Case Report

An Eco-linguistic Study on Plants (A Case Study on Plant Entries in Farhang-e Bozorg-e Sokhan)

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Abstract

Eco-linguistics concerns linguistic expressions that can improve the way human beings deal with their ecosystem. To reiterate, the connection between human language and the environment in which he lives has been a matter of curiosity for years. However, there has remained a question of whether it is nature including the ecosystem in a particular area that has effects on human language or vice versa. The next question which springs into mind would be the quality of the mentioned correlated link (i.e. language and nature) not to mention how these two sides can influence each other. Regarding the effects of language on human attitudes, and dictionaries as a main source of culture, the current study has selected all entries related to plants listed in "Farahng-e Bozorg-e Sokhan". Based on studying 75,000 main entries, 1,312 entries related to plants have been extracted. Then, they were categorized based on botanical definitions as well as the parts of their body such as "wood, trunk", "flower, blossom", "fruit, nut", "kernel, seed", "nectar, syrup", "leaf, vegetable" and "powder, or pollen". After that, all entries' usages as mentioned in the dictionary whether being beneficial for humans in the form of "food", "medicine", "industrial and decorative use" or being detrimental to humans in the arrangement of "drug, poison, and weed or wild plant" were analyzed according to an eco-linguistic perspective. On the basis of findings, 82 percent of definitions were positively or negatively humanized, while less than 18 percent were neutral in which plants were regarded as independent entities regardless of human benefits. On account of the tangible data in the findings of the study, it seems to be fair to say that human beings directed their attitude towards plants mostly for their own benefits and usages, the notion which was introduced conspicuously in the definitions of plants.

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INTRODUCTION

In its first encounter, the term "*Eco-linguistics*" could be met with bafflement. To be more precise, this term associates ecology and language, two fields that at first glance seem to be totally separate areas of life, however, it mainly focuses on the relation among the cultural and linguistic concepts with the environment (Stibbe, 2015). Moreover, in pursuing the interaction between language and ecology, eco-linguistics offers a new role for linguistics. It elucidates the liaison between language and ecology not to mention how linguistics can pave its way through life sciences. This implies that eco-linguistics encompasses the core concepts of language, the environment, and the interaction between them, resulting in the interdependency of language, mind, and the living world (Linell, 2009; Cowley and Zhang, 2011; Chen 2016). Earlier, Sapir and Whorf (1929) had presented valuable ideas about the relation between language, humans and their habitation. They argue that there is a close relation between the language use and the environment around the speakers. It means that both language and the methods of using it have effect on the human's thought and the world. The human environment and cognition of speaker have a deniable effect on the language. Furthermore, it considers the meaning as the result of interactions between human societies and language users in a specific environment (Ghatreh, Poshtvan, Talebi-Dastnayi, 2015).

In view of the special approach of eco-linguistics to the relation between language and the environment, one of the most significant concepts in this field refers to the dominance of anthropocentric attitude in the context (Fortuna et al, 2021). Anthropocentrism is a group of explicit or implicit concepts, perceptions, suppositions, schemas and ideologies which consider the human being as the central element of the world or even the existence (Rakei et al. 2016). This point of view, most of the time, ends in a utilitarian attitude towards nature, plants, and animals. That is to say, it does not rely on the independent living right of other creatures and instead, looks at them as an unlimited source in order to provide the needs and benefits of humans. From this vantage point, human is the center of the world, but animals, plants, and objects are valuable just when they are directly or indirectly along with human benefits (Ghiasian & Shirini, 2016).

There are many significant consequences of the anthropocentric vision, which intensely has an impact on the means by which humans construe their interactions with other species, as well as with nature and environments (Heuberger, 2017). Some of these are debated as follows:

The anthropocentric outlook proposes that humans possess superior inherent worth to other species. This attitude leads to the notion that any species that are of possible use to humans can be a "supply" to be demanded and misused. The mentioned convention frequently happens in an unmanageable style, subsequent to degradation not to mention deforestation, at times to the point of elimination of the organic resources, as has happened to the *Rhynia*, *Calamites*, *Lepidodendron*, and other plants.

