

ARTICLE

Reading Blood Work Is an Art Form: Toward an Embodied Feminist Practice of Veterinary Science and Care

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Abstract

What are the advantages of a concrete, embodied relationship between human subjects and their non-human objects of care for the veterinary process of knowledge production? The scientific reductionism that frames formal studies makes much of the knowledge gained in those studies questionable or severely limited, since many important factors of real life illnesses and their causation and cure are excluded from consideration for the sake of clinical control and traditional scientific objectivity. This essay narrates my experience with my mare Lilly who suffered from a rare auto-immune disease; at the same time, it describes and analyzes the history and strategies of the world's largest internet-based equine patient advocacy network on metabolic illness, a network that supported my journey of knowledge acquisition and contribution, through our case history, to a larger alternative veterinary cause of knowledge production. Located between Feminist Science Studies and Critical Animal Studies, this project explores the notion of touch and raises questions about the biomedical field's present-day heavy reliance on visual diagnostics. What is the relation between visual technologies and the detached, disembodied knowledge "from nowhere" that conventional science believes in? How much of the alternative to

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this way of knowing lies in touch, embodied assistance, relationality, and intuition?

And finally, in observing and documenting the relationship at the heart of this venture around knowledge, my essay also suggest that this is a queer project where queerness is understood as the careful but radical reconfiguration of kinship in the context of Haraway's recent call to "make kin, not babies."

Introduction

How to begin? Who is the reader?¹ How to frame the argument? How to write an academic article about a deeply personal experience, one whose utterance collides with any number of traditional academic limits? This project is about medical treatment, care ethics, T/technologies, R/research, gender, and internet communities; it is also, perhaps most centrally, a challenge to the millennial distinction in Western thought between "the animal" and "the human."² Biomedicine is built on the backs of nonhuman animals, but what happens when an animal is actually the patient? These lines all converge in my Percheron-cross mare Lilly.³ And now it is about grief as well. What is care if not the practice of becoming worldly?⁴ What does care have to do with gender?⁵ What is the connection between grief and care? What are the communities where humans and equines commingle that have arisen from these contexts of care and grief? How do they function, and what are the roles of Biomedicine and various Technologies in their creation of biocitizenship? What are the discursive constraints in academic writing around care and grief, particularly when other animals are concerned?⁶ What are the complex temporalities of such writing? In this piece, I move away from the *cold-body*, Anatomy-hall practice of Science, which, in Newtonian fashion, approaches and frames the body (and nature at large) as a set of distinct, independent entities, substances, and mechanisms: objects of study and intervention. Based on a feminist critique of Scientific reductionism, and particularly on Karen Barad's *agential realism*, this writing instead seeks to move toward understanding reality as intra-active, framing certain specific physical functions as dynamic relations

and energy exchanges. In other words, I wish to leave behind a mechanistic vision of the body and approach health and illness as the embodied experience of *warm bodies* that are always entangled in energetic exchanges. Such a practice must steer clear of the traditional academic disembodiment of the writing voice. My grief, which is one central energetic mode of entanglement here, is not an additional strand, at will to be added to, or subtracted from, the study of, say, the fluctuating hormone levels of the patient, but a constitutive element of warm-body medicine.

This project has, in its production, already bridged the period from summer 2013 to summer 2015 and now 2016/17 (as I revise sections of this in 2016/17 for publication). As I reread it with the hindsight of the tragic outcome of 2015, the hopeful tones of the 2013 draft read as hopelessly naive, blissfully innocent. What processes of violence do I bring to bear on one material-discursive construct (lived reality with Lilly) to transform it, step by step, into another, an academic text? Lilly is dead now, many years before her time. She died in the middle of my writing process. My attempts at healing her from her afflictions have failed. Was it inevitable? Are treatment and cure illusions, a “god trick,” part of the disembodiment of Scientific Knowledge (Haraway, 1988, p. 581)? What about academic writing? My outlook on what traditional Science, various alternative sciences, and even the academic writing process have done for us is more pessimistic now than it was in 2013. Finding a diagnosis was as elusive as producing an orderly narrative, but I hope to show that there may be good reasons to eschew either or both.⁷ How to live with her last call to me for help? On the early morning of July 18, 2015, the only help I could offer was euthanasia, trying to steady her panicked, thrashing body on the ground for a seemingly endless, yet much too short, hour until the Veterinarian arrived with the gentle, lethal intravenous cocktail: those two unmistakable bright-pink syringes of pentobarbital. Lilly was never much of a talker; when she “spoke,” it was significant. “Help me!” And now this memory of her call for what I could not give (or did give?) is precious and painful. *Help me leave my body? Or Help me*

get up? How do we confront our impotence in the face of those who believe that we can help? Is this ultimately the predicament of medical doctors, a pressure before which many have retreated into high Technology?

My grief works itself into the interstices of rational analysis, into

What does it mean for me to say this in an academic paper? To quote Judith Butler to legitimize my words—or, on a more optimistic note, to draw on the work of one of the trailblazers of academic speakability of our age? As Butler’s reading of *Antigone* insists, the realm of unintelligibility remains and will remain opaque to a certain degree. I cannot and do not expect to become completely intelligible within academic language through this project, but now that grief forms a constitutive part of it, I note, observe, sputter out what can, at least partially, be said while preserving the opacity, the mystery of my experience.

previous drafts of this account, splitting and shattering it further. How does death reposition my quest for health—Lilly’s health, my own? My grief is not of the gentle kind, a mournful sadness. The English term *grief* seems deeply appropriate in its proximity to violent emotions such as despair, anguish, distress, pain, but also in its association with grievance, aggravation. I howl “like an animal” (but I *am* an animal; how can I howl *like one?*), extruding, expelling my

soul for hours every day until I collapse, with “a violence that brings [my language] to the limits of speakability” (Butler, 2000, p. 80). Furthermore,

this very writing brings a grievance, levels a plaint against the “man of Science,” against Science, against

