

Exploring the nature and strength of the semiotic relation: A case study about liminal species in Tartu

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Abstract: The case study described in this paper is part of an emerging cultural context in both its scientific as well as societal aspects, where animals are seen more and more as social and ethical subjects and their presence in the vicinity of humans is seen less and less as a nuisance to be eradicated. It aims to understand the different aspects (material inconveniences, emotional relationships, symbolic value, biodiversity perception, etc.) that hold sway in the relationship between humans and other species in an environment still symbolically seen as separate from any natural process, containing very little biodiversity, and belonging exclusively to humans. This study aims to map out the shared urban ecosystem and show that many of the relationships, coexistence issues, and failures in urban management are connected to semiotic processes that can be transformed. One of the major results of this case study is the emergence of the concept of ‘resistance of the semiotic relation’: the fact that some semiotic relationships, especially symbolic ones, seem to resist any element or piece of evidence that could be proposed to contradict them. This concept postulates that not all semiotic relations have the same strength or the same resistance to exterior attempts to modify them, and that potential semiotic solutions proposed to improve semiotic relationships, for example in cohabitation situations, need to address this reality and the variety of resistance – or resilience – of different semiotic relations.

Keywords: zoosemiotics; biodiversity; citizen science; corvids; liminal species.

1. Introduction

1.1. Context of the project

The main objective of this project is to improve interdisciplinary methods (Delahaye 2020; Guillaume 2014) in order to facilitate the creation of future

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projects that combine semiotics and life sciences – ecology, ethology, veterinary sciences (Deely 1992; Farina 1998).

The reasons why the project uses corvids² as case studies to test the applicability and generalizability of these interdisciplinary methods are numerous, yet not mandatory – rather, they are accidental criteria that happen to be present in this situation and to form a relevant and potentially productive background, while other reasons or criteria could have been chosen in a different context. Crows are widely present in urban environments (Marzluff *et al.* 2001), and have been inventoried in France³ and studied in Estonia's neighbouring country, Finland (Vuorisalo *et al.* 2003). They suffer from a bad reputation but are also a cause of real nuisances.⁴ They are well adapted to different human behaviours and cities (Marzluff, Angell 2005) and as such are of a particular interest in testing the adaptation of solutions in different cities and countries where cohabitation issues occur. The important role of jackdaws (*C. monedula*) in the Estonian city of Tartu's cultural identity, especially through art and literature, also contributes to this project. At this point, it is important to specify that, although this investigation is not mainly focused on nuisances, it is still possible that the perception of the inhabitants does focus on this aspect, and that the results will consequently follow the same path as in a previous study carried out in Paris (Delahaye 2021),

This project focuses on liminal species, therefore the concept of 'liminality' is central to the study. The term 'liminal' is used to describe species that have particular dynamics with humans, which cannot be described accurately in terms of 'wild' or 'domesticated' (Donaldson, Kymlicka 2013). Liminal species are non-human animals which historically live amongst humans, are deeply linked with them (via food, nesting, and other aspects of their lives) and even prefer to live amongst them, but are not tamed, domesticated, and sometimes not even tolerated by our own species. These species are varied (small mammals, birds, insects, etc.) and can be seen as part of a complete and complex ecosystem alongside humans. For this latter reason, the term 'transgressive', which has sometimes been suggested, does not seem appropriate, since they are not "entering" human space: they have been living in it for centuries and sometimes more, and are part of this space.

² Mainly *Corvus cornix*, *Corvus frugilegus*, *Coloeus monedula* and, from a minor and comparative aspect only, *Corvus corone*.

³ The National Museum of Natural History (*Muséum National d'Histoire Naturelle*) bands its crows with identification rings on both legs.

⁴ In Paris, the Town Hall of the 14th district reports a few attacks every year around June, while Canada has been developing CrowTrax, a website to inventory and create alerts of crow attacks.

1.2. Research aim and research question

This article aims to explore some of the meaningful results gathered by the study, mostly the different kinds of semiotic relations that can appear from the different interactions and relationships between the aspects of human cohabitation with liminals. Consistently with the design of the study, this article mainly adopts a descriptivist approach, observing and documenting the complexity of a situation and proposing concepts to explain some surprising data and results.

