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Fleshy Encounters: Meddling in the Lifeworlds of Zoo and Aquarium Veterinarians

Is it worthwhile trying to build bridges across disputes and constantly getting shot at from both sides? That has been my occupation since 1978.... [and] I have to admit that it hasn't transformed the world. — Mary Midgley, *Beast and Man*, xii.

I don't know whether everyone needs to know every detail about everything. That's why we work in teams, [and] that's why we have experts who spend a lot of time becoming experts in the field. So I think it's okay that not everyone understands the details in what's involved in euthanizing an octopus. The point is that there has been a lot of work done [by experts] to come up with ways to minimize distress and maximize efficacy when doing that to the octopus. --- Martin Haulena, Head Veterinarian, Vancouver Aquarium (interview).

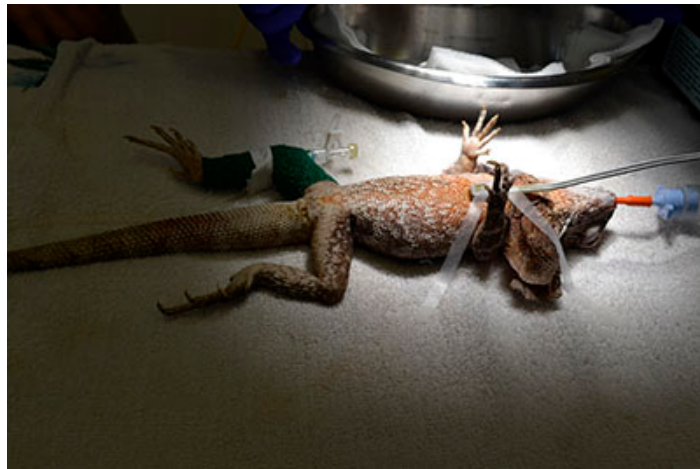


Figure 1: The frilled-neck lizard (*Chlamydosaurus kingii*), endemic to northern Australia and southern New Guinea, is the only member of the genus *Chlamydosaurus*. Here, on the surgery table at a prominent North American zoo. According to the vet: "She's not eating, she's not moving anymore. She hasn't moved for four days. We gave her a lot of different medications but she's not getting better.... We tried different treatments and she's not responding to any treatment. So we cannot just leave her alone like that — we need to give her a chance.... So the surgery is kind of the last chance for her, to see if there is something we can do to save her.... If there is something we can do, like remove her ovaries, then we'll try. And if during the surgery I see that there's nothing to do, then I'll just put her to sleep." (Anonymous, interview)

Why Study Zoo Veterinarians? Belgian philosopher of science Isabelle Stengers instructs that just as no living being is like any other, so every practice is unique and unlike another (“Introductory Note” 184). Calling for an “ecology of practices,” she urges her readers to experience “coexisting and co-becoming as the habitat of practices” (ibid.). She further explains that, “Approaching a practice then means approaching it as it diverges, that is, feeling its bordering, experimenting with the questions which practitioners may accept as relevant, even if they are not their own questions, rather than posing insulting questions that would lead them to mobilize and transform the border into a defense against their outside” (ibid.). Later, Stengers refers to this approach as “cosmopolitics” — a term she appropriated from Kant to “consider that which is not in our own manner of thinking, and to come to a place where all forms of inquiry and ways of knowing are seen as having a legitimate place in the cosmos” (Cosmopolitics 10). Deboleena Roy, herself a neurologist, philosopher of science, and feminist, laments along these lines that “educational systems ... have failed to train our students to become proficient in both the sciences and humanities” (Roy 178).

As humanists and social scientists, we have become versed in critical thinking and deconstruction and have as a result come to see science as no different than any other story we tell and as no less subjective as such. Stengers responds to this postmodern tendency, demanding that much more attention be paid to the details and practices of professional forms of knowledge. “The emperor is wearing clothes,” she writes (“Another Look” 44). “Everywhere, those experts, bureaucrats, and procedures authorized by science are at work.... We have to understand the singularity of scientific fictions and to take seriously their vocation not to discover but to ‘create’ truth.” For Stengers, this does not mean accepting science as objective truth. She asserts, rather, that “the laughter of someone supposed to be impressed always complicates the life of power. And power is always lurking behind objectivity or rationality when these are arguments used by authority.” In fact, the only way to resist authority, according to Stengers, is to concern ourselves with science, to “meddle in what is meant not to concern us” (ibid., 46).

This article is precisely such an attempt to meddle in what supposedly doesn’t concern us. It aims to make visible medical practices and procedures that take place behind closed doors and that are perceived as being of no concern to the public, who wouldn’t understand them anyway. But as Stengers points out, “the public is not incompetent. They don’t need to have their interest stimulated, they only need to be informed and persuaded” (ibid., 50).

The experts that this article is concerned with are medical practitioners of a particular kind: zoo and aquarium veterinarians. Elsewhere, I have described the recent emergence of this profession and its unique characteristics (“Saving Species”); I also distinguished between zoo and aquarium facilities and practices (“Fish Encounters”). Here, I will utilize both text and multimedia presentations to allow the veterinarians I interviewed to explain their work more directly to the reader, who may then experience this work, the space and environment where it is performed, and the tools with which it is conducted on a more affective and sensorial plane. For this purpose, I have both recorded and, in some cases, also photographed and videotaped my interviews and observations. In other instances, I use materials drawn from the public domain.

