INTEGRATING COGNITIVE SEMANTICS AND DIGITAL METHODS IN THE ANALYSIS OF MEANING CONSTRUCTION

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Abstract. *Cognitive semantics has become a central direction in modern linguistics because it conceptualizes meaning as a dynamic interpretive process grounded in encyclopedic knowledge, cognitive operations, and discourse context. Simultaneously, digital methods-corpus tools, computational procedures, and visualization-have expanded the empirical base of linguistic research and strengthened replicability. This article presents how cognitive semantics can be integrated with digital analysis for investigating meaning construction in discourse. The study systematizes cognitive-semantic mechanisms relevant for methodological innovation (frame/scenario activation, prototype-based categorization, conceptual metaphor and metonymy, blending, and cognitive mapping) and proposes a hybrid workflow that combines qualitative modeling with corpus-supported validation and network visualization. As results, the article provides a replicable procedure for tracing metaphorical framing and frame transformations in discourse and demonstrates how conceptual relations can be represented as networks. The discussion highlights the benefits of cognitive-digital integration for transparency and large-scale interpretive research and argues that the hybrid approach preserves explanatory depth while adding empirical control.*

Keywords. *cognitive semantics, meaning construction, conceptualization, categorization, frame semantics, scenario, conceptual metaphor, conceptual metonymy, conceptual blending, cognitive mapping, discourse analysis, corpus tools, digital methods, network visualization*

Introduction

Innovative work in modern linguistics increasingly emerges from the integration of theory-driven explanation and data-driven methodology. Cognitive semantics represents an anthropocentric approach in which language is studied as a tool for conceptualization and interpretation rather than as an autonomous formal system. In this framework, meaning is constructed through cognitive processes such as attention, categorization, inference, and background knowledge activation, and therefore cannot be reduced to minimal dictionary definitions. This view is consistent with frame-based approaches, where word meanings presuppose structured background knowledge and activate frames of experience [Fillmore C. J., 1982, pp. 111-137]. It also aligns with prototype approaches to categorization, where category membership is graded and typicality effects constitute an empirical foundation for explaining semantic structure [Rosch E., 1978, pp. 27-48].

At the same time, contemporary linguistics increasingly adopts digital analysis methods, including corpus procedures, computational text processing, and visualization. These methods enable researchers to investigate large datasets, compare discourse contexts, and provide transparent analytic outputs. The present article argues that

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cognitive semantics and digital analysis are methodologically complementary: cognitive semantics supplies explanatory categories and interpretation models, while digital methods increase empirical coverage and replicability. The aim of the article is to reorganize cognitive-semantic analysis as a digitally supported research design for meaning construction studies and to propose an operational workflow suitable for contemporary discourse research.

Materials and methods

The methodological logic of the study is conceptual and design-oriented: it formalizes a hybrid cognitive-digital procedure and specifies analytic steps and outputs. The approach combines qualitative cognitive-semantic modeling and digital/corpus-supported verification and visualization.

The cognitive-semantic component relies on a set of established analytical instruments. Frame semantics is used to model background knowledge and role structures presupposed by lexical items and constructions [Fillmore C. J., 1982, pp. 111-137]. Prototype analysis is used to reconstruct graded category structure and typicality profiles [Rosch E., 1978, pp. 27-48]. Conceptual metaphor analysis is used to identify cross-domain mappings, inferential projection, and discourse framing effects [Lakoff G., 1993, pp. 202-251]. Metonymy analysis is applied to domain-internal access patterns and discourse compression, especially where institutions, groups, and events are referred to indirectly [Barcelona A., 2000, pp. 1-28]. Conceptual blending analysis is included as an extension for cases where meaning emerges from integrating multiple input spaces beyond simple mapping [Fauconnier G., & Turner M., 1996, pp. 113-130; Fauconnier G., & Turner M., 1998, pp. 133-187].

The digital component supports the cognitive-semantic procedure through corpus checks and representational tools. Corpus procedures (frequency, collocations, concordances) are used to test conventionalization and distributional stability of candidate patterns. Visualization and network modeling are used to represent conceptual relations as cognitive maps. For network-style representation, the study draws methodological parallels with earlier knowledge representation frameworks that treat knowledge as structured systems rather than lists of isolated features [Minsky M., 1975, pp. 211-277].

The hybrid workflow is organized as follows: dataset selection (genre/topic constraints); identification of conceptual triggers; cognitive modeling (frames, scenarios, metaphors, metonymies); corpus-supported verification; visualization through cognitive mapping; interpretive synthesis.

