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## HIERARCHICAL SENTENCE STRUCTURE IN THE DEPENDENCY GRAMMAR MODEL

*The article is devoted to the hierarchical structure of the sentence in the dependency grammar model. According to the dependency theory, the verb affects the determination of the hierarchical structure of the sentence. According to this theory, it is suggested that the center of the sentence begins with the verb. At the same time, the article analyzes the valence and complements of the verb and their number. The first complement of the verb acts as the subject of the sentence. According to Lucien Tesniere's theory, he explains the dependency relations in the sentence with his dependency grammar model. According to his model, the verb is the predicate of the sentence and governs other parts of speech. The analysis in the article suggests that all the necessary elements in the sentence are determined by the verb in terms of form, function and position. It is clear from the article that the main assumption of dependency grammar is the structural connection of two elements and their dependence on each other.*

*The article also compares valence and dependency theory. Dependency grammar models the structural organization of a grammar using different dependency connectors. Thus, it describes the types of relations that can be realized in grammar, from which concrete realizations can arise. Whether these realizations are valence realizations or realizations of completely different relations is considered irrelevant from the point of view of dependency grammar. Dependency grammar reflects all grammatical realizations, regardless of their origin. According to valence theory, it deals with the ability of verbs and prepositions to attach to other words. The difference between quantitative and qualitative valence is explained. The idea of valence is kind of reminiscent of an atom and its particles. The verb and the spaces around it and the words governed by the verb that can locate there. It is also emphasized that one of them refers to the form, and the other to the meaning of the syntactic element.*

**Key words:** *Dependency grammar, valence, actant, circumstant, syntagmatic.*

**Introduction.** According to the dependency theory, the hierarchical structure of the sentence is explained as the determination of the verb. So to speak, the center of the sentence begins with the verb. A verb requires a certain number of complements in a sentence due to its valence. The subject of the sentence is the first complement or actant of the verb. Lucien Teniere explains dependency relations in a sentence with his model of dependency grammar (1:142). Based on his model, the verb becomes the predicate of the sentence and controls other parts of speech. From here we can come to the idea that all the necessary elements in the sentence are determined by the verb in terms of form, function and position.

**Discussion.** The basic assumption of dependency grammar is that two elements are structurally connected and dependent on each other.

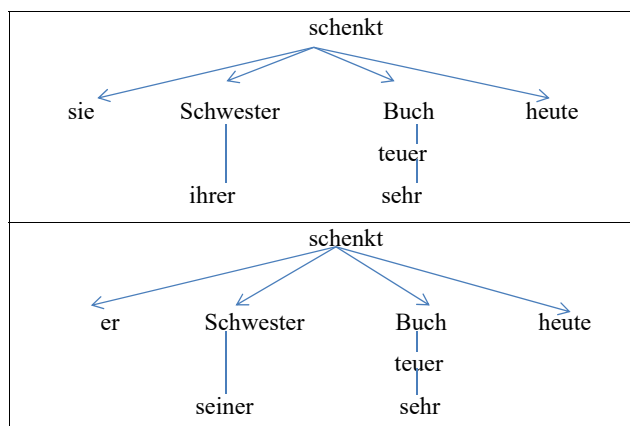
**Er singt.** – According to dependency theory, there are three elements in the sentence. Two elements and the relationship between them. The center of syntax and other words directly or indirectly subordinate to itself is the verb. Therefore, the verb has created a

central node and can create several relations besides itself. As a result of these relationships, the elements are divided into actants and circumstants according to the degree of dependence on the verb (1: 145).

Additional dashes can be used to mark semantic-syntactic relations between elements. The fact that they exist in German can be seen by replacing the feminine pronoun *sie* in the neuter singular with the masculine pronoun *er*. In this case, it is necessary that the possessive pronoun also changes so that the unit of meaning of the sentence is not violated. For ex:

Dependency grammar was developed by L. Teniere on the basis of the grammar of the French language, but this theory can be applied to the German language if the sentence is analyzed correctly (1:142). The correct determination of circumstants and actants in the sentence contributes to the accuracy of the analysis.

