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Between Humans and the Rest of the Natural World: A Corpus-Based Study of Popular Science Articles in Translation with a Focus on Human Categories

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Abstract
This paper presents a corpus-based analysis of popular science articles published in Scientific American *and translated into Polish. Its aim is to analyze how lexemes denoting human categories such as "human", "people" and "person" are translated in popular science texts and to establish whether there are shifts in those categories that may lead to modifying the way of depicting human relationships to other animals or the environment, especially by emphasizing or attenuating anthropocentrism or human exceptionalism expressed in texts. The bilingual corpus used in this study comprises 184 pairs of source and target texts from the English-language version of* Scientific American *translated into Polish and published between January 2019 and January 2023 in* Świat Nauki *(the Polish edition of* Scientific American*). The design for this study included corpus creation and compilation, exploration of word lists, concordance and parallel concordance for the translation of human categories. The findings suggest that human categories are usually sustained in target texts and human relationship to other animals or the environment is also sustained in translation. However, there are also moderately frequent shifts in explicitness, occasionally accompanied by sentence structure change, resulting in changes in the perceived human exceptionalism and anthropocentrism and emphasizing or attenuating human agency in environmental depletion.*

Keywords: *corpus, translation, anthropocentrism, human exceptionalism, popularization*

1. Introduction

This paper attempts to address the issues discussed by Cronin (2017), who called for adopting a wider perspective in translation studies and including more ecocentric approaches. It is also a continuation of the discussion on the representation of the voices of nature in translation inspired by Taivalkoski-Shilov (2020). According to Michael Cronin's (2017) diagnosis of the current state of ecological thought in translation studies, the environmental perspective is, in fact, absent, even though its presence may seem more than justified. Since Cronin's *Ecotranslation* was published, environmental problems and the representation of nature have received some attention in translation studies, for instance from Sealey (2019), Desblache (2020), Taivalkoski-Shilov (2020), Wang (2023), Dasca & Cerarols Ramírez (2024). However, Michael Cronin's (2017) observation that there is a gap in research into translation remains relevant today as translation studies almost completely disregard the ecological aspects of translation. Seeking the ecological perspective in translation studies is justified by the reality of the field. After all, translators function and actively participate in a multidimensional ecosystem – translators handle texts about its problems, mediate communication, participate in negotiating the role of technical development, tourism or food production in environmental change (Cronin 2017); yet, translation scholars hardly ever discuss those issues. Translation research rarely touches upon the relationship between humans and our environment. Perhaps one possible answer to these demands is to look critically at the

language used to describe nature, even though, as Cronin (2021: 47) notes, from the point of view of the theoretical or methodological framework, the social factors affecting translation as much as the environment are more important than the intra-textual dynamics. However, linguistic analysis may shed light on the relationship between humans and the rest of the natural world if we take into account that the ecotranslational perspective emphasizes the connection between translation and environment and thus, the focus of research is shifted to translation and language contact that relate human activity to the environment (cf. Dasca & Cerarols Ramírez 2024).

Exploring the ecotranslational perspective involves opposing the assumption that translation is supposed to be unrelated to nature, which is rooted in the nature-culture dichotomy – a far-fetched simplification of people's relationship with the world around them (Taivalkoski-Shilov 2020). Culture is, in fact, rooted in nature, and translation, among other things, mediates the reciprocal interactions between culture and nature (Desblache 2020). Ironically, nature tends to be conceptualized as completely separate from biological life in cultural contexts and thus becomes reduced to specimens preserved in museums, dusty skeletons or volumes detailing the systematics of various organisms (cf. Desblache 2020).

Translation studies deal exclusively with the translation of human communication while recognizing the diversity of its forms (Cronin 2017: 72–3). It follows that research into translation is anthropocentric. What is more, human and, by extension, humanistic categories also presuppose the existence of a nonhuman element, animate and inanimate entities, so far absent or treated instrumentally in the anthropocentric research and popularization activities, as well as translation (Cronin 2017: 92).

It seems that anthropocentrism and human exceptionalism, which are frequently indicated as responsible for the environmental crisis (Washington et al. 2021; Droz 2022), can be traced in texts discussing environmental problems and their translations. They can become the subject of translation research, if they are present in source and/or target texts. The aim of this paper is to study popular scientific texts which discuss environmental problems, analyze how lexemes denoting human categories such as "human", "people", and "person" are translated in popular science texts and establish whether there are shifts in those categories that may lead to modifying the way of depicting human relationships to other animals or the environment, especially by emphasizing or attenuating anthropocentrism or human exceptionalism expressed in texts.

2. Anthropocentrism and human exceptionalism

Anthropocentrism, a view that situates humans as the focal point of interest and the main reference point, assumes that only humans have inherent value, while the value of other beings or organisms, components of the world, depends on their usefulness for human purposes, and is therefore instrumental (Goralnik & Nelson 2012; Kopnina et al. 2018; Washington et al. 2021; Wang 2023). For instance, animals are often described in the context of their relationship to humans and their usefulness (or lack thereof), for example, as resources, sources of food ("products"), companions ("pets"), or "pests" (Cook & Sealey 2018: 312). Some animal names, in fact, denote products made from their meat, for instance "fish" or "chicken" (Cook & Sealey 2017: 312). They are also described as "wild", "domestic", "dangerous" – with humans as the point of reference, forming an anthropocentric system (Cook & Sealey 2018: 315).

