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Roundtable:

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The Role of Zoosemiotic Inquiry in Shared Environments: Interlinking Nature and Culture

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Environmental humanities study how human worldviews and culture affect the rest of the nature and our interactions with it. Zoosemiotics provides a unique perspective on human-alloanimal communication and analyzes communication dynamics to address the complexities and competing goals in shared environments, recognizing that human interpretations of alloanimal behavior are often anthropocentric. Understanding alloanimal agency and subjective experiences helps create more respectful and harmonious shared environments. By offering case-studies from zoological gardens and species conservation we hope to guide conservation endeavors, environmental conflict resolution, and more sustainable relationships in the Anthropocene. In examining these shared environments, we also indicate how cultural perceptions and practices influence interspecies interactions, thus emphasizing the interconnectedness of culture and ecology.

Introduction

The concept of 'Anthropocene' now represents any negative influence that people have on surrounding nature, but environmental humanities scrutinize how worldviews and images of people and the world change in tandem, providing a deeper understanding of this concept and the ongoing changes (see also Mäekivi, Magnus 2020). The scope of human impact and interaction with other species is constantly expanding. Thus, human non-human animals (i.e., alloanimals) inhabit most of

the world, causing changes in the way organisms communicate, use sign systems, function within their ecosystems, and perceive their surroundings. Although alloanimals take an active role in shaping the environments we share with them, human cultural perceptions and representations of other species frame these interspecies interactions. It is crucial to consider the significance of cultural factors and how they influence our interactions with our environment and other living beings, because our beliefs and perceptions, in a lesser or greater degree, translate into actions towards other organism and our immediate surroundings. This indicates that any type of communication or other semiotic activity that takes place in a shared environment is a complex research object, and understanding the dynamics and semiotic aspects of these environments is critical for nature conservation efforts, (environmental) conflict prevention and resolution, and negotiating our relationships with other animals in the broader natural world.

First, we will introduce the concept and promise of zoosemiotics and demonstrate its utility in examining relationships in which humans play a varying role in the lives of other animals. Next, we will provide more details about the shared environments and highlight the importance of researching them. After that, we will present examples from our previous research to explore the potential applications of zoosemiotics. Additionally, we will discuss the obstacles involved and propose future avenues for investigation.

Zoosemiotics

Zoosemiotics is an interdisciplinary field that was coined and developed by Thomas A. Sebeok (1972, 1990). Sebeok's research platform combined ethology with semiotics to investigate communication among alloanimals from the point of view of syntactics, semantics, and pragmatics. This resulted in the establishment of ethological zoosemiotics, a field that specifically studies intra- and inter-species communication (Martinelli 2010). By relying on the concept of 'Umwelt', which indicates a personal realm of an individual that consists solely of subjective experiences (Uexküll 1992: 383), we can further explore how alloanimals actively interact with their environment, create meaning, and communicate. Umwelt, although not granting us direct access to the internal states of an individual animal, still affords us an accurate assessment when we consider their species-specific traits (Uexküll 1992 [1934]: 338–339), age, health, personal dispositions, etc.

In zoosemiotic inquiry, it is essential to acknowledge alloanimal agency — meaning-making is an inherent quality of all living organisms. Through perception and action cycles, alloanimals actively participate in interpreting signs and establishing connections with other animals and their surroundings (Maran et al. 2016: 10). In his writings, cryptosemiotician Heini Hediger emphasizes this aspect, stressing that alloanimals have subjective feelings, preferences, and dislikes towards various elements and other animals (including humans) in their surroundings (Hediger 1950: 82). Similarly, the most prominent contemporary zoosemiotician, Dario Martinelli, emphasizes the subjectivity of alloanimals (see Martinelli 2010). Therefore, we may assert that including this emic perspective of other organisms is one of the advantages of zoosemiotic study, as it stresses the importance of taking into account the distinct experiences and requirements of each species, populations, and individuals.