This article does not need to be read linearly; it can be experienced in a more intuitive and experimental manner by traversing between the quotes, recordings, images, and videos in any configuration and order. However, the article’s written format does prescribe a linear presentation, and so I have organized the materials within several loose categories and sections. I will start with the unique spaces and ecosystems that zoo and aquarium veterinarians inhabit, zoom inward to consider the tools and medicines they use to care for their nonhuman animals, pause to discuss the different diagnostic processes through which they produce knowledge about their animals, and, finally, zoom inwardly even more to explore their practices of surgically penetrating the animal body. Quotes from the scholarly literature and from the interviews are intended to provide context and to set the tone for the visual and auditory experiences, which are an inherent and important part of the article.

Again, my point of departure for this article is what Buddhists often call a “Beginner’s Mind,” an open and inquisitive place that allows one to “consider that which is not in our own manner of thinking,” and “to come to a place where all forms of inquiry and ways of knowing are seen as having a legitimate place in the cosmos” (Roy 185). My hope is that readers emerge from this inquiry knowing more about how veterinarians see, think, and operate in their professional encounters, and understanding the singularity of their work with nonhuman animals, as well as how this work corresponds with other scientific practices. The idea, more broadly, is that we ought to immerse ourselves, mess with, and meddle in each other’s professional lifeworlds in order to enrich and broaden our understandings of our currently much too self-, siloed-, and human-centric place on this planet.

Veterinary Spaces.

For materiality is always something more than mere matter: an excess, force, vitality, relationality, or difference that renders matter active, self-creative, productive, unpredictable. — Diana Coole and Samantha Frost, *New Materialisms*, 9.



https://www.youtube.com/watch?v=tkOj8fYXyRM&list=UUBG_ptR9W6M9YadFVvIRGQ&index=9

Video 1: Zoo veterinarian Andreas Ochs shows me around the veterinary hospital at the Berlin Zoo. (Video by author, June 2018.)



Figure 2: Lisbon Zoo's tranquilizer drawers, “espingarda pistola” (Portuguese for “shotguns”) and “material para zarabatana” (anesthesia serum for the syringes). (Photo by author, July 9, 2018.)



Figure 3: Tubes at the veterinary clinic in SeaWorld Park at Orlando, Florida. (Photo by author, October 11, 2019.)

To the untrained eye, veterinary hospitals in zoos and aquariums look strikingly alike, and not much different from human hospitals. When browsing through the images and videos, consider the choice of paint color, the white neon lighting, and the sterile feel of exposed surfaces. There are visible variations in the types of equipment and tools that inhabit these veterinary spaces, which you may further explore in the next section. The pharmacy, with its myriad cabinets of boxed and bottled drugs, is situated either in a separate room, as in the Lisbon and Berlin Zoos, or within the surgical rooms, as in the Shedd Aquarium (or in both, as in SeaWorld). Terrestrial zoos with dangerous exotic animals are required to maintain shotguns and tranquilizers in operating condition in the case of an animal escape or other emergencies.



https://youtu.be/DLVK1QN0a_k

Video 2: Veterinarian Rui Bernardino introduces me to the mechanics of the veterinary hospital at the Lisbon Zoo. (Video by author, July 9, 2018.)



Figure 4: Rui Bernardino and his colleague at the facility's pharmacy, Lisbon Zoo. (Photo by author, July 9, 2018.)

Watery Environments.

The pumps, the filters, the disinfection systems – everything [intended] to keep an aquarium with marine species – is very comprehensive, and is *much* more complicated than an enclosure where you keep giraffes or elephants. — Nuria Baylina, Oceanaria de Lisboa, telephone interview, November 12, 2018.

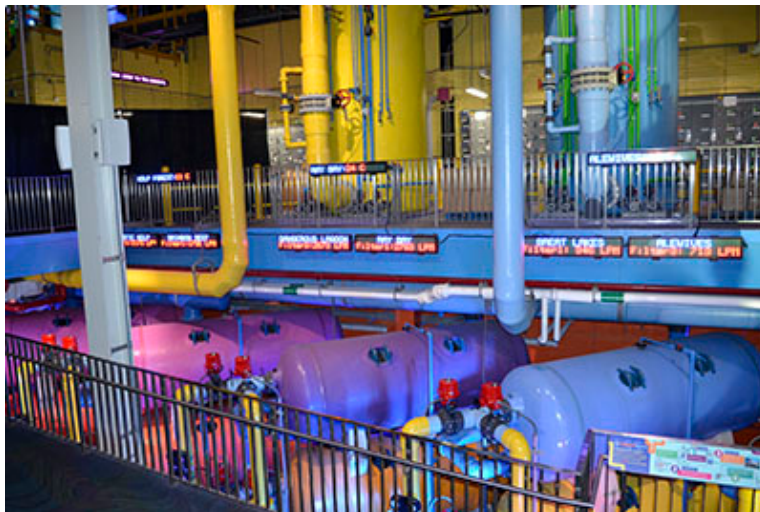


Figure 5: Water pumps exhibited to the public at Ripley's Aquarium in Toronto, Canada. This facility maintains 5.2 million litres of water, which, as the Aquarium's website clarifies, are "about 25,000 bathtubs!" (Ripley's Aquarium, n.d.). (Photo by author, November 22, 2018.)