The paper will focus in more detail on a concept called ‘resistance of the semiotic relation’, a paradoxical situation where an emotional or symbolic relationship is so strong that no elements of evidence can modify it, despite its being in an obvious contradiction with the factual elements. In an earlier study, conducted in Paris, this was visible in situations in which the inhabitants would continue stating that rats are aggressive or carriers of diseases even when pieces of evidence would clearly show that this was not the case.

2. Methodology

The methodology used in this case study is a step-by-step methodology, starting from the data sets, and then proceeding to the different links between data sets, and further, to the different relationships that can be deduced from these links.

The different kinds of data sets were determined during the study on rats in Paris and can be classified in three families, as detailed in the section on materials. A missing family leads to lack of information in the attempt of mapping the different kinds of relationships (Delahaye 2021). Comparisons between different sets of data can lead to different links (consistency, gap and paradox), and the interactions between different links will lead to understanding the different kinds of semiotic relationships (material, emotional and symbolic ones) existing in cohabitation. The types of links and relationships are detailed in the Methods section.

2.1. Materials

The project uses sets of data that can be sorted into three families: biodiversity data, citizen science data, and textual data. The biodiversity family covers data focused on measuring the quality of life and ecological behaviour of the targeted species (if the population is growing or declining, if their nesting seasons are fruitful, if they are in a rich or in a competitive environment, etc.). This family is produced by scholars. The citizen science family brings together mixed data that focus on the recording of the presence of the species in cities, but also provide

indirect information about the people doing the recording, mainly through their potential errors and biases. This family is produced by the general audience. The textual family focuses on how people perceive, live, and talk about the species and their relationships with them. This family is produced by the general audience for primary data and by scholars for secondary data that mainly consist in academic analysis of the primary data. These three families are summarized in Fig. 1.

Biodiversity data in the project derive from two distinct scientific sources.

- The first one is related to experiments conducted by Marko Mägi (Institute of Ecology and Earth Sciences, University of Tartu), aiming to monitor the population of corvids in Tartu and to test the efficiency of sound repellents.⁵ This set of data showed the health of the population of corvids in Tartu, but also how these species can easily adapt to repellents,⁶ indicating the capacity among corvids to differentiate between a sign of danger and a real danger. This set was chosen because it is the most complete observation of the corvids population available in Tartu nowadays.
- The second one is a set of data compiled by the Birds Team of the Bioveins project. This set confirms the good health of the studied populations in Tartu.⁷ This set was chosen because it is the only study on bird populations with corvids included that has been conducted by an international team, and could therefore have a different methodology and different results from the first set of data.

Citizen science data used in the project come from two different general public sources.

- The first is the annual citizen science programme “Suvine aialinnupäevik” [Summer garden bird diary], coordinated by Birdlife Estonia, which takes place every year from 1 March to 3 October. The data used in this study derive from the 2020 report.⁸ In this programme, strict methodological guidelines⁹ were given to the participants, and the results regarding the number of individuals

⁵ The report, requested by the Tartu City Government, has not been academically published, but can be found online at https://tartu.ee/sites/default/files/research_import/2018-01/Vareslaste%20monitooring%20Tartus_1%C3%B5pparuanne%2C%20leping%20M-030.pdf.

⁶ Monitoring of crows in Tartu report, pp 12–13.

⁷ At the request of the Bioveins’ team, these data are not public yet, since publication is in progress on the team’s side. Data were kindly transmitted by François Chiron (Paris Sarclay University) and can be obtained from him if needed. More details about the project are available online at <http://www.bioveins.eu/>.

⁸ This report can be accessed at https://www.eoy.ee/aed/content/materjalid/aialinnupaevik_2020.pdf.

⁹ Details about guidelines regarding the data collection methodology can be found online at <https://www.eoy.ee/aed/kuidas-osaleda>.

and distribution were consistent with the ones gathered by professionals in the biodiversity data family, but with greater statistical power as the general public can gather much more data than academics. This programme is very popular, with the data being updated by bird enthusiasts, people interested in helping natural sciences and researchers, as well as families and senior citizens. The participants are requested to register every bird they notice. The set was chosen for its rigorous methodology, even if the sample is not as large as those of the other programmes.

