

RESEARCH ARTICLE

A Systemic-Contrastive Analysis of Lexical Nucleology In Russian And English

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Abstract

This article presents a systemic-contrastive analysis of lexical nucleology in Russian and English, focusing on the semantic nucleus — the core, invariant features that constitute the essential meaning of a lexical item. Drawing on structural and cognitive linguistic theories, the study investigates how Russian and English differ in structuring core lexical meanings across fundamental semantic domains such as motion, body parts, color terminology, knowledge, truth, and social relations. The analysis demonstrates that English tends to have semantically broad lexical nuclei, often relying on context for specification, while Russian more frequently encodes specific distinctions at the lexical core.

KEYWORDS

Lexical nucleology, semantic nucleus, systemic-contrastive analysis, lexical semantics, Russian language, English language, semantic core, cross-linguistic comparison, frame semantics, lexicography.

INTRODUCTION

In modern linguistic theory, lexical nucleology refers to the study of the nucleus or core components of lexical meaning – those invariant semantic features that constitute a word's conceptual essence within the lexicon of a language. A systemic-contrastive approach to lexical nucleology entails examining how these core semantic components are structured across languages, in this case Russian and English, to uncover both universal tendencies and language-specific divergences. The English and Russian languages provide an illuminating comparative model: they are historically unrelated (Germanic and Slavic lineages) and structurally different (analytic and synthetic morphosyntax), yet both possess rich, well-documented vocabularies. By analyzing their lexico-semantic systems in tandem, we can identify what constitutes a word's semantic nucleus in each tongue and how such nuclei align or contrast across the two linguistic systems.

The core meaning of a lexical item is generally understood as the stable, context-independent conceptual content that it conveys – essentially, the denotative or notional meaning of the word. Surrounding this core are often more variable peripheral elements (metaphoric extensions, connotations, stylistic shades) which may or may not be present in every use. The present study focuses on the nuclear (core) semantic components of words in contemporary Russian and English, investigating how these languages encode the most essential meaning of lexical units within their systems. This systemic-contrastive analysis draws on foundational theories of lexical semantics (from structuralist componential analysis to cognitive frame semantics) and on authoritative insights from linguists such as J.Lyons and L.Bloomfield in the West and V.G.Gak, N.D.Arutyunova, A.V.Zalevskaya, G.A.Brutyan, E.S.Kubryakova, inter alia, in the Russian tradition.

Theoretical foundations of lexical nucleus. In structural semantics, the notion of a semantic invariant or nuclear sememe has been used to describe the stable set of semantic features that define a lexeme's principal sense. According to J.Lyons, «the intension of a lexical item (its intensional meaning) can be conceived as a structured set of semantic components that jointly delineate the concept a word represents, while the extension refers to the range of entities in the real world denoted by the word» [1]. The intensional core – essentially the conceptual content – is composed of those essential features without which the word would lose its identity. For example, the word *bird* in English might have as core features “animate,” “animal,” “winged,” “capable of flight (typically)”, etc., which together form the intensional nucleus of *bird*; these features distinguish a *bird* from other creatures (e.g., lacking “winged” would remove the distinction between *birds* and other animals). In the lexicological terms of V.G.Gak and L.A.Novikov, “the semantic structure of a word consists of an archiseme – the dominant, class-generic seme – plus any number of differential semes that add more specific, contrastive information” [4]. The archiseme (or categorical semantic nucleus) represents the broad category to which a lexeme belongs (“kinship relation” for words like *father*, *mother*, *uncle*, etc.), whereas the differential semes account for the particular meaning of that lexeme within the category (“male parent” as the differential features for *father*, versus “female parent” for *mother*). This archiseme + differential structure ensures that each word has a semantic nucleus (the archiseme encapsulating its general class meaning) surrounded by more granular features that differentiate it from semantically adjacent words.

Notably, Leonard Bloomfield anticipated some of these ideas in his early structural linguistics. Bloomfield did not use the term “archiseme”, but his attempt to define meaning in empirical terms led to the idea of breaking down meanings into simpler elements. Later structuralists and semantic field theorists expanded on this: words were seen as defined by their relations within a lexical field, each word occupying a niche determined by shared and differing semantic features. Such componential analyses, championed by scholars like John Lyons and others in the mid-20th century, formalized the idea that the lexical meaning of a word can be decomposed into a set of semes, with one seme typically being the nuclear or generative concept and the rest being specific modifiers. In this view, the lexical nucleus is effectively the intersection of all contexts in which the word can appear – what remains

constant in all uses. Lyons emphasized that this invariant core must be distinguished from the contextual meaning that arises in particular utterances: the latter can introduce additional nuances but cannot contradict the core without prompting a reinterpretation as a different sense or a metaphor.

