THE LEXICAL-SEMANTIC CLASSIFICATION OF WHOLE–PART RELATIONS IN THE UZBEK AND RUSSIAN LANGUAGES

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Abstract: *This article presents a comparative classification of lexical units motivated by whole–part relations in Uzbek and Russian. Building on standard distinctions in lexical semantics and mereology (component/part, member/collective, substance/material, and figurative/derivative relations), I outline diagnostic criteria, give illustrative examples from both languages, and discuss typological similarities and language-specific devices (possessive marking, collective morphology, compounding, and idiom formation). The goal is a practical taxonomy usable for lexicography, corpus annotation, and computational lexicons (e.g., bilingual WordNet linking). The paper closes with implications for annotation practice and directions for future corpus-based research.*

Keywords: *meronymy, holonymy, partonymy, Uzbek, Russian, lexical semantics, classification*

Part–whole relations are a fundamental organizing principle of human ontology and language: speakers talk about parts of bodies, components of artifacts, members of collectives, materials from which things are made, and many figurative extensions (e.g., "hands" for workers). In lexical semantics these relations are commonly captured under the heading meronymy/holonymy (part/whole) and have been extensively studied in typological, theoretical, lexicographic and computational contexts.

This article aims to: (1) propose a compact, operational classification of whole–part lexical relations applicable to both Uzbek and Russian; (2) illustrate each class with examples from both languages; and (3) highlight morphological and syntactic cues that help distinguish relation types. My working assumption is that a clear typology improves both human lexicographic work and automated approaches (e.g., bilingual semantic networks).

2. Theoretical background and diagnostics

Two theoretical inputs guide the classification. First, lexical semantics provides relation types and tests: substitution in context, entailment patterns, and distributional behavior (Cruse; Lyons). Second, mereology supplies fine-grained conceptual distinctions often used in linguistics: component (part), member (collection), and substance (material). A fourth category—figurative/derivative—captures synecdoche, metonymy and derivational uses that historically derive from part–whole relations but are semantically non-literal.

Operational diagnostics used throughout the paper:

● Ontological dependence test: Can the putative part meaningfully exist without the whole? (If not, likely a component meronym.)

● Independence/member test: Is the entity an independent individual that can exist separately (member) or a constituent required by structure (component)?

● Material test: Is the relation about the material from which something is made (substance) rather than a structural part?

● Figurative test: Is the use literal, or is it metaphorical/derivational (synecdoche, idiom, compounding)?

These diagnostics are used together with morphosyntactic cues present in Uzbek and Russian: possessive constructions, collective morphology, case marking (Russian), possessive suffixes and relativity markers (Uzbek), compounding and idiomatic patterns.

3. Fourfold classification

I propose the following practical taxonomy of whole–part lexical relations. Each subsection includes definitions, diagnostics and bilingual examples.

3.1 Component / structural part meronymy

Definition. Lexical relations where the meronym denotes a structural or functional part of a physical whole.

Diagnostics. Strong ontological dependence; part identity tests (the part is typically physically embedded in the whole); possessive/relational phrases are natural (e.g., "the door of the car").

Uzbek examples (Latin script):

● oyoq — tana (foot — body)
● barg — daraxt (leaf — tree)
● eshik — mashina (door — car)

Russian examples (Cyrillic):

● нога — тело (noga — telo: leg — body)
● лист — дерево (list — derevo: leaf — tree)
● дверь — машина (dver' — mashina: door — car)

Notes. In both languages component meronyms frequently appear with explicit possessive marking: Uzbek tends to use the genitive + possessive suffix (e.g., mashinaning eshigi "the car's door"), while Russian uses the genitive case (e.g., дверь машины).

3.2 Member–collective relations

Definition. Relations in which the meronym names an autonomous individual that belongs to a collective denoted by the holonym.

Diagnostics. Individual autonomy (members can exist apart from the collective); collective morphology and lexicalized collective nouns provide cues.

