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Résumé de l'article

Des espèces qui partagent convivialement un habitat peuvent apprendre à interpréter les signaux des autres et tirer profit de cet apprentissage, même si ces communications ne leur sont pas adressées. La signalisation interspécifique intentionnelle est également répandue. Des formes de sémiose symbiotique, intentionnelles ou pas, sont le résultat d’interactions répétées entre des espèces vivant en état de cohabitation. La syntonie des dispositions d’espèces voisines partageant un habitat, a comme effet de recouper les sémiosphères des organismes ce qui leur permet d’appréhender les points de rencontre entre les *Umwelten*. Il se peut que la sémiose interspécifique soit moins généralisable que la signalisation conspécifique. Or ces interactions peuvent tout de même être interprétées comme l’éthique d’un *modus vivendi*.

Interspecies Signaling and Habituated Conviviality [1]

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Introduction

The question of the ethical capabilities of nonhuman beings is experiencing a renaissance in western discourse. Except for standouts including Montaigne and Hume, a century ago few academics seriously inquired into extending ethical comportment beyond the human realm. And yet, in the last several decades, the proliferation of research tools and methodologies in ethology and the natural sciences on the one hand (Diamond 1993), and the nonhuman turn in the humanities on the other (Grusin 2015), has launched a research program fundamentally reconceptualizing the field of animal ethics and beyond. Ample documentation of nonhuman ethics has been demonstrated within species by primatologists, ethologists, and botanists in the last decades (Baluška 2013; Bartal *et al.* 2011; Bekoff 2007; Burghardt 1997; Horowitz 2014; Waal *et al.* 2006; Waal 2017, 2010, 2007; Witzany & Baluška 2012). That these scientists derive their conclusions of ethical capacities based on the methods and patterns of species and interspecies signaling suggests that biosemiotics has much to add to this debate.

While humanities studies have tended towards more pleonastic approaches to nonhuman bioethics, scientists often resist anthropomorphic language ascribing ethics to the symbiotic interactions animals, plants, fungi, and bacteria can engage in. Understanding ethical behavior as degrees of species-specific potentials and enactments is key to comprehending the disjunction between scientific descriptions of ethical behavior versus circumspection against anthropomorphic interpretations of ethical behavior in nonhuman agents.

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The field of ethics has expanded dramatically in the past decades, as indigenous, feminist, and multicultural ethical perspectives have challenged universalistic general ethical models (Deloria *et al.* 1999; Mills 1997; Young 2011). Rather than a cryptonormative universalized monological entity (Habermas 1996 : 289–290), ethics has ramified into a normative, plural, essentially contested concept (Connolly 1993). Slowly, culture and place-specific contextualized ethics supplement grand narrative ethical system (Hendlin 2016). Value pluralism, contextualist discourse, critical theory, indigenous epistemologies, and scientific discovery have revolutionized how the western mind interprets the interactions of others, human and beyond. Diversity finally also applies to ethical concepts, allowing can agreement on “bads”, without definitively stipulating beneficial interactions for all beings in all situations. Extending this pluralism across the species line, ethical behavior can be constructively understood as species-specific. We can thus ask : under what circumstances do nonhuman beings act ethically? What contexts encourage or hamper more ethical behavior within and across species?

This article investigates how non-anthropocentric and non-anthropomorphic ethical designations can be read from mutualistic and commensalistic behavior in nonhumans across species. While most studies of interspecies ethics focus on human-animal relations, including the profoundly unethical relationships that humans have perpetrated against the more-than-human world, here I restrict attention to interspecies ethical relationships among different nonhuman species, including beyond the animal kingdom. While some potentially ethical nonhuman interactions are unique or anomalous observations, the majority have evolved through iterated interfaces across generations, allowing certain ranges of semiotic freedom within the constraining factures of genetics and learned habit. Hoffmeyer (1997 : 363) calls such interactions “semetic”, where over repeated iteration, species habituate to one another, adapt to one another, and learn to live with each other, even if that means they are in a predator-prey foodchain relationship. Rather than relegating nonhumans to the passive corner of moral *patienthood* as many theorists have (e.g. Regan 1993), the trajectory of inquiry here emphasizes ethical outcomes manifesting from iterative relating, understanding organisms as possible moral *agents* in their own distinctive right.

Even as many biosemioticians have begun to explicate the ethical implications of biosemiosis, enjoining fellow humans to treat nonhumans ethically as a result of organisms’ proven abilities to communicate intelligently and intentionally in ways that previously not appreciated by our species (Emmeche *et al.* 2002; Kull *et al.* 2009; Martinelli 2010), the notion that nonhumans interact ethically through their use of signs has less often been a theme in the field. True, scholars of Bari University have proposed the field of “semioethics”, Eero Tarasti (2000) has proposed “existential semiotics”, and the term bioethics has occasionally but inconsistently been used to cover this territory (Martinelli 2010 : 61). The inkling that nonhumans might communicate in ways that are respectful to each other is already present, but so far, interpreting nonhuman signaling in potentially ethical ways has remained at the margins, and confined to same-species interactions.

