

This text is the author’s preprint “working paper” version of:

Jürgens, U.M. (2017) How human-animal relations are realized: From Respective Realities to Merging Minds. *Ethics and the Environment* 22(2).

How human-animal relations are realized: From Respective Realities to Merging Minds

Uta Maria Jürgens

Swiss Federal Institute of Technology ETH
Department of Environmental Systems Science

Swiss Federal Research Institute WSL
Social Sciences in Landscape Research Group

Zuercherstrasse 111

CH-8903 Birmensdorf, Switzerland

juergens@wsl.ch

+49 163 64 59 373

Abstract

Many accounts in environmental ethics converge on relationality as the catalyst of humans’ responsibility towards other-than-human beings. But what exactly is relationality and how can the amorphous notion be specified? In search of a conceptual basis for human-animal relations, I show how questions about the nature of intersubjectivity are entwined with questions about the nature of reality. In my approach to answering these questions, I connect empirical results, insights from Edmund Husserl’s phenomenology and from Jakob von Uexküll’s theory of *Umwelten*. Based on this synthesis, I explain how beings endowed with radically different subjective experiences – what I call organism’s respective realities – are nevertheless capable of meaningfully relating to one another and have their minds “merge” in intersubjective encounters. I conclude that relationality is a “real” possibility for mediating ethical action.

Introduction

The ecological crisis is arriving, coinciding with crises of many human systems, e.g. the financial and economic systems. Centuries of mismanagement and abuse of natural and human “resources” bring drought and floods, snow storms and suffocating heat, political and psychic collapses. Calls for rethinking and restoring our relationship to the non-human world, to one another, and to ourselves are now ubiquitous.

These calls have emerged from various disciplines — psychology (Fisher 2013, Roszak 2001), philosophy (Callicott 2004, Naess 1973, Plumwood 2002, Rose 2013, Swimme and Berry 1992), sociology (e.g. animalsandsociety.org), biology (Bekoff 2013, Kellert 2003, Wilson 1984), education (Bai 2009, Robinson 2011), law (Cullinan 2011, Stucki 2013), economics (Paech 2012, Speth 2012), religion (e.g. the Forum on Religion and Ecology: fore.yale.edu), to name a few — and they converge on the assumption that we as humans need to tell a “New Story” (Berry 1988) about the human-earth relationship¹.

The ink by which this New Story should be written is *relationality*: If we as humans allowed our talent and longing for being in relation to nature, we could change our presence in this world from a destructive to a benign one, so the rationale goes. We could “rewild our hearts” (Bekoff 2014), unfold our “participatory consciousness” (Bai 2009, 146), reinvent ourselves as part of a “chain of being” (Panikkar 1996, 11), resume our responsibility as stewards of Earth (Hiebert 2000) and “coexist compassionately” with other beings (Jürgens, 2014). Relationality thus could mend the human-nature bifurcation. The idea of an earth-embracing web of relations has been famously expressed in Thomas Berry’s (1999, 82) notion of a “community of subjects”.

But for the vision of a community of subjects to have traction, relationality must be more than just a lofty notion; it must be a real possibility: We need to know that the beings we want to take in as partners in that community are capable of relating back to us. Otherwise, the “community” would remain a mere assemblage or a unilateral anthropogenic construct. For example, we consider dogs and cats natural members of our families exactly because they give us the impression that, beyond doubt, they consider themselves as being lovingly interrelated with us.

Of course, the community of subjects is meant to embrace much more than just human families and their pets, yet even much more than just humans and animals. In the broadest and most consequential sense, it can be understood — and by some *is* being understood — to encompass all natural entities, including microbes, rocks, rivers, whole ecosystems, weather phenomena, even spirit figures. My analysis will focus on the relationship between humans and animals and will be restricted to a modern Western view, being mindful of the fact that for other cultures, the idea of an interrelation of beings arguably has always been an integral part of their tradition (e.g. Basso 1988, Black Elk 1998, Cajete 1994, Cordova 2007).

Relationality-based ethics mostly rely on a vague intuitive notion of relationality as a mutual understanding. They scarcely address and virtually never explain how this notion is to be understood specifically in philosophical or psychological terms. The sciences to whom we might look for guidance in defining relationality, e.g. ethology and comparative psychology, have a hard enough time dealing with intra-mental concepts such as sentience (an animal’s ability to feel pain and pleasure) or intelligence (e.g. future planning and problem solving). Due to inherent limitations of the positive scientific approach, most scientists remain agnostic with regard to the question of

animal subjectivity or even consciousness (Shettleworth 2001). Their uneasiness also expresses itself through the amorphous, and oftentimes confusing, overlapping definitions of those concepts: “Consciousness” is taken to denote an organism’s ability to perceive itself as a subject of a life, probably even meta-cognitively representing her mental states to herself; and “subjectivity” more moderately describes a being’s ability to be a subject embedded within a flow of experience, implicitly living within its phenomenal world (Rowlands 2016). The closest those disciplines get to relationality is through research on sociality among members of the same species: cooperation, play, cheating, mating, rivalry and like social behaviors.

However, if we seek a firm conceptual foundation for a “community of subjects”, we must go even further on that shaky conceptual ground since relationality transcends both individual organisms’ presumed subjective experiences and intraspecific sociality: *Intersubjectivity* across species boundaries is the experiential stuff from which relationality is made. Only an organism endowed with subjectivity can reasonably be considered a subject; but only an organism capable of intersubjectivity can take part in a community of subjects.

The conceptual foundations of intersubjectivity across species borders have virtually never been explored explicitly. For ethology and comparative psychology, it is difficult enough to understand intraspecific communication. Research on human-animal relations are limited to attitude research, to studies of the therapeutic effects of companion animals (Walsh 2009), and to investigating whether different animal species can learn to read human behavioral cues (Udell, Dorey and Wynne 2008). In the philosophy of mind, intersubjectivity mostly is only a side-notion that, if it is raised at all, is quickly dismissed (e.g. Dennett 2008) or cracked superficially (Nagel 1974, 449–50). The lack of empirical research on and the lack of a conceptual foundation of transpecific intersubjectivity go hand in hand and entail each other.

Our search for a conceptual ground for relationality must therefore start with just a working definition of the explanandum. Let us roughly define relationality as denoting an event of mutual referencing between two or more individuals, engendering a sense of togetherness, or figuratively: of two or more lines of life discernibly intersecting. Relationality in this reading embraces vastly different sorts of intersubjective encounters: a contract negotiation—regardless of its success—between managers; extensive play or just a quick locking of eyes among a dog and her companion human; a deer being hunted down or escaping in a battue; a fly soaring upon a waving of a child’s hand, and innumerable further instances of intense to rudimentary contact. The distinctive feature of relationality in contrast to, e.g., a mere haphazard collision of two stones rolling down a hill, is the phenomenal quality of perceiving and being perceived by another organism: a genuine experience of “it’s about me” in whichever infinitesimal form. The degree to which the relating organisms understand each other in the encounter may vary immensely and may be asymmetrical. But an encounter deserving of the attribute “relation” is characterized by the relating organisms *referring* to one another, and thus will engender a genuine feeling of immediateness and intimacy irreducible to any other experiential quality. This essay seeks to illuminate the conditions and the nature of that bidirectional referencing.

First, I review what our everyday intuitions and the sciences say about human-animal relationality. This will lead us to seeing why relating across species borders is a conceptual problem at all, and I will illuminate the full depth of the challenge. Then, I detail the importance of

relationality for grounding us within reality, and then turn to grounding the realness of relationality. I conclude by proposing ethical implications that follow from the analysis.

The science of relating

Intuition is a way of knowing that does not derive from systematic thinking, but which makes itself known by permeating the surface of consciousness unsolicited by logic argument and unbridled by reason. The intuitive answer to the question of whether humans and animals can refer to one another, and thus relate, most likely is affirmative: Yes, we do understand animals and are being referred to by them, hence, transspecific relationality is a reality. This intuition derives from our everyday encounters with animals—our dogs that accompany us, deer that take care to remain at a safe distance to us, pigeons that beg us for food, mosquitoes that nag us and many others. In our everyday lives, we naturally conceive of animals as fellow subjects and treat them accordingly: We thank the dog for being by our side; we calm the deer and ensure him that we don’t mean any harm; we laugh appreciatively at the bold pigeon; and we might smash the mosquito in retaliation. Usually we don’t mind walking on a thin line between anthropomorphizing and “real” mutual referencing: That animals play an active part in establishing relations to us is an integral part of our everyday experience (Wiedenmann 1999, 354–55).

Marc Bekoff (2007, Bekoff and Pierce 2008) has been a visionary in interrelating careful analyses of anecdotal evidence, drawing on his rich experience as an ethologist, with results of empirical studies in order to support his claim that the intellectual, emotional, and moral lives of animals provide a reliable basis for considering them as subjects who actively weave relations within and across species boundaries.

Most researchers in ethology or comparative psychology, however, are still immersed in debates about whether animals of a certain species can be said to be endowed with sentient minds or even possess more complex mental abilities like thinking, planning ahead, having first-person viewpoints, and knowing that others likewise do (e.g. Brown 2015, Carruthers 1998, Ogden 2012, Shettleworth 2001, Suddendorf and Whiten 2001). A weak consensus states that a continuum of mental complexity runs parallel to the evolutionary continuum: Allegedly “more evolved” species possess more vivid mental lives, and more closely related species possess more similar minds. From this perspective, the dichotomous question of *whether* animal minds exhibit intellectual and emotional faculties becomes a graded one: *By how much* do animals resemble us in cognitive and emotional capacity (cf. Chan 2011)? For example, it is assumed that a pig disposes of a more complex and “human-like” mind and a more vivid mental life than a frog.

