Methods of Modeling Syntactic Relations

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Abstract. *The article explores the classification and modeling of syntactic relations within sentence structures using junctional models. Drawing on theoretical frameworks from linguists like A.M. Mukhin, the paper categorizes syntactic relationships into seven types: nuclear predicative, subordinative, coordinative, non-nuclear predicative, appositive, zero-predicative, and introductive. Each type is defined, illustrated with examples, and represented visually via diagrammatic models that reflect syntactic dependencies. The paper also links these relationships to the broader concept of syntactic valency, emphasizing how sentence components interact both structurally and functionally. The analysis is presented from both componential and syntaxeme-level perspectives.*

Key words: *Syntactic relations, junctional models, nuclear predicative relation, subordinative relation, coordinative relation, non-nuclear predicative relation, appositive relation, zero-predicative relation, introductive relation, syntactic valency, syntaxeme analysis, sentence structure, sentence modeling.*

In this article, the syntactic relationships between components within a sentence are modeled using junctional models. The term "junctional model" is derived from the Latin word "junction", which means connection or link, and carries similar meanings in Uzbek [1, pp. 68–69]. This model is structured horizontally to reflect the actual distribution of sentence components and their interdependent relationships.

Referring to the content on syntactic relations widely used in the monographs of A.M. Mukhin and other linguists, we visually represent the syntactic relationships between the syntactic units in a sentence using junctional models. These models define the following types of relations: nuclear predicative, subordinative, coordinative, zero-equivalent predicative, introductive, non-nuclear predicative, and appositive relations [2; 3; 4].

1. Nuclear Predicative Relation

The key features of nuclear predicative relation are mainly connected to two aspects. As is known, predicativity refers to the expression of the relationship of the content of a sentence to reality, which is formed on the basis of the combination. What distinguishes nuclear predicative relations from other syntactic relations is that they can exist independently and express a complete thought without being subordinate to other syntactic structures. Moreover, they link two core components that have equal syntactic status. Because the nuclear predicative relation links two equally important core

components, it is represented in junctional models using a symbol that indicates a bidirectional relationship and an index on both sides ($\Longleftrightarrow$).
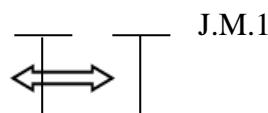
Examples:

1. I am a student.

2. He works.

3. He is 22.

In these sentences, the syntactic relation between the subject and the predicate is a nuclear predicative one, which can be explained in a junctional model as follows:

J.M.1

— the dashed lines represent syntactic units that have independent meaning.

The nuclear predicative relation occurs between the main components of a sentence. This is the main feature that distinguishes it from other syntactic relations. "Other syntactic relations cannot form the central structure of a sentence, as they are considered non-nuclear relations, unlike the nuclear predicative relation" [9, 11, 5, 39].
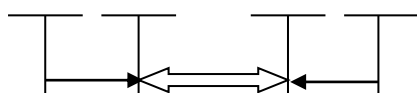
2. Subordinative Relation

The subordinative relation primarily enables the identification of syntactic units that are subordinate to a dominant component in sentence construction. In a junctional model, the subordinative relation is indicated by a unidirectional line pointing from the subordinate element to the dominant one, typically marked by an

symbol. In sentence construction, a subordinate component can depend on the subject, the predicate, or even other subordinate components.

Example: *My brother works at a plant.*

In this sentence, *my* is subordinate to the subject brother, while *at a plant* is subordinate to the predicate *works*.

My brother works at a plant

J.M.2

The subordinative relation helps distinguish extended simple sentences from unextended simple sentences. Moreover, when there is a need to identify the main core components of a sentence structure, this relation allows the omission of the component without affecting the main idea.
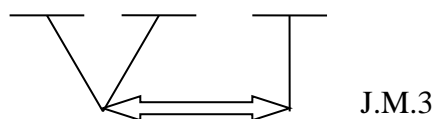
3. Coordinative Relation

The difference between a coordinate relation and other syntactic relations in the junctional model is that in it, parts of a sentence are not directed by indicators and components are not opposed to each other [6, p.13–14]. That means, regardless of their syntactic function in the sentence, the coordinated parts are syntactically equal.

In addition, they maintain equality when linked to another component, meaning either both are subordinate to another part, or another part is subordinate to the coordinated elements. Their grammatical forms are also the same, depending on how they are expressed syntactically. However, this article does not explore the mutual syntactic relations among coordinated elements in detail. The coordinative relation not only connects syntactically equal elements but also links compound sentences that are structurally coordinated [94, p.16].

Coordinated elements can serve as subjects, predicates, or secondary parts of the sentence. In junctional models, the coordinative relation is represented by the symbol "V".

Example:

John and James are students.

J.M.3

As the example shows, the coordinated elements *John and James* are linked through a coordinative relation.

4. Non-Nuclear Predicative Relation

A syntactic unit connected by this relation manifests within sentence construction through the basis of two syntactic relations. It is worth emphasizing that the non-nuclear predicative relation is placed in contrast to the nuclear predicative relation and can appear alongside other syntactic relations such as subordinative, coordinative, and appositive relations. However, each of these relations also differs from one another to some extent.

As noted by U.U. Usmonov, the subordinative relation differs from the non-nuclear predicative relation in that: "... while the subordinative relation expresses one-way dependency on the dominant component, the non-nuclear predicative relation is equally directed toward both components" [5, p.53].