Figure 6: Water tanks — a view from the staff restricted area. The public exhibit is below the staff access space. National Aquarium Denmark, Den Blå Planet. (Photo by author, July 30, 2018.)



<https://www.youtube.com/watch?v=ovzO1E4WoZO&feature=youtu.be>

Video 3: Bill Van Bonn of the Shedd Aquarium in Chicago speaks about the design of a custom fabricated table for the Aquarium's Green or Longcomb sawfish (*Pristis zijsron*). He also mentions that most recreational divers would not typically expect to see the same level of species diversity and numbers of animals together on a typical reef. (Video by author, December 3, 2018.)



<https://www.youtube.com/watch?v=Nr6RCInxmKE&feature=youtu.be>

Video 4: Charlie Innis of the New England Aquarium in Boston shows me the nebulizer and speaks about pneumonia in penguins. (Video by author, September 27, 2019.)

Just as a fish is not a fish is not a fish, water is not water is not water. Whereas some aquarium facilities pump and treat water from near (or not so near) natural bodies of water, others utilize tap water and mix it within their own facility to produce saline and fresh water. Each of these methods comes with its own challenges and costs.

Either way, there is a growing realization on the part of aquarium veterinarians that the health of their visible macro-organisms is highly dependent on the health of their invisible (to the naked human eye, that is) micro-organisms. While not referring to bacteria as their “patients” — yet — veterinarians have come to understand that diverse and balanced microbial communities in their facilities’ waters are crucial for healthy microbiomes on and within their animals. For far too long, the ideal was a sterile water system, veterinarian Bill Van Bonn, Vice President of Animal Health at the Shedd Aquarium, told me in our interview. This ideal, encoded into USDA standards and inspected by federal agencies and industry associations, is now being reconsidered. The new question is: “How clean is too clean for aquarium animals?” According to Chrissy Cabay, Director of Shedd Aquarium’s Microbiome Project, this is perhaps the most important question that marine animal experts need to contend with if they wish to provide a healthy environment for the aquarium animals under their care.

Alongside his dealings with massive beluga whales, sharks, and rays, Van Bonn’s daily work thus requires acquainting himself with and caring for the tiny fungal, bacterial, and archaean life thriving in his institution’s marine environment (veterinarians admit that they still know very little about viruses). We spent a large chunk of our morning peering through a microscope at the array of microbial life in cultures taken from

different parts of the aquariums' animals and waters: the nose of a dolphin, the shell of a turtle, a swab from a yellow stingray, and water samples from various exhibits. Van Bonn consistently stressed "the value of basic science work enabled by the privilege of having the animals in our care." He referred to this as "science beyond conservation." In his words: "The idea of simply knowing nature is an important and valuable function of zoos and aquaria that is not recognized enough" (e-mail communication; see also Braverman, "Saving Species"). Some argue that this idea is especially acute when it comes to microbiome management (West et al.).



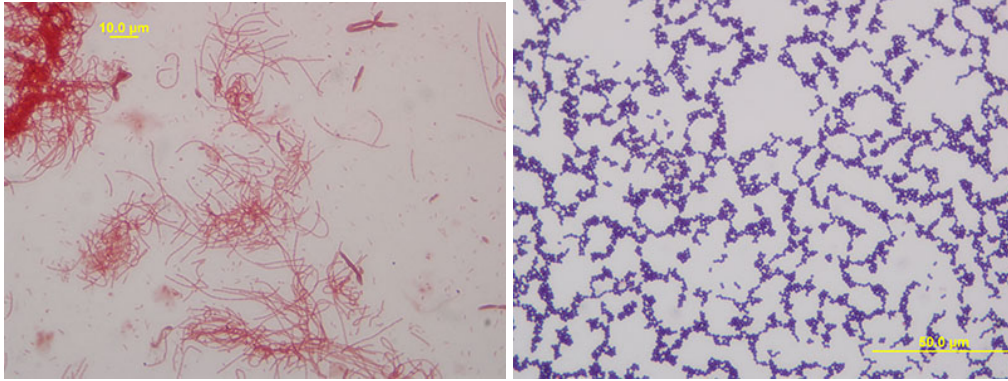
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Video 5: Kasper Jørgensen of the National Aquarium Denmark, Den Blå Planet, talks about water. (Video by author, July 30, 2018.)



<https://www.youtube.com/watch?v=PaUwurBOuGM&feature=youtu.be>

Video 6: Bill Van Bonn of the Shedd Aquarium explains the management of water and the growing understanding that this water contains its own animal environment. (Video by author, December 4, 2018.)



Figures 7 and 8: Aquarium-dwelling bacteria. According to Van Bonn: “These two types of bacteria represent two very different morphologies of commonly found aquatic bacteria. Filamentous bacteria are sometimes associated with skin infections in a variety of fishes, and enterococci can sometimes cause septicemia—infection spread through the bloodstream. As with all bacteria, their mere presence is not the problem. Conditions must be right to favor them.” (Courtesy of the Shedd Aquarium.)