Nevertheless, essentially, all ethical systems are anthropocentric, since humans are the ones with the cognitive capacity to formulate moral judgments, so the anthropocentric ethical system is the only logical ethical system available to us (Goralnik & Nelson 2012). The origins and roots of anthropocentrism are found in ancient Greek philosophy, Judeo-Christian traditions, Renaissance/Reformation, modernism and postmodernism (Washington et al. 2021).

Even though the term *anthropocentrism* may be ambiguous, it frequently has negative connotations, especially if it appears in the context of ethical considerations about human activity, the essence of humanity, and how we (humans) derive knowledge about the world around us (Droz 2022). The view that anthropocentrism is ethically wrong and responsible for the environmental crisis is quite prominent in environmental discourse (Kopnina et al. 2018). Anthropocentrism is sometimes considered a scapegoat for the environmental crisis (Droz 2022: 24) – it is sometimes accused of belittling the status of the nonhuman world, treating it solely as a resource, which in turn leads to fuelling the ecological crisis and accelerating the extinction of species (Washington et al. 2021). Anthropocentrism is even sometimes considered to be the fundament of ecocide (Washington et al. 2021; Droz 2022). When it occurs in this sense, it is synonymous with, for instance, resourcism, extractivism and also homocentrism, androcentrism, speciesism or species discrimination (see: Cronin 2017; Kopnina et al. 2018; Washington et al. 2021; Droz 2022). Other terms affiliated with anthropocentrism include *human supremacy*, i.e. the belief that humans are "the superior life form of the planet" (Washington et al. 2021: 287), *human chauvinism*, which says that "humans are the only subjects of moral consideration" (Washington et al. 2021: 287) and *human exceptionalism*, according to which humans are essentially different from all other animals (Washington et al. 2021). Some environmental ethicists, however, argue that the criticism of anthropocentrism can be counterproductive and misleading because it tends to overlook the nuances of inequalities between people who differ greatly in their impact on the environment and ignores a simple correlation: Since ecosystems constitute a life support system for humans, anthropocentrism can provide motivation for environmental protection as it is beneficial for humans (Kopnina et al. 2018).

As mentioned above, *human exceptionalism* is affiliated with *anthropocentrism*. Those two terms, however, are not synonymous. *Human exceptionalism* assumes that humans are radically different from any nonhuman beings (Cronin 2017: 68–9). Having said that, we need to state that the differences between humans and other animals are a fact: The most prominent ones include language, cognitive and creative potential (Merleau-Ponty & Séglard 2003; Toadvine 2007; Kirby 2014; Dean 2021). The fact that one species differs from other species is actually the fundament for biological taxonomy: Giraffes are exceptional and dissimilar from other species, as are penguins and seahorses, etc.:

> From the standpoint of contemporary evolutionary biology, it seems that the answer would be negative: human capacities, including those of language and self-consciousness, are just as much a product of evolutionary selection as the traits of other animals. Even if humans have capacities that distinguish us from other species, these are no more or less exceptional than the distinguishing capacities of others. As Mary Midgley puts this point, "We are not the only unique species. Elephants, as much as ourselves, are in many ways unique; so are albatrosses, so are giant pandas." (Toadvine 2007: 40, cf. Midgley 2005: 152).

In the case of humans, however, the differences are "fetishized" (Cronin 2017: 68) and used as a justification for giving humans a special place in the ecosystem – this is the aspect

that connects human exceptionalism and anthropocentrism. It is worth noting that "recent research suggests that the cognitive gap between humans and other animals is much narrower than has formerly been supposed, with the growing consensus that our differences are a matter of degree rather than kind" (Toadvine 2007: 40). The tendency towards human exceptionalism may be rooted in "our anxieties about the unacceptable parts of our own natures" (Toadvine 2007: 40). Human exceptionalism, much like anthropocentrism, is blamed for animal exploitation and the destruction of the natural environment (Dean 2021). In a sense, one of the effects of climate change and the discussion about it is an increasingly critical assessment of the belief in human exceptionalism (Cronin 2021).

Neither anthropocentrism nor human exceptionalism is a linguistic phenomenon, but the manifestations of both of them can be linguistic. For example, they can be found in dictionary definitions and encyclopaedia entries, which characterize animals in terms of their usefulness as potential human food or as a farm aid, fur donor, subject of laboratory experiments, etc., and emphasize features considered aesthetically appealing by humans – large eyes or the graceful and agile gait of deer (Heuberger 2003).