- The second one is the public collaborative database eElurikkus, which allows anyone to report the observation of any species (bird, mammal, insect, plant etc.) at any time and anywhere. The database is mostly updated by people who watch birds in their leisure, but also by researchers and by citizens concerned about biodiversity issues. The requests made to the database were restricted to the Tartu area.¹⁰ The results brought together in this set were different from the other set of citizen science data and marked by an underrepresentation of common species (like corvids), while rarer or visually impressive species were very well documented. This is the first example of a gap that appeared in the project that frames the present case study, and it was termed as the ‘remarkable bias’ (see the Results section). This set was chosen for being the largest set available, even if it is less rigorous in its methodology than other programmes.

Also textual data employed in the project are of two different kinds.

- The first set consists in first-hand recordings, a number of various texts ranging from blogs to complaint forms or novels, in which the city’s inhabitants talk about their relationship with corvids. Primary sources in the category of novels and other fictional texts were obtained via the database “Tartu ilukirjanduses” (‘Tartu in Fiction’)¹¹. Some points of interest were also derived from interviews with Lauri Laanisto (Institute of Agricultural and Environmental Sciences, Estonian University of Life Sciences) and Marko Mägi (Institute of Ecology and Earth Sciences, University of Tartu).
- The second set contains second-hand analysis, and is more related to literature¹²

¹⁰ Results obtained from the database can be seen online at <https://elurikkus.ee/regions/Linnad/Tartu%2520linn>.

¹¹ In Estonian only, consultation on the data was by Rene Kiis from the Department of Semiotics, University of Tartu. The database can be accessed at: Tartu in fiction Database, <https://teele.luts.ee/>.

¹² These secondary sources, such as Velsker, Soovik 2017, were used to understand how corvids participate in creating the gothic atmosphere of the city or to learn about the cultural particularities of the city.

and arts, but also to the literary analysis of the city's inhabitants' relationship with corvids, in particular jackdaws (Järv 2017¹³). It is composed of academic documents indicating how the city dwellers perceive these species symbolically and culturally. A quite paradoxical situation emerged in connection with this set, as very depreciative vocabulary was used to talk about corvids, yet this deprecation was not a sign of hostility, as the disparaged behaviours were in fact appreciated as aesthetic elements of the general gothic atmosphere of the city.

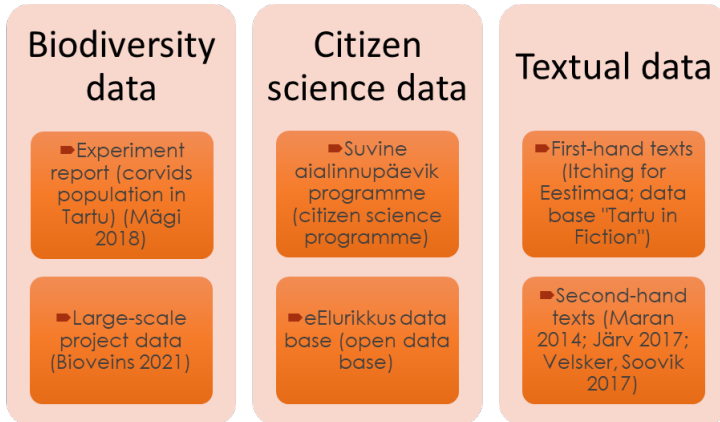


Figure 1. Summary of the different data sets.

2.2. Methods

Exploring the semiotic relation in fact means exploring the different kinds of semiotic relations that we could find in the situation of cohabitation. In a previous study using the same methodology, three major kinds of relations were described:

- materiality: inhabitants are projecting sense, values and meaning onto another species based on observable facts, documented events or first-hand experience;
- emotional relationship: inhabitants are projecting sense, values and meaning onto another species based on their feelings, emotions and moral sense;
- symbolic relationship: inhabitants are projecting sense, values and meaning onto another species based on their cultural background, beliefs and transmitted stories.

¹³ Järv, Elo Tuule 2017. *Hakkide küsimus Tartus. Konfliktide olemusest ja lahendusvõimalustest* ["The case of the Eurasian jackdaws in Tartu: On the nature of the conflict and possible solutions"] (unpublished BA thesis, Department of Semiotics, University of Tartu) is available at <https://dspace.ut.ee/handle/10062/58424>.

Exploring these multiple kinds of semiotic relations requires studying links between different aspects of the relationship between humans and liminals. When these different pieces are studied and compared, three different kinds of links – consistency, gap, or paradox, as was already shown in Delahaye 2021 – may appear. Consistency implies that, in this situation, the link between two data sets is a continuum. The two sets form a congruent and logical whole and seem to describe the same reality.