Queering Kinship: “Make Kin, Not Babies!” This is the witty slogan in Haraway’s urgent call to rework kinship in the face of climate change and planetary destruction. Queer feminism has everything to do with such a need to restructure kinship. Feminists should “exercise leadership in imagination, theory, and action to unravel the ties of both genealogies and kin, and kin and species” (Haraway, 2015, p. 161). “My purpose,” she argues, “is to make ‘kin’ mean something other/more than entities tied by ancestry or genealogy” (p. 161). What other forms of expressing my “inalienable right to procreate,” my affective (and biological?) need to mother/father, are there that do not make more humans? How to rethink cross-species relations to their fullest potential (involving love, care, and grief) that are not second to the “real thing”? How to confront what Haraway bravely mentions as the immediate suspicion (“and who can blame them”) that my insistence to exclude myself explicitly (programmatically?) from the (human) baby-making business represents “neo-imperialism, neo-liberalism, misogyny, and racism” (p. 164) is merely an expression of my white privilege? How to claim family sick leave at work to care for my recumbent Lilly? How to explain that six PM is not a good time for committee meetings because it’s dinner time in my barn? (My childbearing colleagues wield stronger arguments in the “work/life balance” debate!) Lilly and I are queering the genealogies of mothering, fathering, brothering, and sistering (and even fathersistering or brothermothering? Cousingrandfathering?). We are trans-species warriors.

my own impotence. Just as in Antigone's case, our culture continues to deem this violent response to the visceral experience of death inappropriate, obscene, private at best. Like Antigone, I erupt into the public sphere of academia (this bastion of rational, humanist thought) with a claim to my "right to grieve" (Butler, 2000, p. 80). This claim may appear even more scandalous in that the object of my grief is "just an animal" (like me!). To be sure, here reside some of the political aspects of this grief's unintelligibility, in the very sense that Butler attaches to Antigone's claim and that she intimates is queer, a radical reworking of kinship. And then the question: is a better science project, a warm-body anatomy, not always the outcome of grief?

The logistics and circumstances (ninety-degree weather, weekend) made organizing an autopsy difficult, so Science and its cold-body epistemological comforts once again retreated in favor of simply

accepting
what had
happened
without
"that kind
of
knowing."

Why did
Lilly
"suddenly
" die?

Why had
she been
slowly
starving to
death
between
March

Wild speculations on the frequent, continuous, even excessive, use of anthelmintics in contemporary horses (some owners give anthelmintics, i.e. dewormers, with the daily grain): In *The Wild Life of Our Bodies*, the evolutionary biologist Rob Dunn suggests that our human bodies have evolved to coexist with many other species. In the chapter on Crohn's disease, he analyzes an alternative medical practice which involves the insertion of hookworms and pinworms into the gastrointestinal tracts of patients with Crohn's, which in many cases has induced remission; Biomedicine does not understand why and tries to brush the treatment off as placebo. Dunn's argument is that the human gut has evolved to be in struggle with worms and that modern hygiene has eliminated this companionship. Out of "boredom" or "longing" for the lost worms, the immune system begins to attack the "host's" own body: our bodies are "eating their guts out" (Dunn, 2011, p. 23).

The continuous use of anthelmintics is a recent phenomenon in horses. So is the emergence of equine IBD. Would Biomedicine do better with autoimmune disorders if it chose to take Haraway's notion of *cum panis* (companion) seriously rather than continue with a paradigm that understands disease to stem from "infection," from the intervention of an extraneous aggressor (pathogen) whose elimination is Biomedicine's mission?

2014 and July 2015? (So was it sudden, or drawn out, or both?) Why

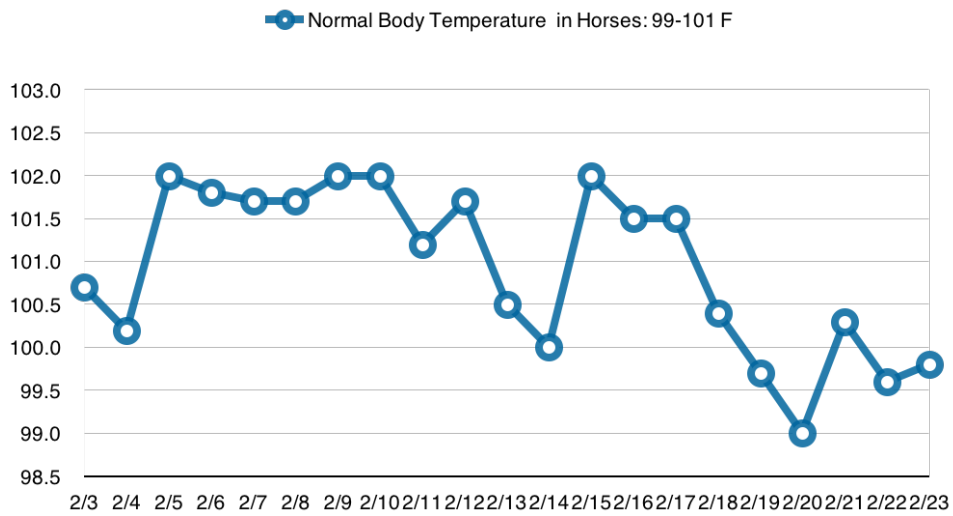
could no one make sense of it? Why is so much knowledge apocryphal with horses? Why was she not diagnosed (or not officially, or, at least, not when there was time)? In fact, equine inflammatory bowel disease (IBD) is beginning to crop up in research papers on what are labeled as “emergent” diseases; while prognosis is poor, Research into this rare condition is beginning. However, just like there is a solid barrier between medical Research and what trickles down to the practitioners in the field, particularly with rare diseases, the likelihood of finding diagnosis and proper support from local Veterinarians is slim. A guardian needs enormous amount of initiative, endless emotional resources, and often deep pockets to help an individual affected by such a disease.⁸

