Jones 2003).

Small animal veterinarians treat pets, such as dogs and cats. Their formal training is not focused on chickens, but some of them will work with sanctuaries. Of those who will, a sanctuary manager reflects, "it's not like they're dismissive of chickens; it's that they don't have that much experience" with the unique problems sanctuary chickens face (personal communication, September 2017). Even so, sanctuaries often prefer to work with small rather than large animal veterinarians. The tendency of small animal veterinarians to value animals as more than commodities, and their openness to treating chickens, outweighs their limited experience.

Finally, avian and exotic veterinarians are newer, often combined, tracks in veterinary training and practice. These veterinarians often have experience with wild or pet birds, if not chickens (Hess and Rose 2016). As one such vet, who treats sanctuary chickens, notes, "the closest [species we see] are gonna be pet birds, which are probably 50 percent of our clientele. But as far as the other species we see a lot of egg issues with are reptiles, turtles" (personal communication, August 2017). The fact that avian and exotic animal veterinarians have training in "egg issues"—even if not through working with birds—is part of what makes their expertise especially relevant to treating sanctuary chickens.

Medical care is made more difficult by production-oriented regulation. Veterinarians are, in the words of an avian veterinarian, "very limited in the drugs

we can use, because chickens are considered food animals," according to the United States Department of Agriculture (personal communication, August 2017). The Food Animal Residue Avoidance Databank (FARAD) limits the use of antibiotics in chickens to mitigate antibiotic resistance in livestock (FARAD, n.d.). The same avian veterinarian continues: "FARAD makes medicine very difficult for the poultry. [F]or pigeons, for raptors, for psittacines [parrots], we can use what we need, but for the chickens it's much more difficult. I feel bad for 'em but, it's a matter of losing your license" (personal communication, August 2017). Thus, even when a veterinarian knows what medicines are likely to work, chickens' legal status prohibits them from prescribing.

The upshot of this is that there is considerable "undone science" (Frickel et al. 2010) regarding sanctuary chickens. Undone science refers to the "systematic nonproduction" of knowledge or research areas that are "left unfunded, incomplete, or generally ignored" (Frickel et al. 2010, 444) by major institutions, but which social movements deem important to research or understand. For sanctuaries, these research voids concern both knowledge and methods. Sanctuary affiliates are often tacitly or explicitly opposed to traditional animal testing, considering it exploitive. How, then, do sanctuaries respond to these gaps? In other words, how do sanctuaries do undone science? The answers to these questions comprise the remainder of this paper.

Witnessing in Animal Activism, Science, and Feminism

Witnessing has a long history in animal activism, in which activists feel compelled to share stories of nonhuman animals made to suffer by society. For example, Kathryn Gillespie's (2016) practice of witnessing dairy auctions drove her to share the stories of cows in modern agriculture. Taking inspiration from intersectional feminism, witnessing is a provocation to "reveal and document hierarchies of power and inequality that affect the embodied experiences of marginalized individuals and populations" (Gillespie 2016, 572–73; see also Dave 2014). Witnessing can counteract the erasure of such hierarchies, such as those that enable animal commodification, suffering, and death. Witnessing, therefore, is an approach to knowledge circulation: it demands action through sharing untold or hidden stories.

Further, witnessing involves a productive entanglement of information and emotion. It necessitates attention to "the political function of emotion" (Gillespie 2016, 572). Often, activist witnessing is described in terms of cultivating empathy and care (Gillespie 2016; Gruen 2015; Dave 2014), as in how Gillespie was compelled to write about cows at dairy cow auctions as she grieved. She describes witnessing as something that transforms grief and other emotions into political action. This transformation necessitates a balance of proximity and critical distance. As Sara Ahmed (2004, 2017) recognizes about witnessing as activism more broadly, a witness must remember that empathy is always limited and

imperfect. Though witnessing can expose hierarchies and perhaps take steps toward dismantling them, it cannot erase them entirely.