A gap shows that, in this situation, the link between two data sets is fragmented. Some elements are still consistent, but there are obvious differences between the realities described by the two sets such as differences in intensity, temporality, etc. These two realities are not incompatible, and one is probably a distorted version of the other one.

Paradox, in this situation, means that the link between the two data sets is a relation of opposition. At least some major elements of the data sets cannot coexist in the same reality, while consistency may pertain between some minor elements. This situation is often the cradle of semiotic relations with an important “resistance”.

Not all of the comparisons between the two sets of data prove to be fruitful. The scheme in Fig. 2 provides a detailed comparison between the situations arising in the framework of this study.

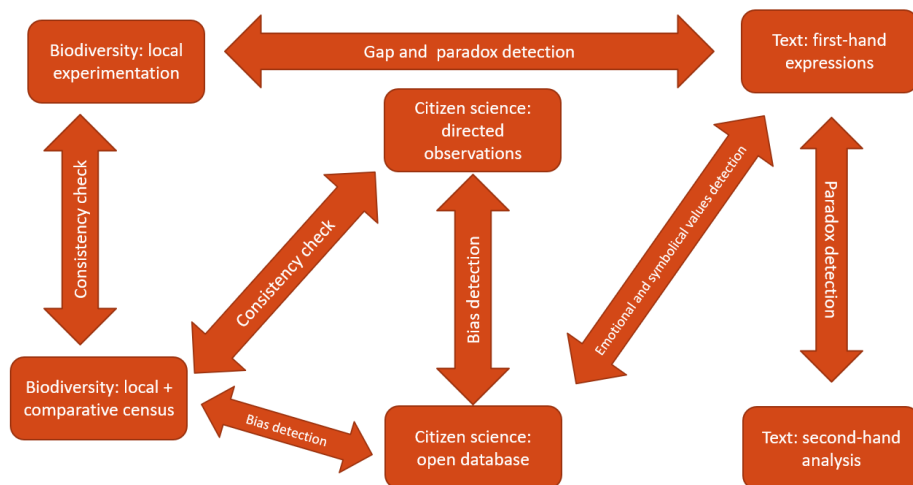


Figure 2. The different semiotic relationships between two sets of data.

The different kinds of semiotic relations can all appear from a comparison between two sets of data, as soon as these are (a) from different families of data, or (b) from sources of different nature (either academic sources or general audience sources). This is because, to see a semiotic relation emerging, we have to use two sets that are clearly two different entities that can have a kind of relationship, and not two continuous parts of the same entity.

Some sets must be compared to ensure the consistency of the overall consistency of the study: the sets from the same “family”.

3. Results

3.1. Consistency

A comparison between the biodiversity family set and the citizen science family set showed consistency in the geographical repartition of the species. Variations in number, depending on the years, are also quite similar in scientific biodiversity data and citizen science data, but only in case of a quite closely monitored programme.¹⁴ With other citizen science programmes, where participants were given less methodology and more freedom, a gap appeared.

3.2. Gap

In the comparison between sets of the biodiversity family with the data from an open database accessible to the general public, a gap appears between the number of individuals registered by scientific biodiversity data and citizen science data. This gap is a sign of what was termed ‘the remarkable bias’¹⁵ – a tendency to register every occurrence of a rare species but to under-register occurrences of common species. Here, the ‘remarkable bias’ seems to weigh heavily in citizen

¹⁴ “Suvine aialinnupäevik 2022” report can be found at https://www.eoy.ee/aed/content/materjalid/aialinnupaevik_2020.pdf.

¹⁵ Other aspects of observations, such as difficulties with registering large numbers, the observers’ fatigue or forgetfulness, can explain the difference between biodiversity data sets and citizen science data sets. However, these difficulties are valid for every citizen science programme and cannot be used to explain why a difference exists only between biodiversity sets of data and open access citizen science programmes, but disappears when comparison is made with citizen science programmes with strict guidelines. A reviewer suggested that people who are bird enthusiasts could be looking more for “remarkable” birds, whereas other citizens could focus and report more “ordinary” birds because these are part of their daily life. Currently, there are no data to counter or confirm this hypothesis, but a complementary survey is ongoing in the framework of the project to elucidate this issue.

science results, but only for people involved in citizen science programmes that do not provide strict guidelines. This gap could suggest a weaker interest of inhabitants in corvid species as they are more likely to document what is remarkable for them, and tend to forget the species they live with on a daily basis.

