COGNITIVE–TYPOLOGICAL CORRELATIONS IN WORLD LANGUAGES: HOW HUMAN COGNITION SHAPES GRAMMAR

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"Language is the mirror of the human mind."
— G. Lakoff

Annotation: *This article examines the relationship between human cognition and grammatical structures across the world's languages. Cognitive–typological research suggests that many grammatical patterns are motivated not only by structural rules but also by universal cognitive tendencies such as categorization, attention, memory constraints, and perception. The study integrates insights from linguistic typology, cognitive linguistics, psycholinguistics, and neurolinguistics to demonstrate how cognitive factors influence morphology, syntax, semantic roles, spatial expressions, and evidentiality. By analyzing cross-linguistic data, the article argues that cognitive universals create predictable patterns of grammatical structures, while language-specific cultural and environmental factors account for structural variation. The findings show that cognitive typology has important implications for language teaching, translation, and artificial intelligence.*

Keywords: *cognitive typology, human cognition, grammatical structures, cross-linguistic patterns, semantic categories.*

Аннотация: *В статье исследуется взаимосвязь между человеческим мышлением и грамматическими структурами мировых языков. Когнитивно-типологический подход показывает, что многие грамматические явления мотивированы не только структурными правилами, но и универсальными когнитивными тенденциями — категоризацией, вниманием, ограничениями памяти и восприятием. Работа объединяет данные типологии, когнитивной лингвистики, психолингистики и нейролингвистики, демонстрируя влияние когнитивных факторов на морфологию, синтаксис, семантические роли, пространственные выражения и эвиденциальность. Сравнительный анализ подтверждает, что универсалии человеческого мышления формируют предсказуемые грамматические модели, тогда как культурные и средовые особенности объясняют различия. Полученные результаты важны для преподавания языков, перевода и искусственного интеллекта.*

Ключевые слова: *когнитивная типология, когниция, грамматика, межъязыковые соответствия, семантические категории.*

Annotatsiya: *Ushbu maqola dunyo tillarida inson kognitsiyasi va grammatik strukturalar oʻrtasidagi bogʻliqlikni oʻrganadi. Kognitiv-tipologik yondashuv koʻplab grammatik hodisalar nafaqat strukturaviy qoidalar, balki kategoriyalash, diqqat, xotira chegaralari va idrok kabi universal kognitiv tendensiyalar bilan izohlanishini koʻrsatadi. Tadqiqot lingvistik tipologiya, kognitiv lingvistika, psixolingvistika va neyrotilshunoslik maʼlumotlarini birlashtirib, kognitiv omillarning morfologiya, sintaksis, semantik rollar, makon ifodasi va evidensiallikka taʼsirini namoyish qiladi. Kross-lingvistik tahlil shuni tasdiqlaydiki, kognitiv universallar grammatik tuzilmalarning bashorat qilinadigan namunalarini yaratadi, tilga xos madaniy va muhit omillari esa farqlarni shakllantiradi. Tadqiqot natijalari til oʻqitish, tarjima va sunʼiy intellekt uchun muhim ahamiyatga ega.*

Kalit soʻzlar: *kognitiv tipologiya, kognitsiya, grammatika, tillararo oʻxshashlik, semantik kategoriyalar.*

Linguistic typology traditionally focused on structural comparison of languages: morphology, phonology, syntax, and semantics [1]. However, recent decades have seen a shift toward integrating cognitive science into typological research. Languages are no longer viewed solely as rule-based systems; instead, they are considered reflections of human conceptualization processes [2]. Cognitive typology aims to show how thinking shapes grammar and why certain grammatical structures are universal.

This new trend unites several areas: typology, cognitive linguistics, neurolinguistics, psycholinguistics, and anthropology. Together, they show that human cognition places constraints on grammatical systems and motivates cross-linguistic similarities.

2. Cognitive Foundations of Grammatical Structure

2.1. Categorization and Grammar

Humans categorize experience to simplify complex reality. Languages grammaticalize these categories through tense, aspect, gender, animacy, evidentiality, and numeral systems [3]. For example, many languages distinguish animate vs. inanimate nouns because the human mind treats living entities as cognitively salient.

2.2. Attention and Word Order

Word order often reflects attentional priorities. SOV and SVO patterns dominate the world's languages because they align with "agent first" cognitive processing [4]. Typological studies show that subjects tend to be placed earlier in sentences due to default attention patterns.

2.3. Memory Constraints and Morphology

Languages with complex morphology often reduce syntactic complexity, creating cognitive balance. This "trade-off principle" mirrors memory limitations and processing efficiency [5].

3. Cognitive Typology of Key Linguistic Domains

3.1. Spatial Semantics

Spatial reasoning is universal, and therefore many languages encode space in similar ways: path, trajectory, source, goal, and orientation [6]. However, some cultures use absolute directions (north/south) instead of relative ones (left/right), showing environmental influence.

3.2. Semantic Roles and Event Representation

Sleeping, running, giving, or breaking events have predictable cross-linguistic patterns. Most languages distinguish:

o Agent (doer)
o Patient (undergoer)
o Experiencer (feeler)

These reflect how humans conceptualize events psychologically, not just grammatically [7].

3.3. Evidentiality and Human Perception

Evidential systems (marking source of information: seen, heard, inferred) are strongly connected with cognitive mechanisms of belief formation and sensory perception [8]. Languages like Turkish, Quechua, and Tajik grammaticalize evidentiality, while English expresses it lexically.

4. Cross-Linguistic Variation and Cognitive Universals

Typological diversity arises from cultural, environmental, and historical differences, yet languages still show strong cognitive universals. Examples include:

• preference for binary oppositions;
• prototype-based categorization;
• metaphorical structuring of abstract ideas;
• spatial→temporal mapping ("future ahead", "past behind").

These regularities are shared across unrelated languages because they arise from shared cognitive architecture [8].

5. Implications of Cognitive Typology

5.1. Language Teaching

Understanding cognitive patterns helps teachers predict learners' errors. For example, English articles are difficult for Uzbek and Russian learners because their categorization of definiteness differs.

5.2. Translation Studies

Translators benefit from knowing conceptual mismatches across languages. For instance, spatial metaphors differ significantly between Indo-European and Turkic languages.

5.3. Artificial Intelligence

AI language models increasingly use cognitive-typological data to predict grammatical patterns and improve natural-language understanding systems.

Cognitive typology shows that linguistic structures are deeply intertwined with how humans perceive, categorize, and interact with the world. Universal cognitive tendencies generate structural similarities, while culture-specific cognition creates typological

diversity. Integrating cognitive science with typology not only enriches linguistic theory but also provides practical benefits for language instruction, translation, and AI development.

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