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RESEARCH ARTICLE

Semantic Modeling In Contrastive Lexicology: A Comparative Analysis Of Lexical Units Using Uzbek And Russian As Examples

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Abstract

Semantic modeling has become one of the most productive methodological tools in contrastive lexicology because it allows researchers to formalize meaning, compare lexical systems across languages, and describe equivalence, partial equivalence, and lacunarity with higher precision than intuitive translation-based comparison. This article explores how semantic modeling can be applied to Uzbek and Russian lexical units by integrating componential analysis, semantic field theory, and frame-based representation. Relying on dictionary definitions and contextual evidence from digital corpora, the study demonstrates that contrasts between Uzbek and Russian are frequently shaped by differences in lexical segmentation, polysemy patterns, culturally salient frames, and the interaction between lexical meaning and grammatical expression. The results show that a combined semantic model (component + frame + distribution) improves the description of cross-linguistic correspondences, especially in domains where cultural experience is strongly encoded in the lexicon, such as kinship, social evaluation, and emotion concepts. The paper concludes that semantic modeling in contrastive lexicology is most effective when it treats meaning as a structured bundle of semantic components embedded in conventional frames and verified through corpus-based distributional evidence, rather than as a single "dictionary sense" matched to a translation equivalent.

KEYWORDS

Contrastive lexicology, semantic modeling, Uzbek language, Russian language, componential analysis, semantic fields, frame semantics, lexical equivalence, lacunae, corpus linguistics.

INTRODUCTION

Contrastive lexicology investigates how lexical systems of two or more languages structure experience, categorize reality, and encode culturally and communicatively significant distinctions. In practice, contrastive studies often begin with a simple question—"What is the equivalent of X in another language?"—but quickly reveal that lexical meaning is rarely mapped one-to-one. Instead, cross-language correspondences typically involve partial overlap, differences in semantic scope, divergent connotations, or distinct pragmatic constraints. For this reason, semantic modeling is increasingly used as a methodological bridge between language-specific lexical organization and cross-linguistic comparison.

Semantic modeling in this context means an explicit representation of meaning that enables systematic comparison. Such representation can be built through decomposition into semantic components, through field-based relational structure, or through frames that capture

background knowledge and participant roles. Frame semantics, for example, emphasizes that lexical meaning evokes a structured scene of experience rather than a list of isolated features; understanding a word involves understanding the conventional situation it activates. In contrastive work, this is especially valuable because Uzbek and Russian often differ not only in "what they name," but in how they conventionalize situations and what aspects of experience become lexically prominent.

Another reason semantic modeling is essential in Uzbek–Russian comparison is that lexical meaning frequently interacts with grammar in different ways. Uzbek, with its agglutinative morphology and productive derivational resources, can distribute semantic distinctions between lexical roots and affixal constructions, while Russian may encode comparable distinctions through lexical differentiation, aspectual pairs, or derivational families. This creates a methodological risk: if researchers compare only "word-to-word," they may miss that a meaning in one language corresponds to a lexical-plus-grammatical package in the other. Accordingly, contrastive lexicology benefits from models that can represent not only semantic content, but also the typical distribution and grammatical environment of lexical units.

The article is grounded in the assumption that contrastive semantic modeling should be empirically anchored. Digital corpora provide an efficient way to verify usage patterns, collocations, and pragmatic environments. The National Corpus of the Russian Language, for instance, is designed to represent different historical periods and sociolinguistic varieties, supporting contextual analysis of lexical meaning. Uzbek corpora are also developing as research resources, incorporating texts from different genres and sources and enabling concordance-based observation of lexical distribution.

The aim of the present article is to show how semantic modeling can be operationalized for Uzbek and Russian lexical units and how it improves the description of equivalence and divergence. The focus is not on compiling an exhaustive bilingual dictionary, but on demonstrating a reproducible analytical procedure and illustrating it through representative lexical domains.

The study follows an integrative contrastive methodology that combines definitional analysis, componential decomposition, frame-based representation, and corpus-supported distributional verification. First, lexical units were selected from semantically and culturally informative domains where Uzbek–Russian divergences are well-documented in applied translation and lexicography. The domains include kinship terminology and evaluative/emotive vocabulary, as these areas frequently exhibit different degrees of lexical differentiation and culturally shaped connotations.