3. Popularization and nature

Popularization can be seen as a social process involving discursive-semiotic practices that take into account various media, books, the Internet, as well as other genres aimed at disseminating scientific knowledge to lay audiences in an accessible way (Calsamiglia & Van Dijk 2004; Bołtuć 2015). Popularization is characterized not only by certain textual structures but, above all, by the properties of the communicative context: participants and their roles (journalists, readers), their knowledge and attitudes, which are significant factors in the linguistic analysis of the textual structures of such discourse. Popularization involves reformulation and recontextualization of scientific knowledge. Accordingly, the language of popularization publications is expected to be adapted appropriately to the audience, the genre and the requirements of the medium. From the perspective of this study, it is especially important that media actively participate in shaping popular knowledge and opinions about science and scientists, deciding which elements of scientific knowledge to disseminate and how to do so (Calsamiglia & Van Dijk 2004; Bołtuć 2015). That means that they can be a significant element of the tradosphere shaping the attitudes to environmental issues.

The available studies exploring how nature is depicted in popularization include the analysis of modal verbs used in the narrations of nature documentaries. The results indicate that animal behaviour can be depicted as motivated by compulsion or obligation, in a continuum, from circumstantial necessity to the obligation to make an informed choice (Sealey & Oakley 2014). Popular science texts may have anthropocentric overtones and elements of anthropomorphism that may be retained or amplified in translation, as previous studies of Polish translations of English-language popularizations show (Karwacka 2020). In the translation of popularization, shifts can be observed in wording related to social behaviour or attitudes, as emotional and mental states of animals: The social behaviours and attitudes of animals are occasionally conveyed as expressions of emotions or cognitive states. Translations may portray animal behaviour and mindset as slightly more intentional than in the original popularized accounts, indicating an underlying anthropocentric bias in the translation process, whether deliberate or unconscious (Karwacka 2020).

4. Methodology

The focus of this study, i.e. the relationship between humans and the rest of the natural world, is motivated by the eco-translation perspective. Operationalizing concepts such as eco-translation, or human exceptionalism or anthropocentrism for the purposes of translation analysis, however, is a challenge, which is addressed by adopting the approach offered by corpus-based critical translation studies (CbCTS), which explore ideological aspects of translation through analyzing transitivity, nominalization, modality, classification as well as keywords and sensitive words (Hu & Li 2019).

In this study, the focus is on classification, i.e. "designation and description of human beings, objects, and events through lexical means in texts" (Hu & Li 2019: 597). The analysis centers on the classification of humans vs. (other) animals, which may be influenced by the translators' or editors' positions and beliefs (Hu & Li 2019). In analyzing translation, classification in the target text may potentially be motivated by the ideology of the author, source text and source culture and also by the translator along with target culture (Hu & Li 2019). Therefore, it seems that exploring human categories may yield observations regarding shifts or manipulations, understood as textual operations (cf. Chesterman 2016: 89), which may affect the way in which humas are depicted in texts about natural environment. The initial assumption was that it would be possible to study the visibility and significance of human agency in environmental changes and the human role in the natural world as well as some linguistic operations which would be related to anthropocentrism or human exceptionalism.

The specific goal is to explore popular science articles about the natural environment with a special focus on lexical units consisting of or containing words which refer to humans and animals – *human*, *people*, *man*, *person* – to see how the humans and their relationship to their environment are depicted in translated texts. The lexemes chosen for this study are related to humans but the fact alone that they are used in a text does not necessarily suggest an anthropocentric or an exceptionalistic approach; however, they may help observe, for instance, potential shifts in conveying the human relationship to the environment. The aim of the study is to trace those potential shifts rather than formulate recommendations on adequate solutions to translation problems.

4.1. Analysis

The tools used in this study include the functionalities available in Sketch Engine: word lists, concordance, annotation and parallel concordance (Kilgarriff et al. 2004; Kilgarriff et al. 2014). The size of the corpus is relatively small (see Section 4.2), therefore the adopted analysis strategy has quantitative elements which inform the qualitative study.

Whenever translation strategies are mentioned, they follow the classification proposed by Chesterman (2016: 91–109):

- Syntactic strategies: literal translation, loan, calque, transposition, unit shift, phrase structure change, clause structure change, sentence structure change, cohesion change, level shift, scheme change.
- Semantic strategies: synonymy, antonymy, hyponymy, converses, abstraction change, distribution change, emphasis change, paraphrase, trope change and other semantic changes.

- Pragmatic strategies: cultural filtering, explicitness change, information change, interpersonal change, illocutionary change, coherence change, partial translation, visibility change, transediting and other pragmatic changes.

The strategies most frequently referred to in this study include the pragmatic strategy of explicitness change, which is defined as a change "either towards more explicitness (explicitation) or more implicitness (implicitation)" (Chesterman 2016: 105). Whenever explicitness change is detected in the studied material, it is therefore additionally labelled as explicitation or implicitation as appropriate. Another strategy which is frequently referred to is the semantic strategy of hyponymy, which involves translating a source language (SL) subordinate into a target language (TL) hyponym as well as variants SL hyponym – TL subordinate and SL hyponym – TL hyponym (Chesterman 2016: 100).