In the largely protest-oriented work associated with activist witnessing, scientific knowledge production is often far from the aims of participants. Witnessing in empirical science is the opposite in this respect. Examining the rise of experimental science, Steven Shapin and Simon Schaffer ([1985] 2011) discuss the necessity of Robert Boyle's creation of a space for "collective witnessing" by free and freely acting members of their community ("men," in their words, though it also merits noting that they were white, British, and, by contemporary definitions, at least middle class) for experimental science to be successful (335–36). In so doing, they point out how scientific results need to be perceptible to a community to be accepted, and likewise that witnesses share certain norms and values with those doing the experiment, the "modest witness" of the experimenter (see also Haraway 1988).

Feminist scholars invoke the concept of the immodest witness as an important corrective to Shapin and Schaffer. The modest witness is not simply a disembodied and ahistorical demonstrator, they contest. As such, one's positionality inevitably influences the knowledge that one can produce (Haraway 1988; Harding 1986; Fujimura 2006; Murphy 2012). This contingency, and acknowledging it, can render researchers' claims "more plausible and less distorting" (Harding 1986, 28). Therefore, these scholars emphasize how marginalized groups can bring unique and sometimes especially valuable perspectives to answering research questions, through drawing on experiences through the lenses of their identities.

I want to suggest that witnessing is how sanctuary science works. More specifically, I suggest that sanctuaries do undone science through queering witnessing, taking inspiration from Ahmed's work on witnessing (2004, 2017) and from queer ecologies. Ahmed keenly recognizes that "the master's tools will never dismantle the master's house" (Lorde 1984, 110). As she writes, "she [the witness] might not be using things the way she is supposed to. She might queer use or find a queer use for things" (Ahmed 2017, 241). And indeed, sanctuaries don't practice witnessing in the ways described above, but by combining them: queer witnessing is both a form of activism and a form of scientific, situated knowledge production and circulation. Moreover, it often entails subverting the intended use of agricultural knowledge.

Work in queer ecology interrogates how bodies, reproduction, and desires are pathologized or valued in association with nature and the natural (Mortimer-Sandilands and Erickson 2010). Animal studies scholars have demonstrated the gendered, heteronormative, and racialized politics of commodified chickens (Alaimo 2010; Adams [1990] 2010), and the racist, xenophobic exploitation of human workers in the poultry industry (Striffler 2007; see also Wamsley 2020).

Taking a queer ecological approach, we can recognize that the status quo of chicken production in much of Western society is undergirded by naturalizing and valorizing large-scale and rapid egg production and chicken reproduction (Potts 2012). Queer witnessing at sanctuaries denaturalizes these narratives, echoing queer ecological arguments that what is considered "natural" is also cultural and that hewing to the natural is often oppressive (Bell 2010). In so doing, sanctuaries rewrite norms about chicken reproduction, family, and desire. The following sections elaborate how this works through three practices: aspirational archiving, transposition, and reorienting health.

Witnessing Rhythms and Patterns: Aspirational Archiving

A major part of witnessing at sanctuaries entails defining and learning to see chicken health, illness, and distress in a sanctuary context. One way of doing this is a process I call "aspirational archiving." Like queer narrative archives, this process entails challenging which stories are worth finding and remembering, with the recognition that remembering can take multiple forms (Juvonen 2020; Rohy 2010). Aspirational archiving is when sanctuaries keep records, in part because they are useful, but also because sanctuaries hope they will be useful, for themselves, for another sanctuary, or for the sanctuary community. Aspirational archiving is witnessing in that it is observation—collecting information—enfolded into desires for societal change and improved care.

One sanctuary in California did necropsies on most of their deceased chickens over the last two years (birds who had been killed by predators were exceptions, as their cause of death was known). They repurposed resources designed for the biosecurity of chickens in the food supply to conduct the necropsies. The University of California extension programs conducted no-cost necropsies of domestic chickens upon request, as part of an effort to monitor disease prevalence.[2] Sanctuary workers, however, used this program as a way to learn what had happened to the birds—an echo of Ahmed's note about not using things the way one is supposed to.