Second, definitional data were collected from authoritative explanatory dictionaries and scholarly lexicological descriptions in both traditions. Definitions were used not as final truth, but as structured prompts for extracting candidate semantic components, identifying polysemy, and clarifying conventional constraints. Componential analysis was then performed by identifying recurrent semantic features that distinguish units inside a field and that are relevant for cross-language mapping. The componential approach follows the general logic that lexical meaning can be represented through a limited set of contrastive features that support systematic comparison, even though not all aspects of meaning are reducible to discrete components.

Third, the analysis incorporated a frame-based layer. Here a "frame" is treated as a conventionalized situation that includes participants, relations, typical presuppositions, and expected discourse functions. This layer was used to represent culturally embedded background knowledge that is often invisible in purely componential models. The frame-based approach draws on established semantic theory that connects word meaning with structured experiential scenes.

Fourth, the resulting models were checked against corpus evidence. Concordance examination was used to observe typical collocations, syntactic environments, and pragmatic usage conditions, which often function as diagnostics for meaning boundaries. The corpus-oriented step is important because contrastive equivalence is not only about sense overlap but also about "where and how" a word is used in real discourse. For Russian, corpus-oriented statements are aligned with the documented representational scope of the National Corpus of the Russian Language.

Finally, equivalence types were described through the semantic models. The paper distinguishes full equivalence (high overlap of components and frames), partial equivalence (overlap with systematic divergence), and lacunarity (absence of a conventional lexical match, requiring descriptive paraphrase or multiword strategies). The "Results" section reports the principal model patterns that emerge from this

procedure.

RESULTS

The analysis shows that semantic modeling yields stable cross-language comparison when it is built as a multi-layer representation: semantic components define a meaning "core," frames describe culturally salient conventional scenarios, and distributional evidence confirms or refines boundaries.

In kinship terminology, Uzbek and Russian exhibit differing degrees of lexical differentiation and polysemy. A contrastive study of kinship systems notes that Uzbek kinship terms can show polysemy and broader semantic scope, while Russian often employs a more differentiated system for naming kin relations, particularly in domains related to marital kinship and specific relational distinctions. When modeled componentially, many kinship terms align in a partial-equivalence pattern: a single Uzbek lexeme may correspond to multiple Russian terms depending on gender, lineage direction, or marital relation. The frame layer clarifies why: kinship terms are not merely labels for genealogical positions; they often function as social-role markers, politeness devices, and indicators of obligation structures. In Uzbek discourse, the kinship frame frequently extends into social address practices, producing conventional uses that do not map neatly to Russian lexical choices without pragmatic adjustment.

In evaluative and emotive vocabulary, semantic modeling reveals that divergence often lies in the balance between internal feeling, social norm orientation, and moral judgement. For instance, Uzbek lexemes commonly translated as "shame," "honor," or "conscience"-related notions may distribute meaning across a cluster of components such as social exposure, moral self-assessment, and reputation management. Russian lexical items may overlap in core affective meaning but differ in whether the evaluation is primarily internal (self-directed) or external (socially regulated), and whether it is framed as ethical obligation, emotional discomfort, or status-based value. Componential modeling captures these contrasts, while frame modeling explains why certain equivalents are preferred in specific discourse situations such as admonition, self-justification, or public moral evaluation.

A particularly productive outcome of semantic modeling is the identification of cross-language "splits" and "merges." A split occurs when one source-language lexeme corresponds to two or more target-language lexemes depending on the activated frame. A merge occurs when multiple source-language lexemes map to one target-language lexeme because the target language lexicalizes fewer distinctions and relies more on context, modifiers, or constructions. Uzbek–Russian comparison demonstrates both patterns. Kinship terms frequently illustrate splits; certain motion or state predicates illustrate merges when one language encodes aspectual or processual distinctions lexically while the other distributes them morphologically or syntactically.

The distributional layer proves essential because it often refines borders that dictionaries leave vague. A word may share definitional components with a presumed equivalent but appear in systematically different collocational networks. In such cases, semantic modeling predicts translation difficulties: the equivalent may be denotationally adequate but pragmatically infelicitous. Corpus observation, therefore, functions as a validation step: if two modeled equivalents truly match, they should show comparable discourse roles in similar contexts, even if the surrounding grammar differs.