In dependency grammar, the control of the verb and valence are necessary for the development of the dependency model of the sentence. Just as an atom



binds to itself other elements, so a verb binds to itself a certain number of actants. Both the linguistic and the chemical element have a certain valence (1: 150).

Valence theory deals with the ability of verbs and prepositions to bind other words to oneself. There is an absolute difference between quantitative and qualitative valence. The idea of valence is a kind of reminiscent of an atom and its particles. The verb and the spaces around it and the words that can make a decision there, are subordinate to the verb and fall under its control (2:107). The valence of a verb depends on how it makes the word dependent on itself:

Avalent verbs – impersonal verbs. (Es regnet.)

Monovalent verbs – verbs with a subject. (Sie weint.)

Bivalent verbs - verbs with subject and object. (Ich lese ein Buch.)

Trivalent verbs – verbs with two objects (Dat. Akk.). (Er gibt mir einen Kugelschreiber.) (2:107)

Sometimes the difference between mandatory, necessary actants depending on the verb and independent, facultative actants in the sentence can be difficult to determine in German.

Sie wohnt in Berlin. – Sie kocht eine Pizza in der Küche.

In the first sentence, the verb to live semantically requires absolute space. In the second sentence, however, the space is not so important. This sentence is syntactically complete, even without specifying the space.

In contrast to L.Tesniere's theory, linguist K. Buhler in his work "Linguistic theory" applies other parts of speech to words that gather elements like atoms around them. (2). It should be noted here that the concept of valence should not be equated with syntagmatic relationships such as control and compatibility. The control of the verb reflects the fact that the form of one constituent is determined by another. Concordance is the agreement of sentence

elements according to grammatical categories such as person, quantity and case. Valence, on the other hand, is a deeper level. What matters here is how cohesive the word is and how this function is realized within the sentence (2:108). The advantage of L.Tesniere's theory is that the concept of valence has found its place in syntax. It transforms the property of being a carrier of a verb into an integral part of his grammatical model. Its point of departure is the hypothesis that the structural principle of the entire sentence stems from the valence properties of the verb (2: 110).

One of the linguists who wrote about the levels of valence is Helbig Schenkel. He mentions 3 levels of valence in his dictionary: syntactic, semantic and logical. Y. Yakobs talks about different valence relationships in his program called "Contra Valence" (8).

The main point of Y.Yakobs' reasoning is the set of syntagmatic relations that exist between the object and the verb, but do not exist between the adverb and the verb (8). These relationships are discussed under the keyword valence in linguistic studies.

There are 2 special criteria for distinguishing the actant and circumstant in the sentence. One of them refers to the form, and the other to the meaning of the syntactic element. The actant form expressed by the noun presents itself as an element dependent on the verb. For ex: *Peter schlägt Bernard*. And the circumstant, expressed only by the adverb, if it is expressed by a noun, must first reflect the sign of the adverb with the apron. For ex: *Peter geht durch die Strasse*. In the example, it is clearly seen that the word "die Strasse" shows the adverb with the help of the prefix "durch".

The point of meaning is so unified with the subject and the actant verb that the meaning of the verb cannot be determined without it. For ex: In the sentence *Peter schlägt Bernard* it is "Bernard" that definitely plays an important role in the formation of meaning. In the second example, *Peter geht* himself is the actant which freely completes the thought correctly. In other words, it is not important how, with whom and with what Peter goes. In this analysis, it can be concluded that in German, the Dative and Accusative case of the noun can be the second and third actant in the sentence. Otherwise, if these actants are arranged with the help of prefixes, they are closer to the circumstants. For ex.: *Peter gibt das Buch Peter*.

On the contrary, some objects are actants in themselves and are closely related to the verb, and without them the meaning of the verb is not conveyed correctly. For ex.: *Peter zieht den Anzug an*.

Den Anzug cannot be an actant in a sentence because it is considered circumconstant to belong

to the second actant which performs the action in the sentence and in the second actant is neither the second actant who is subjected to the action nor the third actant is benefited or harmed as a result of the action. Indeed, the word “den Anzug” accompanies and determines the action of the verb.