Techniques and Technologies, Instruments and Tools.

When we come under the spell of the deeper domain of techniques, its economic character and even its power aspect fascinate us less than its playful side.... This playful feature manifests itself more clearly in small things than in the gigantic works of our world. — Ernst Junger, *The Glass Bees*, 132.

Acrouch, strung, the surgeon is one with his instrument; there is no boundary between its metal and his flesh. — Richard Selzer, *The Art of Surgery*, 21.

Since most medical and surgical equipment is not designed with nonhumans in mind, and that which does focuses mainly on farm and domesticated animals, zoo and aquarium veterinarians must be highly creative in adjusting existing equipment to the particular nature and needs of the animals under their care. This creativity manifests in elevators and tables that fit a variety of body sizes and weights, inhalation machines large enough for whales or elephants, and transportable ultrasound and laparoscopy technology. Drug quantities and concentrations must also be adjusted for a myriad body sizes and conditions. I was particularly drawn to the multitude of scissors used by veterinarians. Accustomed to scissors of one or two types, I found the array of scissors on display here enchanting. Perhaps another reason for this enchantment is that such scissors are used accurately and intently to cut the flesh of a nonhuman being. Something about the mundaneness of this tool explicated the unique variety of bodies, tissues, and issues that veterinarians must contend with when dealing with

diverse nonhuman animals. Scissors are unlikely to be applied to these nonhuman animals except by a veterinarian or a vet technician.

Senior veterinarian at SeaWorld Lydia Staggs described the function of scissors, as well as an additional two types of mundane technical tools used by vets: hemostats and forceps. “Forceps are for grabbing things,” she explained. “You don’t want to use your fingers, you need to use an extension so you have different forceps for that.” “Why not use your fingers?” I wondered. “Well, it’s not as good sometimes,” she responded, laughing, arguably implying that there needs to be some divide between one body and the other. Staggs also noted the importance of accuracy for surgical procedures on living animals: the thin interconnective tissues are so sensitive to the touch that the less you disturb them, the better (apparently, the process is quite different in necropsy procedures, which are mandatory for every animal who dies at the park).

“The hemostat is for clamping,” Staggs continued matter of factly. “If I had a blood vessel that was bleeding and I needed to stop it very quickly before I could suture it, [I] would put a clamp on it to stop it.” Then there are bandage scissors to cut bandages off. “This is specialized so you don’t cut the patient. See how you have a blunt end?” she commented. Iris scissors, mayo scissors, Metzenbaum scissors — there are thousands of different kinds of tools, the vet technician who worked in the room during the interview commented, and Staggs continued:

These are iris scissors. [They] are small, little delicate things. You’re cutting delicate pieces of tissue.... So you might need to have something that is at an angle.... Because animals aren’t straight and perpendicular, so you might just need to get around.... Mosquito hemostats are the little ones.... These are retractors. When you open an animal up and you need to see, you could have somebody stand there just with their hands, holding it open. But instead ... you put this in and then you press it and it opens to keep your surgical field open for you. So you can see down into the animal.... Then these are rongeurs ... for snipping pieces of bone off. So in some of the fractures that we have, when you’re putting them together, if there’s a splintery end that just isn’t coming together, you can just kind of trim it up and make it neat so it doesn’t cause any more damage. Sometimes, there might be a defect in the bone so you need to clear it up. That’s what we would use these for (interview).

As one can observe when looking at the video I shot of this exchange (Video 8), my camera had a life of its own, too, and insisted on focusing on the vet's hands, instead of on her face. The veterinarian's hands were indeed doing their own thing, encompassing within their movement the secrets to a deeper understanding of the life of the mundane artifacts that the vet was telling me about.

Philosopher and retired medical physician and clinical neuroscientist Raymond Tallis was also fascinated with the human hand, suggesting that: "the hand inspired the tool-use that has come to dominate human life and which has led to the emergence of the complex symbolic systems — most importantly language — that underpin civilization" (Tallis, cover). He argued further that:

Herein lies the true genius of the hand: out of fractional finger movements comes an infinite variety of grips and their combinations. And from this variety in turn comes choice — not only what we do, but in how we do it.... With choice comes consciousness of acting: the arbitrariness of choice between two equally sensible ways of achieving the same goal awakens the sense of agency. (174)

This Heideggerian realization of the importance of the hand for the use of tools invites further reflections about the particular nature of the tools used in animal procedures, as well as the continued coproduction of agency through the interaction of the human and animal body through the tool. Despite the huge advancements in medical technology, the simple daily tools remain crucial for procedures of medical care. Social studies of science scholars Christian Heath et al. reflected along these lines that:

In recent years we have witnessed a number of remarkable developments in surgical procedures and the technologies that are used to undertake operations. Notwithstanding these developments, many, if not most procedures, rely upon commonplace objects and artefacts — hammers, chisels, pliers, drills, scissors, tweezers and the like.... These implements and materials not only enable the performance of highly complex procedures but embody complex divisions of labour, knowledge and expertise that underpin their availability, deployment and use. (297)

Other science studies call to take "the nonhuman, the material, and its agency seriously; to consider the interdependencies and interconnectedness of the human and nonhuman

in action” (ibid.; see, e.g., Maller). While most of these studies pertain to a human patient encountering the nonhuman in things and artifacts, here the nonhuman animal body surely invites further contemplation about networks across species divides, as well as on boundaries and forms of ordering that inhibit such networks.