To demonstrate how the multi-layer model operates in practice, consider a simplified representation for three illustrative domains (the examples are indicative and are intended to show modeling logic rather than exhaust lexicographic detail).

Domain	Uzbek lexical unit (modeled)	Russian candidate equivalent (modeled)	Typical equivalence type
Kinship	broader relational scope; social address extension; potential	differentiated lexical set by gender/lineage/marital	partial equivalence with split

	polysemy	tie	
Social evaluation	internal + social-norm component; reputation-sensitive frame	lexemes differ by internal emotion vs moral judgement vs status value	partial equivalence with frame shift
Emotion/attitude	culturally salient scripts for modesty/respect/shame	overlapping affective content but different conventional triggers	partial equivalence; occasional lacuna

The key result is that semantic modeling makes such equivalence types explicit and predictable: once the component and frame layers are specified, the analyst can anticipate where translation requires contextual disambiguation, where one-to-many mappings occur, and where paraphrase strategies are necessary.

The findings support the view that contrastive lexicology gains explanatory power when it replaces "word-to-word matching" with structured semantic modeling. Componential analysis remains useful because it imposes methodological discipline: it forces the analyst to specify which semantic features are shared and which are contrastive. Yet componential models alone are insufficient for Uzbek–Russian comparison in domains where cultural scripts and discourse conventions play a decisive role. Here the frame layer becomes indispensable because it captures conventionalized scenes of use and the implicit knowledge speakers assume.

The Uzbek–Russian kinship contrast illustrates this clearly. Even when two terms appear genealogically comparable, their discourse function may diverge. Uzbek kinship terms can act as social address forms, signaling respect, proximity, or hierarchy; Russian may require different address strategies or use a personal name plus patronymic, producing a mismatch that a purely definitional comparison cannot explain. The Rasulova contrastive analysis of kinship terminology reinforces that semantic correspondences and discrepancies must be studied not only as "lexical meanings," but also as systems shaped by cultural and cognitive factors. Semantic modeling, by integrating frames, provides a way to formalize this.

Another important implication concerns polysemy and regular meaning extension. Uzbek and Russian both exhibit polysemy, but they may differ in how regularly meanings extend across domains and how such extensions are lexicalized. A semantic model that includes distributional evidence can show whether a metaphorical extension is central or peripheral, productive or restricted, and whether it aligns across languages or creates asymmetry. This matters for contrastive lexicography, bilingual dictionary design, and translation pedagogy: what looks like a direct equivalent may differ in sense frequency, stylistic register, or typical discourse role.

The methodological role of corpora is also crucial. Corpus-based observation constrains semantic modeling and reduces the risk of "analyst-imposed meaning." The Russian National Corpus describes itself as representing different epochs and sociolinguistic variants, which allows researchers to observe lexical meaning across genres and periods rather than relying only on introspection. Uzbek corpora, as described in their project documentation, integrate materials from dictionaries, web texts, educational resources, and multiple genres, making them increasingly useful for contrastive distributional checks. Although corpus coverage and annotation depth differ across languages, the modeling logic remains the same: meanings must be verified through patterns of use.

From a theoretical standpoint, the multi-layer model aligns with influential traditions in lexical semantics and semantic representation, including Russian semantic theory and international semantic frameworks. It also remains compatible with practical contrastive tasks: translation, bilingual lexicography, and language teaching. Instead of treating semantic modeling as an abstract formal exercise, the paper treats it as a tool for predicting and explaining where equivalence holds, where it is partial, and where it fails due to lacunarity.

Semantic modeling in contrastive lexicology is a powerful

methodology for analyzing Uzbek and Russian lexical units because it makes cross-language correspondences explicit, testable, and explanatory. The study shows that a combined model—semantic components for core meaning, frames for conventionalized knowledge structures, and corpus-based distribution for empirical validation—captures equivalence patterns more accurately than translation-based matching. The Uzbek–Russian comparison demonstrates that lexical divergences frequently arise from differences in semantic segmentation, polysemy organization, culturally salient frames, and the distribution of meaning between lexicon and grammar. As a result, contrastive semantic modeling not only supports theoretical description but also has direct value for bilingual lexicography, translator training, and the development of contrastive teaching materials.

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