Another consensus seems to be emerging with regard to the question of whether and by which mental means animals interrelate with one another: Being a subject that refers to other subjects presupposes a mental faculty which allows for recognizing other beings as subjects.

One candidate faculty is the so called “Theory of Mind” (TOM) module (Premack and Woodruff 1978). Somewhat confusingly labeled a “theory,” TOM is conceived of as a built-in tool of our perceptual system: an “other-subject detector”: It makes us recognize other subjective creatures and weaves their existence, probably even their presumed viewpoints, emotions, thoughts and intentions, into our reality. Humans inarguably have these abilities. From an early age, babies intuitively resonate with subjective states in their fellow humans and partake in intersubjectivity

(Bai 2009, 141–46, Papousek 2007). Furthermore—albeit to my knowledge no one has explicitly related TOM to *transspecific* intersubjectivity—our intuitive tendency to experience animals as mind-bearing subjects evidences that our “other-subject” detector likewise and smoothly works across species boundaries.

We seem to share this ability with many other-than-human animals. The specifics are being fiercely debated (e.g. Penn and Povinelli 2007), but the evidence seems to favor the view that even animals differing greatly from humans are endowed with at least TOM-like capacities. For example, corvids take each other’s points of view (Emery 2004, Reichholf 2013); fish know their “school-mates” in person (Brown 2015, 10–11), rats waive food to save a conspecific from harm (Bartal, Decety and Mason 2011); dogs refuse to cooperate if they suspect a human of treating them unfair (Range, Horn, Viranyi and Huber 2009), ravens guide conspecifics and wolves towards prey (Despret 2015, Stahler, Heinrich and Smith 2002). There are many more examples showing that various kinds of animals recognize and refer to conspecifics and members of other species as co-subjects endowed with minds and viewpoints of their own. Those scientific findings are corroborated by innumerable accounts of “marginal epistemologies” (Lestel 2011, 83), i.e. our everyday encounters with animals. In sum, TOM and TOM-like capacities in humans and other animals seem to provide one mental foundation for constructing relationality (cf. Jürgens 2014).

However, humans’ TOM also is responsible for our natural tendency to anthropomorphize, i.e. to “see” minds in entities that positivist science proclaims as mindless, e.g. trees, rocks, or thunderstorms. Anthropomorphizing is a by-product of TOM’s automatic functioning. An anthropomorphism arises when TOM responds to “mind-like” stimuli, e.g. perceived agency or sentience (Fiske, Cuddy, and Glick 2007, Gray, Gray, and Wegner 2007, Waytz et al. 2010), and makes us experience intention, mutual reference and even affection—while a rational reassessment may convince us that we “actually” aren’t being referred to by anyone. Here, we run into a major conceptual challenge for the first time: How are we to determine whether TOM detects a “real” mind and establishes a relation between subjects, or whether it signals a “false” one and our impetus to relate goes astray?

We can distinguish real from conjectured (inter-)subjectivity *only* if we first elaborate what constitutes “reality.” What TOM feeds into our stream of experience can not a priori be deemed right (e.g. other humans’ subjectivity) or wrong (e.g. the existence of spirits). What is and isn’t an “actual” instance of subjectivity is not an objectively set criterion: It is *us* who, in adherence to our favorite metaphysical paradigm, ex post facto validate or invalidate our experience (Bai 2009, 136). For example, some of those strictly adhering to the prevalent positivistic paradigm are hesitant to recognize animals as subjects (Carruthers 1998, Dennett 2008, Penn and Povinelli 2007), whereas in many non-western cultures, intimate relations of living humans to their late ancestors, to animals, and to spirit figures are a lived reality (e.g. Basso 1988, Black Elk 1998, Cajete 1994, Cordova 2007). In a similar vein, proponents of biosemiotic ethics (Beever and Tønnessen 2017, Tønnessen 2003) point to the inseparable interrelatedness of sentient beings and the abiotic factors determining their particular lives.

Most people rely both on their intuition and on science as sources of “truth”, and data from both these sources support the idea that animal subjectivity and human-animal intersubjectivity is “a real thing.” He who doubts that those intuitions are reliable, and she who ignores or contests the scientific findings, deny that a substantial part of our lived reality is actually “real.” In the next

section, I will explore how from that denial may derive a more radical and informed sense of relationality as *being real* indeed.

Denying Relationality—Deconstructing Reality

In opposition to our intuitive affirmation of animal subjectivity and in doubt of the scientific findings that confirm it, sceptics of all times have argued that both our naive and our educated convictions of animal personhood are mere self-deception. Few if any today deny the existence of animal minds altogether, like e.g. Descartes (Boyle 1999). Modern sceptics of animal subjectivity rather claim that animal minds lack the content and complexity to enable subjectivity: Mostly, animals’ lack of language is cited as pivotal in disabling literally meaning-full human-animal encounters (Carruthers 1998, Dennett 2008, Dor 2015, Dupré 2003). Conceding that animal minds might be populated with some (primitive) form of subjective experience, it is claimed these experiences are so radically different from humans’ that a mutual understanding and, thus, transspecific intersubjectivity is impossible. Humans and animals coexist physically, but they occupy essentially different mental landscapes. If this sceptic account was true, it would imply that we just *conjecture* understanding animals: TOM malfunctions, or overacts, seducing us to project our own subjectivity onto mindless, or mind-meagre, organisms.

The claim that mutual referencing between humans and animals is a mere illusion, relies on a sharp distinction between objective reality—the body of noumena, the things actually existing in the physical world “out there”—and subjective appearances—the individual realms of experiences, evaluations and interpretations of that objective world. In that dichotomous reading, intersubjectivity, the *experience* of being in relation, clearly pertains to the subjective realm: We think that we understand animals and are being understood by them, but we actually just anthropomorphize.

Some of these sceptics go so far as to question what we have above cited as scientific evidence for animal subjectivity. They propose that what appears to be instances of animals acting mindfully is actually scientists reading their own minds into animal behavior.

Methodologically, they have a point here. Classical ethograms for example (e.g. Feddersen-Petersen 1989, Zimen 1980) ultimately consist of structured intuitions about the meaning of animal behavior, i.e. about which presumed subjective states in an animal’s mind go with which overt gestures or postures. Jane Goodall’s (2010) almost participatory sampling of chimpanzee behavior might be the most blatant example: Ethologists construct their knowledge from hours and hours of watching and interacting with animals (Lestel, 2011). At some point, they *just know* what a given behavioral code means. Their constructions may then be subject of inter-collegial debates, but these debates, again, are informed by other researcher’s understanding of how behaviors correlate with subjective states for a given animal species.

Likewise, comparative psychologists conduct laboratory studies investigating animal intelligence and sentience that ultimately rely on a logic of “the animal could not do X unless Y would go on in its mind”, with “Y” akin to a human-like mental state or process, e.g. planning ahead (Raby, Alexis, Dickinson and Clayton 2007), experiencing injustice (Range, Horn, Viranyi and Huber 2009), or feeling empathy (Bartal Decety and Mason 2011).

Given that both in real-life scenarios and in experimental settings, animals behave in ways that appear to be strikingly similar to a human’s reaction in like situations; and given the evolutionary relatedness of humans and some of the animal participants of those studies, e.g. apes, deducing that the investigated animals entertain similar subjective states and processes seems to be the most plausible conclusion. Whether they *really* entertain those subjective states and if so, how they experience these states, will always be veiled to us. We cannot rule out the possibility that in those experiments, animals just behave *as if* they had “Y”-like mental states. Thus, sceptics will stick to their claim that we just construe our understanding of, and hence our bidirectional relating to, animals.

Again, they have a point – in a very literal sense: We do *construe* our understanding of animals. But strictly speaking, they are not even skeptical enough: We construe everything else, too. Technically, we cannot be sure of *anything* regardless of how “real” it appears to us. Beginning to question the “realness” of our experience at one point ultimately flows into the all-embracing Cartesian doubt which unravels all reality. With his famous radical doubt about existence, Descartes shatters the world as we naively know it, then rebuilds it from the apodictic—undeniable, undoubtedly certain—“reality” of that same doubt. In a simplified version, the logic goes like this: If the act of doubting is real, and it is, as it is excruciating in its all-embracing vigor, there must also be someone who is excruciated. If there is such a rudimentary person for whom the doubt is a reality, then other qualities cogitized by that person are similarly “real”. If these cogitations come with an inherent quality of referring to a world “out there,” the reality of these cogitations jointly constitute that world. *Cogito ergo sum*: I think therefore I am. And therefore, everything else is, too.

Edmund Husserl revisits the Cartesian logic, i.a. in his monumental work “The Crisis of European Sciences and Transcendental Phenomenology” (2012) and amends it in ways pertinent to the present discussion. Here, I can’t go into the detail his analysis deserves; I will sketch the key points and weave them into my argument.

Husserl clarifies one pivotal aspect: The Cartesian doubt, the doubting Ego, and this Ego’s cogitizing can be said to be real only in the sense of an *experiential reality*. The cogitizing is in fact experiencing. It is of subjective quality. Therefore, the world, as the Ego experiences it, is constituted by and within the Ego’s subjectivity. Whether the phenomenal experience of the doubt, of an Ego, and of an external world refers to any *objectively real*, noumenal entities “out there”, i.e. entities whose existence is independent from their being experienced by the Ego, cannot be determined. According to Husserl’s striking insight, all we have are our experiences and we can never go beyond them. We are encapsulated within the subjective phenomenal world, the “lifeworld,” as Husserl calls it, whose realness is constituted by the certainty of our experiences. Thus, the attribute “this is *real*” needs to be indexed with the predicate “real *for me*,” or “real within my phenomenal experience”.

