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Semantic evolution of a lexeme in historical context: analysis of changes in its meaning and usage

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Abstract The research in the field of language history should be based on the latest achievements and developments in philology, history, anthropology, and pedagogy. The semantic evolution of a lexeme should be relevant for translators, artists, and literary critics. The study aims to establish the effectiveness of different approaches to defining the semantic evolution of a lexeme. Also, it seeks to determine the influence of changes in the meaning and usage of a lexeme on the analysis of changes in the meaning and use of a lexeme, taking into account the historical context. In addition, it is necessary to consider an assessment by students and teachers regarding the effectiveness of using knowledge of language history and the historical context of lexeme evolution within translation activities. The study employs a comprehensive approach to a methodology. The main methods used in the research are the descriptive method, as well as analysis and synthesis. They are used to present theoretical material. Furthermore, a comparative method was used to show the evolutionary processes of changes in the usage and meanings of lexemes. Separately, the author also employed survey and observation methods. The main hypothesis assumes that the practical application of innovative approaches and principles to the reconstruction of lexeme semantics evolution will demonstrate an increase in accuracy and clarity of translation, its interpretation, and revision. Therefore, it will facilitate and improve the quality of work with a text. The result of this study is a proof of the effectiveness of using different methods and approaches to establish the evolution of lexical semantics, as well as the specifics of meanings and usages, where knowledge of the historical context is essential. The collected data indicate the prospects for implementing projects in translation pedagogy, language history, and literature.

Keywords: lexical semantics, historical context, language change, word meaning evolution, historical linguistics.

1. Introduction

Language, as a product of human activity, is constantly functioning. It changes together with a culture, history, and society. Language is always open to changes, making it an effective communication tool. As a result, the semantics of natural languages is fluid, with some meanings emerging and others disappearing. Such a feature of language has an enormous impact on the work of all scholars who deal with history, literature and culture, theory, and the practice of translating ancient texts in general (Kirby et al., 2016). The scientific issue of developing new methods and approaches to working with sources is very relevant. Even literature or articles written twenty years ago may require additional comments. Therefore, academic studies of changes in the meaning and use of words are an essential component of modern science. These studies will be helpful to historians, linguists, political scientists, archaeologists, and anyone who works with historical, ancient, or original texts.

A reconstruction of a linguistic unit's semantics at the lexeme level is a difficult task, especially in traditional comparative models of language evolution research (Lakoff, 1987). The challenges of such a reconstruction entail the need to consider the historical context at the level of paradigmatics and syntagmatics. Phonological and morphological changes are challenging to reconstruct. In fact, they are a permanent component of language evolution. Moreover, it is promising to consider the evolution of semantic changes in lexemes, which makes it possible to imagine the evolution of language (Lomax et al., 1977). Firstly, it is an issue of encoding the meaning associated with different semantic relations with the main meaning, i.e., the semantic core. It is a question of semantic transposition, which creates such forms of meaning evolution as metaphor, metonymy, and generalization. Secondly, a lexeme's semantic evolution and its use and compatibility are influenced by cultural connotations, taboos, abstraction level, category of animate/inanimate, etc.

This study aims to determine the effectiveness of different approaches to defining the semantic evolution of a lexeme and to establish the impact of changes in the meaning and usage of a lexeme on text translation, considering the historical context.

Based on this aim, the following research tasks should be accomplished:

- to define the components of the lexeme's semantic evolution concept and the basis for such changes according to the historical context;
- to present an assessment of educational process participants as to which methods of working with the lexeme's semantic evolution are the most used ones;
- to establish the principles of change analysis and the factors influencing it, an analysis of changes in semantics and paradigm, and the impact of historical context on the lexeme evolution.

2. Literature review

Many factors can explain the great attention of researchers to language history. These include the complexity and depth of the theoretical foundations of the language history study and the practical importance of knowledge in pragmatics and semantics for research and teaching issues (Kiraly, 2015). Linguistics has developed various methodologies that help identify changes in the lexical meaning of a word. A reliable and effective method is the analysis of changes in the language system based on documented data that can be formalized and consistently applied (Vejdemo and Hörberg, 2016).