How much does “this kind of knowing” matter to me? The kind of knowing “for sure” based on biopsies, autopsies, “hard” evidence?⁹ Lilly’s own primary-care Veterinarian, a Research-oriented man, was not Research-oriented enough to provide us with a proper diagnosis while Lilly lived: only two years of head-shaking. He did not bother to consult the latest publications, as I eventually did. I came up with equine multisystemic eosinophilic epitheliotrophic disease (MEED), one of the subcategories of IBD, or possibly granulomatous enteropathy (GE), two related autoimmune-mediated malabsorption disorders. I come to this hypothesis (corroborated by a young Veterinarian who has come into our lives recently, but too late for Lilly) based on observing and interpreting symptoms and data such as blood chemistry and tactile observations made day and night for half a decade. But I don’t know “for sure” in the way that Veterinary Medicine claims that MEED or GE can only conclusively be diagnosed: invasively, through biopsy or necropsy. I hypothesized too late, trusting that the “man of Science” knew best. The point is that we missed the opportunity to experiment with corticosteroids. My consolation is that even with corticosteroids, the prognosis for horses in an advanced stage of MEED or GE is poor. So the abyss of knowing and the abyss of not knowing devour me simultaneously as I consider what I failed to know when there was time to act.

What would it mean to “act”? Action toward health? I, the griever, berate myself for not having acted (enough). But why should I consider death “the worst outcome” by definition and illness the most undesirable state, to be eliminated as soon as possible?¹⁰ What, then, is objectionable to me about my “man of Science,” Lilly’s Veterinarian, failing to diagnose her affliction or provide treatment options (however elusive)? What is wrong with embracing her return to the bowels of the earth when her own bowels became unable to provide sustenance for her? Will I want the same nonintervention for myself when the time comes? “Composting is so hot!” as Haraway insists (2015, p. 161). When is it best to Diagnose, “Know,” act, and when is it best to accept, surrender, compost, know otherwise? How much life justifies how much suffering for whom?

How to know? I opted not to Know “conclusively” (necropsy) in order to conclude otherwise. Conclude: to end, to close, to lock, like the earth closes a body off from the living? But does it? Do not the “inconclusive” ruminations, the digestive dynamics of earthly existence, continue inconclusively in the bowels of the earth (and my mind)? Is my mind equivalent, parallel, related, to the earth in how we digest (compost) my mare’s physical remains?¹¹

Throughout my life with Lilly and throughout this project, I am and have been torn between Science’s epistemological comforts and promises and the realization that much of it is ultimately grasping at straws. What is the value of measuring? Can there be measurement without theory, theory without measurement, and to what extent is all theory an art form?¹² During certain periods (months at a time), I took Lilly’s temperature rectally at least twice a day and kept a diary: the most basic of medical measuring techniques, marrying the intimacy of our daily rituals to the ancient technology of the diary. This data now allows me to construct a graph of her body temperature between February 3 and 20, 2013, the period of the most acute crisis where she was mostly recumbent.



Graph 1: Daily recorded body temperature of Lilly

There was likely (definitely?) an infection between December 2012 and March 2013, peaking in February. But was it due to a particular identifiable external pathogen (*Borrelia*? *Ehrlichia*?) or internal sepsis caused by intestinal lesions? I regularly (what is regular?) had blood drawn to measure glucose, insulin, and blood levels of the pituitary hormone ACTH. What does that tell me now? What did it tell me then? As some Veterinarians explained to me after this blood work appeared inconclusive, these are snapshots in time. Blood chemistry fluctuates over time, over weeks, over the course of a day. Reading blood work is an art form, not an exact Science. We start from a hunch. What, then, is an exact Science? An impractical and unaffordable chimera? In order to gain more exact Knowledge, we would need to draw blood ten times a day, every day, for several weeks. Who can afford that without health insurance? Which health insurance system would support this model of Science? How practical would it be, how much more accurate or valuable is this information than my intuitive sense that my horse is doing well or not? Looking into her eyes and knowing? Is the graph above inherently more useful, objective, consequential, effective than my diary? The devil is in the details, and the details are overwhelming: hence Scientific reductionism. How do we construct our K/knowledges? What is static and what is information? Is a medical expert needed to sort static from

information? Can the lay expertise of the owner/guardian prove to be equally, or more, useful? And how often does knowledge come late, too late to make a difference?

The logistics of having in my care an ill horse limit the reach of Science's epistemology in more blatant ways than with an ill human:

Instead, I am going to make an effort—for one cannot simply leap outside that discourse—to situate myself at its borders and to move continuously from the inside to the outside.

Luce Irigaray, "Questions" (1985, p. 122)

knowing is a matter of transportation (how to get her to a hospital, hours away, in her state, given that she needs strength to stand in the swaying, bumping, shifting trailer), of hydraulics (how to lift her body when she cannot

get up), of body density (the limits of x-ray and ultrasound imaging for equine diagnostics), of the length of the intestines (equine anatomy makes a colonoscopy impossible), of prey-animal psychology (the stresses of the confinement and immobility associated with hospitalization). But the question remains whether these epistemological limits do not apply to human illness as well, albeit to a different degree in a world that is tailored to human needs, designed with the size of the human body in mind.¹³ What was complex in 2013, when I began this writing process, is now perhaps on the brink of chaos. I do not pretend to find definitive answers to all or even any of these questions; the prognosis on my own project is "guarded," but still I don't want to refrain from asking them, as they drive the process of my investigation forward more than any progress narrative at which I could be grasping. With Irigaray, I engage in the spirit of the question to move us away from the center to the margins of the discourse.