At the stage of initial screening of the corpus, the word list of nouns revealed a relatively high frequency of the target *człowiek* ('human)' (351 occurrences, 8th position on the list). The source *human* occurred 166 times (27th position) producing a significant discrepancy. Most of the discrepancy can be explained when we combine the numbers of occurrences of the sources *human* and *people* (166 and 186 occurrences, 27th and 22nd position in the corpus, respectively). The number, however, is still not equal (351 vs. 352). The fact that the lexemes were relatively frequent in the corpus could signal the anthropocentric perspective.[1] That is why the subsequent steps were planned with the assumption that the study may reveal certain shifts affecting how the nature and the human-nature relationship are conveyed. The next step was to trace how human categories ("human", "people", "person", "man") were translated to see if there were any shifts that would potentially affect the depicted relationship between humans and the rest of the natural world. The choice was dictated by the assumptions of the study which included analyzing lexical units used as categories. The results of those explorations led to further steps: exploring the translation of "nonhuman" and "including humans".

4.2. Corpus

Acceptable corpus size remains the subject of debate (Corpas Pastor & Seghiri Domínguez 2010; Condamines & Picton 2022: 231), but the tendency is to compile largest possible corpora, which are heterogeneous in genre and domain (Condamines & Picton 2022: 231). As a general standard, 20–50 occurrences of each expression ensure sufficient representativeness (Condamines & Picton 2022: 231). Collecting and compiling bilingual specialized corpora poses a significant challenge (Condamines & Picton 2022: 232). As a result, corpora in a specialized domain are typically smaller and are characterized by a limited number of occurrences and shared contexts (Bertels 2022: 324). Nevertheless, smaller corpora can be valuable for analyzing text genres in the specialized domain: As Watson (2001: 2) observes, a specific corpus does not have to be extensive if it has "a reasonable number of examples of each target word". Therefore, with high-frequency words, a corpus of around 50,000 words should produce at least 10 examples of each word. In the case of low-frequency words, the corpus could be expanded up to 200,000 words. Beyond this point, Watson (2001: 2) postulates, "the law of diminishing returns and the size of the file containing the corpus make further expansion not worth the effort" (Watson 2001; cf. Karwacka 2025b, 2025a).

[1] To shed a wider perspective: The word *cat*, which can refer both to the family or species occurs 145 times, is the second most frequently represented within the animal kingdom. On the other hand, the word *animal* – which is used for all animals, including humans, occurs 515 times.

The above factors were taken into consideration – the corpus used in this study (bilingual focus corpus) comprises 180 pairs of source and target texts from the English-language version of *Scientific American* translated into Polish and published between January 2019 and January 2023 in *Świat Nauki* (the Polish edition of *Scientific American*).

Additionally, to compare preferences in Polish non-translations, a reference corpus was used. It is a collection of Polish-language internet texts from 2019, available in Sketch Engine (plTenTen19). The sizes of the sub-corpora are listed below:

- English sub-corpus: 215,613 tokens; 189,500 words
- Polish sub-corpus: 203,388 tokens; 173,184 words
- Reference corpus Polish Web 2019 (plTenTen19): 4,863,900,915 tokens; 3,994,024,317 words
- English Web 2021 (enTenTen21): 61,585,997,113 tokens; 52,268,286,493 words

The material chosen for this study is popular science for a few reasons: Popularizations discuss the relationship between humans and the surrounding world; they influence the degree of environmental education among the lay recipients and even shape their views on environmental issues. In the case of our study material, i.e. *Scientific American* articles, the availability of parallel texts is an important selection criterion.

The names of translators were not indicated by the journal. The texts were chosen with regard to their topic – natural environment, animals, plants, bacteria, funghi (tags: agriculture, animals, biology, climate change, conservation, earth, ecology, environment, evolution, extraterrestrial life, genetics, geology, microbiology, paleontology, plants, pollution, public health, space and physics, vaccines). Texts discussing new technologies, architecture or urban infrastructure and human psychology were excluded because they were unlikely to allow observations of the relationship of humans and the rest of the natural world. The corpus was first processed manually by removing titles – according to the information provided in each issue of *Świat Nauki*, headings are created *de novo* by the Polish editing team. The files were then converted into text-only documents. Next, they were uploaded to Sketch Engine and automatically compiled. The alignment was checked manually, and – where texts were not correctly aligned – the files were checked, cleaned and re-aligned.

5. Results

5.1. People (lemma)

The first step involved searching for the lemma *people* in source and the equivalents in target texts. In the vast majority of cases, synonymy was used (see Table 1), including such solutions as *człowiek*/*ludzie* (lemma denoting singular 'human' and plural 'people'), *osoba/osoby* ('person/s'), *homo sapiens*, *ludność* ('population of people'). The cases of hyponymy involved using more specific categories *mieszkańcy* ('inhabitants'), *badacze* ('researchers'), *strażacy* ('fire-fighters').