Among other approaches to the study of language evolution are experimental studies related to the tools of cognitive linguistics. From this perspective, changes in meaning and methods for constructing hierarchical meaning models based on corpus data have been considered. Interlingual lexical typology has been explored to create models of semantic structuring (Ullmann, 1966). The combination of these methods can serve as the basis for assessing the effectiveness of methods and the reliability of the obtained data, that is, determining the direction of semantic evolution (Traugott and Dasher, 2002).

According to many researchers, the phenomena of polysemy are fundamental to assessing semantic changes in a lexeme. This phenomenon is used in historical research, linguistic experiments, semantic typology research, and work with lexical corpora and text collections. By definition (Murphy, 2010), polysemy is synchronous variation when a lexical morpheme can have not one but several specific meanings (Murphy, 2010). This process creates semantic ambiguity and leads to the need to structure and divide meanings within a single word, capturing the initial stages of semantic change. Multifaceted variations in a lexeme are caused by communicative and sociocultural principles of word usage, making historical context, culture, and society key aspects of semantic evolution and changes in word meaning and usage (Durkin, 2009).

The actualization of variations in ambiguity at the synchronous level can be visualized and analyzed as a semantic network. It is a paradigm that shows the structure of combining different meanings from different perspectives. This includes prototypes, semantic proximity of meanings, and their connections in systems - their hierarchies (Georgakopoulos and Polis, 2021; Lakoff, 1987). Such items can also represent the nature of relations between different word meanings as synonyms, antonyms, metaphors, and metonymies. These semantic relations make it possible to trace the evolution of the word's semantics at the diachronic level. This method of determining evolutionary changes is used in linguistics when it is necessary to create cross-linguistic models and to see typological contrast or similarity at the level of word semantics (Haspelmath, 2003; François, 2008).

In the last decade, empirical, lexical, and graphical studies have become possible due to the emergence and discovery of databases and conglomerates of databases, such as CLIKS (List, 2018; Rzymski et al., 2020). New computer technologies have made it possible to expand and deepen the study of global and niche models with arches of emotional archaisms, family-related patterns of the semantic domain of emotions (Jackson et al., 2019), to describe and study macro-real models of perception universal and macro-areal patterns of perception and cognition (Georgakopoulos and Polis, 2021). The pragmatic aspects and frequency of word use are also being actively studied. These studies demonstrate that the frequency of usage should be linked to lexical and semantic typology (Kuiper et al., 2018).

A separate area of study is a cognitive experiment, which has established certain global trends. In these experiments, the conceptual similarity of meanings leads to the fact that speakers prefer these meanings (Karjus et al., 2021).

The active development of research in the field of language history, semantic evolution, and etymology construction is based on new technical capabilities and the availability of large and interconnected databases (Senthilkumar and Kannappa, 2017; Jayashree, 2017). The results of such research can be used in the professional and educational activities of linguistics and require continuous monitoring by contemporary linguist researchers.

3. Methods

A comprehensive approach to studying lexemes' semantic evolution, including changes in usage and meaning in the historical context, involved applying various methods. The descriptive method, analysis, and synthesis were used to work with the main theories and parameters of recording evolutionary changes. The comparative method was used to assess the instrumental and theoretical basis of various research methods in lexical semantics, paradigmatics, cognitive science, etc.

The observation and survey methods were used to assess the practical and theoretical value of studies of lexeme semantic evolution from the standpoint of semantics and pragmatics.

The research team developed a survey to achieve its aims. It was implemented at the Ivan Ohienko Kamianets-Podilskyi National University and in several translation agencies (Ukraine), where students in linguistics undergo internships and training. The survey also involved 6 university professors and 50 students (3rd year, first (bachelor's) level of education). Participation in the survey was conditional on the successful completion of the following academic disciplines: Theory and Practice of Translation and General Linguistics. These courses are scheduled as part of a four-year bachelor's degree program.