The subjectivity of the Husserlian lifeworld is not to be understood in a constructivist sense of every observer having his or her “own”, idiosyncratic reality. The subjectivity of the human lifeworld is presumably shared by all humans. Therefore, we can fathom the lifeworld “objectively,” i.e. we can find consensus about the method and the results. Nevertheless, on Husserl’s and other phenomenologists’ account, all knowing, discovering, analyzing is subjective. What our sciences discover is not about the world “out there,” but is likewise encapsulated within the realm of our subjectivity. Therefore, the even the natural sciences—Mathematics, physics, chemistry, biology—just explore their share of the subjectively constituted human reality. What is

posited by positive science “just” systematically maps the insights of the human mind as it dives into its reality: It doesn’t bring forth noumenal facts, but (re)discovers the abstract principles that structure human subjectivity. For example, the axioms in which mathematics and logic are ultimately grounded are irreducible keystones of common—human—sense (cf. Harris 2005). Mathematics, in this reading, is about the semantic and syntactic archetypes of our thought and about the perpetual recursive extrapolations of these principles.

The most convincing argument that the “hard sciences” explore reality only through the lens of subjective human experience, stems from the recognition that proffered insights about the “objective foundations” of the universe, as researched by physics, change dramatically over time (cf. Kuhn 2012). For example, the very concept of matter, the central idea on which our everyday view of the world relies, got completely revolved, and eventually resolved, in the ongoing scientific discourse (e.g. Roszak 2001, 150–88). In conclusion, all knowledge that we have about reality is not knowledge of the noumena that exist “out there,” beyond subjectivity, but knowledge of what we can *know as real for us*.

When we live our everyday lives or when we adopt a scientist’s analytic stance, we partake in the lifeworld without questioning its realness: We immerse ourselves in it or research its qualities without challenging its metaphysical foundation. Let us call this the “lifeworldly mode” of being. Husserl proposes a second mode of being: We can choose to enter a distanced analytic stance which Husserl calls the “transcendental epoché.” The transcendental epoché enables us to discover the underlying structure of the lifeworld: to see that all of those qualities are but the content of an experiencing Ego’s subjectivity. This is the mode from which we launched this analysis.

How is all this relevant to a discussion of relationality? In its most radical consequence, the transcendental epoché and the metaphysical perspective that it provides lead us to see that the experiencing Ego is essentially solitary. Like all things that populate the lifeworld, all other beings in the first instance are contents of our subjectivity. What we, in the lifeworldly mode, perceive to be fellow subjects coexisting with us within this one world, are just our experiences, no independent essences, when considered from the transcendental epoché. Still more radical, we, the experiencing Egos, are not human beings pondering metaphysics. “Human being,” and “being embedded within a community of interrelated subjects” are labels given to lifeworldly experiences. When entering the transcendental epoché, we rid ourselves of those labels. When peeping beyond the scope of naive lifeworldly reality, “we” become *one* Ego stripped of all lifeworldly qualities. This Ego consists in free-floating subjectivity, holding a subjective world within itself. All the richness of the lifeworld flows from that solitary Ego that can only be apodictically sure of its own experiencing.

So, what becomes of relationality? On the one hand, the existence of other “Egos” and of our being related to them, is one integral part of our lifeworldly reality. Although Husserl (2012) is mainly concerned with humans’ (or the human) subjectivity, he explicitly identifies animals and even plants as subjects and thus as Egos constituting their own lifeworlds through their respective subjectivities. Likewise, vivid intersubjective encounters with both fellow humans and animals form part of our lifeworldly reality. Therefore, viewed from the lifeworldly mode of being, human-animal intersubjectivity *is* a reality. The apodictic certainty of our experiences says so.

On the other hand, we have every reason to doubt that certainty. The transcendental epoché dismantles all lifeworldly certainties.

In conclusion, when we revisit the sceptics’ attempt to disqualify the reality human-animal relationality against this background, we come to see that their being right depends on their mode of analysis. If they utter their doubts as lifeworldly persons firmly nested within naive reality, then they are wrong: Lifeworldly evidence shows that humans and animals can and do meaningfully relate to one another. Conversely, if they doubt the existence of relationality by adhering to an analytic stance akin to the transcendental epoché, then, they are right: human-animal relationality is a mere appearance provided by our subjectivity.

Two associated caveats are in order here: First, “appearance” does not equal “illusion”. The contents of our subjectivity are all we have. Subjectivity is a premise of awareness. If there is an objective truth, we have no access to it. Therefore, there is no objective standard against which we could measure the “illusory” nature of our experiences. Thus, the terms “appearance” and “illusion” lose their derogatory implication. Second and in a similar vein, if sceptics of human-animal relationality adhered to a stance similar to the transcendental epoché in claiming that human-animal relationality is just a subjective appearance, then they need to embrace *all* of the consequences: They cannot selectively disqualify just human-animal relationality. They would need to disqualify *all* lifeworldly appearances. Why? Because in the transcendental epoché, we discover that all experiential contents have the same epistemic status. We know about human-animal relationality through our experience. This is exactly how we know about stones, rivers, stars, about other researchers, or about physical formulae: They are part of our stream of lifeworldly appearances. It all comes down to phenomenal experience. How do I know that a stone exists? Well, I see it, feel its heaviness and hardness, I hear the sound it produces when thrown to the floor, I can smell the salt and dust that covers it and informs me of its long journey of being grinded by ocean water. Seeing, feeling, hearing, smelling—all these qualities are forms of experiencing. No different in essence from seeing, feeling, hearing and smelling my dog referring to me in our intimate everyday encounters, or from experiencing a raven’s reactions in a reasoning experiment. Human-animal relations are no different from any other experiential content. If human-animal relations are “illusory,” then so are stones, rivers, stars, other researchers, or physical formulae. The only logically feasible option to dismantle the reality of relationality is to dismantle all lifeworldly reality, and consequentially, dismantle our own existence as humans partaking in that reality.

Relationality is the sheet anchor of reality

We have seen that doubting the realness of human-animal relationality consequentially implies doubting lifeworldly validity altogether. Choosing not to rely on the “subjective realness” of the lifeworld means to bid farewell to all relations and to remain solitary entrenched in a state of seemingly total agnosticism.

One reason for the fact that hardly anyone, not even the most thoroughgoing skeptic, is capable of enduring the free-floating state of being thus distanced from lifeworldly reality for longer than the duration of a thought experiment is this: It is incredibly uncomfortable. As mundane as this may seem, the intense repulsion we feel when adopting or even roughly imagining the mode of a transcendental epoché, is another indication of the foundational character of relationality.

The idea that all reality may dissolve in free-floating subjectivity is so displeasing because we are not rational beings who may disinterestedly assess the ontological status of our reality. We are

social beings *emotionally entwined* with this reality. We rejoice in the act of experiencing the vividness of the lifeworld, and we relish responding to all experienced entities. We like seeing colors, tasting tastes, feeling touches. We like climbing rocks, swimming seas, exploring landscapes, talking to fellow humans, interacting with fellow animals. Existing in the lifeworld is relating to everything we experience. There might be some things we dislike when viewing them from our lifeworldly mode, e.g. feeling a wasp’s sting or meeting our mother-in-law. But both liking and disliking are forms of relating and if in doubt, we would still prefer to have both valid positive and negative experiences rather than not having any. Essentially, what we enjoy about both liking and disliking individual aspects of reality is the very act of relating. As humans of the lifeworld, we live in and by those relations. *This* is why we are reluctant to questioning the realness of our reality: We don’t want to bid farewell to our relations.

In his analysis of the lifeworld as a subjective phenomenon, Husserl (2012) acknowledges the pivotal role of relationality. He notes that our reality essentially is an intersubjective realm: “[Our] consciousness of the world is... a consciousness of the world as the same one for all: for all known and yet unknown subjects, for all subjects that we may encounter. My world is oriented around myself; other [subjects] have their worlds oriented around themselves, respectively. All these worlds presuppose [the existence of] other [subjects], who, in turn, presuppose [the existence] of yet other subjects.” (2012, 274, my translation). By mutually referring to each other as parts of their respective realities, the subjects enter into an “intentional connection” (ibid.) from which arises a “shared apperception” of *one* world shared by all subjects. Thereby, every subject’s life “reaches out into the life of the other”, causing all individual lives to be “intertwined in the coexistence of life” (ibid., 259, my translation).

Relationality, thus, is not just one phenomenon contained within the lifeworld. It constitutes its very structure. Reality is relationality. Being in the lifeworldly mode is cognitively and emotionally *interbeing* with other lifeworldly creatures. The Cartesian *Cogito ergo sum* then needs to be amended by the insight that what anchors us in lifeworldly reality is relationality: *Jungimur, ergo sumus* (we are related, therefore, we are).

So there are two ways for arriving at the conclusion that relationality is real. Either, (1) we remain safely settled within the lifeworldly mode of being and take part in the vivid, tangible stream of experience spread out around us, forming our reality. Then, we can rely on our intuitive or scientific observations of interrelating with animals. Or (2) we go a long way via the Husserlian argument, deconstructing lifeworldly reality and reconstruct it as the only reality we have. Then, we come to see relationality as an inseparable, even constitutive feature of our reality.

Yet, as soon as we allow the interbeing with other subjects to ground us within our reality, another challenge arises: If we accept the realness of other human and non-human subjects, we automatically accept them as being situated in subjective experiences of their own (cf. Lestel, 2011). Husserl (2012, 266) explicitly addresses animals as subjects, implying that they create their respective lifeworlds. But since animals’ minds differ from ours and differ across species, animals’ subjective experiences presumably differ from ours and from each other. If this is so, then all animal species occupy their respective species-specific lifeworlds. How can we meaningfully relate to animals despite those essential differences in experience?