Russian semantic scholarship (N.D.Arutyunova, E.S.Kubryakova) distinguishes between a word's denotative nucleus (понятийное содержание) and its pragmatic/connotative periphery. Lexicographic practice reflects this through definitions structured as genus term + differentiae: *луна* (*luna*, moon) is defined as естественный спутник планеты (“natural satellite of a planet”), where спутник планеты constitutes the archiseme (categorical core) and естественный differentiates it from artificial satellites. While poetic connotations (lunar symbolism of beauty/night) remain peripheral, Arutyunova observes that evaluative semes (the inherent negativity in бродяга [“vagabond”], combining “homeless wanderer” with pejorative force) may blur core-periphery boundaries [5].

C.Fillmore's frame semantics posits that word meanings activate conceptual frames (sell requiring seller, buyer, goods, money). E.S.Kubryakova and E.Rosch's prototype theory further conceptualizes meaning through central exemplars (robins as prototypical birds) versus peripheral members (penguins). A.V.Zalevskaya's psycholinguistic research demonstrates how core semes are primed during lexical access, with peripheral features emerging through contextual modulation. Across paradigms - structural-componential (J.Lyons, Y.D.Apresyan, L.V.Novikov), cognitive-functional (Fillmore, Kubryakova), and philosophical-semiotic (G.A.Brutyan) - scholars agree that lexical nuclei comprise stable, cross-contextual components enabling interlinguistic equivalence, while peripheral elements account for language-specific nuances in connotation and usage.

METHOD

The study isolates nuclear lexical meaning through a rigorously condensed six-stage protocol: delimiting cross-linguistically salient semantic domains to establish a conceptual tertium comparationis; selecting high-frequency, prototypical lexemes from authoritative monolingual and bilingual dictionaries; decomposing each lexeme into integral and differential semes to reveal its archiseme; constructing contrastive feature maps augmented by frame semantics to capture relational salience and language-specific categorial

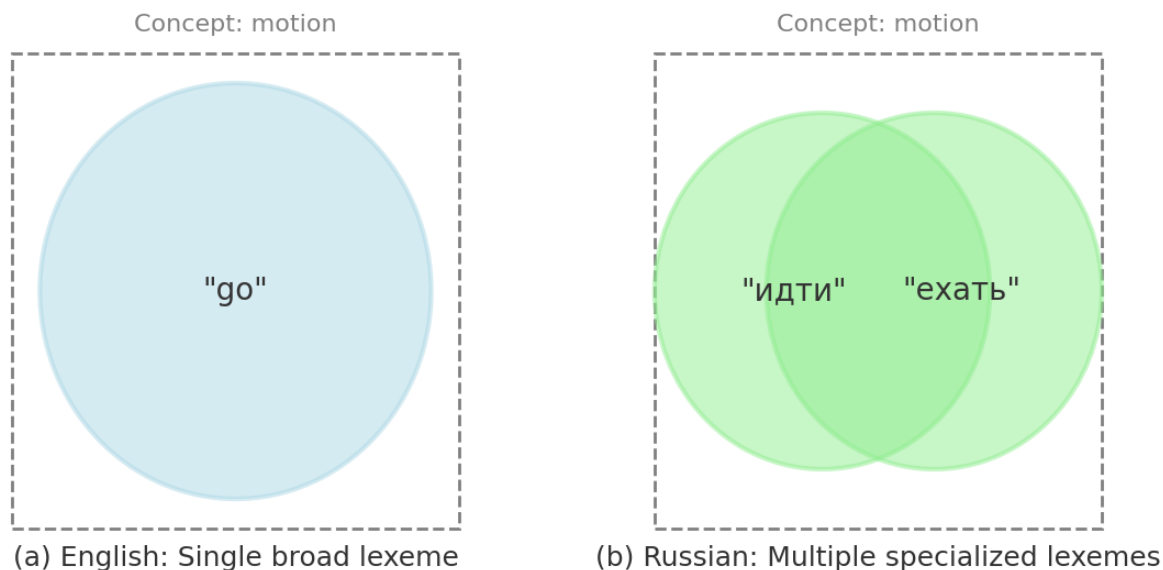
cleavages; corroborating hypotheses via corpus collocations from the BNC and RNC, plus synset architectures in WordNet and RuWordNet/YARN; and synthesizing findings in a comparative matrix and a typological diagram that discriminate unified versus split semantic nuclei — thereby coupling qualitative componential scrutiny with quantitative, empirically grounded validation in the spirit of Gak’s systemic lexicology and Kubryakova’s cognitive-semantic methodology.