Table 1: Strategies used for translating the lemma *people*

Strategy	Number of occurrences
Synonymy	137
Hyponymy	21
Explicitness change – implicitation	17
Transposition	10
Abstraction change	1
Total	186

There were 17 cases of explicitness change towards implicitation consisting of only implying humans or even omitting them. However, they seem to be motivated by style choices rather than the tendency to conceal human participation in the discussed situations or phenomena:

(1) ST: The type of lateralization **most familiar to people** is undoubtedly handedness.

TT: **Najbardziej znanym** przejawem lateralizacji mózgu jest bez wątpienia preferencja w użyciu jednej z rąk.
(‘**The most well-known** manifestation of brain lateralization is undoubtedly the preference for using one hand.’)

These shifts can be attributed to a preference for more abstract and impersonal forms, particularly in explanatory contexts, the use of which results in reducing overt references to human participants without altering the propositional content or deliberately manipulating human visibility. One of the ways in which explicitness change can be achieved is through sentence structure change involving the use of the passive voice and impersonal forms, which was found in 4 occurrences. For instance:

(2) ST: **people widely considered them** to be tall tales

TT: relacje na ten temat **długo uważano** za wykwit marynarskiej fantazji
(‘the reports on this subject **have long been regarded** as a resurgence of nautical fantasy’)

Such changes are not obligatory, i.e. they do not seem to be dictated by pragmalinguistic conventions: The translator could have formulated the sentence with a personal active form (*ludzie uważali*, an equivalent of *people considered*) but chose the impersonal form.

A similar effect of implicitation is achieved through clause structure change involving the use of an impersonal form – the defective verb *można* (‘one can’) + infinitive in 1 target text:

(3) ST: extinct florals that **people could smell** while meditating

TT: wymarłych kwiatów, które **można by wąchać**, medytując
(‘extinct flowers, **which could be smelled** while meditating’)

Transposition mainly involved translating *people* into various forms of pronouns like *my* (‘we’, 4 occurrences) or *ci/tych* (‘these’/’those’, 4 occurrences). The lexeme *people* occurs 186 times in the corpus, and, as we will see in the sections below, there are more lexemes that are synonymous.

Replacing lexical items that denote *people* with pronouns may potentially affect the visibility of the human element. However, in the occurrences found in the corpus, the equivalent of the first-person plural form *we* is used to denote all humans, explicitly excluding non-human beings, while the equivalent of *they/those* is employed primarily as a strategy to produce concise and natural-sounding sentences in Polish rather than to obscure human reference. See example 4 below.

(4) ST: the **number of people who reach the finish line** has been going down

TT: spada **liczba tych, którzy docierają do mety**
(‘the **number of those who reach the finish line is declining**’)

We know that the mere fact of mentioning people does not indicate an anthropocentric perspective. But the fact that people are mentioned much more frequently than any other species can imply centering on the human aspect. Nevertheless, the translation of the lexeme *people* does not point to any shifts in perceived anthropocentrism or human exceptionalism; the use of transposition and implicitation did not alter the anthropocentric effect. It is worth stressing, however, that explicitness changes and transposition may affect the way in which the human–environment relationship is reflected in a translated text. Section 5.2 presents cases in which such translation shifts obscure or emphasize human impact on nature.

5.2. Human (lemma, noun)

Table 2: Strategies used for translating the lemma human – noun

Strategy	Number of occurrences
Synonymy	127
Transposition	20
Explicitness change – implicitation	13
Hyponymy	6
Total	166

In the case of *human*, there were separate queries for *human* as noun and as an adjective. For the noun, the equivalents used included mainly synonyms *człowiek/ludzie* (‘human’/‘people’, 124 occurrences) and single occurrences of *istota ludzka* (‘human being’) and *homo sapiens*. The transpositions mainly involved using the pronoun *my* (‘we’) to translate the lexeme *human*. This strategy can help avoid lexical repetition in the target text, but it may also implicitly reinforce a human–animal dichotomy and perpetuate an us–them opposition. See example 5 below.

(5) ST: the findings hint at the pest-deterrent **services bats may offer humans**.

TT: odkrycia te są wskazówką, że być może i **my moglibyśmy skorzystać z usług nietoperzy**.
(‘the findings are a clue that perhaps **we, too, could benefit from the services of bats**.’)

There were 13 cases of explicitness change (see Table 2) – towards implicitation, for example:

(6) ST: The findings, published in 2019 and 2020, revealed a clear path for how **humans could enhance the reactions**.

TT: Wyniki tego projektu, opublikowane w latach 2019 i 2020, wskazały jasno, **w jaki sposób można by zwiększyć intensywność reakcji** chemicznych
(‘The results of this project, published in 2019 and 2020, clearly indicated how **the intensity of chemical reactions could be increased**.’)