So, in order to separate actant and circumstant in a sentence, we must look for it between the third actant and circumstant. We must look for between the third actant and the circumstant. The third actant is German, in Latin its Deutsch is prefixed in French. For ex: jemandem schaden – to harm someone, jemandem eine Freunde bereiten – to please someone. In contrast, circumstantial completeness is mainly used in the genitive and dative. For ex: von jemandem abhaugen – to depend on someone. It turned out to us that in German the elements to the verb were actants and circumstants. The principle of sentence construction in German is to write one of the actants or circumstants that depend on the verb at the beginning of the sentence, then write the verb (ie in II place) and other actants.

So, it is possible to construct the sentence in different ways without changing the meaning.

*Ich las gestern einen deutschen Text ohne Wörterbuch.*

*Gestern las ich einen deutschen Text ohne Wörterbuch.*

*Einen deutschen Text las ich gestern ohne Wörterbuch.*

*Ohne Wörterbuch las ich gestern einen deutschen Text.*

Each of these options is correct, the only difference between them is the emphasis on the word that precedes each. According to J. Jurken, the role of a link that holds several keys together is played by a verb in a sentence. If we apply this analogy to the sentence structure in German, the first key is the verb - the ring verb knot - and the other keys are in the elements that depend on the verb. This sentence structure gives grounds to say that the place of the verb in German changes depending on its type, and new interrogative sentences also appear in the first place, in the second place in the sentence, and at the end of the sentence (3). So in German the verb has a fixed invariable place depending on the type of sentence. And finally, we can say for sure that each element subordinate to the verb has a fixed place in the sentence, regardless of whether it is actant or circumstant. Naturally, each element subordinate to the verb can be in the role of subordinate in itself and make other elements dependent on itself. That is, it can make the verb knot hanging. That is, the verb

knot occupies a single fixed place, regardless of the degree and number of subordinates: For ex: *Mein Freund gibt mir ein Buch. Mein Freund, der mir bei der Prüfung helfen möchte gibt mir ein Buch.*

Regardless of the width of the sentences, the verb knot is constant and invariable in both. In order for the structure of the sentence in German to be clear, its actant and circumstant must be subordinate to the verb. In this case, the structure of the German language is stable and uniform, regardless of the type of knot (3). It is the stability of the sentence structure in the German language that makes it possible to study it in terms of different word classes. Let us make your mind clear. In German, there are groups of verbs that are characteristic of the infinitive and complex tenses, and their place in the sentence is different. For ex: *Peter wird diesen Text morgen fertig gelesen haben.*

*Wird Peter diesen Text morgen fertig gelesen haben.*

*Ich glaube nicht dass, Peter diesen Text morgen fertig gelesen haben wird.*

In this sentence, it is clearly seen that the auxiliary verb *wird* is used as the main verb in a fixed place. Other verbs are considered as verbal adjective and infinitives, and *gelesen haben* (they are considered as particles of the compound form of the language) as other word classes. They have places that do not belong to the verb position. The noun that is always connected to the verb and subordinate to it is the element that is controlled by the verb and is located closer to it in the sentence. For ex: This is precisely why actants are not separated from verbs by commas in French. The general attraction of elements to the verb is clearly manifested in personal nouns in their place in the sentence:

*Ich gebe meinem Bruder ein Buch.*

*Ich gebe es ihm.*

The elements expressed by the corresponding cases of personal pronouns subordinate to the verb depend on it as the actant of the verb. These actants, in turn, are ranked as the first, second, and third actants. The attachment of actants to the verb can vary from language to language. The person denoting completeness is distinguished by the pronominal actant, especially in French by ordering and taking turns from the verb. From the examples given, it is clear that person-reflective elements represent people based on the grammatical category of person. Their main function is to express the person in the sentence. We know that the verb in German varies according to the person. An interesting fact is that in our languages, especially in Chinese and Samoan, which personal pronouns perform the function of the first

actant, and the verb changes and remains the same. The pronoun, which loses its independence as the first actant, becomes an indicator in the sentence in these years, which simply indicates classification.

English is one of these languages. Thus, the personal indicator denoting the subject and the personal ending of the verb perform the same function. As a result of combining the personal noun with the verb, it has led to the formation of prefixes, affixes and personal endings or inflections in every language for many years. Thus, we can say that the verb has already made the first Actant syntactic by showing the reconciliation between the person ending and the first actant in the sentence. We would also like to note that it is precisely in the German language that the subjective arising in sentences is needed in some cases (3).