Biocitizenship with Nonhuman Animals: Building Patient Activism for Horses with Metabolic Illness

The following paragraph was written in 2013. I will quote it as such in its entirety because its tone of voice so jarringly clashes with my reality in

2015/6, yet illuminates a crucial moment in time:

Briefly the back story: From November 2011 on, Lilly, then my riding and training partner and companion of four years and my next of kin, has had a series of severe, life-threatening health crises. Local veterinarians have been unable to help at best, and in one particular episode—a misdiagnosed and untreated serious infection—have caused great suffering due to their incompetence and lack of attentiveness while shamelessly charging for their shoddy services. There are grounds for a lawsuit but I do not have time or energy to engage in litigation culture. Horses continue to be legal property, not subjects. Lilly's net value is negligible. In any case, chances are that she will live. I will be unable to leave her for more than a few hours at a time for at least the next ten to twelve months to administer her medications five times a day in particular sequences. What sustains us through this journey are internet communities. Thanks to them, Lilly will likely live despite local incompetence.

I choose to leave this paragraph unaltered to leave a performative trace of the jagged temporality of my journey with Lilly, the constant retroactivity and belatedness both of my care and my "sleuthing." I also leave it to document the particular anger I felt toward "local Biomedical incompetence," in opposition to my utopian construction of the alternative internet communities that were promising that we would get through Lilly's health crises. Patient activism generally arises to fill a need not met by existing professions and institutions, both to pressure them and to provide mutual emotional support. Finally, what is at stake is also the construction of belonging, of kin and companionship. My current position on these communities is not fundamentally different from what it was in 2013. I will, in what follows, engage with the challenge to traditional Veterinary structures brought forward by internet patient activists, but I must now acknowledge that the nature of Lilly's illness obviated a cure or management of her symptoms based on the knowledge produced by this activism. This is not a criticism of the

movement but rather the realization that Lilly's illness simply made her fall outside the roster of their hard-won expertise. She probably didn't suffer from what these communities have evolved around, but nevertheless we are indebted to them: in part because

As Dumit demonstrates in "Illnesses You Have to Fight to Get," a major player in the complicated dynamics around emergent diseases in the human context is the institutional interaction between biomedical practitioners (particularly primary-care physicians), HMOs or other insurers, and the patient (2006, p. 577). Many patients with contested illnesses (often classified as "syndromes") fail to get health coverage and thus cannot afford treatment. If you prefer: "Many patients...cannot get health coverage and are thus unable to afford treatment. Since health insurance is still a rare occurrence in the equine context, the institutional discontent in owners of horses with emergent diseases is directed more "simply" against the Biomedical field's various practitioners, as well as the allocation of research funds. The psychological and moral pressures around "non-biologizable" illnesses in humans is different from those in equines as well, although there are parallels. Nettleton analyses the considerable moral pressure on patients resulting in guilt, ambivalence, and self-doubt in the context of "medically unexplained symptoms" (MUS) (2005, p. 1168). The owners of horses with MUS, misdiagnosed, or dismissed symptoms and disabilities are often put under pressure by trainers, Veterinarians, and other equestrian humans to pressure the horses to perform "until they either break or get better," and thus the horses themselves also become the recipients of our medical uncertainties and Biomedicine's simplistic definition of what constitutes proper illness. Nettleton's Foucaultian historicization of the hegemonic Biomedical idea "that the origins of disease are located within the interior space of the body" is particularly suggestive in this context (p. 1168). To legitimize our existence as patients, I argue, we thus cannot work symptomatically to heal them, but have to locate the origin of the malaise in logocentric fashion in order to eliminate it and return the organism to a full functionality that is itself never critically understood as an idealized, ableist phantasm

they helped mitigate some of her symptoms and, even more crucially, because they provided an invaluable emotional support network. What is the nature, what are the obligations and rights of these belongings? How do diagnostics—both in the form of the Biomedical diagnostics industry and the alternative communities that weave their discourses through and against it—inflect our queer trans-species reworking of kinship, as mentioned previously? Do we, do I, belong to these communities even though Lilly likely did not suffer from the diseases they address? How does her death affect my biocitizenship in them? What are my continued obligations to their mission of alternative knowledge production?

For the sake of brevity, I focus here on the second community I joined after my mare came down with laminitis, the Equine Cushing's Insulin Resistance (ECIR) Network.

Since early 2012, we have been supported by Dr. Eleanor Kellon, a research veterinarian based in Pennsylvania. On a shoestring budget and in collaboration with other volunteer activists, Kellon has mounted a large internet research and support network for guardians of horses with various metabolic conditions, most prominently: insulin resistance (IR) and pituitary pars intermedia dysfunction (PPID, also known as "equine Cushing's syndrome"). The Yahoo group "ECIR" (Equine Cushing's /Insulin Resistance) currently has more than 12,000 members globally and includes thousands of case histories. The group now possesses the "largest field trial database in the world" for these disorders (www.ecirhorse.org), and is registered as a public charity under 501(s)3. In 2015, the group identified the following key focus areas:

- building a bridge between formal research (conducted in veterinary research institutions) and real-life experience with PPID/IR horses
- other related forms of outreach, particularly toward International Veterinary Information Service, but also expansion and continued growth of the group's three internal platforms: the ECIR Yahoo group, the ECIR facebook page, and the informational website ecirhorse.org
- strengthening of a core area of ECIR groups, the volunteers.