Results

The investigation reveals a structured hybrid workflow that operationalizes meaning construction analysis in a replicable and scalable way. The first result is a step-by-step procedure that links cognitive-semantic interpretation to explicit outputs.

The second result is a demonstrative analytical scenario for metaphorical framing research. The procedure begins with qualitative identification of metaphorical expressions, then reconstructs conceptual mappings and projected inferences [Lakoff G., 1993, pp. 202-251]. Next, corpus evidence is used to test whether those metaphors are conventionalized in the target discourse domain. Frame analysis is applied to explain which roles are highlighted and which are suppressed in different framings [Fillmore C. J., 1982, pp. 111-137]. The final outcome is a cognitive map that visualizes conceptual

clusters (e.g., metaphor clusters linked to evaluation and argument structure) and shows how framing guides interpretation.

A third result concerns methodological transparency: each stage of analysis produces a defined output (trigger list, frame table, mapping schema, metonymy patterns, network graph), enabling peer review of steps rather than only final interpretations. This feature aligns the cognitive-semantic approach with current methodological expectations of digital humanities and computational linguistics, while preserving the interpretive depth characteristic of cognitive semantics.

Discussion

The results support the thesis that cognitive semantics and digital methods are complementary resources. Cognitive semantics offers explanatory constructs-frames, prototypes, mappings, and conceptual networks-that clarify why meanings emerge, why they differ across contexts, and how they structure evaluation and inference. Digital methods, in turn, strengthen the empirical dimension of analysis by enabling broader coverage and increasing replicability. Corpus evidence can test whether a proposed mapping is conventionalized; visualization can make conceptual relations communicable; and standardized outputs make the analytical process more transparent.

The discussion also highlights an important methodological constraint: digital procedures do not replace semantic interpretation. Computational and corpus tools provide evidence and pattern detection, but cognitive-semantic explanation remains necessary for modeling conceptual structure, inference, and discourse meaning. Therefore, the most productive innovation lies in hybrid research design: qualitative cognitive modeling guided by theory, combined with digital validation and representation.

Finally, the approach is relevant for applied discourse studies and cognitive stylistics. Uzbek cognitive-text research supports the general direction that cognitive models (frames, conceptual structures) are productive for explaining how readers construct meaning from textual cues and how discourse organizes implicit information [Ashurova D. U., 2011, pp. 11-14; Ashurova D. U., 2013, pp. 88-92].

Conclusion

This article formulates that cognitive semantics is a productive innovative approach because it treats meaning as a dynamic process of conceptualization grounded in encyclopedic knowledge, categorization, inference, and discourse context. The proposed hybrid workflow integrates core cognitive-semantic tools-frame and scenario modeling, prototype-based categorization, conceptual metaphor and metonymy, blending, and cognitive mapping-with digital procedures such as corpus checks and network visualization. The integration enhances transparency and replicability while preserving explanatory depth. As a result, cognitive semantics combined with digital methods provides a strong methodological framework for modern discourse research, cognitive stylistics, and applied linguistic analysis.

REFERENCES

1. Ashurova, D. U. (2011). Cognitive stylistics: Views, approaches, perspectives. In Stylistics in the light of modern linguistic trends. Papers of scientific practical conference (pp. 11–14). Tashkent.
2. Ashurova, D. U. (2013). Frame semantics. Vestnik Natsional’nogo universiteta Uzbekistana, (4), 88–92.

3. Barcelona, A. (Ed.). (2000). Metaphor and metonymy at the crossroads: A cognitive perspective. Mouton de Gruyter.
4. Fauconnier, G., & Turner, M. (1996). Blending as a central process in grammar. In A. Goldberg (Ed.), Conceptual structure, discourse and language (pp. 113–130). CSLI Publications.
5. Fauconnier, G., & Turner, M. (1998). Conceptual integration networks. Cognitive Science, 22(2), 133–187.
6. Fillmore, C. J. (1982). Frame semantics. In Linguistic Society of Korea (Ed.), Linguistics in the morning calm (pp. 111–137). Hanshin Publishing.
7. Lakoff, G. (1993). Contemporary theory of metaphor. In A. Ortony (Ed.), Metaphor and thought (2nd ed., pp. 202–251). Cambridge University Press.
8. Minsky, M. (1975). A framework for representing knowledge. In P. Winston (Ed.), The psychology of computer vision (pp. 211–277). McGraw-Hill.
9. Rosch, E. (1978). Principles of categorization. In E. Rosch & B. B. Lloyd (Eds.), Cognition and categorization (pp. 27–48). Lawrence Erlbaum.