The opinion that human beings own more central importance than other species similarly influences ethical decisions about communications with other creatures. These ethics are repeatedly used to validate treating other species with behaviors that would be revealed ethically intolerable if humans were treated in the same way. For instance, plants such as trees, bushes and so, are regularly neglected when developments are of concern for humans such as disregarding green life in the jungle, as well as mountains just for the sake of constructing villas or sacrificing plants for doing research in order to advance in agricultural developments. This discriminatory behavior with other species has been characterized as "speciesism" by ethicists.

One more repercussion of the anthropocentric vision is the conviction that humans rank at the zenith of the biological evolutionary

headway of species and of life. This confidence is in contradiction to the contemporary natural understanding of evolution, which advocates that no species are "greater" than any others, despite the fact that some obviously have a more primeval evolutionary ancestry or appear to be comparatively simple life forms.

Regarding all the eco-linguistic issues such as the way human beings categorize their ecology and ecosystem especially plants not to mention how plants are being described in an anthropocentric vantage, it is indispensably evident that dictionaries are regarded as the main sources of descriptions and definitions for environmental phenomena (Liu et al., 2021). Hence, this study concerns analyzing the plant-oriented entries in a comprehensive Persian dictionary entitled "*Farhang-e Bozorg-e Sokhan*[1]", as well as explicating the following questions:

How were plants defined in *Farhang-e Bozorg-e Sokhan*?

Which parts of the plants were mostly of importance and focus on the given definitions?

What is the attitude of this dictionary on the basis of providing definitions of the plants?

METHODOLOGY

The employed methodology for this study was based on presenting an eco-linguistically analytical attitude in describing the descriptive statistics obtained from *Farahng-e Bozorg-e Sokhan*. To be more exact, *Farahng-e Bozorg-e Sokhan* prepared by *Hassan Anvari* with the cooperation of more than one hundred consultants, authors, painters, and translators was written for eight years. This book has been provided in eight volumes with more than 75,000 main entries, 45,000 secondary entries, 160,000 evidential instances, 1,000 examples, and 1,500 images. Besides, this dictionary includes nearly all the words used in old and modern Persian and

[1] Sokhan's Grand Dictionary, 8 vol., under the supervision of Hasan Anvari, Sokhan, Tehran, (2002).

comprises 450 works of 800 poets and authors. Regarding one hundred and twenty thousand entries in this book which is considered the most comprehensive dictionary in the Persian language (Mohammadi et al., 2013), this research thrived towards analyzing all 1,312 plant-related entries. This study was done in a descriptive-analytical frame, through desk study research. The first step of his study was finding every single word in this dictionary that was directly or indirectly related to plants, trees, flowers, etc., and then typing in the entries with their definitions in Excel files to evaluate later. The given definitions were analyzed based on three criteria: negative anthropocentric definition, positive anthropocentric definition, and neutral definition. In the second step, these three qualitative criteria include whether or not, in the definition of the plants, human benefits and usage has been the basis. In other words, in the definitions, were the plants considered neutrally and by themselves, or according to the advantages and disadvantages of the human being? If the answer to this question is "no", then the definition is neutral. And if the answer is "yes", then the given definition would be considered "anthropocentric" and consequently, "positive" or "negative". After a quantitative analysis of each main and secondary entry, the approach of *Farahng-e Bozorg-e Sokhan* was evaluated. There is also another categorization for the definitions. Figure 1 illustrates the percentage plus the proportion of the given definitions in each botanical category. In Figure 2, the frequency of each part of the plant is shown in seven different categories: 1.wood/trunk/stalk/bark 2.flower/blossom 3.fruit/nut 4.kernel/bean/seed/ oil 5.resin/sap/syrup 6.branch/leaf/vegetable 7.powder/lint/fluff/fiber. And finally, Figure 3 illustrates the above-mentioned category, regarding anthropocentric features in definitions: Neutral definition, Negative anthropocentric definition, Positive anthropocentric definition, and Incomplete definition.