Amassing necropsies was certainly emotionally driven: workers sought a sense of closure. At the same time, they were driven by a desire to gain and use information. If there were issues that could affect other birds, such as parasites that could be treated, they wanted to know. They learned that most of the deaths were due to reproductive problems: cancers and other diseases associated with egg laying. Finally, they hoped that someday they would either find time to do something with the data or that someone else would—that these data would be helpful to chickens more broadly. This practice is aspirational in that the sanctuary hopes that having data will be helpful to others in the future.

In a second situation, I was on a team that developed a bird health checklist at a sanctuary in the Midwest. This was a knowledge-building and anti-hierarchical move: in the past, if something seemed amiss, volunteers would contact the lead

chicken caretaker. She would then determine whether the bird needed a vet visit or whether the issue could be addressed in-house. We made a list of the birds, their known conditions, and a plan of what to look for on their bodies and in their behavior. Volunteers on the bird health-check team were to check some birds every week during our shift(s), taking notes of anything amiss. The hope here was that the log would enable us to notice changes earlier, transcending occasional individual observation. For instance, a bird losing weight was a potential sign of concern, which might lead to weighing them every week for a few weeks rather than once a month. This strategy seems to have been successful. In the words of the shelter manager:

> We try to be more aware of what's going on with them. When I first started here, nobody did chicken checks, everybody would run around, then they would get sick, and then we would take them to the vet and they would die, because it was too late. So maybe now we're just more aware of things, we have a lot more volunteers that report what's going on. I think we notice things better than we used to. (personal communication, June 2017)

Her comment about noticing better gestures toward how archiving is a practice of learning to see. As situated knowledge production, volunteers learning to see is grounded in a desire to improve chickens' lives. The checklist created a critical proximity and distance for us as caretakers: rather than simply assessing based on emotion or impulse, we had information from previous weeks and months from which to learn. This practice enabled us to calibrate our observations, which was especially important for chickens. As the shelter manager explained, by the time we noticed that they were sick by various human standards, they were often past the point of treatment. This both echoes and affirmatively inverts descriptions of queer archives as sites where "affective investments would radicalize the familiar model of archival work as a mastery of empirical 'fact,'" in movements away from universal truths and toward including queer histories (Rohy 2010, 343). Here, archival investments in the form of non-normative record-keeping enable sanctuaries to channel their affective work more productively toward better care, toward undone science.

A final example is at a well-known chicken-specific sanctuary. The sanctuary keeps records of when chickens are implanted and how long the implant seems to prevent egg laying in each chicken. They post these calendars online, hoping that others will find them useful, because there are no studies on how long the implants last in chickens. While no sanctuary affiliates I talked with mentioned these calendars, many had indeed learned about the implants through talking with staff at this sanctuary. The use of the implants and how knowledge about them circulated is elaborated next.

From Witnessing Futility to Queer Transposition

Carrie Friese and Adele Clarke use the term "transposition" to "describe and compare how findings about different species, the infrastructures supporting different species, and the bodies of different animals have been mobilized at different research sites" (2011, 32). Transposition, for them, describes the movement of scientific findings to a different place or a different context. By using medical drugs or procedures originally developed for another species (e.g., ferrets), or another context (capitalist production), sanctuaries practice transposition. They queer transposition by challenging norms about reproduction: questioning egg production, which is considered natural and central to chickens' lives (Potts 2012). As part of this process, they often not only use knowledge out of its original context, but often invert the purpose for which it was intended, queering its use. Queer transposition characterizes the development, use, and knowledge circulation regarding the implants given to chickens like Pandora.