After assessing the various types of relationships species have, I assert that the most apt nonanthropocentric ethical context to examine interspecies relationships is not a narrow definition of virtue ethics, utilitarian ethics, or deontic duties, but rather a *modus vivendi* framework. *Modus vivendi* tacit arrangements allow conflicting groups, or species, in this case, to coexist without need to resolve potential discord (McCabe 2010). The habits of organisms in an ecosystem amongst interspecific inhabitants become their *habitus* – "a embodied history, internalized as second nature and so forgotten as history […] the active presence of the whole past of which it is the product" (Bourdieu 1990 : 56). *Modus vivendi* ethics arises out of these generations of conviviality. These interactions overflow human ethical categories, and instead each interface of activity between organisms proposes ways of living together, codified not by laws or duties, but accreted through the mores of iteration.

Ethical Frameworks

The ecological notion of "companion species" – groupings of species that live and depend on each other – reconstitutes the organism as composing and composed by other organisms in "co-constitutive relationships in which none of the partners pre-exist the relating" (Haraway 2003 : 12). Bapteste and Dupré (2013 : 379) suggest amongst microbes that a "network-based ontology" is a more accurate representation of microbial ecologies than a species-exclusive one. For microbes and other domains of life, individual identity supervenes upon social grouping as much as collectives supervene upon individuals, both within and across species. How such supervenence plays out in terms of symbiotic versus parasitic outcomes bears centrally on questions of biosemiotic ethics.

Interactions with interspecies others can take a variety of forms. Organisms coexisting in a given ecology can share space with little awareness that they are doing so. They can even render salubrious or detrimental externalities from their actions on others without intending to do so; such effects, positive or negative, are unintended byproducts of their actions. On one reading, such unintentional actions can be thought of as amoral, beyond ethical scrutiny due to their lack of conscious premeditation. On another, it is quite ordinary to gloss results of actions as ethical or not due to their outcomes, as we see when we take a polluting factory to court for fouling the river downstream. Surely, the intention of the factory was not to purposefully harm those downstream, the owners and operators might not have even realized that their facilities were harming anyone else, let alone specific people. Nonetheless, if harm (or good) occurs to others as a result of our actions, we have no problem assigning responsibility, holding those accountable, and lobbing praise or blame. Thus, the notion that intention or purposefulness necessarily be a part of ethics does not hold for all definitions. An ethics of outcomes can fruitfully be applied to nonhuman interactions.

The question of nonhuman ethics often turns on nonhuman sociality – whether or not nonhumans have a capacity for empathy and the other virtues which the western philosophical tradition has regarded as the bulwark of the humanistic tradition. While some scientists believe humans alone are sociable creatures capable of true cooperative interaction (Tomasello 2009), at the other extreme scholars speak of "microbial ethics" (Hird 2009 : 1). What sociability looks like, how it is behaviorally visible to human observers, and how it is performed by organisms no doubt may appear strange. Nonetheless, if we can overcome the notion that sociability and ethical behavior must copy our human models (and, more specifically, our western conceptions), then suddenly nonhuman interactions are revealed as replete with sociable and ethical relationships. Biologists call it symbiosis.

Nonhumans are social in relation to the learned pathways of behavior they receive genetically, culturally, and through learned transmission. To make ethics solely the purview of the effects of "nurture" at the cost of jettisoning "nature", or genetic disposition and epigenetic coding, is to pretend as if humans have unlimited free will, which is certainly not the case. There are many things that make us, fortunately or not, determined, and limit the good or bad any particular environmental factor (such as education) might bring. While certain organisms, such as plants, receive less if any acculturation from the parent plant they came from, in terms of genetic and epigenetic attunement to the likely range of climatic, predatory, and resource challenges they may face they are able to act accordingly to their surroundings, interpreting signals with semiotic success (Trewavas 2014). Over generations, certain interspecies relationships become codified, and if they bring survival advantages, may propagate over strategies lacking such alliances.