In junctional models, the non-nuclear predicative relation is shown with a bidirectional indicator (↔ or similar symbol), typically represented by a two-way line.

Example: *I asked him to come in.*

Such syntactic constructions, namely *him to come in*, are referred to in both practical and theoretical English grammars as objective infinitive constructions [10, p. 165–167]. However, it has been widely interpreted that there is a close connection between the components of these objective infinitive constructions, with both elements functioning as a single clause part, specifically as a complex object [7, p. 82].

This interpretation remains one of the controversial issues. For instance, in the phrase *I asked him to come in*, the question arises: what kind of syntactic relation links the second component (*asked*) with the third (*him*), and the third (*him*) with the fourth (*to come in*)?

The answer to this question becomes clear when the sentence is modeled in a junctional representation. That is: *I* and *asked* are connected by a nuclear predicative relation, *asked* and *him* are connected by a subordinative relation, and *him* and *to come in* are connected by a non-nuclear predicative relation.

In the structure of this sentence, the syntactic unit *him* participates simultaneously in two different syntactic relations:

Sentence:

I asked him to come in.

J.M.4
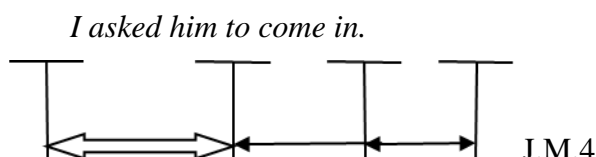
A detailed discussion of this syntactic relation can be found in the works of A.M.Mukhin [8, p.144–148].

5. Appositive Relation

A.M.Mukhin defines the appositive relation as follows: "In an explanatory sentence, not only do appositive phrases enter into a direct syntactic connection, but through that syntactic relation, they also indirectly connect with other components in the sentence" [1, p. 240–246].

A component connected through an appositive relation may not be a core component of the sentence, meaning it might not participate in forming the sentence's main structure.

A syntactic unit linked via appositive relation can be attached to the subject or to a secondary component of the sentence. In a junctional model, the appositive relation is represented with a marker placed between lines, like this: (   ).

Example:

*Gray, the anesthetist, mumbled an answer.*

J.M.5
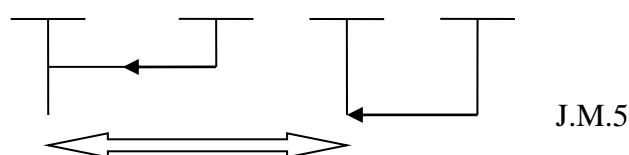
6. Zero-Predicative Relation

It is known that in language, there also exist one-member sentences. Such sentences exhibit three characteristics: predicativity, modality, and prosody. In one-member sentences, it may be impossible to clearly identify the subject or predicate.
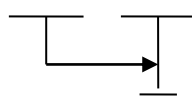
Examples:

Ugh! God! or one- member extended exclamations like: *Holy God! Good God!*

In junctional models, these types of sentences are represented using a zero-predicative relation symbol: ($=$).

Ugh! God!	J.M.6
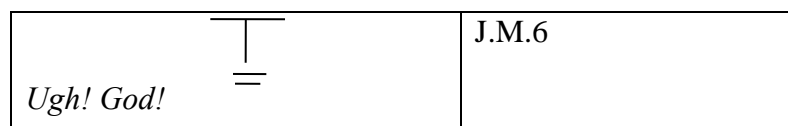
Holy God! Good God! J.M.7

This structure is also characteristic of vocative sentence constructions.

7. Introductive Relation

The introductive relation refers to syntactic units in a sentence that are not syntactically or intonationally connected with the core or secondary parts of the sentence. These units are represented in the junctional model using the symbol ( ).

Example:

Of course, I shall come at 7.

J.M.8

Based on the syntactic possible to determine the syntactic level. relations outlined above, it is the valency of components at However, in global linguistics, the theory of valency is approached differently across the phonological, morphological,
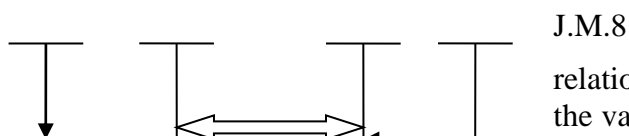
lexical, semantic, and syntactic levels of the language. When analyzing a sentence by breaking it down into components, the position, function, and morphological characteristics of each syntactic unit are revealed, this reflects the external structure of the sentence. However, when analyzing syntactic units through syntaxemes, their categorical and non-categorical syntactic-semantic properties are identified.

In this article, the syntactic relationships by which valency of components is determined based on both componential and syntaxeme-level sentence analysis. The aim is to explore the syntaxeme composition of these units.

Conclusion. In linguistics, the theory of valency, particularly syntactic valency and syntactic relationships, is discussed, and both positive and critical views on this topic are summarized, leading to the following conclusion:

The issue of syntax has been widely debated among linguists, with some dividing syntax into structural and functional syntax. Within structural syntax, the analysis of sentence construction includes syntactic relationships such as core predicative, subordinative, coordinative, non-core predicative, zero predicative, introductory, and appositive relationships. Based on the aforementioned syntactic relationships, syntactic valency can be developed.

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