Hormonal (deslorelin) implants are of relatively recent use in chickens: sanctuaries first began to use them in the early 2010s. To understand how they came about, it is necessary to look both earlier in time and to chicken-specific sanctuaries. One sanctuary founder, "Sue," talks about the challenges she faced in learning about chicken care:

> When we first started, I volunteered at a wildlife rehabilitation clinic and university raptor center for two or three years so I could learn critical care techniques. That was not quite satisfactory because their whole mindset is quite different from that of companion animals, it's all about being releasable. When there was something that under the right care could be treatable, the recommendation was always to euthanize. That was the best I could do, 'cause every other vet I reached out to, even ones that specialized in birds, said "no, we don't treat chickens." That was in the early 2000s. So I kept looking, then found one and then another and another. (personal communication, July 2017)

This story reiterates how sanctuary chickens fall out of spaces of veterinary medicine. It also elucidates another way of doing undone science: Sue sought education in wildlife rehabilitation and at a raptor center, in part to learn animal care herself. She notes the significant differences in perspective (being releasable) with those of sanctuaries, who are not, for the most part, trying to re-wild or release chickens. At the same time, she readily states that there was still some knowledge that she could transpose to her sanctuary from volunteering with these groups.

Drawing on other information about animal care is a common refrain at sanctuaries: "We were very lucky to find a former physician's assistant [to volunteer]," another sanctuary manager commented. "She's been able to

translate a lot of human medicine to animals…And then we've had people come through here, like a vet student" (personal communication, June 2017). If lucky, the presence of veterinary students, vet techs, and other medical professionals at sanctuaries is certainly not anomalous.

Sue describes a central struggle introduced in the previous section: "no matter what we were doing about the housing, diet, lighting…we kept losing them to repro[ductive] disease" (personal communication, July 2017). Again, the focus on housing, lighting, and diet transposes knowledge about chickens into a sanctuary context. Exposing hens to more light is known to increase egg laying, and sanctuaries invert this information.

However, this was of limited success. Sue continues, "I finally said, to the vet, what can be done? He says, 'Sue,' he says, 'there's these implants we use for other birds, shuts down the ovaries.' And I said, 'sign me up'" (personal communication, July 2017). Sue's is the first known sanctuary to use implants, and many others found out about them through her.

Sanctuaries learning from one another is sometimes through direct connections. "At first we had to call vets out for certain things," commented a manager of a ten-year-old sanctuary. "Other sanctuaries contact us a lot now…they'll have questions and call us, and we'll have the answers!" (personal communication, June 2017). To summarize, sanctuaries had to find the right veterinarians and to find each other.

Knowledge circulation through queer transposition is facilitated by social media, such as the Open Sanctuary Project. Formed in 2018, the project compiles and shares information about sanctuary best practices online, for chickens and eleven other species. Especially worth exploring is the combination of sources they reference. In their article on deslorelin implants (Griffler 2020a), several of their sources are from sanctuaries. Others are resources designed by and for veterinarians. Still others, though, are scientific research studies that use hens as model organisms to study human disease. The last is another process of inversion, although not directly from the egg industry this time. Because they are so prone to ovarian cancers themselves, hens are sometimes used as model organisms for studying ovarian cancer in humans. The Open Sanctuary Project transposes this knowledge by using it for cancer prevention in hens—a use far from its intended one.

The Open Sanctuary Project flags sources such as these as "non-compassionate." Non-compassionate sources are those in which the publisher and/or organization "advocates for or condones the use of animals or substances that come from their bodies for human benefit…While the data sourced may include elements of compassionate care, we believe that it's important to note that we do not condone these sources' views about animals and their role in the world" (Griffler

2020b). They reference non-compassionate sources because "while we would prefer that all information comes from sources such as fellow sanctuary founders and caregivers as well as veterinary journals, due to the current state of animal agriculture and the general attitude of animals being viewed solely as commodities for human benefit, much of the research available on a wide variety of topics comes exclusively from non-compassionate sources" (Griffler 2020b). This deliberately compromising position, of not condoning the source's views but considering the information useful, echoes the practice of sending birds to the University of California food safety laboratories for necropsies. Indeed, sanctuary medicine often seems to entail compromises like these.

Through queer transposition, sanctuaries have developed practices for chicken care that build on and synthesize knowledge from many fields, about many species, and taking several approaches. This has helped improve sanctuary medicine such that vet trips are not always one-way, and it has also enabled sanctuaries to do some medical care themselves. However, thus far the hormonal implants have been depicted in primarily a positive light, useful for preventing cancer. In reality, their use is limited and somewhat controversial. The following section unpacks this controversy.