Thus, organisms can be social, in naturecultural milieus, without any specific cultural transmission of sociality *per se*. Many organisms such as plants, are engaged much more in improvisational *modii vivendi* with organisms in their *Umwelt* than others that have clearer norms of behavior taught by their kin. Remembering the semiotic limits of organisms, that they can only interpret others as others within their own sensorial frameworks of interpretation, means that the filter of experience already places limits on the richness of targeted helping one organism can provide to another, humans included. Plants and other organisms both rely much more heavily on genetic and epigenetic learning than their animal counterparts, and also must have a wide repertoire of responses to novel situations that they might not have any direct previous experience or knowledge of. While animal parents can help guide cubs, colts, goslings or puppies as they grow, imbuing them with norms of behavior through reward and punishment, plant norms largely lack this component of parental and social guidance. While plants as seeds certainly pick up on surrounding conditions and grow accordingly – to dry or moist conditions, sun or shade, pests or pestfree environments – the question of whether nature or nurture enables ethical behavior becomes moot when the outcome is demonstrably ethical between members of different species.

Symbiosis can be either voluntary or obligate, intentional or genetic. These distinctions however, obfuscate ethics as a noun rather than understanding it as Aldo Leopold (1966) did, as a verb. Ethics is a process, a phenomena, which leads to ethical instances, situations, and outcomes. The "ecological theater" in which evolution occurs means that organisms evolve in response to the other biotic and abiotic elements in their environment (Hutchinson 1965), and that evolution does not occur in a vacuum. Extending Spinoza's concept, Matthews writes that an organism's conativity (self-preservation) tends to the path of least resistance to achieve this aim. Organisms generally follow "a path by which one seeks to fulfill one's own conativity while, as far as possible, accommodating the conativity of others" (Mathews 2011 : 369).

Getting past an anthropocentric ethics requires not holding other creatures to the strictures of human ethical systems.

Degrees of Freedom and Biosemiotic Ethics

The ethical weight of choice or volition in biological interactions plays a similar role for nonhumans as it does for humans. It makes little sense to speak of ethical behavior is a situation where there is no opportunity for things to be otherwise than what they are. In a determinate universe, no action can be considered ethical, or unethical, for that matter, but instead, actions are interpreted as amoral. Human systems of punishment likewise are based on culpability, where the prosecuted receives more severe sentencing for committing a willful harm than an accidental one.

While human behavior is commonly regarded as driven by conscious volition, much more is often composed of cued responses and habits which are not actively curated by the conscious subject (Appiah 2010) (Bargh & Chartrand 1999). The philosophical framework of situationism acknowledges that our lived environment often strongly influences human action, rather than action resulting from the raw will of sovereign autonomous individuals. In this way, situationism understands our environment to make up part of our ethical milieu, constraining and channeling our intentions as we unconsciously respond and react to stimuli around us (Brink 2013). Jakob von Uexküll's (1928) contextualizing the behavior of animals in a relational field of *Merkzeichen* and *Wirkzeichen* is paralleled in how empirical philosophy of psychology makes ethics into a fluid and contextual affair. Situationism decenters responsibility to include not only the organism in question, but the biotic and abiotic signs – the larger *Umwelt* – composing an organism's impulses to act.

The vulnerability of the self to environmental supervension obtains even more strongly for nonhumans more prone to the unavoidable objects and processes of their natural environments without the extensive conceptual and physical bubbles (*Blasen*) and buffers humans erect (see Szasz 2007; Uexküll 1928; Sloterdijk 1998). The line between considered response and compulsive reaction is difficult to draw for nonhumans (Keijzer 2012), and often, speciesists gloss all nonhuman behavior as more mechanistically determined than the result of free choice (Dennett 2002). This Cartesian lineage of denying nonhumans any sort of agency or intention contributes to philosophers' historic reticence to consider nonhuman ethics (Hediger 1984; Wild 2008, 2012). Like many aporias, the truth of willed versus automatic responses rests on a continuum.

Stjernfelt (2014 : 144), following Cussins (1990), proposes that in terms of experimentation, "in biological organisms the notion of *success* may be substituted for that of truth". Success that encompasses more than one actor could be seen as a sort of ethical behavior that when iterated becomes a reinforcing feed-forward mechanism. Kull (1999, 2011) has also investigated that while certainly predator-prey relations exist, that for non-linguistic beings the concept of violence is absent. Therefore, especially for interspecies biosemiotics, we must accordingly modulate ethics to take account of the capacities, choices, and outcomes nonhumans display.

Gradients of Ethics

The following subsections discuss instances of interspecies ethics, moving from the most convincing to the most speculative cases. Interspecies communication seems to be more plausibly ethical in relation to the voluntariness of the actions described, so this descending list of circumstances also corresponds with the most voluntary forms of interspecies interaction and ends with the least.

Targeted Helping

Perhaps one of the clearest cases of interspecies ethical comportment is what Franz de Waal (2010 : 91) calls *targeted helping* : "assistance geared toward another's specific situation or need", whether of the same or a different species. Such actions encompass the "good Samaritan" type of interspecies ethics, where one creature deliberately goes out of its way to help a member of another species, without anything directly expected or received in return. Targeted helping is the nonhuman form of altruism (Waal 2017).

