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RETHINKING ARGUMENT STRUCTURE: A CONSTRAINT-BASED INTERFACE MODEL FOR ENGLISH DITRANSITIVES

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Abstract
The analysis of argument structure has traditionally been grounded in syntactic theory, particularly within generative frameworks where argument realization is treated as a projection of hierarchical structure. However, persistent empirical challenges—especially in English ditransitive constructions—suggest that purely structural accounts are insufficient. This paper develops a constraint-based interface model in which argument realization emerges from the interaction of syntactic configuration, lexical semantics, and usage-based pressures. Drawing on insights from generative linguistics, cognitive linguistics, and corpus-based studies, the analysis demonstrates that acceptability and interpretation in the English dative alternation are gradient rather than categorical. The proposed model integrates structural and interpretive constraints, offering a more flexible account of argument structure. The paper contributes to ongoing debates on the syntax–semantics interface and proposes a framework for future empirical validation.

Keywords: Argument structure, dative alternation, syntax–semantics interface, cognitive linguistics, English linguistics, gradient acceptability.

1. Introduction

The realization of arguments in linguistic structure remains one of the most debated issues in theoretical linguistics. While early generative approaches

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emphasized the primacy of syntactic structure, more recent work has questioned whether syntax alone can account for the full range of observed variation.

The English dative alternation provides a particularly revealing case:

- *She gave him a book*
- *She gave a book to him*

These constructions, often treated as structurally related variants, display subtle but systematic differences in meaning, acceptability, and distribution. Such variation raises a fundamental question:

Is argument structure determined by syntax, or does it emerge from the interaction of multiple linguistic systems?

This paper argues for the latter view. It proposes that argument realization is best understood as the outcome of interacting constraints operating across syntax, semantics, and usage.

2. Empirical Challenges in Ditransitive Constructions

2.1 Verb-Specific Restrictions

Not all verbs participate equally in the alternation:

- ✔ *She sent him a letter*
- ✘ *She explained him the problem*

This asymmetry suggests that structural availability alone cannot determine grammaticality.

2.2 Subtle Meaning Differences

Even when both constructions are acceptable, interpretation differs:

- *She gave him a book* → strong transfer implication
- *She gave a book to him* → weaker, more neutral

These differences challenge models that assume semantic equivalence.

2.3 Gradient Acceptability

Speakers often report intermediate judgments:

- *She baked him a cake* (acceptable)
- *She described him the event* (marginal)

This indicates that grammaticality is not binary, but gradient.

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3. Theoretical Background and Critical Review

3.1 Generative Approaches

Within generative grammar, argument structure is typically derived from syntactic configurations. The Minimalist Program proposes that structures are built through operations such as Merge.

While elegant, these accounts struggle with:

- Verb-specific variation
- Frequency effects
- Gradient judgments

3.2 Usage-Based and Cognitive Approaches

Usage-based models emphasize frequency, learning, and cognitive processing. They successfully explain:

- Variation
- Probabilistic patterns

However, they often lack formal precision in representing structure.

3.3 Toward an Integrated Perspective

Recent work suggests that neither approach alone is sufficient. This motivates a constraint-based interface model, which combines:

- Structural constraints
- Semantic constraints
- Usage-based pressures

4. A Constraint-Based Interface Model

4.1 Core Assumption

Argument structure is not projected from a single component. Instead, it emerges from the interaction of constraints.

4.2 Three Constraint Domains

1. Structural Constraints

- Define permissible configurations
- Govern syntactic well-formedness

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2. Lexical-Semantic Constraints

- Encode verb meaning
- Determine compatibility with constructions

3. Usage-Based Constraints

- Frequency
- Processing efficiency
- Conventionalization

4.3 Constraint Interaction

Table 1: Constraint Interaction in Dative Alternation

Verb Type	DOC	PDC	Dominant Constraint
Transfer verbs	✔	✔	Balanced
Communication	Limited	✔	Semantic
Abstract verbs	✘	✔	Usage + semantic

5. Analysis: Explaining Variation

5.1 Why "Explain" Fails in DOC

- Structural constraint → allows construction
- Semantic constraint → incompatible
- Result → ungrammatical

5.2 Why "Give" Allows Both Forms

- Structural → both allowed
- Semantic → compatible
- Usage → both conventionalized

5.3 Gradient Acceptability Explained

Acceptability reflects constraint alignment strength:

- Strong alignment → fully acceptable
- Partial alignment → marginal
- Conflict → unacceptable

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6. Beyond Binary Grammar

Traditional models assume:

- Grammatical vs ungrammatical

This paper proposes:

- Continuum of acceptability

This aligns with:

- Psycholinguistic evidence
- Corpus frequency patterns

7. Theoretical Implications

7.1 Against Strict Autonomy of Syntax

Syntax alone cannot determine argument structure.

7.2 Toward Interface-Based Grammar

Grammar emerges from interacting systems.

7.3 Compatibility with Interdisciplinary Research

The model integrates:

- Formal linguistics
- Cognitive science
- Usage-based theory

8. Conclusion

This study has demonstrated that argument structure in English ditransitives cannot be fully explained by syntactic projection alone. Instead, it emerges from the interaction of structural, semantic, and usage-based constraints.

The proposed model offers:

- Greater empirical coverage
- Flexibility in explaining variation
- A foundation for future research

Future work should test this model using large-scale corpus data and cross-linguistic comparison.

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