If the personal indication of the first actant is the personal ending of the verb, then its first actant meaning is deleted. If it is important to use the first actant, then it is necessary to express it with a false subject as the main object. It is in German that the using of the particle “es” belongs to this rule. *Es lacht der Mai* (Goethe)

In this example, the first actant is the word “Mai”, while “es” simply indicates how the verb should be conjugated. The very fact that “es” shows the neuter gender also shows that it is not related to the masculine gender “der Mai”.

The first actant can always be expressed not only by a noun but also by a personal pronoun. Even in languages with first actant person indicatives, the personal noun is far from reflecting the personal indicative (3).

In languages with personal indications of the first actant, this application is essential. Particles that do not make sense, on the other hand, cannot do this. In addition to German, it can be found in French and Latin. The personal substantive gradually turns into personal indicators and personal endings, leading to the classification of the verb according to persons. This sequence is based, albeit partially, on the derivative of the verb in the noun. So when subjective person indications reconcile with the verb, the person causes its endings to appear, which in turn creates the paradigm of its conjugation. This agglutination leads to the reconciliation of the verb exactly to the person and quantity, and sometimes to the case depending on the first actant. Sometimes the verb can turn the second actant into its personal ending and refer it to itself. In this case, the personal ending indicates the second actant, not the first.

This type of verb form agrees with the second actant, which depends on it, not the first.

It is this type of agglutination that shows the direct completeness of the verb. Since this is not a very common phenomenon, the object classification is found in Hungarian. In this classification, the verb must have a second actant.

In this classification, the principle is parallel classification of the verb with subject and object in the indicative. It should be noted that in the classification of the subject, the indicators of the first actant are prominent, and in the classification of the object, the indicators of the second actant are prominent. Both classifications have similarities in form (structure). However, there is a difference between them. Thus, the verb agrees with the first actant in terms of identity and quantity. It agrees with the second actant only by person.

For ex: *Ich lese ein Buch. Ich lese Bücher*

*I actant*

*II actant*

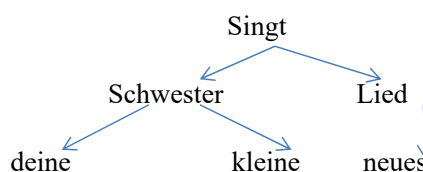
Therefore, the paradigm of classification is always the result of the combination of person indicators with the verb. From the above, it can be concluded that the verb controls the elements that depend on it in the sentence, i.e. actant and circumstant. And these elements, in turn, control words from another category. Actants are nouns and personal pronouns. Each name structurally forms a knot, forming part of large or small links. This is called a knot noun. The fact that in the sentence the noun forms a knot by gathering words around it does not come from the role it plays in the sentence as a noun, but from the fact that it is precisely a noun. If the noun that governs the knot, in turn, is used in the sentence not in the first, but in the second actant function, then only actant connections can be spoken here.

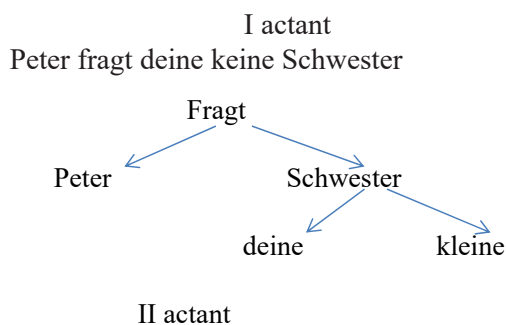
For ex: *deine kleine Schwestern*

In this noun knot, the word “Schwestern” makes the possessive pronoun “deine” and the adjective “keine” dependent on itself. It has changed according to its gender and quantity.

The example we are considering is that the noun can be both the first and the second actant. And this will change depending on the control of the verb to be used in the sentence. For example, we can witness this in the next examples.

*Deine kleine Schwester singt neues Lied.*





Usually the words included in the composition of the noun knot are words that characterize the noun, indicate its signs. While the number of actants of the verb is limited to 3, there is no limit to the number of words indicating the sign of the noun.