With the development of zoosemiotics, questions pertaining to not only communication but also representation (see Maran et al. 2011) have become the focus of zoosemiotics. This suggests that, in addition to ethological zoosemiotics, anthropological zoosemiotics (Martinelli 2010) has gained attention, emphasizing the importance of understanding the complex interplay between culture and biology in human-alloanimal relationships (Maran et al. 2011: 2). Even more, we may argue that due

to the era of the Anthropocene, the study of cultural representations of other species is becoming more prevalent (*Zoosemiotics 2.0* tackles exactly the ways that we perceive and represent alloanimals in culture (Marrone, Mangano 2018)). Thus, anthropological zoosemiotics allows us to also scrutinize the attitudes, impressions, and depictions of alloanimals. This perspective supports the idea that the boundary between semiotic activities in animals and their portrayal in human culture should not be considered the defining boundary of zoosemiotics (Maran 2014: 4). We have previously shown that speciesism, stemming from our own mammalian Umwelt, burdens conservation endeavors (see Mäekivi 2018). Anthropological zoosemiotics allows us to understand why we manage and treat alloanimals in shared environments the way that we do, and brings to the foreground the connections between biological meanings and cultural interpretations. Studying other animals' representations in our culture also helps us shape our interactions with them.

Shared Environments

In the environmental humanities, there are many synonyms that indicate spaces that people share with other species, e.g., 'novel ecosystems,' 'hybrid natures,' 'anthropogenic landscapes,' and 'liminal spaces' (see also Mäekivi, Magnus 2020). What is important to us is the fact that these terms emphasize the complexities of the environments. These environments have different agents who may have opposing interests and goals. Shared environments are thus irreducible to the needs of only humans or some other species — in them, we need to account for all parties, mitigate possible conflicts, reach compromises, and rethink our relationships with other species, while bearing in mind the cultural dimensions that influence the perceptions and management of these shared environments.

There exist numerous diverse shared environments that exhibit varying relationships with other species. We oversee all aspects of the lives of the pets in our families, just as we do with factory farming. Nevertheless, the attitudes, species, and relations that humans develop in different environments change significantly. We have zoological gardens, conservation centers, and laboratories; however, it is important to note that the interest groups, demands, and objectives associated with these establishments are varied. We inhabit both urban habitats and rural landscapes, where we somewhat relax our control over other species. However, we still have preferences regarding which species we are willing to coexist with and those that we do not accept. The point here is not to list all the possible shared environments, but to reiterate and keep in mind the complexity and diversity inherent in human-alloanimal relationships within shared environments. These relationships span a wide spectrum, are accompanied by attitudes and perceptions depending on the context and setting, and are influenced by the agency of alloanimals themselves. We believe that zoosemiotics (ethological and anthropological) encourages us to re-evaluate practices that impact human-alloanimal communities. Zoosemiotics allows us to examine the context and understand what is happening at a given time and place. It also enables us to inquire what, in what way, and how something is meaningful for an alloanimal or human, and how our actions influence the meaning-making practices of other species. Additionally, zoosemiotics helps us explore ways to improve our relations with other species so that shared environments would be truly shared.

Zoosemiotic Inquiry in Shared Environments: Case Studies

Here we will bring some examples that show how alloanimal agency, our perceptions and attitudes towards other species, and the specific context of shared environments that shape human-alloanimal relationships.

We have researched human relationships with pets (see Dydynski, Mäekivi 2021) and how media representations (specifically cartoons), which include alloanimal characters and the consideration for alloanimal Umwelten, set expectations for a real alloanimal counterpart. This, in turn, creates imagined human-alloanimal relationships, which can influence real-world interactions between humans and other animals. However, if these interactions do not align with our expectations, it can lead to frustration or even to the decision to relinquish pets. The issue, however, typically resides in the (erroneous) perceptions that give rise to expectations. This research offers insights into the effects of cartoon animals, enabling better mediation of positive human-alloanimal interactions. Thus, zoosemiotics provides us with a means to explore the practical implications of both denotative and connotative meanings associated with different species. Denotative meanings pertain to how animals are portrayed and our scientific understanding of them, encompassing fields such as biology and ecology (Maran et al. 2016b: 37). Animal representations are contextualized within cultural contexts through connotative meanings (Maran et al. 2016b: 37).

Our long-term research on zoological gardens provides another example, directly illustrating how human perceptions shape the behavior of zoo animals (Mäekivi 2016). Alloanimals are managed in zoological gardens so that their species-specific behavior is preserved; however, there are also welfare requirements that must be met. Thus, for many alloanimals, welfare requirements 'override' the provision of species-specific behaviors (e.g., fighting for females or territory, hunting live prey). As a result, it is common practice to allow only species-specific behaviors that are consistent with good welfare while prohibiting or discouraging others. Furthermore, there are numerous instances in which abnormal behavior (i.e., behavior not observed in in situ conspecifics) is encouraged if it is consistent with good welfare (for example, interspecies relationships). Thus, we demonstrate that there is a mismatch between what is considered species-specific and what is considered consistent with good welfare. This shows that deviations in an alloanimal's communication and behavior are unavoidable given today's *ex situ* management practices, but it also compromises the alloanimal's 'wildness,' making them unsuitable for reintroduction programs because they lack some of the necessary skills to survive in their natural habitat.