Another gap appeared when comparing sets of textual data with sets from the biodiversity family. The vocabulary used to describe corvids (either for literary purposes or to complain about them) is usually negative and morbid, even overdramatic.¹⁶ A part of this morbidity is not necessarily negative *per se*, as it constitutes a part of a gothic aesthetic that is, in itself, viewed as a quite positive thing, an element of identity.¹⁷ However, the virulence of the complaints does not seem to match with what is registered in the field. Instances of aggressive behaviour, more than rare, are anecdotal. The experimental work conducted to test noise repellents showed that, besides being ineffective, the repellents were in fact noisier than the corvids, and that most of the inhabitants either preferred the corvids' noise to the repellents' noise or were not really bothered by the noise in the first place. It appears that there is a gap between “the idea of corvids” and the real behaviour of corvids.

3.3. Paradox

When comparing the data from the open database (citizen science family) with textual data, a paradox appeared. Corvids' registration certainly suffers from the remarkable bias, which seems odd, considering that the complaints, on the contrary, seem too numerous, important and “dramatic” when compared to the biological behaviour and the actual evidence regarding this aspect. In citizen science data, corvids are probably seen as so common in the city that they are not even registered when observed. In textual data, corvids are, on the contrary, seen as very present, very noisy, very “existing”.

3.4. Interpretation

It appears that the gap between an “ideal corvid”, an artefact created from values I would say are emotional and symbolic, and the biological reality of the species could be part of the explanation of why observing corvids is so easily influenced

¹⁶ Translations of the words found in the database can be ‘black’, ‘sad’, ‘noisy’, ‘flew anxiously’, ‘jackdaw army’, ‘jackdaw vortex’, and ‘trumpets of Jericho’. Even if the translation from Estonian to English may miss some relevant nuances, this is still a very strong use of vocabulary.

¹⁷ There are very few examples available in English that would allow us to understand how the idea of an “atmosphere” is strongly present in the textual data describing Tartu city and corvids in the city. One of the rare examples in English could be found in the text “Spooky Tartu” on the blog *Itching for Eestima*.

by the remarkable bias. The symbolic value of the species has an impact on the way the inhabitants perceive (in textual data), register (in citizen science data), and react to (in both sets of data) the materiality of the species. Three elements can be pointed out:

- Corvids are perceived as prolific and almost overcrowding species; thus, they are poorly registered through citizen science programmes because the general public sees no point in doing this.
- Corvids are perceived as a source of nuisances, even if experiments regarding this aspect show that these nuisances are actually minimal (e.g. they are less noisy than the repellents used against them),¹⁸ and even if these nuisances form a completely natural part of the corvids' social behaviour (no "pathological" behaviour, such as attacking humans, has been registered).
- The regular widespread presence of the species throughout the city leads the inhabitants towards considering them as "objects, as parts of the city" (this is particularly noticeable when we study the ways in which the birds are described in an overdramatic manner¹⁹ as ingredients of the city atmosphere, closely linked to the buildings they live in), rather than actual animals contributing to biodiversity, which probably explains their underrepresentation in the biodiversity watch database.

The elements introduced above are probably magnified by a kind of paradox, rooted in the emotional value corvids seem to have, at least for a part of the inhabitants. The importance of the remarkable bias apparently contradicts the importance given to nuisances. This apparent paradox can be explained by two other elements mapping the shared urban ecosystem and the relationships between species:

- The underrepresentation of biological individuals in the citizen science database and the overrepresentation of complaints about ordinary biological behaviour are in fact coherent when the researcher takes into account that a part of Tartu's inhabitants consider corvids as "objects of the city". As objects, they are not registered like other living species, which, however, does not disqualify their abilities to be considered nuisances by the inhabitants.
- Underrepresentation of biological individuals in the citizen science database is also relevant for those inhabitants who attach a positive emotional value to

¹⁸ Monitoring of crows in Tartu report, pp 12–13.