Trained at the University of Pennsylvania, and actively involved with Science-based Research and publication, Kellon continues to be the group's most active link to formal Veterinary Research. She is one of ECIR's most competent policers of Scientifically unfounded theories or solutions. As part of this ethos, any claim members make as to what constitutes successful treatment of their horses has to be backed up by hard and fast Data. This rule was instituted, no doubt, in response to the ever-increasing number of "snake-oil vendors" in the field of equine health and nutrition who gain access to semipublic forums such as ECIR in order to indirectly market or promote their products, and in those contexts often prey on confused and desperate horse guardians in crisis.

Up until very recently, IR and PPID were so poorly understood by traditional Veterinarians that, from the late 1990s onward, the internet rapidly became the main source of horse information for guardians. Nevertheless, I would argue that the group provides insufficient epistemological and even logistic critique of institutionalized Scientific Knowledge production.

Since its inception in 1999, ECIR has sought to serve as a bridge between its “field trial databases” and formal Research. Early on, for example, some members provided blood samples from numerous horses diagnosed with PPID for formal studies at Cornell’s Veterinary College. One particularly seminal study, based on an ECIR member’s contributions in 2004, debunked the common Veterinary hypothesis that elevated sugar and starch levels in fall grasses alone caused laminitis, a severe and complex inflammatory condition of the hooves, in PPID horses. The study showed that the seasonal change in hormone levels in PPID horses occurred even without access to fall pasture and without any changes to a low-sugar/low-starch diet. These contributions were then formalized and published in a study in a major Veterinary journal (Donaldson, 2005). This confirms the important role of the group in discovering the seasonal change in hormones in PPID horses, thereby enabling the early detection of PPID in horses before the catastrophic development of laminitis. The relevant hormone test is now a regular Veterinary procedure in the field and several national laboratories offer it as part of their normal services, which most certainly occurred in response to the activist demand from many horse owners/guardians over the last decade and a half. ECIR has been instrumental in focusing and championing that demand.

The distinctive feature of Kellon’s networks is their combination of cutting-edge Science and accessible, free-of-charge support. Within Science-based networks, in which she functions both as an insider (with her strong pro-Science ethos) and an outsider (she is personally not institutionally sponsored), her forte is to provide practical, undogmatic questioning of established wisdom and protocols. Her approach is

always eminently “field-based”: in other words, founded on the experiences of real horses and real owners rather than the controlled and reductive environments of formal studies. Nevertheless, she does not reject the Knowledge gained in formal studies and often refers ECIR members to them. She teaches and encourages old-fashioned care-based methods such as layperson observation, diary keeping, and self-education through popular online science courses, and in this way integrates newer technologies in crucial ways.

On February 6, 2013, I joined ECIR (already having been a member of the EPSM group since January 2012) after receiving a condemning set of x-rays. These radiographs confirmed that Lilly’s pedal bone had rotated by six degrees, sunk toward the sole of her hoof, and detached itself from the laminae that bind it to the hoof walls, due to severe inflammation. This inflammatory state, laminitis, is an overdetermined symptom, the showcase phenomenon for what Nettleton calls “medically unexplained symptoms.” The symptom’s cause, in Lilly’s case, remains nebulous to this day. There are several theories, some of which I espoused as probable cause in 2013 but have since put in doubt or rejected. The first possibility is a misdiagnosed infection with Ehrlichia, a tick-borne bacterium. The attending Veterinarian failed to treat it with antibiotics, as he should have. The second theory was that Lilly had an early onset of PPID (as hypothesized by Dr. R., up until that point Lilly’s primary-care doctor). This is now the least likely cause, as it was never confirmed by any data. The third, and now strongest, hypothesis is that, due to her IBD, she was already developing intestinal lesions and may have developed an infection due to those lesions. Thanks to my diligent temperature-taking between December 2012 and April 2013, there was a demonstrable period of fever, suggesting an infection of sorts. But early in 2013, I had no inkling of the possibility of IBD. Without that hypothesis—and since the other two causes seemed equally unlikely, yet there had to be some trigger—in consultation with various members of ECIR and Kellon herself, I decided to treat them as equally possible, and put together a program that consisted of a continued low-carb diet,

antibiotic treatment (doxycycline) for three months, and the dopamine-receptor site blocker pergolide, just to cover all possible bases, until her laminitis subsided.

The attending Veterinarian was pessimistic as to Lilly's prospects and advocated for euthanasia. This is consistent with a more old-fashioned, pre-ECIR approach to laminitis in horses, where the "lack of use" of a horse over an extended period of time (usually at least a year to allow for full rehabilitation) and the intense personal care involved often exceed what owners are willing to invest.

The "mantra" developed by ECIR is DDT+E: Diagnosis, Diet, Trim + Exercise. This mantra that allowed them to challenge the established, euthanasia-centered approach to laminitis effectively. The first D invokes the group's investment with Science. *Diagnosis* means here that the cause of laminitis has to be determined and eliminated, usually based on a combination of lab work and close observation. The most common causes are elevated ACTH levels (leading to excessive cortisol levels in the blood, typical for PPID horses) and insulin resistance (which, not unlike type 2 diabetes in humans, also causes inflammation; the laminae are a common target for inflammation in the horse's body). IR is exclusively managed through diet, but PPID requires pharmacological intervention with pergolide mesylate, a dopamine inhibitor that also blocks the receptor sites for ACTH in the brain (used to treat Parkinson's disease in humans). The approach to PPID obviously depended on the availability of ACTH testing in laboratories, specific veterinary knowledge in how to handle the blood sample, and the marketing of pergolide at an affordable price, as well as education in how to dose and administer the drug correctly. Preceded by direct action of the sort that ACT-UP championed against government agencies in the 1980s and 1990s, ECIR also pressured the Food and Drug Administration in 2007 with an online petition and a barrage of FedEx packages during the "great pergolide scare," when the agency threatened to prohibit the bulk manufacturing of pergolide in compounding pharmacies across the country.¹⁴

In considering DDT+E, we see the functioning and mission of the

ECIR group in a nutshell, as well as the kind of horse owner it serves. Most PPID horses with a good chance to live are under the vigilant care of humans motivated enough to educate themselves to educate their Veterinarians, farriers, and trainers. The owner of a PPID horse needs to assemble a team and manage it carefully, typically at home (not a boarding facility).