For ex: *Ihr neues interessantes Buch*.

In languages with the gender category of the noun, agreement between the noun and the signifier is mandatory. For example, German, Russian, etc. In English, there is no such agreement. In the French language, since some adjectives cannot change, the agreement partially applies to this language. Depending on whether the signifier words come before or after the noun and agree with it, it is also possible to install the languages as centripetal and centre-oriented (4).

This clearly manifests itself in a linear sequence. Languages such as Egyptian, Arabic, Italian, Romanian are considered to be centripetal languages, while Russian, Turkish, German, Chinese, and Georgian languages are considered centre-oriented languages.

The fact that the adjective precedes and follows the noun is evident from the linear sequence. In French, a group of adjectives come after a noun. This language can be considered one of the languages that escape from the center precisely because of this feature.

One of the questions that arise is the features other than the dependent word in the sentence and their characteristics. How can they be distinguished from key words that convey information? The semantic criterion is already known. According to L. Teniere, all those who took part in the event are described as additions, and the circumstances of the event are described as information. As he said, information can be omitted, it is impossible not to have additions (1). But here the question arises how to evaluate the conditional definition required by the verbs. For example: The verb “*liegen*” requires an adverb of place and the verb “*dauren*” requires an adverb of time. L.Teniere also notes that prepositional relations are always opposed to adapting or omitting information to a syntactic necessity. There are prepositional

phrases in German that cannot be omitted. For ex: *Er verzichtet auf sein Recht*. On the other hand, a nominal sentence that does not have to realize.

For ex: *Er tanzt (die ganze Nacht)*.

It is possible to witness that these ideas are contradictory at some stages. Hellbig Schenkel points out that information can and cannot be freely added to all verbs. E. Braynol notes that there are expressions that are marked as free information, but are subject to semantic restrictions in terms of their connection. (5). For ex: Those directions can only be combined with verbs that show a change of place. For semantic reasons, many verbs allow only a small class of information. A semantic constraint is always necessary. In this respect, this criterion of subclass characteristics adopted by Hellbig et al. cannot be used to differentiate. There are expressions that cannot be put into words until they are put into a sentence.

The concept of valence has been used for language-constructive studies, especially for the creation of dictionaries (4).

The fact that the valence of the German verb is reflected in dictionaries confirms how important this information is for language learners. For ex: The fact that the verb “*helfen*” requires the Dative case after itself, it is processed by the control of the verb “*sich erinnern von jmdm*”. In particular, there are 4 dictionaries dedicated to the valence of German verbs.

G. Helbig und W. Schenkel „*Wörterbuch zu und Distribution deutscher Adjektive*“

H. Schumacher *Verben in Feldern – Valenz Wörterbuch zur Syntax und Semantik deutscher Verben*

K.E. Sommerfeld, K. Schreiber *Wörterbuch zur Valenz und Distribution deutscher Adjektive*

K.E. Sommerfeld, K. Schreiber *Wörterbuch zur Valenz und Distribution der Substantive*

The description of valence in dictionaries should be done in such a way that the user should be able to specify any sentence and the control of the verb that is needed or more appropriate in the description. It is precisely these dictionaries that must create conditions for determining the object after the corresponding verb, whether it is mandatory or not, or whether the initial or secondary meaning of the verb corresponds.

The seriousness of the task of grammar books is already conceivable if dictionaries have such a role in valence theory. What syntactic models are possible in the construction of a sentence in the language is directly the valence and unity of the verb. Erben offers 4 template in German:

1. Sentence model with an object: Peter Schiff
2. Sentence model with two objects: Ich lese einen Text

3. Sentence model with three objects: Ich stelle Blumen und den Tisch

4. Sentence model with four objects: Er schleudert ihm den Handschuh ins Gesicht.

Based on the model proposed by Erlen, 34 sentence models are proposed in Duden grammar. When looking at the valence of the German verb after L.Teniere, it becomes clear that the prototypical sentence structure attracts attention in its definition, and the 3 forms of the German verb: Indicative, Imperative, Conjunctive clearly manifest themselves in sentence modeling.