RESULTS

Entry definitions based on botanical species

Figure 1 clearly depicts that 1 percent of the entries are plant-related. Furthermore, there are 312 entries, and about 32 percent of them have incomplete definitions which means there is either the other name for the plant like "*Sage*" or there is not enough information about the category, description of its appearance, or its characteristics or for the definition of "*Salix aegyptiaca*" it says, "kind of grapes". So, after leaving aside the incomplete definitions, just 440 entries, about 46 percent

have been introduced as "plant" or "weed" and in 202 cases, 21.02 percent of entries; we can definitely see the plant is "tree", "shrub" or "bush".

Consistent with what can be recognized from the evidence given in the definitions, it is generally convicted that the plant is a tree or bush, however, in many cases, the term has not been mentioned obviously (Franco et al., 2017). The pie chart below illustrates the proportion of various botanical species in *Farahng-e Bozorg-e Sokhan*:
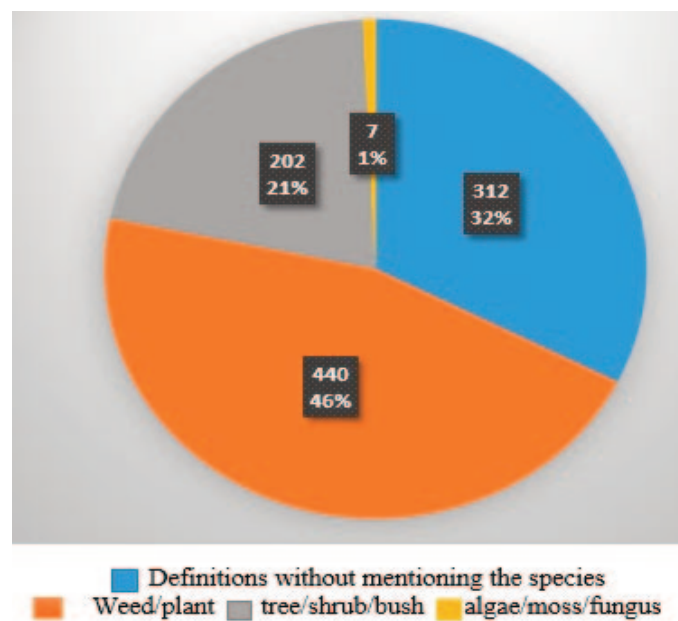

Figure 1. Proportion of the Given Definitions in Each Botanical Category

All in all, the statistics confirm that the largest definitions of plants in this dictionary refer to the category "plant/weed". The next earlier, there is "tree/shrub/bush", and "non-vascular/fungus" took up the smallest proportion in the next group, presenting the answer to the first question of the research.

Entry definitions are based on the remarkable characteristic of the different parts of a plant

Considering a resolution for the second question of the research, the definitions of the plants were divided into following categories: "w o o d / t r u n k / s t a l k / b a r k",

"flower/blossom", "fruit/nut", "kernel/bean/seed/oil", "resin/sap/syrup", " b r a n c h / l e a f / v e g e t a b l e ", "powder/lint/fluff/fiber". The category "fruit/nut" is focused on the usage, significance, and advantage of the plant. In many entries, the focus is on being a fruit or its good taste which all refer to the advantage of the plant just for humans and not itself as a part of nature (Franco & Geeraerts, 2019). The next one is about "flower/blossom" which is targeted at the wonderful color, pleasant smell, and edible or therapeutic usage of flowers, blossoms, or buds.