Witnessing Daily Life: Reorienting Health

Though many sanctuaries have knowledge of the implants, their use is debated on the basis of their cost, side effects, and relative benefits. For these reasons, combined with limited access, many sanctuaries do not use them on some or all their chickens. As a result, there will often be egg-laying birds, which leads to a question often posed to sanctuaries: What do you do with the eggs? Responses to this question, intertwined with the debate about implants, reveal a third practice of witnessing. This practice is reorienting health—reconsidering what health means in the context of farmed animals at sanctuaries. This section begins by discussing the debate about implants and then turns to the question of the eggs.

The cost of implants varies based on the veterinarian, the number of implants given, and other factors. As such, implants range from seventy-five to several hundred dollars each, and can last from weeks to many months. Costs quickly add up, to the point where implant use can be prohibitive for a sanctuary's budget. This quandary elaborates the political economic dimensions of health among rescued chickens: that its costs are scaled to companion animal medicine, not accounting for how costs accumulate for even a small flock.

Issues with side effects from implants are somewhat more complicated. Sanctuaries have seen birds seeming to get depressed and losing feathers, and been concerned. However, through a balance of empathy and critical distance, implant advocates found that there is more to this picture. The feather loss and moodiness are due to molting, a side effect of the drug. Molting is an energy-intensive process and can be tiring to birds, hence their appearance as depressed.

However, this side effect is relatively temporary compared to the usual lifespan of the implants, and the main longer-term side effect is missing feathers, which take longer to grow back. Though the birds may look strange and be tired, as one sanctuary founder says, the result is "nothing but healthy birds" (personal communication, July 2017). Thus, despite the cost, many sanctuaries choose to implant at least some of their birds. This is the first example of queer transposition, as molting is a process well-known in production chickens: farmers will induce it to increase egg production. Sanctuaries invert this knowledge.

Preventing reproduction is also a practice of reorienting health. As United Poultry Concerns, a sanctuary and advocacy group, states,

> Our role is to educate people to understand why we do not allow our hens to hatch chicks: first because this is a sanctuary and not a breeding or farming operation. Second because we do not support bringing animals into a world in which the majority are mistreated by our species and in which millions already exist who need caring and responsible homes. (2014)

In this respect, (many) sanctuaries are anti-natalist: health for domesticated chickens entails preventing reproduction. Sanctuaries are not trying to return chickens to an imagined "natural," or pre-breeding, state, in which hens laid and hatched fewer eggs. Rather, this work is fully "naturalcultural"—so-called natures and (agri)cultures are inextricably intertwined (Haraway 2003; Bell 2010). Sanctuaries pull different threads from naturecultures to reorient chickens' presents and futures: they make claims about health and healthy chickens that consider their present biological lives and how these are intertwined with hegemonic political economy. These reorientations speak to a point undergirding much of queer ecology, that "nonreproductive sexualities are understood as deviant" in Western society (Mortimer-Sandilands and Erickson 2010, 7). And indeed, the practice raises discomfort, even among sanctuaries, of stopping chickens from reproducing in the sense of hatching their own eggs—if they seem to want to (Donaldson and Kymlicka 2015).

While other solutions can certainly be imagined, I suggest that embracing nonreproductive futures attends to the material challenges of the world sanctuaries both exist in (overwhelming numbers of chickens, breeding, financial limits of sanctuaries) and attempt to reorient (care attentive to apparent preferences). Reorienting health as such can therefore be understood as one response to Kim Hall's provocation that a nonanthropocentric "queer conception of the future can move beyond exclusive anthropocentric and reproductive focus on future generations toward future generation—the resistant commitment to generating alternative communities and modes of being" (2014, 221, drawing on Braidotti 2006, 113). Sanctuaries' efforts to care for hens with reproductive issues manifests this turn to (perhaps liminal) future generation and alternative modes of being.