1. Er spendiert mir ein Eis (He buys me ice cream)
2. Ein Eis wird mir spendiert.
3. Ein Eis wird mir von ihm spendiert.
4. Spendier mir doch ein Eis! (2)

This systematic way of writing the completeness of sentences in some cases should not be confused with the valence of the verb. The lack of completeness in some sentences takes as a morphological phenomenon. From here it can be concluded that valence is determined in the indicative form of the verb. They do not apply this to the infinitive and indefinite form, however, systematically these forms also have syntactic valence. Vilmos Angel expressed a critical attitude to this aspect of the issue. He explains the realization and potential of valence as follows:

“These forms and types of the grammatical realization of valence, the inclusion of valence into the grammatical structure of a single language, he calls the realization of valency” (12). It mainly expresses the idea that the valence properties of the word play a key role in the construction of grammatical structures. In fact, there is truth in Angel’s words. Most linguists who study valence

consider only one level, the macro level, and this is wrong. Only if both levels of typological differences between individual languages are considered equally can the new model describe valence both syntactically and morphologically. For example, in German, the first actant can indicate both levels.

Let’s compare the German indicative and imperative:

Du isst das Brot. (both micro and macro level)

Iss das Brot! (both micro and macro level)

The advantage of this model is that the realization of the topic at the micro level is not perceived as a decrease in valence. On the contrary, it is taken into account that actants can appear in different microvalent and macrovalent forms. These forms do not depend on valence, they are based on the structural principles of individual languages.

They can also vary within the language depending on some factors.

Conclusion. In conclusion, let’s note that although valency is somewhat close to dependency grammar, it should not be confused with it. Dependency grammar models the structural organization of a grammar using different dependency connectors. Thus, it describes the types of relations that can be realized in grammar, from which concrete realizations can arise. Whether these realizations are valence realizations or realizations of completely different relations is considered irrelevant from the point of view of dependency grammar. Dependency grammar reflects all grammatical realizations, regardless of their origin. That is to say, valence acts as one of the constitutive links for the construction of syntactic structures in dependency grammar.

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### **Джамалзаде Н. Е. ІЄРАРХІЧНА СТРУКТУРА РЕЧЕННЯ В МОДЕЛІ ГРАМАТИКИ ЗАЛЕЖНОСТЕЙ**

*Стаття присвячена ієрархічній структурі речення в моделі граматики залежності. Відповідно до теорії залежності, дієслово впливає на визначення ієрархічної структури речення. Згідно з цією теорією, припускають, що центр речення починається з дієслова. Водночас у статті аналізуються валентність і доповнення дієслова та їх число. Перше доповнення до дієслова виступає підметом речення. Відповідно до теорії Люсьєна Теньєра, він пояснює відносини залежності в реченні за допомогою своєї моделі граматики залежності. Згідно з його моделлю, дієслово є присудком речення і керує іншими частинами мови. Аналіз у статті свідчить про те, що всі необхідні елементи в реченні визначаються дієсловом за формою, функцією та позицією. Зі статті зрозуміло, що основним припущенням граматики залежностей є структурний зв'язок двох елементів і їхня залежність один від одного.*

*У статті також порівнюється теорія валентності та залежності. Граматика залежностей моделює структурну організацію граматики за допомогою різних сполучників залежностей. Таким чином, він описує типи відносин, які можуть бути реалізовані в граматиці, з яких можуть виникати конкретні реалізації. Чи є ці реалізації валентними реалізаціями чи реалізаціями зовсім інших відносин, вважається неважливим з точки зору граматики залежностей. Граматика залежностей відображає всі граматичні реалізації, незалежно від їх походження. Відповідно до теорії валентності, це стосується здатності дієслів і прийменників приєднуватися до інших слів. Пояснюється різниця між кількісною та якісною валентністю. Ідея валентності чимось нагадує атом і його частинки. Дієслово та пробіли навколо нього та слова, керовані дієсловом, які можуть там знаходитися. Також наголошується, що один із них відноситься до форми, а інший до значення синтаксичного елемента.*

**Ключові слова:** Граматика залежності, валентність, актант, обставинна, синтагматика.