As it can be realized, the leaf of the plant and its usages are the focal point of attention. Overall, the given category with 139 cases takes up 15 percent of the definitions in the dictionary. By the same token, "kernel/bean/ seed/ oil" with 131 cases gives in 14 percent. To be more precise, the figures for the nested category which is "wood/trunk/stalk/bark" are 102 and 11 percent. In this category, the focus of the definitions is on the quality, ben-efits, and productivity of the plant. However, the thought-provoking point in entries refers to the resin and the usage of the plant in which the number of such definitions is not that high, just 49 entries, around 5.10 per-cent. Last but not the most, the category "powder/lint/fluff/fiber" is the least frequent group in *Farahng-e Bozorg-e Sokhan*. This category with 23 cases, takes up 3 percent of the given definitions.
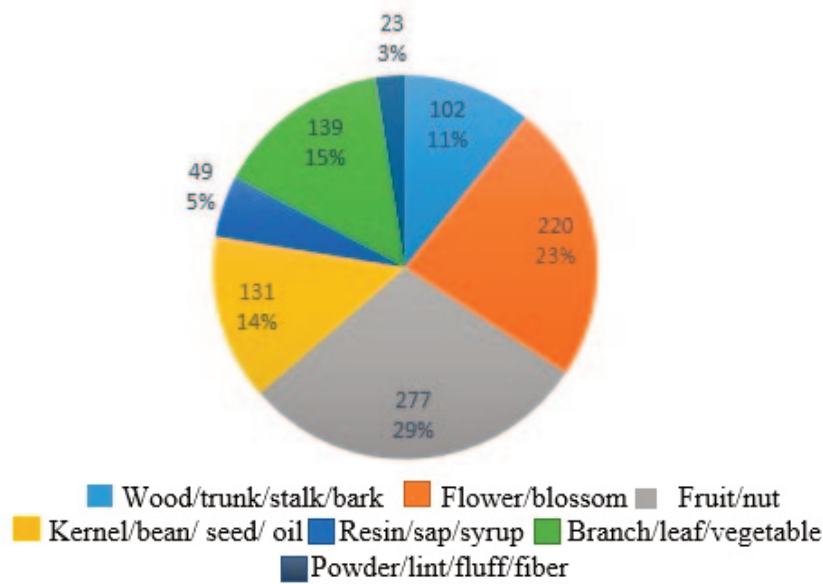

Figure 2. The Frequency of the Given Definitions of Each Part of the Plant

Decorative usage of plants for human

It must be admitted that human beings use plants not only for their vital usages like food and medicine regarding the anthropocentric attitude towards plants but also for their beautiful appearance and pleasant smell (Boycheva et al., 2021). Accordingly, the given figures in the pie chart depict that the fre-quency of this category is so high that it takes up a quarter of the entries in *Farahng-e Bo-zorg-e Sokhan*. As specified in these usages, the beauty of the flower, blossom, or bud is the main focus. Concerning the smell of plants, having a pleasing smell in different parts of the plant like blossom, bud, stalk, stem, powder, leaf, seed, resin and even sometimes the sap of the plant is referred to as its prominence and significance. In some cases, the definition of being an apartment plant or a greenhouse plant is noted in a way that just being appealing to humans is impor-tant (Samudro & Mangkoedihardjo, 2021). As an example, for the plant *Jasmin*, the follow-ing definition is worth noting:

"*A decorative plant which cultivates to a height of 2 meters, with yellow, white, red, pur-ple and amusing smell*" (Farahng-e Bozorg-e Sokhan, 2007 vol.8, p: 8499). In another entry, the definition for Pelargonium is as fol-lows:

"*An apartment shrub with big white flowers inclining to pink with a purple shade of color*" (Farahng-e Bozorg-e Sokhan, 2007, vol. 4. p: 3436). In fact, among the whole entries, 242 definitions for plants were focusing on being ornamental, having a sweet smell or both of

them. The frequency of this category reaches 25.18 percent. Although it may seem that paying attention to the aesthetic aspect of the plant brings no harm to it, however, in the long run, it may convey some negative effects. For instance, people tend to grow beautiful fine-looking plants and some may see it unnecessary to look after other plants, so this attitude may lead to their destruction and annihilation, hence, omitting some plants and making imbalanced nature.

It should be underlined that the way people interact with their environment and surrounding is measured as one of the criteria indicating the human's attitude towards ecosystem and bionetwork. To be more exact, if the specific criteria in the definition of plants are the notion of being rare, human behavior is going to be more cautious and consequently, the plant will be maintained and preserved more cautiously. For that reason, mentioning adjectives such as "plantable" versus "self-grown", "forest plant" or "weed" are dividing plants into two groups, "important for human" and "unimportant for human" which both verify the anthropocentric outlook towards plants. In this research, 122 entries have been introduced with adjectives such as "wild", "self-grown" or "forest plant" confirming the high frequency of the plants. As a result, it is implied that there is no need for spending time, effort or money on protecting them. On the other hand, 74 entries introduce plants with adjective such as "cultivatable", "greenhouse" and "plantable" presenting their significance and importance for human. That is to say, if people tend to get their benefits, they ought to spend time, effort and money for them. As an example, the definition for "Zelkova" is "an elevated forest tree which is beneficial in carpentry and construction works" (Farahng-e Bozorg-e Sokhan, 2002 vol.1, p: 86). While in the definition of "livistona australis", it is mentioned that "a type of decorative, greenhouse plantable palm tree which is shorter than the usual palm tree". It can be easily realized that for the first one, the focus is on being self-