One of the striking phenomena of Kellon's networks is that their members—the response team, the experts, virtually everyone involved—are women. It is no accident that Kellon's specific research and support structures bear the mark of a female-identified genius. The entire approach is based on close caring relations.¹⁵ Owners/guardians provide detailed data based on daily interaction and documented in diaries. The Yahoo group also provides emotional help and grief support to owners. There is an open acknowledgment that we not only have tight and intimate relations with our equines that need not be camouflaged, but that those relations, rather than standing in the way of Science and Knowledge production, are prerequisites for the work. In this sense, while remaining committed to a number of mainstream Biomedical institutions and ideologies that operate according to the principles of mechanistic cold-body Anatomy, ECIR opens the path in important ways toward a feminist practice of embodied, warm-body science.

Embodied Science in Practice

I am concluding with an example of embodied science in practice, or “what ‘having a body’ means in relation to scientific work” (Latimer, 2013, p. 13).

The notion of touch (as gendered female) raises interesting questions about (the genderedness of) the Biomedical field's present-day heavy reliance on—indeed, pioneering advances in—visual diagnostics. What is the relation between visual Technologies and the detached, disembodied Knowledge “from nowhere” in which mainstream Science believes (Haraway, 1988)? How much of the alternative to this way of

knowing lies in touch, embodied assistance, relationality, and intuition? Is a fusion of the two technologies possible, desirable, even necessary or inevitable when the quality of life of the patient is the main goal? In order to explore these questions against the backdrop of Lilly's history, I would like to return once more to the question of podiatry in horses. The profession of the farrier has its history as a craft, and as such is eminently empirical and based in practical applications. "No hoof, no horse" used to be a matter of human survival, but continues to be of highly practical importance for horses as individuals. More recently, however, and particularly when there are manifest pathologies, farriers have begun to work closely with Veterinarians and their advances in visual Technologies, most notably portable digital x-ray equipment, which lets the practitioner in the field immediately apply the "insights" gained. In February 2013, right at the beginning of Lilly's second bout of laminitis, the "condemning" set of x-rays mentioned earlier clearly showed both the rotation and sinking of the coffin bone. Figure 1 is an x-ray of her left front foot:

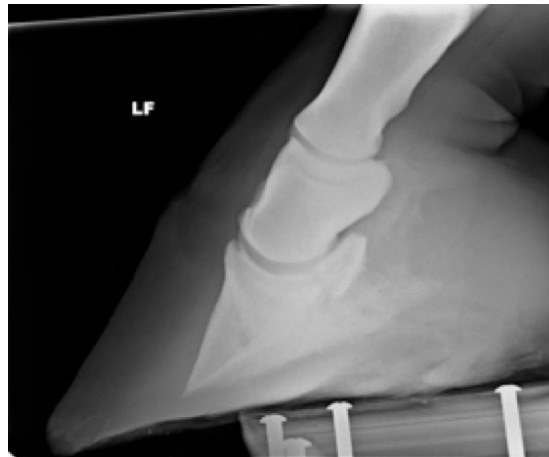


Figure 1

By way of contrast, consider Figure 2, the radiograph of a healthy hoof without P3 rotation:

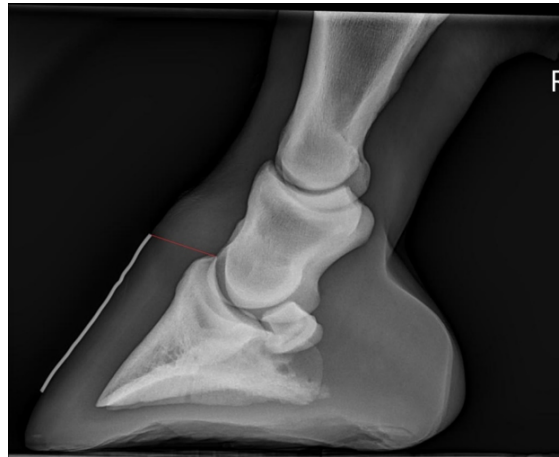


Figure 2

The coffin (or pedal) bone, the most distal bone of the limb, has a triangular shape that, in this x-ray, has rotated by several degrees, as compared with the nonpathological hoof, where it lines up parallel to the frontal hoof wall (seen in a more transparent color to the left of the coffin bone). In addition, the sharp tip of the coffin bone in Lilly's hoof has sunk down and is pressuring the (thinning) sole (or bottom of the hoof, the interface with the ground). The coffin bone is attached to the hoof capsule (composed of horn) only through connective (soft) tissue, called "laminae." The rotation causes the bone to tear those laminae away from the hoof wall with the hundreds of pounds of weight that each limb bears, causing the associated pain and lameness.

To match the x-ray image up with a look at the foot from the outside, Figure 3 shows an external photograph of Lilly's same left front foot

Figure 3

As I mentioned earlier, within less than twenty-four hours, ECIR's emergency response team sent me a marked-up image of the x-ray as well as the original external photograph, with detailed instructions on how to trim the hoof in order to relieve Lilly's pain and initiate her process of rehabilitation toward realignment.