The program lasted during the 1st semester of the 2022-2023 academic year. During this period, researchers surveyed and collected data and materials on teaching the basics of linguistics, translation theory, and practice.

The study identified the following survey stages.

Stage 1. The research team developed questionnaires and conducted interviews with students, teachers, and translators in the bureau and administrations of the institutions. The university administration and the translation bureau gave permission for this experiment. All participants were guaranteed anonymity and non-disclosure of their data in the public space.

Stage 2. A test survey was conducted among the control group. Then, the respondents' comments were collected and analyzed. On this basis, the research team created revised questionnaires.

Stage 3. At the final stage, the main survey was conducted to determine the practical value of information about changes in the meaning of a word, as well as knowledge of etymology, pragmatics, and semantics.

Based on the collected data, the researchers made recommendations for further implementing the results in practice. They also identified areas of using digital technologies and translation techniques related to lexeme semantics evolution. Such materials were subsequently uploaded to university websites and electronic archives specially adapted for such research aims.

As for the difficulties faced by the group during the study, they include the need for time (a semester). There was no opportunity to conduct a qualitative, in-depth analysis.

4. Results

At the beginning of the XX century, the semantic evolution of a lexeme was studied from the perspective of considering the results of changes in its meaning and typologization. These included metaphorical and metonymic expansion/contraction of meaning, as well as the evolution of negative and positive in the semantic structure of the word. The main drawback of this approach was the lack of consideration of the context. However, language is realized as a form of communication and speech activity and is highly dependent on the historical context, current discourse, changes in culture, ideology, society, etc.

The creation of lexemes' semantic evolution models can be based on a system of encoding semantic relations. The types of semantic relations that form the basis for semantic changes can be represented schematically.

In modern historical linguistics, when analyzing the evolution of meaning, scientists focus their attention not on the statement of changes but on the pragmatic factors that contributed to them. This primarily considers cognitive processes (analog thinking, communication models, encoding, interpretation of meaning by communicators, grammaticalization, etc.) For this reason, possible semantic correlations and mechanisms of changes such as metaphorization, objectification, and metonymization are currently at the center of scientific attention. A careful approach to contextual data is also essential. It is ensured by the availability of large electronic corpora and applications for working with these data (Table 1).

Table 1 Four types of semantic relations.

№	Type	Meaning	Example
1	Generalization	Hyponymy, or the expansion of "I am, "I and the connection level."	father is a relative; cat – a pat;
2	Specialization	Narrowing, limitation, hypernymy, "I am a part of something."	a baby pig is a piglet; a woman's husband is a husband;
3	Hyponymy (synecdoche)	A part of something	A cup of tea – tea; An apple tree – an apple
4	Meronymy (synecdoche)	A part of something with a reversed order of "general-specific."	Potatoes – tubers of Potatoes. Winter – January

Source: author's elaboration.

1. The structuralist model of establishing the lexeme's semantic evolution is based on the modeling of lexical fields. In this case, lexemes can have several meanings, and each individual meaning can create syntagmatic relations that correlate with others. Such correlations are formed as semantic fields in their synchronous state for individual lexemes and semantically related lexemes. Thereby, a system of lexemes in the vocabulary is formed that are related to each other due to the presence of different and common meanings. Such a system also implies semantic variability and causes semantic changes, which is the basis for assessing the semantic evolution of a lexeme. In the structuralist model, the prototype (core meaning) is central, and such meanings are the point of reference for peripheral meanings. In diachrony, these peripheral meanings in such a model

can be represented synchronously as an evolutionary process. Using a computational phylogenetic model, the systems of central and peripheral values in a synchronous state form the starting point of evolution.