What about hens with apparent desires to hatch eggs and raise young? Hens' tendencies to go broody—to sit on a nest and attempt to hatch eggs—is also naturalcultural, in that it has been extensively manipulated through breeding. Domestic chickens' wild ancestors do go broody. Some hens, such as the common factory breed of white leghorns, are bred to be less likely to go broody to make them more productive, but even this is not entirely successful (Potts 2012). Sanctuaries are anti-natalist in terms of discouraging biological reproduction, but, manifesting a spirit of generating alternative communities and modes of being, sanctuaries nonetheless enable and create space for parenting.[4] For whether they are broody or not, chickens will not infrequently take younger residents under their wings, literally, and raise them. While opposed to hatching eggs, sanctuaries will enable these behaviors, especially when taking in younger or weaker birds.

Reorienting health is perhaps even more apparent in terms of chickens who still lay eggs at sanctuaries. Most sanctuaries with egg-laying hens and roosters cohabiting emphasize the importance of collecting eggs. An extremely common next step is feeding them back to the chickens (sometimes raw, sometimes scrambled, sometimes hard-boiled and mashed—and always with shells included), partly to restore nutrients lost through egg laying.

Another major sanctuary writes, "Hens will eat their own eggs! Indeed, hens love them. Plus, eggs provide much-needed calcium and other nutrients that can help hens, who have been genetically manipulated through centuries of selective breeding, avoid problems with egg binding and other deadly conditions" (Triangle Chicken Advocates, n.d.; see also Singer 2009). This practice offers a different narrative about health, naturalizing and denaturalizing the egg laying of contemporary chickens by detailing how hens have been bred to lay significantly more eggs than their ancestors.

At least as significant, though, is the reference to chickens' desires: "hens love them." The attention to desires is even more apparent in that sanctuaries feed eggs to roosters as well, making the argument of nutrient necessity as the primary motivation a bit weaker. In the passage by Triangle Chicken Advocates, nutrients become a nice bonus, known through learning about the legacies of breeding, but desire seems to be the primary motivator. Of course, sanctuary workers can never be completely sure of chickens' preferences (though, see Johnston 2008; Squier 2010). But through combining learning to see better, transposing knowledge from multiple fields about chickens' health, and being aware of and responsive to political economy, feeding eggs back to chickens, or simply not preventing them from eating their eggs, sanctuaries thoughtfully reorient what health means for rescued chickens. Further, using implants and feeding eggs back to chickens are challenges to the heterosexist status quo of enabling (or forcing) heterosexual reproduction of agricultural animals (Adams [1990] 2010; see also Alaimo 2010).

The Limits of Witnessing

Thus far, I have portrayed sanctuaries and witnessing in a primarily positive and progress-oriented light. However, it is important to recognize that witnessing at sanctuaries has its limitations. Some of these are undercurrents throughout this paper, ranging from a lack of standardization and incomplete communication, to the intertwining of capitalist agricultural and sanctuaries' political economies. This section turns to these undercurrents, demonstrating how, although sanctuaries contribute to doing undone science, much is still left undone, literally and figuratively.

First, it is crucial to recognize that a large majority (though far from all) of sanctuary staff and volunteers are white. Sanctuaries have made strides toward challenging white privilege and white supremacy—for example by issuing statements supporting the Black Lives Matter protests of summer 2020 (Farm Sanctuary 2020); offering grants to sanctuaries led by people of color (Microsanctuary Resource Center, n.d.); and simply by challenging animal agriculture, with its racist and xenophobic labor practices (Striffler 2007). However, there is a long way to go. Particularly in the case of the deslorelin implants, nowhere in the debate about them is concern (about their use or communication) out of solidarity with people of color who have been prevented from having children because of white supremacy (e.g., TallBear 2018). Sanctuaries might consider including messaging condemning the forced sterilization of minoritized humans in their discussion of implants. More generally, sanctuaries' limited racial and ethnic diversity impacts queer witnessing in that, first, sanctuaries are unable to learn from as many voices, perspectives, and knowledges. Further, they are limited in their ability to speak to and alongside the anti-racist movements with which sanctuary work is intertwined.