A textbook example of targeted helping is evident in one of de Waal's bonobo research subjects Kuni, who :

> found a stunned bird that had hit the glass wall of her zoo enclosure. Kuni took the bird up to the highest point of a tree to set it free. She spread its wings as if it were a little airplane, and sent it out into the air, thus showing a helping action geared to the needs of the bird. Obviously, such helping would not have worked for another bonobo, but for a bird it seemed perfectly appropriate. (Waal 2010 : 91)

Such ethics can be seen not as normative (*i.e.*, one *ought* to take such an action in these situations), but instead as an empathic response to distress. While certainly norms of behavior do exist in nonhumans, especially pack animals, much of the ethical behavior found in the more-than-human world can instead be identified as a type of responsibility, responding to a situation that calls for helping action beyond what is selfish from a calculative perspective.

Stuart Kauffman (2008 : 261) depicts the various ways in which nonhuman beings can act ethically, including their "sympathy related traits such as cognitive empathy, norm-relating characteristics such as prescriptive social rules, reciprocity such as trading, and getting along such as community concern about good relationships". A trap in traditional natural selection thinking has been to view evolution as based on pure individual selection, rather than group, or even biome health and capacity. Kin selection, the notion that extending genetic preservation to nonrelatives of one's group would confer a selective advantage to the species group as a whole. Kin selection is not altruism, but "may be a stepping stone to altruism" (Kauffman 2008 : 261). Group selection is a new way of looking at such apparently altruistic tendencies. It may be that such other-oriented preservation lays the groundwork for interspecies ethics.

Direct Collaboration

Perhaps some of the most intelligent and researched mammals, dolphins have unique capacities to enter into ethical relationships with humans. They have been documented for decades in Brazil engaging in mutualistic relationships with human fisherman helping coordinate catching fish through signaling the fishermen with flaps of their tails when schools of fish are approaching (Zappes *et al.* 2011). These dolphins of Laguna, Brazil engage in human-dolphin practices that increase the fishing success for both species. Not all of the dolphins in the area engage in this practice, pointing to the voluntary nature of this cooperation (Daura-Jorge *et al.* 2012). Dolphin have also been reported to save drowning humans (Griffin 1992), give (fish) "gifts" to humans who had fed them (Holmes & Neil 2012), and share sips of hallucinogenic puffer fish amongst each other without harming the puffer fish (Downer 2014).

So-called "cleaning symbiosis" is also common in aquatic life. Larger animals, such as manta rays, sharks, and whales, gather periodically at "cleaning stations" where schools of smaller fish feed on the parasites off their bodies, both externally and internally (Hammerstein 2003; O'Shea *et al.* 2010). The smaller organisms get a meal, the larger organisms get freed from potentially debilitating microorganisms. While in other circumstances the larger animal might eat the other fish, at cleaning stations, both parties bracket their usual prey-predator relationships to establish a space dedicated to cleaning symbiosis. The deliberativeness of this interaction is what makes it a strong case, if not for anthropocentric ethics, then certainly for interspecies mutualism.

Quid pro quo

Over 93 species of plants have evolved extrafloral nectaries that act as food sources for insects that defend that plant when pests attack the plant. These plant-animal collaborations, can be read from an anthropocentric perspective as quid-pro-quo exchanges : the plants provide special feeding appendage at their own energy costs to provide sustenance for their protector population via extrafloral nectaries, and the insects, often ants, provide "ant-guard systems" against would-be insect predators to that plant (Walters 2011 : 47-49). Lima beans, when facing herbivory solicit helper ants who swarm the plant, and attack the herbivore, and are rewarded by the plant with a sweet nectar (Witzany & Baluška 2012). Helper insects are actively called through the release of volatile organic compounds the plant releases into the air upon attack by insect predators. This evolutionary response of providing specialized nectar feeding sites to incentivize visitation by the natural predators of damaging pests is a significant energy investment to add to the plant's growth and reproduction expenditures; relying on allied insect species for defense is predicated on reliable symbiosis.

Other plants do not reward allied insects with nectar, but they do develop semiotic signaling directed at such rescue insect species by letting them know that insects they prey on are feeding nearby. Such signals promise a meal not directly from the plant, as in the case with ants, but for example, parasitic wasps will be rewarded by following plant-sent volatile organic compound signals by feeding directly on the attacking species (Witzany & Baluška 2012).