What is particularly interesting is that, in 4 cases, implicitation is used while discussing the human impact on the environment:

(7) ST: A cinnamon-breasted sandpiper that is declining rapidly **as humans overharvest** the horseshoe crabs

TT: Liczebność tych pięknie ubarwionych bekasowatych szybko maleje **z powodu odławiania** na masową skalę skrzypłoczy
(‘The numbers of these beautifully colored sandpipers are rapidly declining due to the **mass trapping** of horseshoe crabs’)

(8) ST: conditions along these mammal pathways, including routes through **land used by humans for homes**, **crops, forestry or livestock**

TT: warunki wzdłuż takich stref tranzytowych są dla zwierząt rzeczywiście korzystne – w tym celu sprawdzano m.in. **lokalizację domów, pól uprawnych, pastwisk czy lasów**
(‘conditions along such transit zones are really favorable for animals – for this purpose, **the location of homes, cultivated fields, pastures forests and other factors were checked’)**

(9) ST: Historically ignored **because of its paucity of fossil fuels for humans to exploit**

TT: Choć często ignorowane, jako pozbawione paliw kopalnych, **które można by wydobywać**
(‘Although often ignored **as lacking fossil fuels that could be extracted**’)

(10) ST: the myriad other **stressors generated by humans**

TT: niezliczone **inne czynniki wywołujące stres**
(‘countless **other factors inducing stress**’)

The examples above illustrate the use of an impersonal form with a defective verb (9) and changing from passive into the active gerund form (10). Those changes are not obligatory, i.e. the human agency could be made as explicit as it is indicated in STs. Their effect can be described as blurring anthropogenic factors of environmental depletion: The party responsible for trapping crabs, extracting fossil fuels and inducing environmental stress is not directly identified. Is that indicative of anthropocentrism? It definitely does not point to an ecocentric approach.

In the results of the query for humans, the phrase *we/us humans* occurred 7 times. It is an emphatic phrase signaling that the author stresses that they and the readers belong to the same biological species referred to in articles discussing exceptional human features or the group responsible for environmental changes. The phrase is translated with the equivalent of *we (us) humans* (*my, ludzie*), *humans* (*ludzie*) or *us* (*nas)*. However, the number of occurrences is too small to make valid comments on the distribution of solutions.

5.3. Człowiek (lemma)

In the reverse search, when the Polish corpus was searched for the lemma *człowiek* ('man', 'human') to identify the source units, it transpired that the target *człowiek* (351 occurrences) corresponded to the sources *human* (191 occurrences), *people* (99 occurrences), *person* (5 occurrences), *man* (5 occurrences) and pronouns (10 occurrences). There were altogether 41 cases of explicitness change towards explicitation, i.e. the human element was just implied in the source and is explicitly referred to in the target texts. Humans are mentioned as ecosystem participants, as in example 11 below, which mentions the coexistence of humans and wild plants and animals. Humans are also occasionally named as the party responsible for environmental depletion (altogether 4 occurrences), see example 12 below, in which the passive construction "its habitat was razed" is translated with the use of an equivalent of "humans significantly reduced their habitat".

(11) ST: more creative means of **coexisting alongside wild plants and animals**.

TT: bardziej kreatywnego podejścia do kwestii **współegzystencji ludzi oraz dzikich roślin i zwierząt**.
('a more creative approach to the **coexistence of humans and wild plants and animals**')

(12) ST: even as much of **its habitat was razed** to make room for pineapple plantations

TT: mimo że **ludzie znacznie zredukowali ich siedlisko**, by zrobić miejsce dla plantacji ananasów wydobywających ropę naftową oraz luksusowych osiedli mieszkaniowych.
('even though **humans significantly reduced their habitat** to make room for pineapple plantations')

That means that the corpus shows competing approaches – making human agency more explicit as in example (12) above as opposed to blurring this agency, as shown in the previous section. The use of explicitation could also be interpreted as a form of compensation for implicitation (including 17 cases of implicitation of *people*, and 13 of the noun *human*). However, since it is not known whether the texts were translated by the same translator, this

interpretation remains hypothetical. The tension in translating the relationship between humans and the environment that they shape to suit their needs may be indicative of the potential range of approaches to the man vs. nature dichotomy and its anthropocentric aspect.

5.4. Including humans

An interesting additional observation was made concerning the category of humans while exploring the translations of the phrase *including humans* for instance in "animals, including humans", "tetrapods including humans", "creatures, apes, organisms including humans", which emphasize that people are a part of the animal kingdom. Out of 8 occurrences of *including humans (people),* 6 were translated as *w tym (także) człowieka/ludzi*/*ludziom* ('including [also] human/people' [2 declension forms]) (see example 13). In one example, the distance between humans and other animals was increased and people were presented as separate from the animal kingdom (see example 15). In one case, the classification of humans within the tetrapod category became less explicit (see example 14). It illustrates a certain tension surrounding references to humans as part of the animal kingdom and the challenges of overcoming human exceptionalism.

(13) ST: more than 33,800 species of tetrapods alive today, **including humans**.

TT: ponad 33 800 gatunków, **w tym także u człowieka**.
('over 33,800 species, (**also) including humans**.')

(14) ST: we can reconstruct how the basic plan for **the hands of tetrapods, including humans**, originated.

TT: możemy rekonstruować drogę prowadzącą od płetw mięśniopłetwych **do rąk tetrapodów**.
('we can reconstruct the pathway leading from muscular fins to **tetrapod hands**.')