grown and for the second one it is on being decorative and conservatory. In view of that, it is particularly evident that both mentioned examples associate the role of human being in obviously upsetting natural balance; the former is denoting that the plant is used by human for construction and the latter is signifying that it is pleasant and makes the human's surrounding more fine-looking and attractive (Wang, 2020). By and large, putting plants in categories such as "self-grown, forest, wild, rain fed" or "plantable, greenhouse, cultivatable" is again concentrating on various parts of the plant like "leaf, root, stalk, seed, fruit" which gains 20.40 percent of the entries in *Farahng-e Bozorg-e Sokhan*.

Among different anthropocentric features attributed to plants, expanding human features to the plants is remarkably striking and noticeable. When a human develops his own positive characteristic of a phenomenon, he is willing to take care of it or may feel more dominant over it. In the same way, when negative features are used for a phenomenon, the possibility of reducing or ignoring the phenomenon would increase (Von Verschuer, 2021). With reference to this outlook, there are positive or affirmative human-made features like "free", "pretty", "sweetheart", "lovely", "symmetric", "lover-related" "high-reaching", "good-natured" as well as negative or undesirable human-made features such as "guff", "stupid and narrow-minded", "useless", "obsequious", "hippocratic" and "ugly and unattractive" for plants. In Farahng-e Bozorg-e Sokhan, for instance, for "Janni date" the definition is as follows:

"Date or a newly hand-picked fruit, and metaphorically, every decent and satisfying thing" (Farahng-e Bozorg-e Sokhan, 2008, vol.4, p: 3640) which represents its positive features of it. In another instance, for "thistle" the definition is "a grain; a nonsense or pointless word" (Farahng-e Bozorg-e Sokhan, 2011, vol.5, p: 3946) which uses unpleasant human words for a plant. As stated, employing both positive and negative human words for plants refer to the signs of an anthro-

pocentric outlook toward plants and nature. It is obvious this viewpoint does not contemplate plants as independent living creatures but, as a phenomenon that is subservient to human beings and their cognition.

As stated by anthropocentric or non-anthropocentric, as well as neutral definitions, it has been indicated that among 1312 definitions for plants in Farahng-e Bozorg-e Sokhan, 792 cases were anthropocentric and 169 ones were non-anthropocentric. In the following illustration, besides the two aforementioned categories, "incomplete" definitions have been illustrated as well.

As it has been displayed in the last pie chart, the biggest proportion of the definition in *Farahng-e Bozorg-e Sokhan* denotes positive anthropocentric definitions for plants equaling 56 percent of the whole cases. The next frequency refers to incomplete definitions with 27 percent of them. In the third place, there are neutral definitions with a proportion of more than 13 percent. And finally, the negative anthropocentric definitions are shown by only 4 percent. It is worth mentioning that the dominance of anthropocentric attitude towards plants, including both positive and negative definitions represents 792 entries which comprise 82.41 percent of them. So, according to Eco-linguistic criteria, in an-

swering the third question of the research, the attitude of providing definitions for plants in *Farahng-e Bozorg-e Sokhan* is considered an anthropocentric and human-centered orientation.