Figure 4

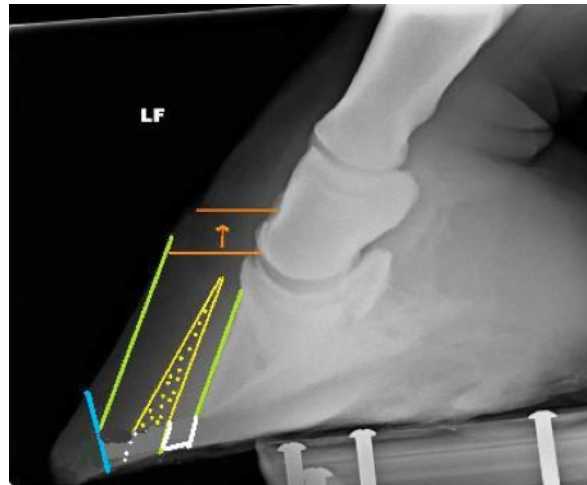


Figure 5

The white triangle in the external photo (Figure 4) represents the estimated position of the coffin bone inside the hoof capsule. The green and blue lines in both external photo and radiograph (Figure 5) represent the changes in the external hoof shape to be made. The yellow wedge gives a sense of how the hoof wall is tearing away from the rotated coffin bone, opening up a gap where the laminae are stretched and weakened. The brown lines with the arrow above indicate how much the whole bone structure has sunk down within the hoof capsule, as compared to where it should be located.

This technique clearly takes advantage of x-ray Technology to explain the forces at work in this pathology and to suggest the necessary

steps for intervening mechanically. Internet and long-distance interventions (the responder was located thousands of miles from us) limit the scope of technologies heavily to the visual, lending x-ray Technology a clear advantage. However, farriers working with Veterinarians in the field also now use digital radiography to visualize the changes they make as they proceed; in this way, farriery draws on the visual advancements of modern Biomedical Technologies. In addition, farriers often have the horse they treat sedated and/or anesthetized by the Veterinarian, thus receiving their feedback primarily from the high-tech interface, not dialogue with the patient.

Lilly and I had the great fortune to find, through ECIR, Abigail Nemec, a highly trained farrier experienced in laminitis rehabilitation who was local enough to rush to us physically. She proceeded differently from the plan the internet farrier had proposed. While Nemec considered the x-rays and markups, she evaluated Lilly's feet and the entire horse with her hands, her intuition, and active communication with the patient, then decided that Lilly would not be able to tolerate the interventions suggested. She worked closely with Lilly's feedback on each millimeter of change she made to her hoof shape. Her decisions were based as much on external visual aspects of the hooves as on the way they felt in her hands. Furthermore, each horse's tolerance for pain is different, as well as how they communicate that pain (stoic? hysterical? internalized? optimistic?); their reactions to changes in hoof angles must inform a good trimmer's decisions on how far to go or even in which direction to go. A good rehab farrier will also have some immediate feel for how the horse will tolerate the changes in the days following the intervention. The trims became long collaborative sessions in which Nemec communicated intimately with Lilly; Lilly's input was as important as what visual Biomedical Technology was providing. There was an artfulness to Nemec's method that could most accurately be described as a dance, particularly in the martial-arts-balanced ways she dodged Lilly's compromised body as it occasionally collapsed during the trimming sessions. Lilly's relief and subsequent recuperation were achieved as

much due to this intimacy as to Nemeč's anatomical Knowledge and ability to read a radiograph.

Epilogue: Toward an Embodied Health science

The central intellectual problem of our time is that of complexity.

—Lewontin & Levins 2007, p. 183

Confronted with the serious limits of Scientific reductionism (a topic I enacted earlier in my demonstration that blood work with the hormone ACTH was, within a mechanistic framework, only potentially useful if,

[The] reductionist focus has been the principal orientation of our science since the seventeenth century. It searches for the smallest particles in isolation and assumes that they will behave in the same way when assembled in the whole. It is an approach that works well in engineering where the parts are built by design and can be tested in the laboratory. In the biological and social sciences it is a useful research tactic but as a philosophy it creates a pattern of knowledge and ignorance that in the long run is harmful and makes us more vulnerable to surprises. (Lewontin & Levins, 2007, p. 183)

unrealistically, we could draw blood a thousand times over several weeks), much of Science has recently cast its lot with Large Data. However, if the problem were only that we just don't have enough time and world to process complexity (and complexity is certainly preferable to simplicity), then Large Data

would indeed offer the solution. In the Biomedical context, Large Data creates the illusion of addressing the complexity of embodied existence without abandoning the objectivity of a reductionist, mechanistic approach. It allows the practitioner to hide behind the smokescreen of Scientific objectivity while admitting that simplicity and monocausal pathways are insufficient. It thus enables the survival of cold-body Anatomy in an updated version. In this parting act, however, I want to suggest instead that living bodies are more than highly complex mechanical assemblages (with which Large Data might have a better chance), more than the sum total of their various systems that we can

continue to study and manipulate in Newtonian fashion. I want rigorous sciences that are open to this insight; that are informed by a Baradian understanding that all forms of distancing and Cartesian cutting are temporary and ultimately inadmissible strategies in a universe where players “intra-act” rather than interact. There is no outside from which to observe, analyze, and manipulate. I want sciences that move away from framing embodied life in terms of distinct particles, substances, and mechanisms and begin to address the energetic entanglement and relationality of all embodiment.