This clearly symbiotic relationship plants engage in with other species phyla and domains is an ethical one according to the possible options for collaboration or competition these organisms face. These relationships go beyond merely finding coinciding signals across *Umwelten*. Each species provides a service to the other for their mutual benefit. In the process, both insects and plants also gain an extension of their semiotic awareness to events happening elsewhere that they cannot directly detect. By interfacing semiotically through volatile organic compounds that carry shared meaning, they in effect extend their bodies through these messenger signals. Through this signal translation of events to insects, plants, despite being sessile, draw on and live in a spatially dynamic *Umwelt*.

Mutualism

Upon spotting a fox at a sufficient distance, a brown hare will bolt up making itself conspicuous instead of running, signaling to the fox that both should not waste energy in a chase the rabbit would win, which implies that the rabbit knows that the fox knows that the rabbit will outrun him (Holley 1993). This is rational for both rabbit and fox, as rabbits can outrun foxes. But brown hares do not adopt this behavior with dogs, which can outrun them. Hoffmeyer (1997) points out that not only is such signaling beneficial to the hare, but it is also beneficial to the fox, saving both energy that would otherwise be wasted. Such mutualism is of course self-interested, but it also represents a kind of mutual respect, and understanding of a shared semiotic sphere. Not only does such signaling impart valuable information to the benefit of both entities, but it also is based on a certain amount of trust. If the hare thought that the fox would defect from the deal – the hare signals that it sees the fox and is close to its burrow, therefore the fox hunts elsewhere – then revealing one's position would be counterproductive and potentially costly. While such behavior could also be glossed instead as a prudential calculation from a privileged position – the hare is so confident of its security that it does not expose itself to the fox, even if the fox breaks the deal – the difference between utilitarian calculation and goodwill can sometimes be hazy gradient, as it is with much human ethical action.

Presence

Sympatric species are at an advantage to pick up on each other's signaling. In some biotic communities, the mere presence of a certain community of species, other vulnerable species either ignored by or preying on the species in question are harbored at higher numbers than elsewhere. Black-tail prairie dog (*Cynomys ludovicianus*) towns, for example, were associated with higher concentrations of a whole list of species, including badgers, coyotes, foxes, rare salamanders and toads (Lomolino & Smith 2004). If a species plays the role of an "ecosystem engineer" in stabilizing ecological conditions and providing ecological niches for a variety of species, are these positive externalities of their existence actions that can be considered ethical? While such species such as prairie dogs may be acting out of self-interest, if the effect is that their actions of digging, foraging, calling and aerating soil create an environment more conducive to other species, including rare ones, the beneficial result can be thought of as a sort of (perhaps unintended) ethical outcome.

Like creating a just city that while planned by those in government creates public spaces and goods that support the commonweal, prairie dog "town ecosystems, created and maintained by one species, continue to be inhabited by distinct assemblages of terrestrial vertebrates, both volant and non-volant" (Lomolino & Smith 2004 : 97).

Apoptosis

Members of organized collectives often sacrifice their own well-being or even life for the sake of the group. In ecological evolutionary developmental biology, such behaviors are demonstrations of "kin selection" rather than neo-Darwinian (anthropocentric) notions of natural selection that unduly focus solely on the individual. Such total selfless sacrifice is the stuff Greek myths are made of. Apoptosis, also known as programmed cell death, is a type of sacrifice that is deeply communal. It occurs, for example, at the fairly unspeciated biotic level in slime mold communities; a response in individual cells (say, with a virus) that is not *compelled* by surrounding cells, but is crucially a cell's *sui generis* enactment when certain conditions risk infecting or killing the group (Zahavi 2008). Xylem cells in trees also commit apoptosis, becoming lignified during growth and then dying to create "essential [structural] support tissues as the plant increases in height" as well as providing tubes that transport water and translocate minerals throughout the plant (Trewavas 2014 : 7). In this case, the component vascular xylem cell dies for the greater good of the biotic whole (the tree). This is a different type of ethical activity than when the other cells are undifferentiated conspecifics, as in the case of the slime mold. Consider the following cases : the sacrifice of one organism for its colonial conspecifics in bacterial apoptosis, and the interspecific endosemiotic apoptosis of xylum cells in a tree to provide scaffolding for further macro organism growth and neighboring cell propagation. In both cases these processes indicate a yoking of cell behavior and signaling to the larger community of cells in which the sacrificial cell is acting in concert.

(In)conspicuous Artifacts

Animals and other organisms' eusocial strategies mean that signaling through pheromone traces lead to helpful information to other organisms. *Stigmergy*, the concept first developed by French entomologist Pierre-Paul Grassé to describe this trace-signaling process in ants and other insects to help their conspecifics learn from their discoveries and enable group organization and intelligent swarming, derives from the Greek *stigma* (spur, mark, or sign) and *ergon* (work or action). Parunak (2006 : 164) interprets the concept to describe the process of how "an agent's actions leave signs in the environment, signs that it and other agents sense and that determine their subsequent actions". Pheromones, traces, and other types of emissions or signals which linger in specific places and serve as markers, act as signs designed to be interpreted by conspecific or interspecific organisms and convey specific information. The classic example on the macro scale is dog marking of territory. Through such markings, other dogs can determine the sex of spraying dog, whether that dog is pregnant or in heat, etc. (Horowitz 2014). Scents and olfactory traces are the most common forms of stigmergy among plant and insect populations.