Our third example falls in line with the previous one of zoos, but has its focus on different attitudes that varied interest groups (e.g., visitors, zoo curators, conservationists) may hold of the same animal (see Mäekivi, Maran 2016). We map communicative encounters and shifting perceptions on the scales of welfaristic, conservational, dominionistic, and utilitarian approaches. Zoological gardens seem to raise animal awareness in two stages: personifying and de-personifying. Personifying animals helps people care about and conserve species. To focus on its goals, the zoo must de-personify animals. They must show that while this animal will not face hunger or habitat loss, their conspecifics do and need support. Signage and keeper talks are the most common ways to de-personify animals and foster species-wide empathy. A zoo exhibit shows the life story of a personified animal, and both keeper talks and shows introduce animals and their personalities before discussing behavior, morphology, and conservation. Semiotic strategies that combine species-specific potentials promote animal welfare and conservation. While welfare targets individuals, conservation targets species or populations. This dyadic approach may work for modern zoological gardens' educational goals, but species conservation and animal welfare are in a conflict.

Conservation programs select mates based on genetic diversity and cull surplus animals. This scientific view can be utilitarian or emotionally dominionistic toward animals. Dominionistic perception, unlike welfare-based perception, emphasizes human control over animals but makes people feel indifferent towards them. Welfaristic and conservational attitudes can coexist if they do not conflict, and welfaristic attitude can be replaced by conservational view, but the latter is more abstract and fragile.

Our final example comes from species conservation (see Magnus, Mäekivi 2023), where we focus on animal agency, search and function tone, semiotic fitting, and environmental changes, and analyze the reintroduction process from the alloanimal's perspective. To understand the local perspective, we consider the species' appeal, cultural placement, and overlap with human and non-human resources. Our case study focuses on the reintroduction of the European mink to Estonian island of Hiiumaa and the planned reintroduction to Saaremaa. Using semiotic analysis, we find that reintroduced animals require innovation and flexibility to establish new semiotic relationships and restore those from their historical environments. We propose that human perceptions of species and efforts to reintroduce them influence animals' appearance and behavior. Interspecies relations *in situ* are influenced by differences between wild species, perceived overlap between human and alloanimal Umwelten, and conservation discourse. Thus, we offer a research platform that accounts for alloanimals' semiotic abilities.

The Future of Zoosemiotics

We can see that shared environments, with their complexities, represent an interesting but difficult research object for zoosemiotics. Zoosemiotics addresses the difficulty of reconciling the varied viewpoints and concerns of both humans and alloanimals in shared environments. These environments are defined by interconnections, contradictory objectives, and fluctuating power dynamics, all of which pose challenges for interspecies communication and meaning-making. In addition, zoosemiotics addresses the inherent subjectivity of semiotic processes by recognizing that interpretations of signs and behaviors differ among species and individuals. This requires a comprehension of the distinct Umwelten of various organisms and how they construct and navigate their social and ecological realities.

Even though zoosemiotics is an interdisciplinary science, it welcomes and needs the insight of the arts, natural sciences, sociology, etc. to be able to aid in solving problems and conflicts that arise in shared environments and to find novel ways to design environments that not only recognize but also respect other agencies. Zoosemiotics, together with other scientific fields and in cooperation with policymakers and stakeholders in shared environments, could loosen the practical constraints of limited access to research sites, ethical considerations, a scarcity of data on alloanimal communication, and the involvement of different relevant agents. The integration of cultural studies into zoosemiotics can further enrich our understanding of these environments by highlighting how cultural narratives and practices shape human-alloanimal interactions.

We believe that the commitment to understanding the semiotic dynamics of human-alloanimal interactions in shared environments, as reflected by the Anthropocene era, will shape the future of zoosemiotics. Zoosemiotics can enhance nature conservation, facilitate environmental conflict resolution, and foster the establishment of more sustainable relationships between humans and other species in the broader natural world.

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