THE MANIFESTATION OF MORPHOLOGICAL FORMAL RELATIONS IN THE UZBEK AND GERMAN LANGUAGES IN THE CORPUS

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Abstract: This article explores the manifestation of morphological formal relations in Uzbek and German, two linguistically diverse languages belonging to different typological families. Uzbek, as a Turkic agglutinative language, exhibits regular and transparent morphological constructions, whereas German, an Indo-European fusion language, demonstrates a more complex and irregular morphological system. By analyzing linguistic data from corpora, this study identifies key morphological features in each language, discusses their grammatical implications, and highlights the relevance of corpus-based research in cross-linguistic morphological analysis.

Keywords: Morphology, corpus linguistics, Uzbek language, German language, agglutinative, fusional, morphological tagging, typology, inflection, affixation.

ПРОЯВЛЕНИЕ МОРФОЛОГИЧЕСКИХ ФОРМАЛЬНЫХ ОТНОШЕНИЙ В УЗБЕКСКОМ И НЕМЕЦКОМ ЯЗЫКАХ В КОРПУСЕ

Аннотация: В этой статье исследуется проявление морфологических формальных отношений в узбекском и немецком языках, двух лингвистически разнообразных языках, принадлежащих к разным типологическим семьям. Узбекский язык, как тюркский агглютинативный язык, демонстрирует регулярные и прозрачные морфологические конструкции, тогда как немецкий язык, индоевропейский язык слияния, демонстрирует более сложную и нерегулярную морфологическую систему. Анализируя лингвистические данные из корпусов, это исследование выявляет ключевые морфологические особенности в каждом языке, обсуждает их грамматические последствия и

подчеркивает актуальность исследований на основе корпусов в кросс-лингвистическом морфологическом анализе.

Ключевые слова: морфология, корпусная лингвистика, узбекский язык, немецкий язык, агглютинативный, фузионный, морфологическая разметка, типология, словоизменение, аффиксация.

Introduction. Morphology, the branch of linguistics concerned with the structure and formation of words, is a critical domain for understanding the grammatical organization of languages. When comparing Uzbek and German, the contrast in morphological systems is striking. Uzbek, with its agglutinative nature, constructs words through linear and additive suffixation, where each morpheme carries a distinct grammatical function. In contrast, German, characterized by its fusion nature, employs inflections where single morphemes often encode multiple grammatical meanings simultaneously.

Corpus-based linguistic research has opened new avenues for analyzing these morphological systems empirically. Large-scale corpora allow linguists to observe real-life usage patterns, frequency of morphological forms, and contextual applications of grammatical structures. This methodological approach facilitates an objective and data-driven comparison of Uzbek and German morphology.

Uzbek: An Agglutinative Morphological System

In Uzbek, morphological construction is highly regular and rule-governed. Grammatical relations are expressed through the consistent use of suffixes, with minimal variation. The agglutinative structure allows for a transparent morpheme-to-meaning correspondence.

Example:

- *kitoblarimizdan* (from our books)

kitob (book) + *-lar* (plural) + *-imiz* (1st person plural possessive) + *-dan* (ablative)

Such forms are easily decomposable, and their structures are predictable across different contexts, making Uzbek morphology highly systematic and analytically accessible.

German: A Fusional Morphological System

German morphology, on the other hand, exhibits fusion, where a single affix may convey multiple grammatical categories, such as case, number, and gender. Moreover, inflectional forms often undergo stem alternations (e.g., umlaut), and morphological forms may not be transparent.

Example:

• *dem Männern* (to the men)

dem (dative, masculine/neuter singular or plural article)

Männern (plural dative form of *Mann*, with umlaut and suffix)

The complexity of German morphology is evident in its irregular plural formations, case distinctions, and gender agreement, which require lexical and contextual knowledge for accurate analysis.

Corpus-Based Approaches to Morphological Analysis

Corpora provide a robust empirical foundation for the investigation of morphological structures by offering access to authentic, naturally occurring language data. Unlike introspective methods, corpus-based research allows linguists to observe how morphological forms function across various registers, genres, and contexts. Through the process of corpus annotation, key morphological features—such as case, tense, aspect, mood, person, number, gender, and voice—are systematically identified and tagged. This structured annotation enables both qualitative and quantitative analyses of word formation and inflectional patterns, contributing significantly to the field of comparative morphology. In cross-linguistic studies, annotated corpora facilitate the alignment of functionally equivalent forms across typologically diverse languages. For example, while an agglutinative language like Uzbek expresses grammatical relations through linear affixation, a fusional language like German may encode multiple grammatical categories within a single morpheme. Corpus data thus allow researchers to identify and compare how similar grammatical meanings are realized morphologically in different languages. Moreover, corpora enhance the reproducibility and scalability of linguistic studies,

supporting computational models and machine learning algorithms used in natural language processing, machine translation, and language documentation.

Morphological Tagging in Uzbek

In a tagged corpus, Uzbek words are analyzed in terms of their base form and affixes:

Example: *kitoblarimizdan*

kitob<NOUN> + lar<PL> + imiz<POSS.1PL> + dan<ABL>

Morphological Tagging in German

German corpus tagging must account for inflectional variation and syncretism:

Example: *aus unseren Büchern*

aus<PREP> + unseren<DET.POSS.1PL.DAT.PL> + Büchern<NOUN.DAT.PL>

Such annotation enables computational models and researchers to align equivalent morphological functions across structurally different languages.

In Language Learning and Translation. Recognizing morphological differences between languages is essential for ensuring accuracy in both translation and second language acquisition. In particular, the contrast between agglutinative and fusional morphological systems presents unique challenges. Uzbek, as an agglutinative language, often conveys grammatical meaning through the linear addition of distinct, regular suffixes, each representing a single grammatical function. German, on the other hand, employs a fusional morphological system in which a single morpheme may simultaneously encode several grammatical categories, such as case, number, and gender. This typological divergence implies that a single morphologically complex word in Uzbek—for example, *kitoblaringizdan* (from your books)—may require a full phrase in German (*von euren Büchern*) to capture the equivalent meaning. Such structural asymmetries underscore the necessity of a deep morphological understanding for translators, who must not only grasp lexical meanings but also interpret embedded grammatical functions correctly. Likewise, language learners benefit from awareness of these morphological principles, as they influence both comprehension and production in

a second language. The integration of corpus-based resources in translation studies and pedagogy further facilitates the identification of recurring morphological patterns, making cross-linguistic differences more accessible and empirically grounded.

Conclusion. Morphological formal relations manifest distinctly in Uzbek and German, shaped by their respective typological structures. Through corpus-based research, these differences can be systematically observed, quantified, and analyzed. While Uzbek offers a regular and transparent morphological model, German requires navigating multiple levels of grammatical encoding within fewer morphemes. The use of corpora provides an invaluable resource for comparative morphological studies, deepening our understanding of how languages encode grammatical information and how such encoding impacts linguistic theory and computational applications. Morphological analysis feeds into lemmatization, part-of-speech tagging, and syntactic parsing. Morphologically rich languages like Uzbek and German challenge NLP systems, which benefit from corpus-based learning and statistical modeling.

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