By developing environmentally-mediated signaling based on trust – following the traces left by conspecifics – insect groups were able to coordinate action in building nests or developing the most efficient routes without directly interacting with other members (Heylighen 2012). Stigmergy occurs also in fungi food exploration and at many other levels of life, such as among various species of bacterial colonies (Heylighen 2016).

Such signals are vital for coordinating action at the group level amongst bacteria, plants, and insects. Vis-à-vis individuals, they appear to be ethically neutral, not conferring any sort of direct good, except guiding others; but with regard to the commonwealth of the larger community population, such actions are indeed ethical, as they save the community valuable resources, and benefit the knowledge and hence action of the group.

Gradations of Harm

Even in predatory or parasitic relationships, there are gradations of harm that are significant in differentiating the severity of organisms' responses. Sometimes a host organism will attempt to communicate with the potential threat. For example, plant defenses against parasitic bacteria, as well as provisioning for beneficial bacteria require complex interspecies chemical signal production and recognition. Regarding parasitic bacteria, plants also respond differently to biotrophic microorganisms like powdery mildew and rust fungi that live off of viable plant matter and are dependent on the continued living tissue of the plant they feed on, versus necrotrophic bacteria which derive their nutrients through plant cells and ultimately cause plant death (Walters 2011). So, just as not all symbiosis is equally beneficial, neither is all parasitism equally harmful.

Summing Up

While it might be easier to agree that the first examples can be interpreted as ethical relationships than the latter examples, clearly ethical relationships between species are not dichotomous, but exist upon a continuum. Noble Prize winner Lynn Margulis (1970) even suggested that symbiosis is actually responsible for the proliferation of life as we know it from the eukaryotic domain in the creation of prokaryotes.

Collaboration and targeted helping are deliberate forms of helping the other, often at no personal benefit, while mutualism and presence does not require any particular empathy or even sociality. Other forms of self-interest such as quid pro quo can bring mutually beneficial results, but already such interspecies interactions appear more strictly opportunistic and calculative. Like with human ethics, it appears as if interspecies ethics, at least in this reading, corresponds with voluntary, deliberate action, and less so with what might be interpreted as purely selfish action that happens to have beneficial outcomes for interspecifics.

Entering into the "interspecies ethical community" requires first and foremost developing a "communicative ethic" that allows humans to enter into the semiotic field of nonhuman others (Plumwood 2002 : 188). The collaborative forms of interspecies communication will always be rife with mistranslations and incomplete semiotic understanding, but this should not prevent earnest pursuit of meaning-centered collaborative dialogical relationships. What makes interspecies biosemiotics even more exciting – and daunting – for humans is that our task is to understand via our sensorial filters not only the interference pattern of our *Umwelt* with the *Umwelt* of another species, but the second-order cross-species meaning-making that occurs between other species' filtered understandings of each other.

For an Ecological *Modus Vivendi*

The concept of *modus vivendi* – uncodified habits of living together that emerge over generations – recently has again become a relevant branch of political philosophy (Gray 2002). *Modus vivendi* differs from other ethical systems in that it eschews arrangements requiring "preconceived, philosophically favored standards of fairness or justice", instead pragmatically making due for present participants to live together according to the particularities of current circumstances (Horton 2010 : 438). This flexible, updateable, and contingent ethic is conducive for integrating ecologically enmeshed milieus. Such an ethic sustainably arises out of a history of conflict, where the conflicts are not unalterably resolved, but new equilibria are reached and reinvented afresh, allowing all parties enough power to live their lives well.

Modus vivendi arrangements often get a bad rap, glossed as hopelessly contingent and unstable compared to codified rules (Becker 2005). Yet, even in human systems, sociologists are convinced that human behavior is overwhelmingly guided by informal, dynamic norms and mores rather than adherence to statutes and laws (Bryne 2012; Hird 2009; Thompson 2010). The implicit and affective or non-institutional aspects of ethics should not be dismissed out of hand.[2]

An ethics of an interspecies *modus vivendi*, unlike a universal law, works via a living tradition of ecologically-embedded organisms and abiotic processes. Such an ethics questions the myth of the autonomous, autochthonous individual central to certain versions of liberal theory, and instead accepts that coexistence in a habitat rests on an intersubjective identity, one fashioned from the environment up, rather than in a vacuum (Naess 1979). By stabilizing towards arrangements of non-domination, *modus vivendi* ethics tends to favor ecological underdogs, peripheral organisms that would otherwise be killed off in milieus entrenching the dominance of one or a few species. The companionship of sharing an ecological setting is not systematic, to the benefit of those marginal organisms dwelling amongst the ecosystem engineers and keystone species. Species at the ecotones are not weeded out, but thrive, as power remains contingent and malleable. Rather than just "funny accidents", the symbiotic relating between species rests on the fact that "evolution favors the establishment of refined semiotic interaction patterns between species" (Hoffmeyer 1997 : 8).