(15) ST: Two other forms of play have only been documented in great apes, **including humans.**

TT: Dwa inne rodzaje zabaw udało się dotychczas zaobserwować jedynie u wielkich **małp i – oczywiście – także u ludzi**.
('Two other types of play have so far been observed only in great apes and, **of course, in humans as well**.')

5.5. Human (lemma, adjective)

Table 3: Strategies used for translating the lemma human – adjective

Strategy	Number of occurrences
Synonymy	44
Transposition	90
Explicitness change – implicitation	5
Hyponymy	1
Total	140

There are 140 occurrences of the adjective *human* in the corpus, and they are most frequently translated with the use of the adjective *ludzki.* It is translated by transposition (90 occurrences) with the use of the noun *człowiek* ('human', 58 occurrences) or the personal pronoun *nasz* ('our') in 36 occurrences, for instance, *human brain – nasz mózg* ('our brain'). There are 5 cases of implicitation, for instance, *human perception – percepcja* ('perception'). There is only one case of hyponymy (see Table 3).

5.6. Nonhuman animals

There were 9 occurrences of *nonhuman* including 1 instance referring to artifacts ("nonhuman artifacts" – "not made by human hands"). The remaining occurrences refer to monkeys, primates, animals, and – broadly – members of communities inhabiting sacred groves ("community members who are not humans", example 17). When *nonhuman* refers to animals other than humans (8 occurrences) that belong to the same groups as humans (apes, primates, animals), the inclusion of humans within other zoological categories is not reflected in 3 target excerpts where *nonhuman animals* is translated as *animals* (see example 16 below). *Nonhuman primates* appears twice: once translated as *primates* (*naczelnych*), and once as *primates, excluding humans* (*naczelnych, poza człowiekiem*, example 18). There is one instance of translation of *nonhuman animals* as *our animal relatives and cousins* (*naszych zwierzęcych krewnych i kuzynów*), and one instance of translating *nonhuman apes* into a less transparent and more technical term *małpy człekokształtne* ('Hominoidea'). It is also worth noting that the superfamily of Hominoidea, the family Hominidae (hominids), includes humans, as well as gorillas and orangutans (Britannica 2026). To sum up, in 4 cases, the *nonhuman* element was completely omitted, thus foregoing the emphasis on humans belonging to the animal kingdom. In other cases, we observe more or less complex strategies to convey the sense of "nonhuman".

(16) ST: Are **nonhuman animals** as good as we are at evaluating rivals?

TT: Czy **zwierzęta** są w tym równie dobre?
Are **animals** equally good at this?

(17) ST: These **nonhuman community members** benefit them in many ways;

TT: Ci **przedstawiciele wspólnoty, którzy nie są ludźmi**, przynoszą nam rozmaite korzyści;
('Those **members of the community who are not human** bring us various benefits;')

(18) ST: we now have archaeological records for three **nonhuman primate lineages**.

TT: dysponujemy zapisem archeologicznym dotyczącym ewolucji technicznej trzech odrębnych **linii naczelnych, poza człowiekiem**.
('we have an archaeological record of the technical evolution of three distinct **primate lineages, apart from humans.**')

Interestingly enough, in the corpus of Polish-language internet texts in Sketch Engine (plTenTen19, 4,253,636,443 words) from 2019, we can find the phrase *zwierzęta pozaludzkie* (‘beyond-human animals’) – a direct equivalent of *nonhuman animals* – 19 times (in 7 sources). It needs to be noted that, on the one hand, dividing animals into human and nonhuman acknowledges the fact that people are a part of the animal kingdom, and on the other hand, reinforces the human-animal dichotomy.

5.7. Man, person

The source units *man* and *person* were also included in the explorations. The noun *man* has 18 occurrences, including 15 denoting human males and only 3 times referring to all the people, and then it is translated as *człowiek/ludzie* (‘human’/‘people’). The word *mężczyzna* (‘man’, understood as a human male) is used 10 times. The remaining cases are translated by transposition (pronouns), hyponymy and explicitness change (implicitation). *Person* occurs 21 times, 9 of which are translated as *osoba* (‘person’), 5 as *człowiek/ludzie* (‘human’/‘people’), and the remaining ones are translated by explicitness change (implicitation) and hyponymy.

6. Discussion

This study focused on the lexical units used to classify the categories of “human”, “animal” and “nonhuman”. The starting point for the study was an initial screening of the corpus, which showed a relatively high frequency of human-referencing lexemes and suggested a potential anthropocentric perspective. This observation informed the subsequent analytical steps focusing on human categories and possible shifts in the representation of the human-nature relationship. In order to shed light on the potential anthropocentric orientation of the texts in the analyzed corpus, the frequencies of the most prominent human-related lemmas are presented in Table 4. The lemmas *human* (noun) and *people* occur more frequently in the English source texts of the focus corpus than in the English reference corpus (1,632.5 vs. 1,192.29 occurrences per million tokens). Similarly, the lemma *człowiek* (equivalent of *human* and *man*) occurs more frequently in the focus corpus than in the reference corpus. However, these findings only indicate a potential tendency and do not in themselves demonstrate an anthropocentric bias. Rather, they show that references to humans occur more frequently in the focus corpus.