Additionally, witnessing is unstandardized, which enables creativity but is also intertwined with limited oversight. Though sanctuaries do witness one another through communicating with one another, directly and through social media, there are no generalized methods for broadly changing practices when better ones are found or when something turns out to be problematic. One veterinarian discussed how a sanctuary she worked with was especially reluctant to euthanize when the animals seemed to be suffering and were past the point of help. Given sanctuaries' histories with veterinarians—especially farm vets—suggesting euthanasia rather than treatment, the lack of sanctuary standards enables a large grey area between successful treatment and undue suffering.[3]

Another limit is that sanctuaries can capitalize on companionship—making the endpoint of sanctuary work a transformation in the status of sanctuary chickens into pets, leaving agricultural systems unchanged. Perceived financial constraints on the part of veterinarians have contributed to this issue, as veterinarians were often skeptical of someone wanting to spend money to treat a chicken and sanctuaries had to advocate to get chickens treated at all. As a sanctuary founder

noted, "We had to be really assertive [working with veterinarians]. And once they realized we were going to pay the vet bills, it was more okay" (personal communication, July 2017). This challenge of being assertive seems to dissipate once sanctuaries develop relationships with veterinarians, and sanctuaries' outreach and education often does challenge the status of agricultural animals more broadly (Donaldson and Kymlicka 2015). Even so, there is a risk of creating static two-tiered structures, in which sanctuary chickens are an exception that coexist with agricultural chickens.

This hierarchy leads to another potential limit of witnessing: its reliance on sanctuaries with economic privilege. A leading chicken sanctuary stated of their work with veterinarians,

> Our feeling is by working with a companion animal vet, we pay top dollar for the services because if your mission is to elevate the status, then you've gotta put your money where your mouth is and not try to do things on the cheap. Once the doctor got that we were serious, that we weren't looking for cheap medicine, we wanted quality medicine, he got it that there was a market there. Now there's a sign outside saying we treat pet chickens. (personal communication, July 2017)

The emphasis on creating a market for veterinary care pivots the emphasis on knowledge to an emphasis on money. Value is temporarily reduced to financial value, in contrast to much of the work of sanctuaries, which entails exploding the concept of value to that beyond profit. As with the previous limit, I suggest that while this pivot is largely because of the capitalist, agricultural contexts of veterinary medicine, it risks overly influencing sanctuaries.

A further and associated danger is promoting privatized knowledge. Sanctuaries rely on being able to do certain kinds of medical care in house, as described in the sections above. Doing this work both builds practical knowledge and ways of seeing among sanctuary workers, and it makes sanctuary work more (financially) accessible. It is indeed fortunate that some sanctuaries have supporters who finance the paid professional labor of veterinarians, but if all sanctuaries had to rely on vets for all medical care, many would simply be unable to exist. While the contrast between "cheap" and "quality" medicine is true to a certain extent under capitalism, the two are indeed compatible at other sanctuaries, in certain cases.

Conclusion: Witnessing as Activist Science

Queer witnessing is fallible and limited. Even so, it offers a process and ethos of medical knowledge production different from that of much laboratory science. I have shown how queer witnessing at sanctuary works through three practices: aspirational archiving, transposition, and reorienting health. To conclude, I want to discuss the significance of witnessing as activist science, at sanctuaries and beyond.

First, at sanctuaries, queer witnessing offers a way of producing knowledge and caring for animals that foregrounds desires. Care, particularly animal care, has recently (and importantly) been critiqued. Eva Giraud and Gregory Hollin describe how discourses of care are put into practice to ensure that experiments on laboratory animals "progressed more smoothly" (2016, 41), rather than to accommodate the affective needs of animal subjects. In other words, care was used not to challenge instrumentalization, but to support it. In the sanctuary world, Sue Donaldson and Will Kymlicka caution against paternalism, in which "structures and routines" can be "created as much for the convenience and legal protection of caregivers and administrators as for the needs and wishes of residents" (2015, 56). The institutional structure of sanctuaries and the discourse of care can leave sanctuary residents with "a hard shell of restrictions" that can be difficult or impossible to contest (Donaldson and Kymlicka 2015, 56). At the same time, theory on care recognizes the importance of empathy (Gruen 2015), the productive and critical entanglement of "labor/work, affect/affections, ethics/politics" (Puig de la Bellacasa 2017, 5), and the importance of recognizing power inequality in dependency and interdependency (Puig de la Bellacasa 2017; Taylor 2017). Witnessing, I argue, can indeed be situated alongside these latter accounts, but offers a corrective to care in its attentiveness to seeing desires while recognizing hierarchies. Caregivers who witness are coming from a perspective of trying and learning to read desires of individuals and integrate them into structures (see also Puig de la Bellacasa 2017 and Taylor 2017).