Contrastive analysis: core semantic components in English and Russian.

1. Motion and manner: “Go” / «идти/ехать» (movement verbs). One striking contrast between English and Russian is found in the semantic domain of basic motion verbs. English has the high-frequency verb to go, which serves as a semantically broad motion verb, typically indicating movement from one place to another without specifying the manner of motion. Russian, by contrast, does not have a single exact equivalent; instead, it employs different verbs depending on

the manner or mode of motion – most notably идти (to go on foot, walk) and ехать (to go by vehicle, ride/drive). The conceptual domain here can be defined as generic locomotion or travel (motion from point A to point B). In English, the lexical nucleus for this domain is essentially unified in go: the core semantic components of go include [MOVE] + [TRAVEL] + [unspecified manner], covering any kind of departure or movement regardless of how it is carried out. In Russian, the same conceptual space is partitioned between two nuclei: the core of идти is [MOVE] + [BY FOOT] + [usually one direction], and the core of ехать is [MOVE] + [BY VEHICLE]. Figure 1 illustrates this typological difference. On the left, we see English “go” as a single large circle covering the whole conceptual domain of motion; on the right, Russian “идти” and “ехать” appear as two overlapping circles, each covering a segment of the motion domain (the overlap indicates that both share the general idea of motion, but each has its own specific sphere of application).

Figure 1: Lexicalization of the motion concept in English / Russian



2. Body part terminology: “Hand/Arm” / “рука”. In human anatomy, English distinguishes between hand (the end part of the upper limb, used for grasping) and arm (the upper limb from shoulder to wrist), using two separate lexemes with distinct core meanings. Russian, by contrast, primarily uses one word, рука, to cover both “hand” and “arm”. Although Russian does have more specific terms (such as кисть for “hand” and плечо for “shoulder/upper arm”), in everyday speech рука broadly encompasses the entire upper limb.

Thus, рука has a broader nucleus than either English word, reflecting a one-to-two correspondence: one Russian word matches two English terms. This difference can lead to translation challenges, as рука may require contextual clues to determine whether “hand” or “arm” is the appropriate English equivalent. Semantically, English draws a lexical distinction that Russian expresses only when necessary.

3. Color terminology: “blue” / “синий/голубой”. Color terms illustrate how languages segment semantic space differently,

even in basic vocabulary. English has one basic term, blue, covering the visible spectrum between green and violet, including all shades speakers recognize as blue. Russian, however, distinguishes two basic terms in this region: синий ("siniy", dark or deep blue, like a clear night sky) and голубой ("goluboy", light or sky blue, like a daytime sky). Both are core, irreducible color categories in Russian, while English treats "light blue" as merely a shade of blue, not a separate term. Thus, Russian divides what English sees as one semantic core (blue) into two distinct cores. The nucleus of синий is dark, saturated blue; голубой is light, clear blue. English blue encompasses the full spectrum, requiring additional words ("light blue", "navy blue") for precision, while Russian encodes this difference directly in its basic terms.

From the perspective of frame semantics, English has one lexical slot for blue, whereas Russian has two, each with its own prototype — deep cobalt for синий, clear sky or cornflower for голубой. Russian speakers do not consider голубой a type of синий; each is a separate core concept. English blue has a broader, less determinate nucleus, covering both light and dark shades, resolved only by context or further specification. Russian, by contrast, uses a split nucleus typology for blue, reflecting cultural and linguistic factors. In Russian, even perceptual vocabulary like color is shaped by cultural history, with голубой attaining separate status, sometimes linked to cultural prototypes such as the word for "dove".

4. Knowledge and ability: "know/learn" / "знать/учить/уметь". In the domain of knowledge verbs, English and Russian segment meanings differently. English strictly separates to learn (acquire knowledge) and to teach (impart knowledge), each with distinct core meanings. Russian uses учить for both, depending on context and syntax: with a direct object (учить детей – "to teach children"), it means "to teach"; with an infinitive or reflexive (учиться читать – "to learn to read"), it means "to learn." Thus, учить in Russian has a polysemantic nucleus, relying on grammar to indicate direction, while English encodes direction in the verb itself

(learn / teach).

Conversely, English to know covers both factual knowledge and practical ability ("know a fact" and "know how to swim"), while Russian divides this into знать (knowledge of facts) and уметь (know how, ability/skill). Russian lexicalizes the distinction, making уметь the verb for practical skills. Therefore, Russian sometimes merges where English splits (teaching/learning), and sometimes splits where English merges (knowledge/skill). These differences in semantic categorization impact translation and require awareness of context to choose the correct verb.