Figure 9: Surgical scissors at the Lisbon Zoo. (Photo by author, June 2018.)

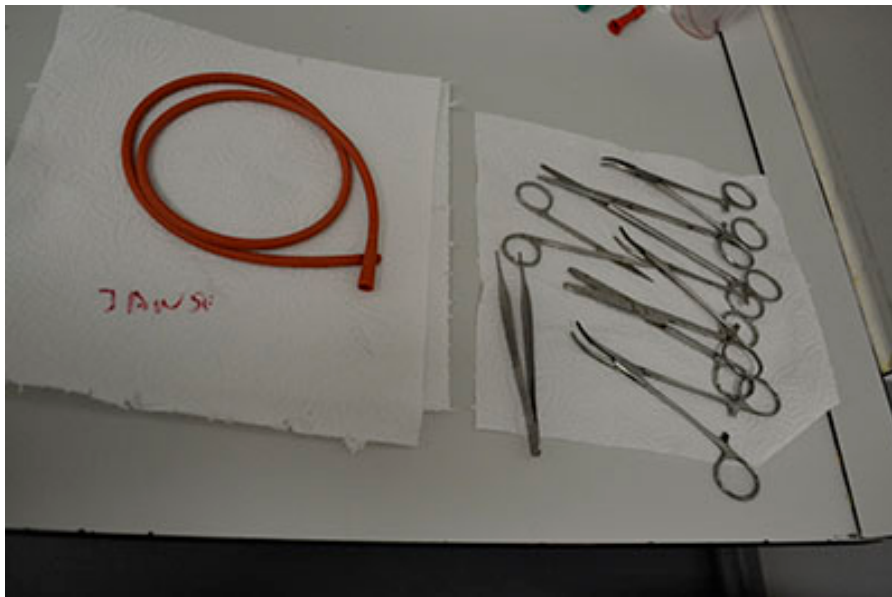


Figure 10: Surgical scissors, Oceanario de Lisboa. (Photo by author, July 2018.)



<https://www.youtube.com/watch?v=etGL-SqRwQ8&feature=youtu.be>

Video 7: Rui Bernardino of the Lisbon Zoo discussing scissors – and their different uses. (Video by author, July 9, 2018.)



<https://www.youtube.com/watch?v=WsZze9tH3FI&feature=youtu.be>

Video 8: Lydia Staggs discussing scissors and other instruments at SeaWorld in Orlando, Florida. (Video by author, October 10, 2019.)

Mundane Procedures. I traveled to the Shedd Aquarium in Chicago for the opportunity to shadow veterinarian Bill Van Bonn as he attended to the 32 thousand animals in the facility. I prepared mentally and physically. Physically, by putting together a few cameras and consulting with my media studies colleagues about how to shoot videos and stills at the same time; and mentally, as I wasn't sure how I would react to the fleshiness of nonhuman animals. It was one thing to write about them and see them in

exhibits, and another to look into the insides of these animals, as I imagined my two days at Shedd to be.

But pretty quickly into my first interview with Van Bonn, I realized that my expectations from the visit may have been a tad too dramatic. “It isn’t every day that we operate on a whale,” he told me with more than a trace of irony. In fact, he explained, “I don’t think we ever performed a major operation on a whale in this facility — and we hope to never have to do so.” Instead, the vast majority of the veterinarian’s work involves observing and asking questions, conducting clinical pathology such as blood and urine tests, and using diagnostic imaging tools such as x-rays, ultrasounds, endoscopy, MRIs, and CTs. “People do want to jump to all kinds of exotic tools, including surgery,” Van Bonn told me. But more often than not, “the most valuable thing to do is to ask questions and get the history.”

Veterinarian Chris Dold of SeaWorld similarly emphasized the importance of the sensorial exam, using the term “organoleptic” to describe it. In his words,

The first thing you’re taught in most veterinary programs is how to do a visual and physical assessment of your patient before you should really allow yourself to do any laboratory testing, imaging, any of those diagnostics. So use your senses before you use a tool. The word that sticks in my head that everyone makes fun of me for when I use it here is organoleptic. Right? Engage all of your senses for the purposes of diagnosis. So when I look at a group of dolphins like this [points at the dolphins we were observing], my clinical mindset is always on. (interview)

In the audio recording I included below, parts of which are also provided herein as text, Van Bonn (VB) explained the typical management and development of an “animal case,” and the importance of the physical exam in particular.