One principle of perception feeds into different realities

In order to see how transspecific relationality may ensue despite the fact that different animal species live in different lifeworlds, we need to look at how those lifeworlds come to be through the process of perception, and how they are constituted.

Our subjective experience is the product of our senses. Our perceptions appear so indisputably “real” to us that we seldom come to question the realness of our reality, so much so that physical optics still is the prevalent model for the process of perception. According to this model and to all its fancier empiricist versions, perception is a transduction of the external world: An object’s surface reflects light that hits our eyes. On our retinae, the picture of the object appears upside down and somehow gets processed by the neuronal apparatus until it appears upright before the “inner eye” of our consciousness.

We have already profoundly dismantled the idea that we directly perceive noumenal objects in following Husserl’s radical analysis. In a similar vein, the empiricist explanation of experience has also been corrected by perceptual and cognitive psychologists and philosophers (e.g. Bai 2009, Fodor 2001, Mausfeld 2002, Nagel 2012, Tholey 1980). They have corroborated what has become known as the Sign Theory of Perception. Jakob von Uexküll (1982) provides a non-anthropocentric version of this account that holds for all sensitive creatures: “Our sense organs—the eye, ear, nose, palate, and skin—are built according to the principles of a safety-match box. Safety matches only react to selected outside influences. Stimuli also selectively excite sense organs to produce nerve impulses, which are then transmitted to the cerebrum. These mechanical events accord with the law of causality. At this point we arrive at the inner boundary of the sense organs, which takes the form of a living chime...” (ibid, 46–47) and further: “When the [neuronal] impulses have reached the brain, the living chime of the brain cells resounds. The [...resounding] qualities of the chime serve as perceptual signs for outer events” (ibid., 74).

In simple words: When our perceptual system imposes itself on what is “out there,” our senses selectively react to specific kinds of stimuli. The presence of these stimuli, e.g. electromagnetic energy on the retina, causes neuronal impulses, which serve as signs and, in turn, cause experiences to appear within our subjective reality, e.g. “brightness”. Albeit the process of how exactly the signs cross the “inner boundary” and bring about experiences remains opaque, the idea of “signaling” in the Sign Theory of Perception helps to clarify the fact that our experiences are *causally* related to the external events that activated them, and that the former are not a mere mirror image of the latter. Therefore, what we perceive as “real objects”—trees, stones, cars, water, etc.—are qualities that our perceptual system *construes* based on the lawful processes that govern it. The experience of a “tree,” for example, is the output of the perceptual system, not the input (Mausfeld 2002, 2010, Tholey 1980). This is true for presumably basic perceptual qualities, like brightness, colors, movement, objects, or temperature. But it is likewise true for more abstract experiences like eye contact, attunement or disharmony, being threatened or safe—including all the qualities mutual referencing is made of.

The Sign Theory of Perception converges with the Husserlian argument and spells it out in terms of perception psychology: When our experiences are mere indications, but no accurate copies of noumena, then it is easy, though not trivial, to see that we cannot go beyond our phenomenal reality. Our understanding of the world is restricted by the “boundary” of our mind, or as Thomas Nagel (2012) puts it: limited to “intelligibility from within.” The internal structures of our

perceptual and cognitive systems determine our reality (cf. Mausfeld 2015): They determine what we experience and how we experience it. Consequently, our reality is one that *makes sense to us as humans*. Other perceptual and cognitive systems select other kinds of stimuli from the “outside influences” and thereof produce other kinds of experiences. Accordingly, other animals’ minds entertain different subjective realities. Notably, however, the underlying mechanisms of creating these different realities are analogous.

In other words: All animals live within their species-specific lifeworlds which are construed through the lawful functioning of their perceptual systems and are constituted within their respective subjectivities. Von Uexküll has coined the term *Umwelt* for a species’ specific reality. The *Umwelt* is a pivotal concept in von Uexküll’s “theory of meaning” (von Uexküll 1982) which embraces much more than his homonymous essay and provides nothing less than an encyclopedic account of physical and mental life that bears essential correspondences to Husserl’s phenomenology. The *Umwelt* is the system of “environmental factors that impact on the animal according to its [anatomical and physiological] design.... Thus every animal is encircled by a... world that completely differs from ours” (von Uexküll 1982, 6; my translation). Von Uexküll proposes that all organisms, even those we would consider as the most simple forms of life, have their particular *Umwelten*. In his 1919 “Umwelt und Innenwelt der Tiere,” von Uexküll carefully composes multiple invertebrates’ *Umwelten* from experimental evidence. For example: “A paramecium’s *Umwelt* is restricted to two entities: fluid with a stimulus and fluid without a stimulus. The stimulus can be of chemical or mechanical nature.” (ibid., 47, my translation).

By consequentially applying the *Umwelt* concept and the Sign Theory of Perception, von Uexküll conceives of the human as an animal for whom the same logic holds true: What we naively call “reality” in everyday parlance, i.e. the system of things that impact us in a meaningful way, is nothing more and nothing less than our particular human *Umwelt*. If there were life forms, say, aliens, with a more richly equipped perceptual or intellectual apparatus and thus being endowed with more comprehensive *Umwelten*, and if these aliens were to research humans in the same way as von Uexküll researched paramecium, then they would observe our limited human minds stumbling around within the limits of our experience which, for them, is just a selective fraction of the environment (cf. also Nagel 1974).

But there is no need to postulate super-human beings to illuminate the fact that the human perceptual system is selective in responding to only some stimuli emanating from what lies “out there” and that others fall beyond their scope. Numerous animals experience things we can’t perceive. Bees, for example, see ultraviolet light, many migratory birds feel the earth’s magnetic field, most wildlife hears the faintest sounds to which our human ears are deaf, and lobsters smell odors given by no more than 3.5×10^{-14} mol per liter of water (Derby and Atema 1982, 303). Conversely, there are things human minds render “real” which arguably are no part of any other animal’s subjective experience. Language perception and production is one striking example (Dor, 2015, Dupré 2003).²

Thus, in sum, we can state that the structure and the content of humans’ and other animal species’ respective subjectivities differ, which appears as a serious challenge to establishing transspecific intersubjectivity. All organisms are encapsulated within their *Umwelten* or lifeworlds and neither humans nor any other animal species have a privileged access to noumenal reality. There are not even “comparative truths” in the sense of scientific realism (cf. Mizrahi 2013), i.e. experiences that are more or less adequate with regard to the true nature of the world “out there.” It

would be absurd to ask whether a bee or a human has the more valid worldview, or whether a bee or a fox has a better access to reality. Humans’, foxes’, microbes’ and all other minds’ respective *Umwelten* are irreducible to any other “truth.”

Quite paradoxically, this synthesis of our discussion brings us closer to understanding how the reality of relationality may be constituted. I would like to term this perspectivist account Respective Realism. In a nutshell, the basic propositions of Respective Realism are the following five:

- I) An “objective” world of noumena exists independent of its being reflected in any mind. This is an axiom adopted from the Sign Theory of Perception.
- II) Perception and the subjective experience it brings forth reliably tie all organisms to that noumenal world: In this sense, subjective experiences are valid.
- III) Yet, subjective experiences are no mirror images of noumena. No one perceives “the objective reality” as such.
- IV) Every organism of a given species experiences the world in a species-specific and arguably individually unique way. Experiencing and understanding thus is respective to any kind of mind (the human mind, the bee mind, the fox mind, the paramecium mind, etc...).
- V) All of these manifold realities, one for each kind of mind, are equally valid. There are manifold truths facing one noumenal world. There is no better or worse access to reality. All beings are epistemic equals.

Notably, I amended the Husserlian and Uexküllian accounts by allowing for interspecific as well as for inter-*individual* differences in subjective experiences. Even though it is plausible that virtually all members of a given species experience their reality in essentially similar ways due to the similar functioning of their perceptual apparatus, an individual’s ontogenetic history is likely to play a part in how the details of its individual reality are constituted (cf. Lestel, 2011).

The remainder of this essay is dedicated to employing the set of conceptual tools we assembled for answering the question that motivated this essay: What is transspecific relationality and (how) is it possible? Let us zoom in on beings’ respective realities, in order to explore how bridges of intersubjectivity may be built between them.

Merging Minds: Relationality explored through the lens of Respective Realism

In line with the assumption that an organism’s subjectivity shapes its respective reality in a way that is particular to just this organism, von Uexküll (1909) avoids talking about animal subjectivity from within and Thomas Nagel (1974, 441–43) famously lays out how it is unfeasible to understand a bat’s reality from a human’s perspective. The other-minds problem (Harnad 2016) reiterates the necessity to remain agnostic as to the exact contents of other beings’ minds. However, a certain degree of congruence between different organisms’ respective realities is necessary in order for them to mutually refer to each other such that a relation may be woven.

One might be tempted to suggest that different subjects could refer to one another via a shared reference to external entities. In this vein, Thomas Nagel (1974) proposes that beings with different kinds of minds come to a mutual understanding when they leave their particular viewpoints behind

and come to “understand the same physical events in objective terms, and this does not require that they understand the phenomenal forms in which those events appear to the senses of members of the other species. Thus, it is a condition of their referring to a common reality that their more particular viewpoints are not part of the common reality that they both apprehend” (1974, 445).