¹⁹ A colourful example from the work of Indrek Hargla is quoted in Velsker and Soovik 2017: 97–98 "[...] the whole Tarbatu [a historical name of Tartu used in an alternative-history narrative, P. D.] is full of oaks, lindens and maples, the tops of which are inhabited by the most impudent winged monsters – the jackdaws".

corvids, as this positive emotional value is also closely related to the concept of “objects of the city”. It is visible in the inhabitants’ commitment to a particular aesthetic of their city,²⁰ of which corvids are an element.

3.5. About the concept of resistance of the semiotic relation

During my study on rats in Paris (Delahaye 2021), a gap became apparent between a significant proportion of the participants in the study agreeing on rats being nuisances, and them still having empathy for rats and not willing harm on them. This gap remained in place even after some factual elements were introduced to the participants which directly contradicted some symbolic aspects associated with the species in the participants’ minds, especially the ones regarding rats being nuisances. This kind of situation where a semiotic relation seems stronger than any contradicting proof available could be referred to as ‘resistance of the semiotic relation’.

The concept of resistance of the semiotic relation was formulated at a meeting of the Department of Semiotics at the University of Tartu in order to explain some aspects of the results that seem difficult to understand from a more factual point of view. Indeed, some semiotic relationships, especially symbolic ones, seem to resist any element or piece of evidence that could be proposed to contradict them. An emotional semiotic relationship can function in this way as well, even if its participants seem to be more aware of the contradictory nature of their feelings, for instance concerning situations in which they feel both repulsion and empathy. In general, participants seem to agree more easily on the fact that their emotions could be recalcitrant²¹ than on the fact that their beliefs or symbolic representations could be so. It is interesting to note that in these situations no substantial effort through active reflection appeared to be of any use: resistance proceeding from an emotional or a symbolic relationship can only be affected by emotional or symbolic elements. In Delahaye 2021 this was called ‘the Ratatouille Effect’: exposure to a film portraying its rat hero as a child was linked to a superior empathy toward this species in adult humans. This particular aspect of the resistance is what differentiates it from earlier concepts, like the one of ‘habits’, since the latter is characterized by a ‘dialectic between doubt and belief’ (Anderson, West 2016), whereas resistance of a semiotic relation can perfectly well exist while the subject is aware of how strongly their position contradicts the facts. It could be possible to say that habit is a sub-category of resistance, but many forms of resistance exceed the scope of habit.

²⁰ The commitment can also be perceived by foreigners, as texts like “Spooky Tartu” (<https://itchingforeestimaa.wordpress.com/2007/02/18/spooky-tartu/>) show.

²¹ During interviews these emotions were sometimes qualified as ‘wrong’ or ‘irrational’ by the participants.

This concept of resistance postulates that not all semiotic relations have the same strength, the same resistance to exterior attempts to modify them, and that the semiotic solutions proposed to improve semiotic relationships, for example in cohabitation situations, need to address this reality and the variety of resistance – or resilience – of different semiotic relations.

4. Discussion

The mapping of the different natures and strengths of semiotic relations involved in a situation of cohabitation is the first major and mandatory step towards finding solutions improving interspecies cohabitation. As the solutions that could be implemented differ greatly from case to case (the world is vast, cities host different cultures, and liminals differ from place to place), it is important to acknowledge the limitations of this study's results. All the different aspects described in the Results section should be consolidated before entering the solution-finding phase, especially to remove as many of the study's limitations as possible.

The major limitation of the study is the linguistic limitation. As data – especially textual data – should be gathered in the inhabitants' native language, this limitation creates two issues. The first one concerns the reliability of the sets of data: as the study mostly gathered data available through English or English-translation tools derived from a limited corpus,²² the samples could be biased. The second issue is the possibility of generating semiotic solutions, as these must also be relevant and accessible in the local inhabitants' language.

In the context of a global drop in biodiversity, another limitation of the study is the speed of change that can be found in biodiversity data. Therefore, it is important to update these sets of data before entering the solution-finding process.

The project from which these results are extracted is still ongoing. The research is going to expand to include first-hand data through surveys and interviews, regarding mainly textual data, as well as field observations, concerning mainly biodiversity data. Having new sets of first-hand data is also a good way to improve the reliability of the samples and consolidate the existing results.