Such a model is used to estimate a quantitative measure of semantic evolution, where the starting point is the attested meanings of lexemes from existing data. These reconstructions are hypothetical in nature. They can reveal hidden meanings and changes in lexemes' semantics (Figure 1).
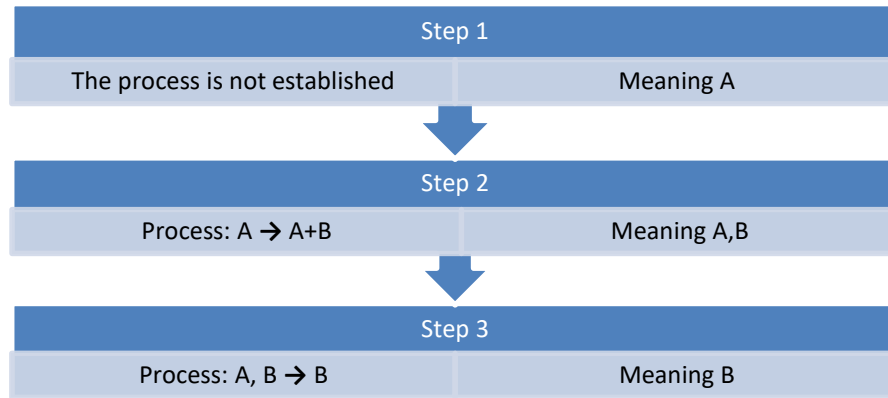
Step 1	
The process is not established	Meaning A

Step 2	
Process: A → A+B	Meaning A,B

Step 3	
Process: A, B → B	Meaning B

Figure 1 Reconstructions of changes probability in the structure of the phylogenetic tree.
Source: author's elaboration.

2. Semantic features and linguistic and cultural concepts. The classification of meanings and the identification of changes in the semantics of lexemes can be related to the concepts of culture and mentality that have been constantly used in cultural contexts since the Neolithic era. First and foremost, it is a system of concepts that can be divided into clusters according to their cultural use and can be divided into semantic subgroups. Carling G. (2019). presents such a classification of basic concepts. The use of concepts and their classification system helps to study the pace of semantics evolution and the speed of changes. However, such a system is challenging to use because there are large differences between conceptual classes that depend on the semantic properties of the lexemes (Akimova et al., 2022). The conceptual approach will be helpful for scholars, translators, and historians who are interested in historical, cultural, and social factors that can influence the nature and intensity of changes. Such a linguistic analysis of semantic models can focus on such aspects (which can also form grammatical categories) as animate/inanimate, living/dead, male/female, weight/quantity, specific/abstract, etc. It is also possible to consider associations, cultural prototypes, and cultural connotations using the cognitive science inventory.

3. Phylogenetic comparative model. This model is used to establish the etymology of meanings. Its hypothesis states that an etymon, including all the lexemes of the etymological tree, loses or gains a certain meaning at a certain moment (all of them). This change occurs at a specific time with a certain probability (Popovych et al., 2022). Often, the analysis is performed by comparing lexemes from the source language with lexemes from derived "daughter" languages, including language subgroups. Such a model is designed to assess the increase/decrease in the semantic richness of a lexeme and changes in lexical meaning.

4. An analysis of language material using databases and specialized applications. The emergence of digital technologies has made it possible to systematically and extensively analyze a large amount of material to see the evolutionary processes that occur in the language comprehensively.

All directions and ways of considering lexemes' semantic evolution in the historical context were presented for consideration and discussion with the respondents.

A preparatory stage preceded the survey. This included data collection, analysis, systematization, initial technical and methodological work, and updating the respondents' competence level. The respondents received recommendations to read modern publications in historical linguistics, pragmatics, translation theory and practice, and digital applications for analyzing etymology and changes in the semantics of lexemes. These steps made it possible to launch the survey (Table 2).

Table 2 The extent to which digital technologies are used in translation pedagogy.

Group names	The use of databases and applications, USON, GCN, BERT, CLIKS	The use of a structural approach to models	The use of a phylogenetic comparative model	The use of semantic features of concepts
Students	56 %	42%	26%	70%
Teachers	43 %	58%	47%	68%
Translators	72 %	24%	40%	28%
Total (average)	57%	41%	37%	55%

Source: author's elaboration.