To recapitulate what has been perceived so far, the following Table 1 represents the overall picture depicted in *Farahng-e Bozorg-e Sokhan* from the most usage percentage as well as a number of entries allotting to plant definitions to the least ones. It seems to be more convincing that weeds or plants take the first stand in defining categories in *Farahng-e Bozorg-e Sokhan* (Table 1; Part A). However, algae, moss, and fungus reveal the least attention for lexicographers to be defined and explained in dictionaries. The next striking notion explicates the fact that there are many definitions that cannot afford even distinguish the species of the plants, the piece of evidence that specifies the complicated and borderless scope of plants on one side, and the deficiency of human knowledge in discovering and understanding the real and actual nature of their environment from another point of view. The same argument applies to the definitions for each part of the plant (Table 1; Part B). That is to say, the parts of the plant such as fruit and nut attained the most benefit of human beings' attention, having the most of number of en-
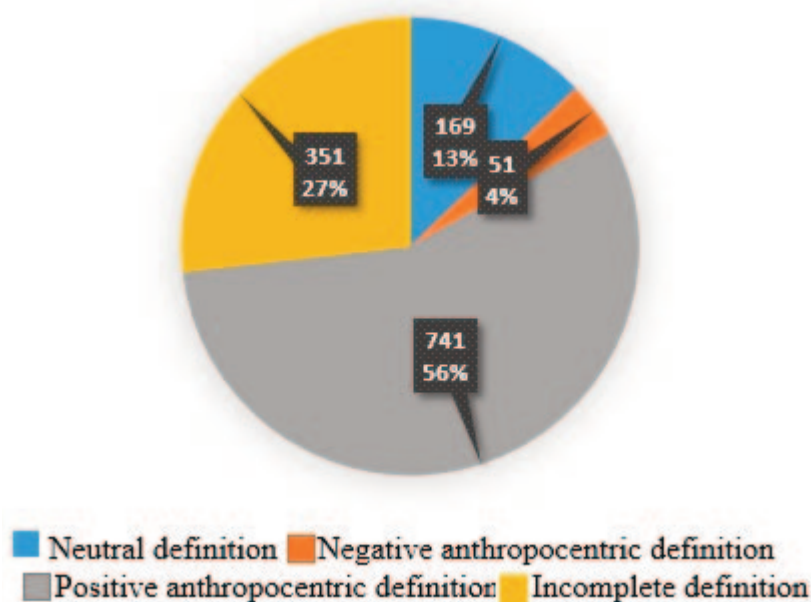

Figure 3: The Frequency of Anthropocentric, Neutral and Incomplete Definitions

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tries as up to 277 ones. The least care goes for powder, lint, fluff and bark fragment, the part which human beings are still confused of making most of that. From an overall perspective, while the frequency of positive anthropocentric definitions (Table 1; Part C) with a number of 741 entries is admired by the researchers, the concept of defining plants based on human need satisfaction still carries the burden of inconveniency for not considering plants as they are present in the ecosystem.

The results and data analysis of this study exposed that statistically, in all eight volumes of Farahng-e Bozorg-e Sokhan, the most frequent category of the plants refers to as "herbaceous plants". While the category "tree/shrub/bush" takes second place, "non-vascular/fungus" remains the least frequent category comprising fern, moss, and fungus. More precisely, on behalf of the significant difference between the numbers of the plants, paying attention to two issues is remarkable of important. Firstly, the words of any language are like the mirror of the environment of its speakers (Zhang & Zhang, 2021). Thus, the high frequency of herbaceous plants can represent the climatic characteristics of plants in the country where they grow. Most significantly, the difference between the species in categories can be either the result of a lexicographer who is unaware of the scientific fact about the plants or the lack of the different species of that category in a certain country (Şimşek, 2020). Additionally, existing or not existing definitions of a specific area could be the consequence of having or not having the specific notion among the speakers of that language. In the same way, the focus on nuts, and fruits pharmaceutical plants seems substantial and obvious due to the fact that they are supposed to be benevolent in nurturing and curing human beings.

CONCLUSION

In a global perception from the number of different categories in Farahng-e Bozorg-e Sokhan, it can be deduced that there used to be harmony in nature (Wei, 2020). However, once humans gained the power to control nature and learned how to use it for their own benefits and desires, harmony was destroyed and deteriorated. No one can mend the harm which humans burdened on the environment but himself. We are the only species on earth who are responsible for damage to nature.