At the same time, *modus vivendi* relationships do not happen all on their own. Histories of symbiosis are cultivated, not merely accidental. Arne Naess (1979), for example, has encouraged a human *modus vivendi* with bears. In his conception, this entails, quite literally, living and letting (the bears) live, even if they posed a nuisance to livestock farming, human fears, etc. Understanding that encroaching on the traditional territories of wild animals will affect their behavior frames human expansion to lands where other agents roam requires reserved rather than antagonistic and hair-trigger reactions to losses incurred from the doings of native species. In other words, such a *modus vivendi* requires active restraint from annihilating others or domination past tacit tipping points.

"The most fundamental fact of life in the biotic community is eating...*and being eaten*", Callicot writes. "Each species is adapted to a trophic niche; each is a link in a food chain, and a knot in a food web. Whatever moral entitlements a being may have as a member of the biotic community, not among them is the right to life. Rather, each being should be respected and left alone to pursue its *modus vivendi*" (1988 : 168). Taking our role as ethical arbitrators and actors given the responsibility of self-reflection in the biotic community means acknowledging that nonhuman interactions cannot be wholly reduced to *Realpolitik* or domination by the most violent species, but rather that living-together signals accepting a certain amount predation on ourselves as part of coevolution. Creatures ourselves, humans have been regularly eaten by crocodiles, wolves, lions, bears, sharks, and other carnivores. Despite having largely eliminated the threat from large predators, we continue to be parasitized by bacteria, viruses, and microscopic predators, and the most dangerous game, our own species. While interspecies ethics indicates modulating self-fitness to include kin- and even interspecies-fitness, there is no opting out of the biotic lifecycle, in which eating and being eaten is part and parcel of life.

Because nonhuman ethics is a new field, an established way of theorizing or researching experientially various forms of interspecies ethics at multiple semiotic levels in a comparative, systematic manner does not yet exist. *Modus vivendi* ethics proposes that the semiotic options each species has is specific, and in some cases more limited, than others. Such differences are of kind rather than merely degree. Yet, even single-celled organisms living in groups (such as bacteria living in the gut microbiome) engage in behavior resulting in ethical outcomes (Arumugam *et al.* 2011). As long as such altruism is to some degree self-willed, rather than deterministic, the organism can be construed as engaging in ethical behavior. As what ethical behavior looks like will be different in different configurations of species and individual organisms (a recently fed bear may help a bird in distress, a hungry bear will eat that same bird) (Medveš 2014), the open-ended *modus vivendi* ethic captures ethical behavior without relying on it as a given.

Conclusion

Recently, the notion of approaching communication with nonhuman beings similarly to how we would an alien culture has increasing resonance (Bogost 2012; Herzing 2010). While perhaps telling of our own culture, that the only way we can engage more-than-human earthlings with curiosity and respect is by framing them as alien intelligent beings *not* of this planet, the notion that their intelligence must be respected nonetheless gives our own ecological metabolism healthy boundaries. This goes back to what Arendt (1958 : 208-9) means when she writes about the alienation of our common sense. Our *sensus communis* is the basis for our *modus vivendi* with other organisms.

Life, in its cohesion and complexity, does not negate killing prey, fighting for group status, fending off unwanted sexual advances, parasitism, and other forms of atrocious behavior. Such instances can be read as organisms fulfilling spaces in ecological niches and exploiting weaknesses in evolutionary design, or as abhorrent but inevitable behavior, depending on the case. While some authors have attempted to assuage these predator-prey relationships with the anthropocentric idea of "policing nature" and genetically-engineering and otherwise dissuading predators to abstain from hunting and killing their prey (Cowen, 2003), such utilitarian ethical stances are absurdly imperialistic on the animal kingdom – not to mention the utilitarian implication if such a scheme were applied to insects, plants, fungi, bacteria, and (semi-living) viruses. The food cycle, looked at as a whole, is not moral or immoral, but amoral. The species involved have generally developed a balanced process – a *modus vivendi* even in predation – that allows for flourishing despite the existential fact of being prey to another organism.[3] While food cycles may be amoral, many other interactions between species carry moral aspects.