VB: Getting the information can start with just asking questions but very often you got to go the next step, which would be a physical exam. Using our senses — our hearing, our sight, our touch, our smell, not so much our taste but on occasion — to get additional information that we don’t get from just speaking to the person [who] knows the animal the best... A

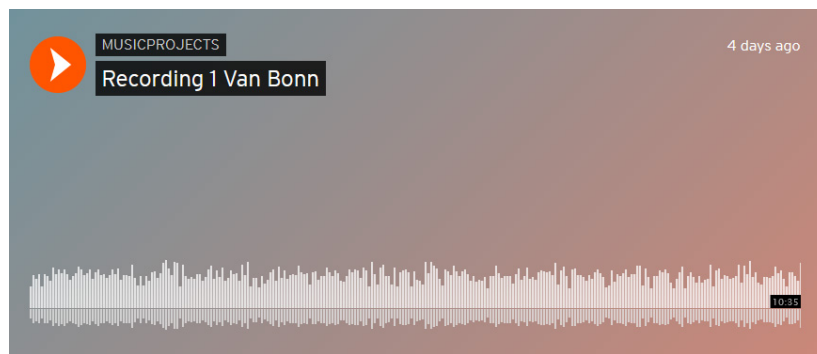
physical evaluation generally requires getting our hands on the animal, understanding the animal, feeling the animal — is he soft or is he hard? If it's a puffer fish like that [one we saw together] his belly should be nice and soft; he should be squishy. And if I were to have felt him and it felt like a hard baseball, that would raise concern because that would not be expected....

IB: How would you know if you'd never touched a fish?

VB: Well, we've touched lots of other types of fish [and], by nature, we're comparative.

IB: Do you have to touch a fish to know a fish?

VB: Yeah, absolutely. So, in that scenario I would say okay now I need even more information, just feeling it doesn't tell me what it is. How else can I learn what's causing that thing I'm feeling? So then we [typically] use tools to determine how well the animal is doing physiologically.... Now I say let me see a blood sample or a urine sample.... Those windows into the health and welfare of the animal are incredibly powerful. With one sample of blood, I can tell you a lot about how's the animal liver doing, how's his kidney doing, how's his thyroid function doing.... The next step is diagnostic imaging. (interview)



<https://soundcloud.com/user-751584113/recording-1-van-bonn>

Recording 1: Van Bonn on different stages and procedures of mundane veterinary care.
(Recording by author, Shedd Aquarium, December 4, 2018.)

Instead of the whale surgery I imagined, I attended a cross river puffer fish procedure. This twelve-year-old fish was dealing with a skin issue. The vet told me that the cause of the wound was unclear, and that they have tried various treatments, including laser.

The only treatment the fish responded to was Regranex Gel, an expensive topical ointment used for humans. The veterinarian explained:

The [fish's] skin wasn't growing back in, so what we're doing now is we're taking off the dead tissue around the edges and we apply a substance called Regranex and that helps it. [This is a] really unique medication. It is a human product — it's in fact a recombinant platelet derived growth factor made specifically to stimulate epithelial growth for people who have chronic diabetes. Diabetes causes pathology to the very small vessels so these little small vessels become diseased, blood doesn't flow [and] doesn't bring the nutrients or oxygen to the tissues and they get all sorts of ulcers and problems. One of the things that doesn't get delivered there like it should is growth product for epithelia, so this product was designed for that. [This drug] is very expensive, it is not the standard thing you would [use]. The reason we're using this guy is that we've tried all sorts of therapies on this guy that weren't successful, including the laser therapy (Van Bonn, interview).

As part of the procedure, the medium-sized fish needed to be anaesthetized. For most of the time, it was the aquarist from the exhibit who handled the fish and moved it from one tank to another with his bare hands (the veterinarian explained that fish “are not internally as sterile as we are” and have evolved to live with various critters. Even during surgery it is not therefore essential, and could in fact be counterproductive “to be completely aseptic and wear a mask and glove and gown”). A vet tech mixed the white anesthetic powder and poured it into the water after some debate over the quantity. A few minutes later, the fish was sedated enough that he (or she, the people in the room weren't quite sure, but the aquarist seemed to remember that her name was Pam) flipped over. Then it was time for the veterinarian to take a look. Van Bonn asked another vet to manage the procedure as he didn't want to treat an animal while being distracted with an interview. When the veterinarian (whose name, incidentally, was also Pam) touched her, the affected area looked way too soft to me; it seemed discolored, raw, and irritated. “This is great!” the two vets in the room exclaimed with much satisfaction. They weren't going to apply the gel after all, as the fish seemed to be recovering on her own. They clearly had a completely different take than mine on the situation. Below are a few of the images recorded to monitor the progress that this puffer fish has undergone, in light of which their satisfaction might make more sense.



Figure 11: Cross river puffer fish before (top left), during (top right), and after (bottom) thirteen treatments of unidentified skin problem with Regranex Gel, an expensive human diabetic drug, conducted between March and December 2018. (Images courtesy of ©Shedd Aquarium.)

The Clinical Outlook: Flipping the Lens. Chris Dold interned with the Marine Mammal Center and worked with the U.S. Navy Marine Mammal Program before starting to work as senior veterinarian with SeaWorld at 2005. He now serves as the Chief Zoological Officer there, overseeing all animal programs as well as rescue and rehabilitation, science, conservation, and education. As we walked through SeaWorld, I encouraged him to tell me how he sees the park's animals, and how his way of seeing

differs from mine and other laypersons'. Here, from our conversation on this issue (CD stands for Dold and IB for myself):

CD: I've always wondered what it would be like to be a human doctor. It would be horrible to walk around just diagnosing disease in everybody that you saw. Especially, say, if you were a dermatologist. You'd be like, 'I know what that is. That guy should see a doctor.'