Table 1

An Overall Perspective of Plant Definitions in Farahng-e Bozorg-e Sokhan

Proportion of the given definitions in each botanical category	Percentage	Number of entries
Weed/plant	46	440
Definitions without mentioning the species	32	312
Tree/shrub/bush	21	202
Algae/moss/fungus	1	7
Frequency of the given definitions for each part of the plant	**Percentage**	**Number of entries**
Fruit/nut	29	277
Flower/blossom	23	220
Kernel/bean/seed/oil	14	131
Wood/trunk/stalk/bark	11	102
Powder/lint/fluff/fiber	3	23
Frequency of anthropocentric definitions	**Percentage**	**Number of entries**
Positive anthropocentric definitions	56	741
Incomplete anthropocentric definitions	27	351
Neutral anthropocentric definitions	13	169
Negative anthropocentric definitions	4	51

Specifically, it makes moral forces into a primary instrument for world harmony based on empathetic understanding that seeks harmony while also recognizing differences"(Zhang et al., 2021). This kind of harmony is also seen in "Sohrab Sepehri's[1]" poems, when he looks at nature as a living object, he supports the equal right to live for earth such as other living objects and insists on respecting the nature, understanding the spiritual value and the necessity for preserving it. It is through emphasizing of the same ideology that he knows himself as the earth citizen.

ACKNOWLEDGEMENTS

REFRENCES

Afshar, T. & Abdi-Boloukani, M. (2020). Analysis of human-nature interaction in the Persian proverbs: An eco-linguistics Perspective. *Language Researches*, *5*(10), 45-69.

Anvari, Hasan. (2002). *Farahng-e Bozorg-e Sokhan*. Tehran: Sokhan.

Bahodirovna, B. G. (2021, June). Anthropocentric Dictionaries and Problems of Classification. In *"Online Conferences" Platform* (pp. 59-61).

Boycheva, P., Ivanov, D., & Yaneva, G. (2021). Application of medicinal plants for decorative purposes by the local population on the North Black Sea coast (Bulgaria). *Acta Scientifica Naturalis*, *8*(2), 28-43.

Brown, Michael H. (2017). Nonhuman animals and the relative pronoun 'who' in English learner's dictionaries and graded readers. *Languages & Ecology*, *9*(2), 43-59.

Fortuna, P., Wróblewski, Z., & Gorbaniuk, O. (2021). The structure and correlates of anthropocentrism as a psychological construct. *Current Psychology*, p(1-13).

DOI:10.1007/s12144-021-01835-z

Franco, K., Piringer, B., & Wandl-Vogt, E. (2017). A case-study on lexical variation in plant names using interlinked digitized dialect dictionaries. In *Action meeting ENeL (European Network of e-Lexicography)* (pp. 1-4).

Franco, K., & Geeraerts, D. (2019). 1. Botany meets lexicology: The relationship between experiential salience and lexical diversity. In *Dimensions of Diffusion and Diversity* (pp. 115-148).

Ghatreh, Fariba; Poshtvan, Hamideh; Talebi Dastnaee, Mahnaz. (2015). Ecological approach in linguistic researches. *Language Studies, 6*(1), 231-243.

Ghiasian, Marayamossadat and Shirini, Akbar. (2016). An eco-linguistic approach to anthropocentrism in defining animals in Moin Persian dictionary. *Researches in Linguistics, 8*(1), 53-70.

Ghorbanpour, Amir (2021). Book review, Arran Stibbe, Eco-linguistics: Language, Ecology and the Stories We Live By (2nd ed.). *International Eco-linguistics Association, 4*(1), 18-25.

Haugen, E (2001). The ecology of language. In Fill, A. & Muhlhausler, P. (Ed), *The Eco-linguistics Reader: Language, Ecology and Environment*, 57' 66. London: Continuum.

Heuberger, R. (2003). Anthropocentrism in monolingual English dictionaries: An Eco linguistic approach to the lexicographic treatment of faunal terminology. *AAA: Arbeiten aus Anglistik und Amerikanistik*, 93-105.

Heuberger, R. (2007). Language and ideology. A brief survey of anthropocentrism and speciesism in English. In Fill, A., Penz, H. (Eds.), *Sustaining Language*, 105-124.

Heuberger, R. (2017). Overcoming anthropocentrism with anthropomorphic and physio-centric uses of language. In *The Routledge handbook of eco-linguistics* (pp. 342-354). London: Routledge.