However, as we have seen, we cannot “understand...physical events in objective terms.” We can't leave our respective realities. Therefore, the body of noumena is no candidate for constituting “a common reality.” Von Uexküll gives a striking example which lethally challenges physical entities, e.g. matter, as the “‘basic rock’ on which the universe is built” (von Uexküll 1982, 71). He explains that a flower stem is constituted in essentially different ways when viewed from the perspectives of a girl who assembles a bouquet, of an ant climbing the stem, of a foraging cow, or of the flower itself, respectively (ibid., 30). Given that all of these different takes on the flower stem are equally “true” within the respective realities of the girl, the ant, the cow, and the flower, respectively, the concept of a truth beyond those phenomenal appearances dissolves: “Not one single property of matter remains constant when we examine the full range of *Umwelts*. Each object we observe not only changes its meaning-quality from one *Umwelt* to another, but the structure of all its material and formal properties also changes...The constancy of matter, about which the materialists boast, is not a solid base for a comprehensive view of the world.” (ibid., 71). Thus, von Uexküll reverses the roles of mind and matter: Subjective minds are no addendum to an alleged objective reality grounded in matter—*subjectivity is the ground* from which a notion of objectivity originates. Mausfeld (2013) makes a similar point in substantiating that the perceptual attribute “this is real” is a product of our perceptual system. Thus, in the face of a perspectivist view akin to Respective Realism, “the constancy of subjects is substantiated far better than the constancy of objects” (von Uexküll 1982, 71). The following discussion will be based on the assertion that subjectivity may be the medium unifying beings’ respective realities.

To begin with the seemingly trivial but essential: Establishing a bidirectional relation requires that both relating organisms have minds. I follow Jonathan Beaver’s and Morten Tønnessen’s (2017) approach of biosemiotic particularism in assuming that all living beings are semiotic, i.e. “contribute meaningfully to dynamic systems of signification within their environments” (ibid., 32). In other words, to be alive is to give and receive information to and from one’s environment, i.e. partaking in a bidirectional flow of meaning. Meaning, in turn, lies at the heart of subjectivity: Von Uexküll specifies in “Theory of Meaning” (1982) that meaning is “imprinted” on external stimuli by a subject who thereby makes the stimuli become a part of its respective reality. For example, a deer’s auditory system is sensitive to the slightest unusual rustle of leaves and imparts the meaning “approaching predator” upon that stimulus, whereas a human would not hear anything and therefore his human reality would not contain any threatening entity. If thus meaning is intimately tied to subjectivity, and subjectivity is intimately tied to life (cf. also Reber, 2016), then “absolutely all living beings have something akin to subjective (or quasi-subjective) experience” (Beaver and Tønnessen 2017, 40). In this sense, it is feasible to state that every organism has a particular kind of mind which harbors its respective reality. Moreover, despite their differing subjective experiences, organisms are united in being endowed with subjectivity. Thus, we have simultaneously identified all living beings as potential participants in a “community of subjects,” and we have defined the first precondition for transspecific intersubjectivity and relationality to occur: Subjectivity as a

shared feature of all sentient creatures is necessary as the “carrier medium” for a flow of meaning between two minds.

A second precondition for intersubjectivity to occur is that the relating organisms are part of each other’s respective reality (cf. von Uexküll 1982, 64). For example, my dog features in my reality as “my dog,” and I feature in his reality as “my companion human.” Moreover, the mutual reference may embrace other objects that likewise feature in both organisms’ realities, for example, the object that, in my view, is a car, and which, in my dog’s view, is a carrier for his scent mark. When two beings’ respective realities are similar, presumably because their minds are homologous like humans’ and apes’ minds, or analogous like humans’ and corvids’ minds; or when the overlap between the beings’ respective realities has been well fathomed like in a long-standing human-dog relationship, then it is easy to see how the shared medium of subjectivity may be woven to intersubjectivity between them (cf. Nagel 1974, 442).

Yet, an exchange of meaning in the semiotic sense, and even a rudimentary form of “perceiving each other’s presence”—and thus a spark of intersubjectivity—is possible between creatures with strikingly dissimilar respective realities. The flow of meaning, then, is just restricted to the lowest common denominator: to the objects that lie within the overlap of both beings’ respective realities. Also, a mutual *understanding* of each other or a shared reference to a subjective content is possible only when this content has the same meaning for both organisms—or if one of the organisms can take the other’s perspective and can see what the object means for the other. For example, a pet snake and her human keeper may be said to relate, to exchange information, and to come to a certain degree of mutual understanding, even though humans’ and snakes’ respective realities evidently differ. The snake experiences the human’s presence when he approaches the terrarium and vice versa, she can even understand that the human’s presence signifies the arrival of “prey.” Concurrently, the human understands that the “mouse” he brought, is considered “prey” within the snake’s reality. Any other attributes that the mouse has when viewed from the human’s perspective, e.g. that it looks cute, that it is an organism with a subjectivity of his own, that it was on sale in the pet store... all this lies beyond what is meaningful for the snake. Also, the mouse/prey object does is not “prey” for the human, so human and snake have no common understanding of it. In this case, the prey/mouse is the lowest common denominator, an object lying within the overlap of the snakes’ and the humans’ respective realities. Since the human is mindful of the snakes’ point of view, human and snake undoubtedly relate and moreover, they come to a certain mutual understanding: To this end, the human must be mindful of the fact that the “mouse” is “prey” for the snake; he must furthermore accept that his existence is understood only in terms of an “entity that provides food” by the snake; and that the snake, in turn, just understands to be referred to in a benign way by “that entity”.

So, it does not seem to take a lot for relationality to ensue. Actually though, the two assumed preconditions—that subjectivity is a shared medium which relates different kinds of minds, and that there is such a thing like an “overlap” of respective realities—are far from trivial and deserve closer consideration. What does it mean that subjectivity provides a medium for relating different kinds of minds? Mindful of the fact that we are launching this analysis as humans settled within the lifeworld and its appearances, we know that all ontological claims are an attempt to understand relationality in our *human* terms. This stance of humility is as much a constraint as a possibility: It opens up the possibility to draw on all ways of knowing without limiting the methodological

repertoire to presumed “objective” approaches. Specifically, relationality and (inter-)subjectivity by their nature evade being nailed down by positive science. The method of choice to approach their apparent elusive quality is a careful hermeneutic fathoming of experience: introspection. Introspection is a method venturing right in between the intuitive and the scientific ways of knowing. It is a systematic, careful, and investigative assessment of one’s conscious mental life that seeks to also illuminate traces of what lies beyond. Husserl’s transcendental epoché is an example of systematic introspection which helps us fathom the foundations of our reality. Introspection and other qualitative methods, and the phenomena that they investigate, often are being regarded as unscientific. Yet, (inter-)subjectivity and relationality are not only an integral part of our experience, they are a constitutive part of our reality. If the current positivist paradigm, i.e. its axioms, methods, and inherent logic used for producing evidence, proves inapt to get a grip on those and other elusive phenomena, then we might want to revise our sciences in order to fit reality, instead of revising reality in order to fit the scientific paradigms. For example, Ecopsychology as laid out by Roszak (2001) and Fisher (2013), is the agenda of integrating the phenomenon of human-earth relationality into positive psychology.

In the wake of methodological freedom, let us approach subjectivity with an image: Despite all differences between different subjects’ respective realities, their subjectivities appear to derive from a common essence, just like rivers, oceans, puddles, and lakes derive from the common essence of water. In this respect, subjectivity is similar to bodily qualities: Animal bodies also take strikingly different forms. Yet they are essentially made from the same stuff and according to similar principles for all species, as evidenced by the ability of embryonic cells stemming from different organisms to flourish within other organisms’ tissues (von Uexküll 1982, 38–39). Similarly, the idea of a solidity-endowing bodily structure can be realized as an exoskeleton for insects, or as an endoskeleton for mammals, or as a mesogloea for jellyfish. The inaccessible noumenal world—whatever its true nature is—seems to call for certain principles of organizing bodies. Likewise, that world arguably calls for similar principles of minds.³ For example, human, chimpanzee and crow minds face, and are able to solve, the same kinds of cognitive problems (Emery 2004, Goodall 2010, Reichholf 2013); humans and migratory birds successfully navigate the same landscapes (Åkesson 2003); humans and jumping spiders both exhibit spatial navigation and object permanence (Harland and Jackson 2004); and humans and trees both live within social networks (Hall 2011, Wohlleben 2015). If some of the organizational principles of subjectivity are universal, then this lays the foundation for intersubjectivity to be built between different kinds of minds.

In a similar vein, Husserl suggests that what characterizes intersubjectivity is “not a multitude of separate souls, each being reduced to its own inwardness: but like there is one universal nature... there is one single interrelation of all souls, souls that are one by virtue of the unison of their life” (2012, 274–75, my translation). Concurring, Martin Buber (1983) beautifully lays out the interrelational quality of mind: “Mind is not in the I, it is in between I and Thou. Mind is not like the blood, circulating in your veins, it is like the air, in which you breathe” (ibid. 37, my translation). Both scholars’ portrayals of intersubjectivity illuminate the idea that when the essence that constitutes all beings’ minds is one, and when the structures of beings’ respective realities are compatible, then a “flow of meaning” may occur between them—just like the water of two intersecting rivers can merge to one stream. Likewise, metaphorically speaking, minds can “merge.”

In light of the previous discussion, we have reached an intuitive understanding of such a merging of minds by virtue of subjectivity as a common medium, or essence, constituting organisms’ respective realities. To conclude, let us consider candidates for common structures within respective realities. The following features that are indispensable in constituting the foundations of our reality, and therefore, I will give examples drawn from the human lifeworld to illuminate them. Yet, these feature’s essences are arguably abstract from any species-specific experience, making them good candidates for universal features of subjectivity (Jürgens 2016a, Prentner 2016).