Perhaps endosemiosis, the semiotic processes taking place inside a cell that keeps complex organisms thriving and evolving, is the most basic form of ethica biosemiotics activity (Geus & Höxtermann 2007). Lynn Margulis' (1970) theory of symbiogenesis, the evolutionary event of the creation of an eukaryote from the initially violent attack of one prokaryote predating on another and instead becoming the mitochondrion (energy supply) for the cell it attacked, demonstrates endosemiosis to be the cooperative evolutionary moment *sine qua non* (Fet & Margulis 2010).

Competition, opportunism, and mutualism all are aspects of a description of biosemiotic interactions. However they may be interpreted, with all their contested representations, Martinelli's (2010 : 48) remarks on zoösemiosis applies also wider research in biosemiotics ethics : "we take too much for granted that we understand of other animals all that is to be understood". Just as Margulis's interpretation of beginning of eukaryotic life emerged via a cell's détournement of an attack by another cell into a transformation for the greater good of the host cell, the splendid fecundity of life turns on multitudinous acts on the ethical spectrum from obligate to voluntary relationships.

The clear-cut categories of moral patients and moral agents fail to do justice to the frailty of agents and the agency of so-called patients (MacIntyre 1999). To understand ethical behavior in other species, we must reconfigure the term, according to the biosemiotic particularism of the species at hand (Beever & Tønnessen 2015). Humans have a special obligation in regard to our semioethical capabilities (Deely 2015). At the same time, many if not most other species possess varying degrees of interpretive skill in making sense of other species' semiotics, and in some instances they cooperate with varying degrees of choice. Thus, far from being the unique species sensitive to how our actions make life go better or worse for others, many species are not only aware of such effects, but sometimes constrain or mitigate their own potential good in order to benefit others – including members of other species.

Notes

1. A preliminary version of this paper appeared in German in *Zeitschrift für Semiotik*.
2. For example, Hershovitz claims that "Rawls, and Kant… have severely underestimated the power of a *modus vivendi* as a means for securing an enduring stability that is tolerant of even significant change in circumstance" (1999 : 224). Kaplan points out that a *modus vivendi* is at the basis of any political theorizing, as theorists must confront the paradox that "in seeking to ground political legitimacy in a coherent set of stable principles, it preempts the political contestation through which governing principles are precariously established" (Kaplan 2011 : 584). That is, a *modus vivendi* presents a mode of resilience born from long-standing and dynamic practices in a given place.
3. Donaldson & Kymlicka note the human intervention into animal food cycle milieus as unethical, robbing animals as autonomous agents from their success at managing their own fates : "To eliminate predation and food cycles, we argue, would require turning nature into a zoo, in which each species would have its own safe habitat and secure food supply at the price of having its mobility, re-

production and socialization tightly policed by human managers" (2013 : 155). Donaldson and Kymlicka overlook the important biosemiotic point, however, that even keeping animal species safe – those legible and valuable to anthropocentric culture-specific values – would require the killing of other organisms in order to feed them, whether they be mice for snakes, or grass for deer. There is no escaping the cycle of eating and being eaten. It is only human exceptionalism that has temporarily extricated ourselves from this lifecycle.

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Abstract

The conviviality of sharing habitat can lead species to learn and benefit from other species' signals, even if those communications are not intended for them. Purposeful interspecific signaling is also common. Forms of symbiotic semiosis, intentional and unintentional, result from repeated interactions between cohabitating species. Attunement to neighboring species' dispositions through sharing habitat carves overlapping grooves in the semiosphere predictable for organisms to make some sense of their overlapping *Umwelten*. Interspecies semiosis may be less generalizable than conspecific signaling, yet these interactions nonetheless can be interpreted as a form of *modus vivendi* ethics.

Keywords : Gradualism; Interspecies Ethics; Biosemiotic Ethics; *Umwelt*; Symbiosis.

Abstract

Des espèces qui partagent convivialement un habitat peuvent apprendre à interpréter les signaux des autres et tirer profit de cet apprentissage, même si ces communications ne leur sont pas adressées. La signalisation interspécifique intentionnelle est également répandue. Des formes de sémiose symbiotique, intentionnelles ou pas, sont le résultat d'interactions répétées entre des espèces vivant en état de cohabitation. La syntonie des dispositions d'espèces voisines partageant un habitat, a comme effet de recouper les sémiosphères des organismes ce qui leur permet d'appréhender les points de rencontre entre les *Umwelten*. Il se peut que la sémiose interspécifique soit moins généralisable que la signalisation conspécifique. Or ces interactions peuvent tout de même être interprétées comme l'éthique d'un *modus vivendi*.

Mots-clés : Gradualisme; éthique interspécifique; éthique biosémiotique; *Umwelt*; symbiose.

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