Uzbek examples:

● qo'y — qo'm/cho'ponlik (sheep — flock) — regional terms for the collective vary.
● talaba — kurs/ guruh (student — cohort/group)

Russian examples:

● овца — стадо (ovtsa — stado: sheep — flock)
● студент — группа/курс (student — gruppa/kurs)

Notes. Uzbek uses productive collective formations (e.g., -lar plural and occasional collective nouns), and Russian marks collectives with lexical items like стадо or grammatical plural and collective nouns.

3.3 Substance / material relations

Definition. The meronym denotes a material or substance from which the holonym is made.

Diagnostics. Material substitution: the meronym does not denote a structural part but a substance; the relation is often non-entailing (having iron does not entail having an iron door).

Uzbek examples:

● temir — eshik (temir eshik) (iron — iron door)

● bugʻdoy — non (wheat — bread) — here cultural and lexical factors affect whether this is treated as meronymy or causal/compositional relation.

Russian examples:

● железо — дверь (железная дверь) (iron — iron door)

● пшеница — хлеб (pshenitsa — khleb: wheat — bread)

Notes. Material relations are semantically close to ingredient/product relations and sometimes require separate tagging in lexical databases.

3.4 Figurative, synecdochic and derivational relations

Definition. Cases where part-terms are used figuratively (synecdoche/metonymy), or where morphological derivation/compounding produces words whose synchronic semantics differ from literal part–whole relations.

Diagnostics. Non-literal interpretation, idiomatic behaviour, lexicalization; historical part–whole motivation may be obscured.

Uzbek examples:

● qoʻl used in idioms (e.g., qoʻl koʻtarish literal "to raise a hand" → figurative "to help / to interfere" depending on context).

● Compound forms where part term contributes an abstract meaning.

Russian examples:

● руки in руки прочь! (hands off!) or у него золотые руки ("he's skilled") — hands used metonymically.

● Derivational patterns where part words extend to abstract domains.

Notes. Identifying figurative uses requires corpus attestation and native speaker judgment; such items are crucial for lexicography due to polysemy.

4. Cross-linguistic similarities and language-specific cues

Both Uzbek and Russian encode the basic distinctions component/member/substance/figurative. However, several language-specific cues help annotate relations:

● Morphosyntax: Russian case (genitive) strongly signals possessive relations; Uzbek uses postnominal genitive + possessive suffix or constructions with ning (e.g., tananing boshi).

● Collective devices: Russian has numerous lexicalized collectives (стадо, толпа, конгрегация), while Uzbek expresses collectivity via lexical items and productive plural/collective derivations; dialectal variation affects the exact set of collective terms.

● Compounding and derivation: Both languages use compounding and derivation to create words whose meanings may be historically part-based but synchronically abstract.

Russian has rich prefixation/suffixation; Uzbek shows productive compound and derivational morphology.

● Idiom formation: Both languages exhibit synecdoche-based idioms; corpus frequency helps decide whether a use is lexicalized.

5. Implications for lexicography and computational resources

A practical taxonomy with clear diagnostics supports:

1. Lexicographic entries: tagging meronymic subtype (component/member/substance/figurative) in dictionary senses improves clarity for users.

2. Bilingual linking: when creating Uzbek–Russian bilingual semantic networks, aligning subtypes reduces mismatches (e.g., a Russian стадо ↔ Uzbek qo'm).

3. Corpus annotation: explicit guidelines using the diagnostics above make manual annotation consistent; these annotations can seed supervised models for automatic meronym extraction.

4. NLP tasks: finer meronym tagging benefits question answering, semantic role labeling, and paraphrase detection where part–whole distinctions matter.

6. Conclusion and future work

This article proposed a fourfold, diagnostic-oriented classification of whole–part lexical relations and illustrated it with examples from Uzbek and Russian. While both languages share the same conceptual categories, their morphosyntactic means of signaling relations differ in ways important for lexicography and computational modeling.

Future work should include (a) systematic corpus annotation in both languages following the diagnostics given here, (b) creation of annotated bilingual meronym datasets to train extraction models, and (c) typological comparison with languages showing markedly different morphosyntax (e.g., languages with extensive case marking or classifier systems).

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