IB: Is the capacity to see through a clinical eye something that can be turned on and off?

CD: For me, yes, absolutely. I see animals differently now, after I got my veterinary degree, than I did before, and I am not any less in awe of them. In fact, I'm more in awe. But there is definitely a switch you make through the veterinary education process. There is a kind of lens that I can flip down over my eyes and go into.

IB: Willingly?

CD: No, sometimes it's flipped for me and I can't necessarily predict it. I have three dogs, a cat, and an aquarium. We've got animals all over the house, and I don't go home going "How's everybody's health today?" I don't go home every night and want to diagnose. But the first time I meet a dog I do a quick assessment, or if I see a dog who's limping [or] coughing. So it's always there. It's like a shadow personality that's always got to be in there. It can creep up when you least expect it or when something new triggers it, like a model animal you've never seen before. I walk [through] the park [i.e., SeaWorld] as often as I possibly can. And when I do, I go into that clinical mode. [I practice] a sort of a herd health approach. If I were to care for cows I would do the same thing. I'd go through the whole herd and I'd go "that one's skinny; that one's hiding in the corner; that one's ribs are showing." If you ever watched the most recent Sherlock Holmes with Benedict Cumberbatch, when he's thinking of all of his theories, all of these words are popping up like next to his head, right? And that's how I imagine it. You've got this list, it starts to develop a potential thing that maybe should be looked into. And then, you know, you'll go individually and say, "well, do any of the dolphins look particularly skinny? Do any of the dolphins look particularly overweight?" I can still stand here and enjoy the dolphins having fun and playing. I also want to make sure people are having fun and, if people are

working, I want to make sure [that] they are doing it safely. But at the same time, the clinical mind does that sort of list and that's trained.

IB: So the next obvious question is whether there is anything that this clinical mind is blind to?

CD: By definition, if you're blind to something, you're blind to it. So I don't necessarily know what we're blind to. Still, I would say that as a veterinarian, your proclivity is to minimize risks. The veterinarian's mindset is [that] nothing is fine until it is, and it's a bias, right? It's a bias. [On the other hand,] as a daily caretaker or trainer or animal keeper your propensity is to assume that most things are fine.

Many of the vets I spoke with referred to this clinical lens, although often not by this name. More generally, all experts seem to put on a specialized lens; yet not all lenses are made of the same materials. The veterinary lens is unique not only for helping deal with the fleshiness of the body, but also for doing so in the context of nonhuman animals.

Indeed, the veterinarians I encountered stressed how different their work is, on so many fronts, from that of a medical doctor caring for humans. Specifically, while the zoo vets often prided themselves for the variety of animals they can and often care for (Braverman, "Saving Species"), many of them emphasized that they "don't do humans." This seems to be a "lens" issue (i.e., vets are not trained to put on the clinical lens in the context of humans), as well as a practical and even a legal one (i.e., related to liability, especially in the context of medical practice in the U.S.). As a result, a rigid division has emerged between human and animal medical care. Under this divide, vets do not provide medical care for humans, although at times human physicians are invited to care for nonhuman animal patients. I was personally exposed to this divide during an unfortunate visit to the surgical room at a prominent North American zoo. Overwhelmed with the fleshiness of the operated lizard, I found myself on the floor. While the vet was clearly aware that I had just fainted and suffered facial injuries, she continued to operate on the frilled-neck lizard without stopping to attend to her human guest. Whereas this behavior seemed odd at the time, inhumane even, other veterinarians later explained to me that this vet was simply following the rules: veterinarians can only care for nonhuman animals, not for humans. One veterinarian told me along these lines that when, during a flight, the pilot asked if there is a doctor onboard, she did not respond.

The Art of Surgery: Peering into the Animal Body.

The ritual of surgery ... is at once murderous, painful, healing, and full of love. Perhaps if one were to cut out a heart, a lobe of the liver, an entire convolution of the brain, and paste it to a page, it would speak with more eloquence than all the words of Balzac. Such a piece would need no literary style, no mass of erudition or history. — Richard Selzer, *The Art of Surgery*, 18.

Although many of them have become accustomed to behind-the-scenes work only visible to their institutional colleagues and to other veterinary practitioners, most of the zoo veterinarians I spoke with were not opposed to, and were usually even interested in, exposing their work to the public eye. Two issues seem to prevent this from happening more often: routines that have been put in place with regard to invasive medical procedures, and wariness about animal rights proponents who often categorically oppose zoos and aquariums and who could make use of such footage against them. “For obvious reasons, we can’t let you shoot any stills or videos behind the scenes,” one Aquarium’s public relations (PR) officer instructed me mechanically. And although the reasons were far from obvious to me, I was not planning to argue. I had already learned that one should always stay on the good side of PR, who are often the gatekeepers to all forms of communication with zoo and aquarium staff. Notably, the same PR official was not at all bothered about my audio recordings. Control over the visual representations of their institutions seemed to be the main concern in this context.