The different aspects described in the Results section, as well as future results that should be gathered in the project by further research, are keys to understanding the complexities of interspecies cohabitation situations, and to proposing accurate solutions that are relevant to the kind of semiotic relation

²² This issue is probably a quite general one every time it is necessary to work with native speakers of a lesser-spoken language: the accessible corpus is the one that has been chosen to be translated (and this may have happened for biased reasons) or the one that was translated with tools (and these tools had to feed on a very small corpus).

that needs to be addressed. Especially in cases when a situation of resistance of the semiotic relation is identified, solutions should involve less concrete, factual and reasoning aspects, and more emotional, symbolic and narrative aspects. For example, sensitization through popular media or narrations aimed at the general audience would be particularly effective, as the “Ratatouille effect” demonstrated in the previous Paris study.

Acknowledgements: This study is based on a project funded by the Estonian Research Council’s programme “Mobilitas Pluss sissetulev järel doktoritoetus” (MOBJD) under Grant MOBJD1010.

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Explorer la nature et la force de la relation sémiotique : étude de cas pour une espèce liminaire à Tartu

L'étude de cas décrite dans cet article se situe dans un contexte culturel émergent, à la fois du point de vue scientifique et du point de vue sociétal, où l'animal est considéré de plus en plus comme un sujet sociétal et éthique, et où sa présence dans l'habitat humain est de moins en moins vue comme une nuisance à éradiquer. En conséquence, cette étude vise à comprendre les différents aspects (nuisances matérielles, rapports émotionnels, valeur symbolique, perception de la biodiversité etc.) qui prennent place dans cette relation entre les humains et les autres espèces, au sein d'un environnement toujours symboliquement perçu comme habitat exclusif des humains, pauvre en biodiversité et isolé de tout processus naturel. Cette étude vise à cartographier l'écosystème urbain partagé et à montrer que nombre des relations, des problèmes de cohabitations et des échecs d'urbanisme sont directement liés à des processus sémiotiques sur lesquels il est possible d'influer. Un des résultats majeurs de cette étude de cas est l'émergence du concept de « résistance de la relation sémiotique » : le fait que certaines relations sémiotiques, en particulier celles qui relèvent de la relation symbolique, semblent résister à tout élément ou preuve contradictoire qui peut leur être présentée. Ce concept postule que toutes les relations sémiotiques n'ont pas la même force, ou la même résistance face à des tentatives extérieures de les influencer, et que donc de potentielles solutions sémiotiques proposées pour améliorer ces relations, par exemple pour résoudre des problèmes de cohabitation, doit tenir compte de cette réalité et de la variété de résistances – ou de résiliences – des différentes relations sémiotiques en présence.

Semiootilise sideme olemuse ja tugevuse uurimine. Juhtumiuring liminaallikidest Tartus

Artiklis kirjeldatud juhtumiuring on osa kasvavast kultuurikontekstist, milles loomi peetakse üha enam sotsiaalseteks ja eetilisteks subjektideks ning nende viibimist inimeste läheduses üha vähem kõrvaldamist väärivaks ebaseaduseks, seda nii teaduslikus kui ka ühiskondlikus perspektiivis. Uuringu eesmärgiks on mõista erinevaid aspekte (materiaalseid ebamugavusi, emotsionaalseid suhteid, sümboolset väärtust, elurikkuse tajumist jne), mis valitsevad inimeste ja teiste liikide vahelistes suhetes keskkonnas, mida sümboolselt ikka veel peetakse igasugustest looduslikest keskkondadest eraldi seisvaks, elurikkuselt vaeseks ning eranditult inimestele kuuluvaks. Käesolevas uurimuses üritatakse kaardistada jagatud linlikku ökosüsteemi ning näidata, et paljud suhted, kooselutsemisprobleemid ning linnakorralduse kitsaskohad on seotud semiootiliste protsessidega, mida on võimalik muuta. Juhtumiuringu üks peamisi tulemusi on 'semiootilise suhte vastupanu' mõiste: tööik, et mõned semiootilised suhted, eriti sümboolsed, tunduvad vastu panevat kõigile tõenditele, mida võib neile vastu vaidlemiseks välja pakkuda. See mõiste postuleerib, et mitte kõik semiootilised suhted pole võrdselt tugevad või võrdselt vastupidavad väliste katsetele neid modifitseerida ja et potentsiaalsetel semiootilistel lahendustel, mida käiakse välja semiootiliste suhete parandamiseks, näiteks kooselutsemisolukordades, tuleb suhestuda selle reaalsusega ning erinevate semiootiliste suhete vastupanu – või säilenõtkuse – mitmekesisusega.