5. Truth and reality: "truth" / "истина/правда". In English, the noun truth broadly covers both objective and subjective senses — philosophical truth, factual accuracy, and honesty. Russian divides these with two nouns: истина (absolute, objective truth, used in philosophical or scientific contexts) and правда (subjective truth, factual correctness, or honesty, often used in everyday speech). The core of истина is absolute, universal truth; the core of правда is truthful statement or honesty, sometimes also linked to justice. English uses truth for both, relying on context or modifiers for nuance, whereas Russian encodes the distinction at the lexical level.

6. Social relations: "friend" / "друг". The English word friend has a broad core meaning — anyone one knows and likes to some degree — and can refer to relationships ranging from close confidants to casual acquaintances ("Facebook friend", "work friend"). In Russian, друг has a much narrower, stronger core: close companion with mutual trust and affection. Russian reserves друг for true, close friends; casual or weaker relationships are labeled with other words, such as приятель (buddy) or знакомый (acquaintance). Thus, friend in English covers a wider range of relationships, while друг implies a significant, deep bond. This difference reflects cultural and semantic distinctions: English relies on context or adjectives ("close friend") to specify depth, while Russian encodes closeness directly in the core meaning of друг.

Table 1: Comparative core semantic structures in English and Russian

Semantic domain / concept	English lexeme(s) – core meaning (nucleus)	Russian lexeme(s) – core meaning (nucleus)	Key difference in lexical nucleus
Motion (general movement)	go – move from one place to	идти – go on foot (walking);	English has one broad verb for general

	another; manner unspecified (general motion)	ехать – go by vehicle (transport)	motion; Russian splits by manner (each verb has manner in its core meaning).
Body part (upper limb)	hand – distal part (palm/fingers); arm – limb from shoulder to wrist	рука – upper limb including hand (entire arm-hand as one unit)	Russian рука covers both “hand” and “arm” (single core); English divides into two separate lexical cores.
Color (blue spectrum)	blue – color of the blue region of spectrum (covers light and dark shades)	синий – dark/deep blue color; голубой – light/sky blue color	Russian distinguishes dark and light blue as basic color terms; English blue covers all shades within one core.
Knowledge acquisition	to learn – acquire knowledge/skill; to teach – impart knowledge/skill	учить – both learn and teach (meaning set by syntax); учиться – to learn; научить – to teach (perfective)	English separates learning and teaching into different verbs; Russian учить can express both (one core, direction set by grammatical construction).
Knowledge (fact / skill)	to know – possess knowledge (of facts or skills)	знать – know (facts/information); уметь – know how, be able (skills)	English know is broad (covers fact and skill); Russian separates cognitive knowledge and ability into two distinct lexical cores.
Truth	truth – that which is true; factual or fundamental truth	истина – absolute/objective truth; правда – factual/personal truth	Russian distinguishes philosophical/absolute truth and factual/personal truth with two separate cores; English truth encompasses both.
Friendship	friend – person one likes and knows (from acquaintance to close friend)	друг – close, trusted friend; знакомый – acquaintance	Russian друг implies a closer, deeper bond; English friend is broader, covering a range from casual to close relationships. Russian lexicon marks this boundary.

It should be noted that in many fundamental domains, English and Russian align closely in their lexical nuclei — basic terms

like “mother” (мать) and “water” (вода) correspond one-to-one with nearly identical core meanings. This reflects the

universality of certain concepts across languages. The differences outlined above typically appear where physical realities allow multiple categorizations (as with colors or motion) or where cultural and historical factors shape the lexicon (such as in social relations, knowledge, or truth). While one language may show lexical polysemy, another may split concepts into separate terms. Contrastive lexical nucleology systematically reveals these patterns, offering insight into each language's worldview.

CONCLUSION

This study provided a systemic-contrastive analysis of lexical nuclei in Russian and English, revealing that while both languages share many universal concepts, they differ significantly in how core meanings are structured and distinguished lexically. English often employs broad lexical nuclei, relying on context for nuance, whereas Russian typically encodes more specific distinctions within its core lexemes. However, these patterns are asymmetric—sometimes Russian compresses meanings where English splits them, and vice versa. Such differences, shaped by cultural and communicative factors, highlight the importance of understanding core semantic structures for accurate translation, lexicography, and language teaching. Overall, the analysis demonstrates that each language constructs its own lexical worldview, and contrastive lexical nucleology offers valuable insights into these fundamental differences.

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