Huang, Guowen and Zhao, Ruihua (2021). Harmonious discourse analysis: approaching peoples' problems in a Chinese context.

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[1] A famous Iranian naturalistic poet

Language Sciences. 85 (2), 23-41.

Indriyanto, K. (2021). An Eco linguistics analysis of the wind Gourd of La'amaomao. *International Journal of Humanity Studies*, *5*(1), 97-108.

Liu, X., Lyu, J., & Zheng, D. (2021). For a better dictionary: Revisiting eco-lexicography as a new paradigm. *Lexikos*, *31*, 283-321.

Mohammadi, M. R., & Abdaltajedini, N. (2013). Survey of Russian loanwords in Persian language: Case study on Farhang–e Bozorg-e Sokhan. *Language Related Research*, *4*(3), 155-178.

Nigmatova, L. K. (2021). Language and cultural issues in Uzbek vocabulary. *Scientific Reports of Bukhara State University*, *5*(1), 30-49.

Rakei, Fatemeh and Naeimi Hashkavaee, Fatemeh. (2016). Metaphor and ecocriticism: Case study on two stories "Gilemard" and "Az Khame Chambar". *Language Studies, 7(1),* 89-103.

Roccia, Mariana (2020). *Changing lives and professional practice: A report on the impact of Eco-linguistics*. International Eco-linguistics Association.

Rosenfeld, Cynthia (2019). From prometheus to Gaea: A case for Earth-centered language. *Journal of Language & Ecology*, *8*(11), 112-133.

Samudro, H., & Mangkoedihardjo, S. (2021). Indoor phytoremediation using decorative plants: An overview of application principles. *Journal of Phytology*, *13*(6), 28-32.

Sapir. E. (1912). *Language and Environment.* New York: Wiley. https://www.jstor.org/stable/659930.

Shaghaghi, Vida. (2007). *Principles of Morphology*. Tehran: SAMT.

Simotwo, Prisca C. (2019). An analysis of linguistic choices in Kalenjin Narratives relating to protection of animals. *International Eco-linguistics Association. 12* (2), 1-24.

Şimşek, Ö. (2020). Lexicographic Decision Rule. In *Oxford Research Encyclopedia of Politics.*

Sishchuk, J. M., Gerasimova, I. G., & Goncharova, M. (2019). Anthropocentric world picture in German and English geological and mining metaphoric terms. In *Innovation-Based Development of the Mineral Resources Sector: Challenges and Prospects-11th conference of the Russian-German Raw Materials* (pp. 555-560).

Stibbe, Arran (2014). *Approach to Critical Discourse Studies.* 117-128.

Stibbe, A. (2015). *Ecolinguistics: Language, ecology and the stories we live by*. London: Routledge.

Von Verschuer, F. (2021). Making post/anthropocentric futures in agrobiodiversity conservation. *Nature and Culture*, *16*(1), 47-64.

Wang, S., & Caldwell, C. D. (2020). Agriculture and Its Anthropocentric Sciences. In *Introduction to Agroecology* (pp. 3-17). Singapore: Springer.

Wang, W. W., Gorsuch, J. W., & Hughes, J. S. (Eds.). (2020). *Plants for environmental studies*. Florida: CRC Press.

Wei, R. (2020). The Routledge handbook of ecolinguistics. *Southern African Linguistics and Applied Language Studies*, *38*(3), 265-267.

Wenjuan, Zhou (2017). Eco-linguistics: Towards a new harmony, *Language Sciences. 62*, 124-138.

Whorf, B. (1956). *Language Thought and Reality, selected writing*. Ed. By Carrol, Cambridge.

Winick, C. (2021). *Dictionary of Anthropology*. Lanham-Seabrook: Rowman & Littlefield.

Zhang, L., Huang, G., Li, Y., & Bao, S. (2021). The application of landsenses ecology in language carriers. International Journal of Sustainable Development & World Ecology, 28(7), 653-660.

Zhang, Y., & Zhang, J. (2021). Ecolinguistics: Language, Ecology and the Stories We Live By by Arran Stibbe, London and New York, Routledge