Indeed, seeing is powerful. And seeing such spaces that were previously invisible is doubly so. According to Van Bonn, the fleshiness of the nonhuman animal usually draws people in. “If they could, they would like to be completely inside the animal, see it as up-close as possible,” he told me. In the marine center where he had previously worked, the necropsy (post-mortem) room was designed with a window for public viewing. School children would often bang on the window and demand to see things up closer, Van Bonn recalled. “Just give humans as much of this closeness to other creatures as possible,” he commented somewhat warily. Philosopher Mary Midgley’s realizations in *Beast and Man* are important in this context. She writes: “We are not just rather like animals; we are animals. Our difference from other species may be striking, but comparisons with them have always been, and must be, crucial to our view of

ourselves” (introduction to first edition, n.p.). The fascination with flesh, ours and theirs, can be understood as a fascination with the foundations of these similarities — and differences. At the start of her transformative book, Midgley quotes from T.S. Eliot’s *The Hippopotamus*:

The broad-backed hippopotamus
Rests on his belly in the mud;
Though he seems so firm to us,
He is merely flesh and blood.
Flesh and blood is weak and frail,
Susceptible to nervous shock;
While the True Church can never fail,
For it is based upon a rock.

Alongside the fascination with flesh — and especially with the fleshiness of the other-than-us who is at the same time also so-similar-to-us — there is also a sense that fleshy matters and imageries can be appalling, gory, and repulsive to many. Others are uncomfortable with what they see as the pornographic dimension of this spectacle. Readers may recall in this context the upset that the dissection of Marius the Giraffe by the veterinarian at the Copenhagen Zoo (in front of an audience of school children) triggered around the world (for further discussion, see Braverman, “Saving Species”). Warnings about “graphic contents” often accompany relevant video presentations released to the public, as can be seen in SeaWorld’s sea lion procedure video.

How do the veterinarians feel about this part of their work? Whereas Van Bonn attested that he has no qualms about such procedures, other medical practitioners may feel differently, as one can learn from the following quote from surgeon Richard Selzer’s *The Art of Surgery* (which focuses on human bodies):

Even now, after so many voyages within, so much exploration, I feel the same sense that one should not gaze into the body, the same irrational fear that it is an evil deed for which punishment awaits. Consider. The sight of our internal organs is denied us. To how many men is it given to look upon their own spleens, their hearts, and live? (24).

Arguably, the most radical manifestation of the clinical mind is during surgery, when the human eye peers into the body of another. Melissa Joblon, assistant veterinarian at the New England Aquarium, explained that she never had an issue with peering, even

as a lab technician studying the brains of apes. That is, until she herself was responsible for the process. In her words:

I never had that weird, queasy feeling. It's something that had never bothered me. [But] I found it completely different when I became the primary person doing it. So when I was an assistant, I was perfectly calm, cool and collected. But when I first started doing surgeries on my own as a doctor, I remember getting, never queasy, but that nervous feeling because it's me in charge. I remember the initial soft tissue handling, of going in to see a dog or cat the first time. It was honestly a little bit terrifying because when something starts to bleed, you're always used, as an assistant, to just sit there and dab. The doctor does what they need. Now, it's me who has to figure out where it's bleeding, right? So, it's a completely different world, where your mind has to be in a completely different place. But you get used to it and it's all about experience. I'm still learning surgery — because it's not something you come out of vet school and you're a perfect surgeon. I'm still gaining those skills and learning them. But I love it now. Now, it's exciting. It's fun.



Figure 12: Stingray surgery at the Denmark National Aquarium. (Courtesy of Kasper Jørgensen.)

Conclusion.

[Our animals] offer windows into the world that are not everywhere and they're unique to most people's experiences. We talked about how dolphins and whales are magical. But then so are dogs, and bacteria. If you look at these things—holy cow! — Bill Van Bonn, Vice President of Animal Health, Shedd Aquarium (interview).

It is, then, surely time for the political left, and for intellectuals in the social sciences and humanities, to see that our continuity with nature is an important fact in the world, a fact quite distinct from those objectionable ideologies — not just the sociobiological one — that have, at one time and another, distorted and exploited it. — Mary Midgely, *Beast and Man*, introduction to revised edition.

The bits and pieces of imagery, sound, and text that this article provided are intended to expose readers from the social sciences and humanities to the lifeworld of zoo and aquarium veterinarians and to their ecology of practices. These vets have a unique perspective on what it means to closely manage and care for animals in a captive setting, and on the broader role of zoo and aquarium institutions in today's society. And although this is admittedly not the only perspective in town, it is nonetheless a valuable one (Braverman, "Saving Species"; Braverman, "Fish Encounters"). To understand it, we must make an effort to immerse ourselves in their world and to familiarize ourselves with their tools and techniques, their routines and ways of knowing.

This was but a quick taste, of course. Much more work on veterinary anthropology still awaits. And with it, an opportunity to bridge the much-too-dangerous, and widening, gap between the hard and soft sciences, and between humans and others. Circling back to Stengers, we ought to "meddle in what is meant not to concern us" ("Another Look" 46). Not doing so would be granting too much power to the authorities who manage these spaces and interactions. At this very particular crossroad, meddling is not a choice but a responsibility: we must cooperate to break the divisive siloes that have come to characterize our lives, disciplines, and universities.

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