1) Subjectivity is seemingly all-embracing:

According to Prentner’s (2016) model of experience, all perceptions are “situated,” i.e. bound to an all-embracing framework of experience. For example, we never experience “redness” in isolation, we always experience, say, the redness of the setting sun which we observe while being wrapped in a blanket and sitting at a stony beach in Brighton on a chilly evening after a joyous leave day in June; or the redness of the blood being drawn from our vein in the doctor’s office while our heart pounds in reaction to the uncomfortable situation, etc. Thus, in a way, experience creates its own context. Notably, that context, or framework, at any point in time, is all-embracing: We cannot step out of it. While sitting at the beach, we may know that the sun’s color had been a bright yellow some minutes ago, but that memory of a past situation is itself part of the framework in which the present moment is embedded (cf. Whitehead’s notion of how presumed causes are “prehended” within an actual “nexus,” as laid out, e.g., in Hampe 1990). In other words: Subjectivity embraces the totality of all previous and current experiences that are actualized at any given moment. Likewise, von Uexküll (1982) proposes that any subject can be understood as living in the “house” of its body surrounded by a garden—the subject’s respective reality: “The garden is not, as it appears to us [as observers], bounded by a comprehensive world of which it is only a small segment. Rather it is bounded by a horizon, whose central point is the house. Each house is covered by its own arc of the sky, across which the sun, moon, and stars, all belonging to the house, travel” (73). Thus, a being’s subjectivity comprehends all of its reality, and the subject is not aware of the fact that its respective reality may be limited when viewed from other subjects’ respective realities.

2) Respective realities are populated by tangible contents:

Within the all-embracing experiential framework of organisms’ respective realities, specific contents are “pointed at” by the vector of intentionality (Prentner 2016, 123), i.e. experience is directed towards its contents, endowing them with a pervasive presence. Framed in the terms of von Uexküll’s image: In their respective gardens, organisms encounter objects, fellow subjects, and events. Each of these entities carries the attribute “I am real” and is each imprinted with a meaning for the subject (von Uexküll 1982, 30). Thus, while all experiences are woven to the totality of our experiential world, when going with the flow of our experience, we come to zoom in on specific experienced entities.

3) An implicit self lies at the gravitational center of experience:

Prentner (2016) states that perspectivity (“*Perspektivität*”) is one of the fundamental and arguably universal characteristics of experience. While being immersed in its stream of experience, “it is a subject’s particular perspectivity which distinguishes it from other subjects and objects”

(122). In a similar vein, Rowlands (2016) proposes that an “implicit self” is inherent in every organism’s subjectivity. Prentner and Rowlands concur with Barron and Klein (2016) in assuming that the perspectivity of experience, or the implicitness of a self, respectively, is not meant to express an experiential quality akin to self-awareness. Instead, the implicit self is the gravitational point of all experience, the point from which the intentional vectors originate. It can take the form of reflective self-awareness, like in humans, but it can also implicitly mold or just carry the stream of experience.

4) Experience extends in space and time:

Though the very process of experiencing itself is bound to the present moment, inherent in that actualized experience lie traces of a past and foreshadows of the future, e.g. when an organism experiences hunger from having starved or feels the urge to run to fat for hibernation. Likewise, virtually all beings exhibit some form of movement, necessitating some internal mechanism for navigation. No ontological claims can be made about the noumenal nature of either space or time. However, we have indications that other beings also live within subjective worlds that are structured by an inherent spatial and a temporal dimension (cf. Prentner 2016, 124). For example, several corvid species employ strategies for caching food that accord with past experiences and expected future needs (Raby et al. 2007, Clayton & Dickinson 1998). Likewise, von Uexküll's (1909) investigations of various invertebrates and Harland and Jackson's (2004) research on jumping spiders support the idea that an implicit self directs these animals and arguably all subjects through their respective complex accounts of space.

5) Subjectivity reaches out beyond itself.

While a subject is perched within its all-embracing garden, it remains mindful of the other beings apparently sharing that space with it. When two subjects “enter into a harmonious meaning relationship with each other” (von Uexküll 1982, 52), they include each other as parts of their respective realities. In von Uexküll’s sense, a “meaning relationship” qualifies as “harmonious” when both partners in this encounter imprint congruent meanings on each other, e.g. “mating partners.” Alternatively, “counterpunctual” relationships exist, e.g. “predator” vs. “prey.” However, we have seen that also an asymmetry in two organisms’ mutual referencing may still allow for a relation to occur: For example, when humans make use of their ability to meta-cognitively abstract from their own flow of experience and carefully attempt to understand another being’s respective reality. I have devoted large parts of this essay to substantiating the intuition that subjectivity seems to be made for entering into a state of intersubjectivity: Minds are made to merge.

Acting on Relationality

In this essay, I have set out to investigate whether an ethical compass calibrated on human-animal relationality may work. We have concluded that a “community of subjects” (Berry 1999, 82) is a real possibility implied in the very quality of being a subject. Thus, we can be assured that the compass does not point into a void. But where exactly does it lead us?

If we accept the position of Respective Realism, it follows that all animals are epistemic equals and are creators of their respective realities who actively create *us* as parts of their own

worlds (Despret 2015, Lestel 2011). Consequentially, we as humans have no conceptual ground for justifying any speciesist arrogance. Most animals even are in much better balance with their respective *Umwelten* than we are with ours. We may choose to treat other beings with different degrees of considerateness, since lifeworldly necessities dictate that we eat, move, mate, and utilize (cf. Buber 1983, 36–47; Naess 2008, 95). Yet, there is no a priori reason to treat them with different degrees of appreciation. Appreciation is the key to a communion of subjects; and in accordance with the perspectivism inherent in Respective Realism, our fellow subjects are not to be appreciated as an anonymous mass, but as *individuals* (Jürgens 2014, Rose 2013). In this vein, an ethic based on Respective Realism and the vision of merging minds is essentially biocentric and particularist (cf. Beaver and Tønnessen 2017, 32): Every being counts and it counts in its own right.

A suiting foundation for moral action therefore is the minimum principle of biocentric ethics subsumed by Callicott (2004): “We can at least respect the interests of other living beings when they do not conflict with our own.... It requires only that we use living beings considerately and sensitively.... Biocentrism permits us to injure or destroy other forms of life, but only when doing so is necessary and unavoidable.” This principle is congruent with a particularist stance which implies that no universal normative claims can be made: Based on the imperative to avoiding as much harm and to being as considerate as possible, we are bound to carefully weigh every option and consult our ethical compass anew in any given situation; but we are also free to draw our own respective ethical conclusions.

This is asking for a lot of mindfulness. Yet, the moral responsibility comes by virtue of a unique feature of humans’ mind: We, as humans, have a unique endowment which we have encountered by different names at several key points in the previous discussion: We are able to abstract from our own subjectivity. We cannot leave our reality, but we can adopt the mode of a transcendental epoché and can question the nature of our reality and whether our reality is the only one “out there.” Concluding that there are other subjects with respective realities, we can even think about questions such as “What is it like to be a bat” (Nagel 1974) or “How is a paramecium’s *Umwelt* constituted?” (cf. von Uexküll 1909). Still further, we can attune our minds to other beings’ subjectivities and, e.g. understand the limited or wider scope of other subject’s respective realities as compared to ours—and still enable relationality to other beings despite their vastly different subjective experiences.

Brian Swimme and Mary Evelyn Tucker, students of Thomas Berry and spearhead authors of the New Story¹, have a beautiful way of framing the uniquely human responsibility: We, as humans, are “the universe, reflecting on itself”, but we are also “the heart of the universe that embraces the whole of the Earth community” (Swimme and Tucker 2011, 2 and 115).

Fortunately, our previous analysis has rehabilitated intuition. In facing the everyday challenge of doing each fellow individual justice, intuition can help us determine the quickest way to reach the destination pointed to by the compass needle. Of course, intuition does not always yield the best ethical choice and we can, and should, let our intuitions be informed by rational contemplation and by science. But we should not let it be replaced by them. It is in this way that a well-grounded notion of relationality may heal both our relationship to our fellow world and towards ourselves: Being freed from measuring our intuitions and actions against a scale of presumed “objective truth”, we may rely on what is *true for us*. We may rely on our subjective experiences as real and on our intuition as valid and on both to neatly weave us into a world of relationality.

Endnotes

- ¹ The idea of a “New Story” as coined by Thomas Berry describes a holistic perspective on human existence according to which we, as humans, are an integral part of this universe not as sovereigns, but as caring contemplators of the other-than-human world. By virtue of our uniquely human cognitive and emotional capacities and of our spiritual vocation, the evolution of the universe is constituted as a wondrous “story” of unfolding coherence within our minds. We, as authors of the New Story, have our place within it as the characters capable of and responsible for tenderly shaping the universe’s future story line according to the vision of a “communion of subjects”.
- ² Moreover, there is a significant difference in the respective architectures of human and animal minds that arguably translates into qualitative differences in the respective beings' subjectivities: Most animals' mental capacities are organized in a domain-specific manner, whereas human minds exhibit cognitive fluidity (Fodor 1983, Mithen 1996, Shettleworth 2012, Spelke and Lee 2012). I have explained elsewhere (Jürgens 2016b) how the presumed modularity of animals' minds complicates the quest for a conceptual basis for human-animal relationality and how that complication may be resolved. In a nutshell: If humans and animals relate “module-wise”, or if in intersubjective encounters, humans integrate the modules of an animal’s mind for the animal, modularity of minds does not stand in the way of meaningful human-animal relations. The latter option, however, presupposes the solution that we are about to develop in the present discussion.
- ³ The assumptions made here are neutral as to possible solutions of the mind-body problem. Whatever mind and matter are, and whether one somehow emerges from, reduces to, or is built of the same genuine meta-essence as the other, they still appear as the same essence(s) for all those that have minds and bodies. And in whichever way Mind brings forth different respective realities for organisms with strikingly different subjectivities, and regardless of how matter forms ridiculously different kinds of bodies, the possibility for the merging of minds and the touching of bodies thus is inscribed within mind-bearers and body-owners by virtue of their deriving from their respective element.