So I return once more to Haraway’s plea that feminist science should not so much give up on visibility as masculinist altogether, hopelessly ensnared in the “god trick,” than reimagine what a feminist and embodied visibility would be in conjunction with other forms of sensory input (1988, p. 581). I hasten to add that this includes even input that we cannot define as sensory in a conventional way (sound, smell, taste, touch), although the outcome (the “healing”) could make it “evidence-based” after the fact. Our farrier’s sense (sensory and supersensory) that Lilly’s laminitis case would likely not benefit from some of the adjustments suggested by the disembodied internet responder originated from her reading of the x-rays themselves. Nemec “knew a few things” about horses like Lilly, thanks to her lived and embodied experiences: horses built like her (whose biomechanical forces were likely to produce a certain outcome); horses who think and act like her; alpha mares who need to feel in control in order to heal; mares who will hide their pain. Nemec’s intuition was confirmed when she saw Lilly in person and heard what Lilly had to say. No radiograph will tell you that, although some of “that” may be encrypted in it if you know how to read carefully. What ended up happening in this encounter between Nemec and Lilly was the full range of what, in feminist science parlance, might be called an embodied feminist methodology and a practice grounded in such an embodied knowledge production, and perhaps something more, a feminist onto-epistemology–*cum*–dynamic trans-species pedagogy. Advanced visual Biomedical Technologies, then, become another tool, in

equal need of intuitive and intellectual use as more traditional hands-on techniques as well as supersensory abilities, and need to be carefully balanced against and with them. Reading radiographs, like blood work, is a (scientific) art form. We need scientists who are also artists.

Notes

¹ I wish to thank Jennifer Hamilton and Jacquelyne Luce for their incisive comments on an earlier draft of this paper.

² Throughout the essay, I follow this special issue's distinction between institutionalized mainstream Science and alternative forms of scientific knowledge production by capitalizing terms associated with the former.

³ I am fully aware that this project, like my life in general, operates within the parameters of late-capitalist pet-culture logic, in which the care of some animals is purchased at the expense of others (Grier, 2006). But to become aware of one's attachments is neither to transcend them completely nor to remain uncritically caught within them. Paraphrasing Donna Haraway speaking about her dogs, I ask: "Whom and what do I touch when I touch my [horse]? How is 'becoming with' a practice of becoming worldly?" (2008, 35). My project rises up against "subjectless queer critique" of emotion and attachment in recent queer scholarship on species (Luciano & Chen, 2015, 194), where "to feel for others, to love and to grieve...remains as normatively white as the figure of Man" (190). I affirm, with Haraway, that "touch does not make one small; it peppers its partners with attachment sites for world making" (2008, 36) because, as van Dooren argues about Haraway's engagement with dogs, it "draws us out into complex interwoven histories of co-evolution and broader patterns of co-becoming" (2014a, 293). In the case of horses—my horses—these histories and worldings involve such practices as war, colonization, animal testing, pet culture, pregnant-mare-urine estrogen-replacement therapy, and the horse racing industry, to name just a few.

⁴ For a discussion of the concept of care along similar lines to mine, consider Maria Puig de la Bellacasa, "'Nothing Comes without Its World': Thinking with Care" (2012), and Haraway, *When Species Meet* (2008), both of whom develop care in proximity to love, curiosity, as well as

critique. As van Dooren succinctly puts it: “As an affective state, caring is an embodied phenomenon, the product of intellectual and emotional competencies: to care is to be affected by another, to be emotionally at stake in them” (2014a, 291).

⁵ For foundational work on this topic, consider Carol Adams and Josephine Donovan (2007).

⁶ Grief also constitutes one of the battlegrounds of human exceptionalism, as it was until recently considered to be an exclusively human affect. Ethological studies on many species have demonstrated the falseness of this assumption. As an outstanding example of this work, consider van Dooren’s “Mourning Crows” (2014).

⁷ Jutel and McBain (2012) understand diagnostics as the creation of an organized narrative out of a “disorganized story” or “disorder” (1533).

⁸ I do not have space to theorize my economic positionality properly here. Suffice it to say that, as a white queer academic who does not “come from money” but has limited human-family obligations and a stable income, my pockets were not deep enough to consider high-end hospitalization for Lilly without declaring bankruptcy. This consideration seems relevant in the current political discussions over government deregulation of the involuntary service of human health care. Veterinary service, sometimes mentioned by conservatives as a model of health care deregulation, is considered “voluntary” because we have the option of electing euthanasia rather than treatment.

⁹ In “Do We Really Need to Know?” (Jutel & McBain, 2012), the authors demonstrate that often what we consider medical Knowledge may be inconsequential for the treatment and the outcome.

¹⁰ See also Weinstein’s concept of “critical life studies,” which serves to critique “the remnants of humanism buried in the concept *life itself*” (2015, p. 237).

¹¹ Wilson (2008) points to the link between gut and brain in depression. What is relevant for me in this context is the naturecultural breakdown of the mind-body binary, where the “gut” ceases to stand for a particularly essentialized “dumb matter” paradigm (p. 379).

¹² I have in mind here Karen Barad’s quantum-physics-based arguments about the mutual imbrication of theory and measuring, kept apart in

Newtonian physics: “Measurement practices . . . must be a part of scientific reasoning: that is, Bohr situates practice within theory” (2007, p. 121).

¹³ It is important to keep in mind that the “size of the human body” is an ableist fantasy. “Compulsory able-bodiedness . . . emanates from everywhere and nowhere” (McRuer, 2006, 8).

¹⁴ See <https://www.ipetitions.com/petition/savepergolide>

¹⁵ See Adams’ and Donovan’s discussions about the connection between care, ethics, and gender.

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Bio

Christian Gundermann is Chair of Gender Studies and Associate Professor of Gender Studies at Mount Holyoke University. Christian Gundermann understands theory as a daily practice like breathing and eating. He teaches students in different contexts as diverse as the interpretation of films, the history of the queer movement, the questioning of the human/animal boundary, the historical study of horsemanship, the practice of body modifications, the connections between feminism and the sciences, the nexuses of power, knowledge, pleasure, and suffering etc. that there is no practice without theory, and that every theory is always already a practice.