Second, witnessing is non-identitarian. Sanctuary caregivers come to the sanctuary with different backgrounds and training in animal care, including human care. In this paper, the volunteers and staff discussed had backgrounds in wildlife rehabilitation, nursing and gynecology, animal testing, animal shelter work, animal welfare science, and biology. Further, sanctuaries draw from different bodies of knowledge and approaches to animal care: the limits of small animal, large animal, and avian medicine become strengths when considered from a non-identitarian perspective, combined with medical research and animal behaviorists. Recalling the sanctuary that tried housing, diet, and lighting before turning to hormonal implants, each of these reflect different approaches, which could easily be foreclosed upon had the sanctuary gone to a professional with a singular focus.

Additionally, Paul Robbins and Sarah Moore introduce the concept of "ecological anxiety disorder" (2013, 16) to talk about scientists' anxieties about being both overly normative and not normative enough. To resolve this paralyzing contradiction, they call for "directly confronting what we want as scientists and citizens and acknowledging where these desires put us relative to others in the world" (Robbins and Moore 2013, 16). In this paper, I have argued that sanctuaries do exactly this, through witnessing as a scientific and deliberately political method, offering queer ecological "models capacious enough to include both

cultural critique and a commitment to uncovering material realities and agencies" (Alaimo 2010, 58). At sanctuaries, humans intervene with vested interests. One of these interests is seeing and foregrounding the desires of sanctuary residents. Because of recognizing residents' desires, combined with sanctuary affiliates' institutional limits and their own interests in challenging the political economy of agriculture, sanctuaries manifest nonreproductive futures.

Finally, witnessing at sanctuaries is a way of expanding the practice of situated knowledge production. Situated knowledge production is historically based on identity—questions of who I am or who we are as a marginalized group—from which it offers the lessons that all knowledge is situated and that certain perspectives might be more valuable than others in answering certain questions (e.g., Haraway 1988; Fujimura 2006). In this paper, situated knowledge is based on identity, but also on (species) difference and political economy. Queer witnessing thus expands the field of situated knowledge production from one of including or focusing on marginalized groups to emphasizing the power relations therein.

This paper has expanded and queered witnessing as a concept. Through combining activist, STS, and queer feminist perspectives on witnessing, this paper has shown that witnessing can be a form of activist science. It is undergirded by balancing proximity and critical distance: it is neither an empathic perspective, where emotions could predominate over other forms of information production, nor a neutral-distant perspective. As such, sanctuaries demonstrate that queer witnessing is a way of doing undone science.

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Notes

[1] Although this study focuses on hens at US sanctuaries, it is important to note that farmed animal sanctuary sites, albeit with widely diverging politics, are not exclusive to the US, or, for that matter, the minority world (Donaldson and Kymlicka 2015).

[2] The university extension program later switched to charging twenty dollars per necropsy because more people, largely backyard chicken keepers, sent deceased chickens than they had anticipated (personal communication, July 2017).

[3] End-of-life conversations for chickens can be extremely fraught. Here I avoid the term "quality of life" as it has been demonstrated to have ableist tendencies (Taylor 2017), and aim simply to suggest that undone science exacerbates the difficulty of conversations about euthanasia.

[4] Tangential to the question of parenting, but relevant to alternative kinship formation, many sanctuaries attempt to group chickens according to apparent preferences for companionship. This included sexual companionship, such as a pair we referred to as the "lesbihens," but it also included groupings based on amicability or care more generally.

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