Acknowledgments

I am indebted to Ms. M.A. Judith Wiesehöfer, Dr. Christopher Faßbender, Mr. M.A. Martin Münnich and an anonymous reviewer for their astute comments on earlier versions of the manuscript.

Uta Maria Jürgens received her diploma in psychology from Christian-Albrechts-University, Kiel, Germany. She has i.a. done perception research at Max Planck Institute for Brain Research, Frankfurt, Germany; and pursued studies in environmental science and the Environmental Humanities at the Yale School of Forestry and Environmental Studies, Newhaven, CT. Uta currently works on her PhD project entitled “Human-animal relations in cultural and mental landscapes” at Eidgenössische Technische Hochschule (ETH) Zürich and Eidgenössische Forschungsanstalt für Wald, Schnee und Landschaft (WSL), Birmensdorf, Switzerland. Her work is funded by the research prize of Deutsche Wildtier Stiftung. Visit Uta on www.uta.info.

References

- Åkesson, Susanne. 2003. "Avian Long-distance Navigation: Experiments with Migratory Birds." In *Avian Migration*, edited by Peter Berthold, Eberhard Gwinner and Edith Sonnenschein, 471–92. Berlin, Heidelberg: Springer.
- Bai, Heesoon. 2009. "Re-animating the Universe: Environmental Education and Philosophical Animism." In *Fields of Green: Restoring Culture, Environment, Education*, edited by Marcia McKenzie, Heesoon Bai, Paul Hart and Bob Jickling, 135–51. Cresskill, NJ: Hampton Press.
- Barron, Andrew B., and Colin Klein. 2016. "What Insects Can Tell Us About the Origins of Consciousness." *Proceedings of the National Academy of Sciences* 113(18): 4900–08.
- Bartal, Inbal Ben-Ami, Jean Decety, and Peggy Mason. 2011. "Empathy and Pro-social Behavior in Rats." *Science* 334(6061): 1427–30.
- Basso, Keith. 1988. "'Stalking with Stories': Names, Places, and Moral Narratives among the Western Apache." In *Text, Play and Story: The Construction and Reconstruction of Self and Society*, edited by Edward M. Bruner. Long Grove, IL: Waveland Press.
- Beever, Jonathan, and Morten Tønnessen. 2017. "Justifying Moral Standing by Biosemiotic Particularism." *Zeitschrift für Semiotik* 37(3–4): 31–53.
- Bekoff, Marc. 2007. *The Emotional Lives of Animals: A Leading Scientist Explores Animal Joy, Sorrow, and Empathy—and Why They Matter*. Novato, CA: New World Library.
- Bekoff, Marc. 2013. *Ignoring Nature No More: The Case for Compassionate Conservation*. Chicago, IL: University of Chicago Press.
- Bekoff, Marc. 2014. *Rewilding Our Hearts: Building Pathways of Compassion and Coexistence*. Novato, CA: New World Library.
- Bekoff, Marc, and Jessica Pierce. 2009. *Wild Justice: The Moral Lives of Animals*. Chicago, IL: University of Chicago Press.
- Berry, Thomas. 1988 "The New Story." In *Dream of the Earth*. San Francisco, CA: Sierra Club Books.
- Berry, Thomas. 1999. *The Great Work: Our Way into the Future*. New York: Bell Tower.
- Black Elk, Charlotte. 1998. "A Song from Sacred Mountain: Lakota-Dakota and Cheyenne Interviews." In *Readings in American Indian Laws: Recalling the Rhythm of Survival*, edited by Jo Carillo, 105–07. Philadelphia, PA: Temple University Press.
- Boyle, Deborah A. 1999. "Descartes's Tests for (Animal) Mind." *Philosophical Topics* 27(1): 87–146.
- Brown, Culum. 2015. "Fish Intelligence, Sentience and Ethics." *Animal Cognition* 18(1): 1–17.
- Buber, Martin. 1983. *Ich und Du*. 11 ed. Heidelberg: Lambert Schneider.
- Bugnyar, Thomas. 2007. "An Integrative Approach to the Study of 'Theory-of-Mind'-like Abilities in Ravens." *Japanese Journal of Animal Psychology* 57(1): 1527.
- Carruthers, Peter. 1998. "Animal Subjectivity." *Psyche* 4 (3): 1-7.
- Cajete, Gregory. 1994. "Singing Waters: The Environmental Foundation of Indigenous Education." In *Look to the Mountain: An Ecology of Indigenous Education*, 74V114. Asheville, NC: Kiwaki Press.
- Callicott, J. Baird. 2004. "Environmental Ethics: I. Overview." In *Encyclopedia of Bioethics*, edited by Stephen Post, 757–69. New York: Macmillan.
- Chan, Kai. 2011. "Ethical Extensionism Under Uncertainty of Sentience: Duties to Non-human Organisms Without Drawing a Line." *Environmental Values* 20(3):323–46.
- Clayton, Nicola S., and Anthony Dickinson. 1998. "Episodic-like Memory During Cache Recovery by Scrub Jays." *Nature* 395(6699): 272–74.
- Connor, Richard, and Janet Mann. 2006. "Social Cognition in the Wild: Machiavellian Dolphins?" In *Rational Animals?*, edited by Susan Hurley and Matthew Nudds, 329–67. New York: Oxford University Press.

- Cordova, Viola F. 2007. "Bounded Space." In *How It Is: The Native American Philosophy of V.F. Cordova*, edited by Kathleen Dean Moore, Kurt Peters, Ted Jojala and Amber Lacy. Tucson, AZ: University of Arizona Press.
- Cullinan, Cormac. 2011. *Wild Law: A Manifesto for Earth Justice*, second edition. White River Junction, Vermont: Chelsea Green Publishing.
- Dennett, Daniel C. 2008. *Kinds of Minds—Towards an Understanding of Consciousness*. New York: Basic Books.
- Derby, Charles D, and Jelle Atema. 1982. "Chemosensitivity of Walking Legs of the Lobster *Homarus americanus*: Neurophysiological Response Spectrum and Thresholds." *Journal of Experimental Biology* 98(1): 303–15.
- Despret, Vinciane. 2015. "The Enigma of the Raven." *Angelaki—Journal of the Theoretical Humanities* 20(2): 57–72.
- Dor, Daniel. 2015. *The Instruction of Imagination: Language as a Social Communication Technology*. New York: Oxford University Press, USA.
- Dupré, John. 2003. *Darwin's Legacy: What Evolution Means Today*. Oxford, UK: Oxford University Press.
- Emery, Nathan J. 2004. "Are Corvids 'Feathered Apes'? Cognitive Evolution in Crows, Jays, Rooks and Jackdaws." In *Comparative Analysis of Minds*, edited by Shigeru Watanabe, 181e213. Tokyo: Keio University Press.
- Feddersen-Petersen, Dorit. 1989. *Hundepsychologie*. Stuttgart: Kosmos.
- Fisher, Andy. 2013. *Radical Ecopsychology: Psychology in the Service of Life*, second edition. Albany, NY: State University of New York Press.
- Fiske, Susan T., Amy J.C. Cuddy, and Peter Glick. 2007. "Universal Dimensions of Social Cognition: Warmth and Competence." *Trends in Cognitive Sciences* 11(2): 77–83.
- Fodor, Jerry A. 2001. *The Mind Doesn't Work that Way: The Scope and Limits of Computational Psychology*. Cambridge, MA: MIT press.
- Goodall, Jane. 2010. *Through a Window: My Thirty Years with the Chimpanzees of Gombe*. New York: Houghton Mifflin.
- Gray, Heather M., Kurt Gray, and Daniel M. Wegner. 2007. "Dimensions of mind perception." *Science* 315(5812): 619–19.
- Hampe, Michael. 1990. *Die Wahrnehmungen der Organismen: über die Voraussetzungen einer naturalistischen Theorie der Erfahrung in der Metaphysik Whiteheads*. Vol. 1. Göttingen, Germany: Vandenhoeck and Ruprecht.
- Hall, Matthew. 2011. *Plants as Persons: A Philosophical Botany*. Albany, NY: State University of New York Press.
- Harland, Duane P., and Robert R. Jackson. 2004. "Portia Perceptions: The Umwelt of an Araneophagic Jumping Spider." In *Complex Worlds from Simpler Nervous Systems*, edited by Frederick R. Prete, 5–40. Cambridge, MA: MIT Press.
- Harnad, Stevan. 2016. "Animal Sentience: The Other Minds Problem." *Animal Sentience* (1).
- Harris, Sam. 2005. *The End of Faith—Religion, Terror, and the Future of Reason*. New York: W.W. Norton and Company.
- Hiebert, T. 2012. "The Human vocation: Origins and Transformations in Christian Traditions." In *Christianity and Ecology*, edited by Dieter T. Hessel and Rosemary Radford Ruther, 135–155. Cambridge, MA: Harvard University Press.
- Husserl, Edmund. 2012. *Die Krisis der europäischen Wissenschaften und die transzendente Phänomenologie*. Hamburg, Germany: Felix Meiner Verlag.
- Jürgens, Uta Maria. 2014. "Compassionate Coexistence: Personizing the Land in Aldo Leopold's Land-Ethic." *Journal of Evolution and Technology* 24(3).
- Jürgens, Uta M. 2016a. "Universal modes of awareness? A 'pre-reflective' premise." *Animal Sentience: An Interdisciplinary Journal on Animal Feeling* 1(10): 6.