The results show that the most popular methods of studying the evolution of lexical semantics are working with specialized applications and databases and using concepts as formants of semantic relations. It demonstrates that philologists understand the need to understand historical and cultural contexts.

Based on the received information and teachers' experience, a set of competencies and translation skills was formed. These competencies and skills were planned to be developed and strengthened during the program.

5. Discussions

The orientation toward modern linguistic analysis possibilities related to the emergence of digital technologies and the ability to work with databases (Chen et al., 2022; Dellert and Buch, 2018) is essential for studying the semantic evolution of a lexeme in both semantic and pragmatic dimensions. Researchers in historical linguistics have noted that computational methods using large diachronic databases have significant potential for automatically detecting general trends and exploring individual trajectories of meaning development of specific linguistic units. A structure for visual analysis to identify and describe changes in the semantics of a linguistic unit at three levels (individual words, word pairs, paradigmatic series, and semantic nuances of word meanings) has been developed. The study indicates that 56% of students, 43% of teachers, and 72% of practicing translators positively evaluated digital applications and existing databases with etymological data and the history of semantic changes. These tools allowed for productive work with specialized texts, historical sources, and monuments.

The choice of methodology for analyzing the evolution of the lexeme's semantics is equally important. For this purpose, a group of scholars (Carling et al., 2023) resorted to using a phylogenetic comparative model. It reconstructed the probable presence of hidden meanings, whose potential to actualize various senses is especially considered when constructing etymological trees. Such reconstructions of meaning evolution and determining conditions for their actualization share many similarities with the comparative method. The phylogenetic comparative model made it possible to reconstruct the evolutionary dynamics of meaning loss/emergence associated with historical and cultural changes. Using comparative and contrastive methods to examine and document changes in the semantics of a lexeme is an integral component of etymology and the semantic structure analysis of a word.

In the study of the dynamic development of the semantic structure of the lexeme "father" in the context of the national worldview, Matiash (2015) found a close connection between linguistic units and extra-linguistic realities, which mutually influence each other. The lexical-semantic structure changes the most during complex historical periods, societal transformations, political regimes, and technological revolutions.

As our analysis has shown, historical linguistics and its methodological tools significantly facilitate the work of linguists, historians, and translators. Besides, they provide the opportunity to explore the dynamics of semantic changes in lexemes in a historical context.

6. Conclusions

During the study, it was found that the main approaches to researching the semantic evolution of a lexeme are based on the following ideas: structural, cognitive, historical, linguistics, and concept theory. The most critical parameters in such research are extra-linguistic facts, semantics, and pragmatics. Among the most developed ways of modeling semantic relations in modern linguistics are the following:

- structural approach;
- the use of databases, applications, and software;
- phylogenetic comparative models;
- semantic characteristics of concepts.

According to the survey data, the most popular methods of researching and applying the evolution of lexical semantics are working with special applications and databases (57%) and using concepts as formants of semantic relations (55%). This demonstrates that philologists understand the need to consider historical and cultural contexts.

In our opinion, the lack of readiness to work with digital high-tech innovations in the field of linguistics is related to the insufficient level of digital literacy of students, teachers, and specialists. For this reason, it is worth paying attention to developing educational courses and organizing projects that would contain information about new applications and databases. They will allow for systematic research of changes in the meaning of language units at all levels and facilitate the research process and professional activities of translators, librarians, teachers, etc.

In the future, it is worth studying evolutionary changes at the level of semantics and pragmatics, the dynamics of the transformation of word meanings in the context of the evolution of the national linguistic picture of the world. In addition, the range of lexical units under study should be expanded by using new digital applications and databases.

Ethical considerations

I confirm that I have obtained all consent required by the applicable law to publish any personal details or images of patients, research subjects, or other individuals used. I agree to provide the Multidisciplinary Science Journal with copies of the consent or evidence that such consent has been obtained if requested.

Conflict of Interest

The authors declare no conflicts of interest.

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