Table 4. Frequency of human-referencing lemmas in the focus corpus and reference corpora

Lemma	Frequency in the focus corpus (per million tokens)	Frequency in the reference corpora (per million tokens)
Human (noun)	769.9	84.18
People	862.6	1,108.11
Człowiek/ludzie (equivalents of *human/people*)	1725.77	1,080.45

The context of the study is the tension between overcoming and reinforcing anthropocentrism and human exceptionalism in texts about nature. The observations made in this study indicate that when translating human categories, translators usually choose equivalent synonyms, which produce a similar effect with respect to how people are referred to.

In a smaller but still considerable number of cases, the human element is made more or less visible or obvious through explicitness change. This can have a number of consequences. Firstly, humans can be depicted and perceived as the "default" creatures (e.g. *human gut – jelita* ['intestines']). Those changes are not related to pragmalinguistic conventions and can be treated as shifts between covert and overt anthropocentrism. What is more, human participation in environmental processes may be obscured. This applies to destructive activities (*other stressors generated by humans – inne czynniki wywołujące stress* ['other factors inducing stress']) but it may also serve to acknowledge the simple fact that humans are part of the natural world. As presented in the sections above, in the analyzed corpus, explicitation is used slightly more often than implicitation (41 vs. 38, respectively), which may be considered consistent with the explicitation hypothesis, according to which translators tend to make implicit information in the source text more explicit in the target text (Blum-Kulka 1986). Changes in human visibility can be the result of changing sentence structure into passive. Changes related to transitivity structures may reflect the translator's communicative intentions and they guide the readers to perceive, in this case, environmental changes from a particular perspective, which can suggest certain ideological implications (Hu and Li 2019). It is worth noting that there are also changes resulting in increased visibility and emphasized responsibility of humans (e.g. *habitat was razed – ludzie zredukowali ich siedlisko* ['people reduced their habitat']). With regard to the visibility of the human agency and human impact on the natural environment, the findings are evenly distributed: Human influence is obscured in translation in four cases, and it is emphasized in four cases in the segments containing the studied lexemes. Even though the effect achieved does not necessarily need to result from translators' personal ideologies, anthropocentric – or, conversely – ecocentric overtones may be added or removed in translation.[2]

Another noteworthy finding concerns phrases such as *nonhuman animals* or *animals including humans* which are translated either in a way that conveys the fact that the homo sapiens species belongs to the *Animalia* kingdom or in a way that moves humans away from other animals – even though such occurrences were not frequent in the corpus, their presence signals that the relationship between people and other animals can be a translation problem. This problem is also seen in such translations as: *we humans are clearly the odd ape out – ludzie są na tle swoich bliskich biologicznych kuzynów bardzo nietypowymi stworzeniami* ['humans are very atypical creatures compared to their close biological cousins'], where the explicit reference to humans as apes is replaced by a more general and less taxonomically precise description. On the one hand, this shift obscures the biological continuity between humans and other primates, on the other hand, it still recognizes that a connection exists between those groups.

The study may be deemed anthropocentric in nature since it focuses on human categories, but it seems important to note and raise awareness to the categories that we use when we talk about humans and (other) animals, especially when we refer to them collectively or when we compare humans to other species. This challenge is explained by Ted Toadvine:

[2] See also Karwacka (2025c) for a discussion of the results of this study and a continuation of research into anthropocentric and ecocentric overtones in translation.

"Since the drawing of the distinction between humans and other animals concerns the constitution of our own identities, it has been acknowledged that the drawing of this distinction is not – nor can it be – an entirely neutral or objective matter" (Toadvine 2007: 40). Nevertheless, it seems to be worth the effort as it may shed light on the language we use to refer to the coexistence of humans and animals in a world essentially dominated by humans (cf. Cronin 2017: 116).

7. Limitations

This study was conducted on a relatively small corpus in one language pair, so its conclusions are limited to this pair only, and should be treated as the findings of a corpus-informed qualitative study. The categories chosen for the analysis, though not yielding revolutionary observations, still offer some understanding of how translators approach the human-nature relationship in popularizations. Acknowledging these limitations, future research could build upon these findings by exploring additional categories or employing different methodologies.

8. Conclusion

This study concerned tracing human exceptionalism in popularization articles devoted to environmental problems and their translations by analyzing source and target lexical units referring to humans and animals. The results show that the way in which a source text conveys human relationship to other animals or the environment is usually also reflected in target texts, but there are also occasional shifts in the perceived human-nature relationship, with infrequent overtones of human exceptionalism, in most cases, resulting from explicitness change occasionally accompanied by sentence structure change. Such shifts may but do not have to be motivated by translators' personal ideologies. Whether this bias is conscious or not, its presence in the translation process may affect the way in which the problems addressed in the articles are perceived by the readers, as they may, for instance, be less aware of the human impact on the natural world.

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