- Jürgens, Uta Maria. 2016b. "An Animal–Many Persons? Animal Personhood in Face of the Modularity of Mind." *International Journal of Social Science Studies* 4(9): 19–26.
- Kellert, Stephen R. 2003. *Kinship to Mastery: Biophilia in Human Evolution and Development*. Washington, DC: Island Press.
- Kuhn, Thomas S. 2012. *The Structure of Scientific Revolutions*, 4th edition. Chicago, IL: University of Chicago press.
- Lestel, Dominique. 2011. "What Capabilities for the Animal?" *Biosemiotics* 4(1): 83–102.
- Mausfeld, Rainer. 2002. "The Physicalist Trap in Perception Theory." In *Perception and the Physical World*, edited by D. Heyer and R. Mausfeld. Chichester: Wiley.
- Mausfeld, Rainer. 2005. "Vom Sinn in den Sinnen. Wie kann ein biologisches System Bedeutung generieren?" In *Sind eben alles Menschen - Verhalten zwischen Zwang, Freiheit und Verantwortung*, edited by Elsner Norbert and Lürer Gerd, 47–79. Göttingen, Germany: Wallstein.
- Mausfeld, Rainer. 2010. "The Perception of Material Qualities and the Internal Semantics of the Perceptual System." In *Perception Beyond Inference: The Information Content of Visual Processes*, edited by Liliane Albertazzi, Gert van Tonder and Dhanraj Vishwanath, 159–200. Cambridge, MA: MIT Press.
- Mausfeld, Rainer. 2013. "The Attribute of Realness and the Internal Organization of Perceptual Reality." In *Handbook of Experimental Phenomenology: Visual Perception of Shape, Space and Appearance*, edited by Liliana Albertazzi. Chichester, UK: Wiley.
- Mausfeld, Rainer. 2015. "Notions Such as 'Truth' or 'Correspondence to the Objective World' Play no Role in Explanatory Accounts of Perception." *Psychonomic Bulletin and Review*, 1–6. doi: 10.3758/s13423-014-0763-6
- Mithen, Steven J. 1996. *The Prehistory of the Mind a Search for the Origins of Art, Religion and Science*. London, UK: Phoenix.
- Mizrahi, Moti. 2013. "The Argument from Underconsideration and Relative Realism." *International Studies in the Philosophy of Science* 27(4): 393–407.
- Naess, Arne. 1973. "The shallow and the deep, long-range ecology movement. A summary." *Inquiry* 16 (1-4):95-100.
- Nagel, Thomas. 1974. "What Is It Like to Be a Bat?" *The Philosophical Review* 83(4): 435–50. doi: 10.2307/2183914.
- Nagel, Thomas. 2012. *Mind and Cosmos: Why the Materialist Neo-Darwinian Conception of Nature is Almost Certainly False*. New York: Oxford University Press.
- Ogden, Lesley Evans. 2012. "Do Animals Have Personality?" *BioScience* 62(6): 533–37.
- Paech, Nico. 2012. *Liberation from Excess: The Road to a Post-growth Economy*. Munich, Germany: Oekom.
- Panikkar, Raimon. 1996. "A nonary of priorities." *Catalònia* (42): 4–11.
- Papoušek, Mechthild. 2007. "Communication in Early Infancy: An Arena of Intersubjective Learning." *Infant Behavior and Development* 30(2): 258–66.
- Penn, Derek C., and Daniel J. Povinelli. 2007. "On the Lack of Evidence that Non-human Animals Possess Anything Remotely Resembling a 'Theory of Mind'." *Philosophical Transactions of the Royal Society of London B: Biological Sciences* 362(1480): 731–44.
- Plumwood, Val. 2002. *Environmental Culture: The Ecological Crisis of Reason*. New York: Routledge.
- Premack, David, and Guy Woodruff. 1978. "Does the Chimpanzee Have a Theory of Mind?" *Behavioral and Brain Sciences* 1(04): 515–26.
- Prentner, Robert. 2016. "Erweiteter Geist—Erweitertes Bewusstsein?" In *Ist der Geist im Kopf? Die These des erweiterten Geistes in Philosophie und Wissenschaft*, edited by Jan G. Michel, Kim J. Boström, and Michael Pohl, 109–31. Münster, Germany: Mentis.

- Raby, Caroline R., Dean M. Alexis, Anthony Dickinson, and Nicola S. Clayton. 2007. "Planning for the Future by Western Scrub-jays." *Nature* 445(7130): 919–21.
- Range, Friederike, Lisa Horn, Zsófia Viranyi, and Ludwig Huber. 2009. "The Absence of Reward Induces Inequity Aversion in Dogs." *Proceedings of the National Academy of Sciences* 106(1): 340–45.
- Reber, Arthur S. 2016. "Caterpillars, Consciousness and the Origins of Mind." *Animal Sentience* 10(6).
- Reichholf, Josef H. 2013. *Rabenschwarze Intelligenz - Was wir von Krähen lernen können*. München: Piper.
- Robinson, Ken. 2011. *Out of Our Minds: Learning to be Creative*, 2nd edition. Hoboken, NJ: John Wiley and Sons.
- Rose, Deborah Bird. 2013. "Val Plumwood's Philosophical Animism: Attentive Interactions in the Sentient World." *Environmental Humanities* 3: 93–109.
- Roszak, Theodore. 2001. *The Voice of the Earth: An Exploration of Ecopsychology*. Grand Rapids, MI: Phanes Press.
- Rowlands, Mark. 2016. "Are Animals Persons?" *Animal Sentience: An Interdisciplinary Journal on Animal Feeling* 1(10): 1–18.
- Shettleworth, Sara J. 2001. "Animal Cognition and Animal Behaviour." *Animal Behaviour* 61 (2): 277–86.
- Spelke, Elizabeth S., and Sang Ah Lee. 2012. "Core Systems of Geometry in Animal Minds." *Philosophical Transactions of the Royal Society of London B: Biological Sciences* 367(1603): 2784–93.
- Speth, James Gustave. 2012. *America the Possible—Manifesto for a New Economy*. New Haven, CT: Yale University Press.
- Stahler, Daniel, Bernd Heinrich, and Douglas Smith. 2002. "Common Ravens, *Corvus corax*, Preferentially Associate with Grey Wolves, *Canis lupus*, as a Foraging Strategy in Winter." *Animal Behaviour* 64(2): 283–90.
- Stucki, Saskia. 2013. "The Animal Person as Tertium Datur." Personhood Beyond the Human (conference), Yale University, New Haven CT, December 7, 2013.
- Suddendorf, Thomas, and Andrew Whiten. 2001. "Mental Evolution and Development: Evidence for Secondary Representation in Children, Great Apes, and Other Animals." *Psychological Bulletin* 127(5): 629.
- Swimme, Brian Thomas and Mary Berry. 1992. *The Universe Story: From the Primordial Flaring Forth to the Ecozoic Era—A Celebration of the Unfolding of the Cosmos*. San Francisco, CA: Harper.
- Swimme, Brian Thomas, and Mary Evelyn Tucker. 2011. *Journey of the Universe*. Translated by Brian Thomas Swimme. New Haven: Yale University Press.
- Tholey, Paul. 1980. "Erkenntnistheoretische und systemtheoretische Grundlagen der Sensusmotorik aus gestalttheoretischer Sicht." *Sportwissenschaft* 10(1): 7–35.
- Tønnessen, Morten. 2003. "Umwelt ethics." *Σημειωτική-Sign Systems Studies* (1):281–99.
- Udell, Monique A.R., Nicole R. Dorey, and Clive D.L. Wynne. 2008. "Wolves Outperform Dogs in Following Human Social Cues." *Animal Behaviour* 76(6): 1767–73.
- von Uexküll, Jakob. 1909. *Umwelt und Innenwelt der Tiere*. Berlin, Germany: Verlag Julius Springer (reprint, Ulan Press).
- Von Uexküll, Jakob. 1982. "The Theory of Meaning." *Semiotica* 42(1): 25–79.
- Wallach, Michael A., Nathan Kogan, and Daryl J. Bem. 1964. "Diffusion of Responsibility and Level of Risk Taking in Groups." *The Journal of Abnormal and Social Psychology* 68(3): 263.
- Walsh, Froma. 2009. "Human-Animal Bonds I: The Relational Significance of Companion animals." *Family Process* 48(4): 462–80.

- Waytz, Adam, Kurt Gray, Nicholas Epley, and Daniel M. Wegner. 2010. "Causes and Consequences of Mind Perception." *Trends in Cognitive Sciences* 14(8): 383–88.
- Wiedemann, R. 1998. "Die Fremdheit der Tiere—Zum Wandel der Ambivalenz von Mensch-Tier-Beziehungen " In *Tiere und Menschen: Geschichte und Aktualität eines Prekären Verhältnisses* edited by Paul Münch and Rainer Walz, 351–81, Paderborn, Germany: Friedrich Schöning.
- Wilson, Edward O. 1984. *Biophilia*. New York: Harvard University Press.
- Wohlleben, Peter. 2015. *Das geheime Leben der Bäume*. München, Germany: Ludwig.
- Zimen, Erik. 1980. *Der Wolf: Mythos und Verhalten*. Frankfurt am Main, Germany: Fischer.