

الباحث

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The Power of Grammatical Functions in Semantic Roles
Recognition

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عنوان البحث

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ملخص البحث

تُعدّ الوظائف النحوية أساسية في نظرية التركيب النحوي لربط أدوار العناصر بأساليب الترميز اللغوي الشكلية. ويمكن وصف هذه الوظائف إما بأنها أفكار أساسية في التركيب النحوي أو مفاهيم تُصنّف الجمل وفقاً لبنيتها. تكمن مشكلة هذه الدراسة في أن العديد من القراء يواجهون صعوبة في تحديد دور دلالي مُعين للعناصر المشاركة، نظراً لاحتمالية امتلاكها لأكثر من دور دلالي. إن النموذج المعتمد في هذا البحث هو قواعد اللغة الإنجليزية الجامعية الذي اقترحه راندولف كويرك و سيدني غرينباوم (١٩٧٣). يهدف هذا البحث إلى إظهار أهمية الوظائف النحوية في تحديد مكونات الجملة، بالإضافة إلى التعرف على الأدوار الدلالية المختلفة من خلال استخدام الوظائف النحوية للجملة. وخلصت نتائج البحث إلى أن الوظائف النحوية والأدوار الدلالية تتعاون معاً لخلق تفسير متماسك. علاوة على ذلك، تُمكن وظائف عناصر النحو الكتاب من التعرف على الأدوار الدلالية للجملة. تُقدّم هذه الورقة البحثية خلفية نظرية لمصطلح "الوظائف النحوية" نظراً لأهميته في النصوص.

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The Title

The Power of Grammatical Functions in Semantic Roles Recognition

Abstract

Grammatical Functions are very essential in the syntactic theory for connecting argument roles to the formal encoding methods of language. These functions can be characterized as either basic ideas of syntax or as concepts that classify sentences according to their structure. The problem of study is that many readers face difficulties in determining a specific semantic role of participants since they have the possibility of having more than one semantic role. The model adopted in this study is A University Grammar of English proposed by Randolph Quirk and Sidney Greenbaum (1973). The aim of this paper is to show the significance of grammatical functions in determining the constituents parts of the sentence. It also aims at recognizing the various semantic roles through the use of the grammatical functions of the sentence. It is concluded from the findings of the research that grammatical functions and semantic roles cooperate to create a coherent interpretation. In addition, the functions of the elements of grammar enable the writers to recognize the semantic roles of the sentence. The paper presents a theoretical background of the term grammatical functions for its significant use in texts.

List of Abbreviations

| | |
|--------------------------------|-----------------------------|
| A - Adverb | Det - Determiner |
| V - Verb | M.V - Main Verb |
| VP - Verb Phrase | NP - Noun Phrase |
| Adj - Adjective | O - Object |
| AdjP - Adjective Phrase | Od - Direct Object |
| C - Complement | Oi - Indirect Object |
| Co - Object Complement | Prep - Preposition |
| Cs - Subject Complement | Pron - Pronoun |
| | S - Subject |

1. Introduction

In linguistics, grammar is defined as the collection of structural principles that determine how words, phrases, and clauses are put together in a particular language. It helps us comprehend how words and their constituent pieces come together to make sentences. It is the methodical study and description of a language. Every language has a grammar, and every language has a unique grammar. Speakers of the same language are able to communicate because they have an innate understanding of the language's grammar system, or its rules for meaning-making. Regardless of the nation or language, grammar is the cornerstone of communication. Grammar rules can assist students in forming the habit of reasoning clearly and rationally. After learning grammar, students can use a language more accurately.

Crystal (2008) denotes that Functional Grammar focuses on the guidelines that control verbal communication, which is viewed as a cooperative activity. According to this method, a predicate is considered the fundamental component of a *predication*; it is stated in the lexicon as a *predicate frame*, with the number of semantic roles it accepts like *theme*, *source*, etc.. "Nuclear predications" are created from predicate frames by adding suitable terms to the

argument positions. Following their semantic interpretation, syntactic and pragmatic functions are applied to predication parts and represented in sentences using *expression rules*, which address issues like *case* and *agreement*.

Jassim and Najm (2013) confirm that there is a strong relationship among the constituents parts of the sentence shedding light on their contribution in form and function.

2. What are Grammatical Functions?

Finch (2000) denotes that the majority of syntactic explanations of language, even those that are primarily formal, will recognize functionalism to some extent and may even employ functional categories. The most fundamental linguistic terms in this aspect include *subject*, *verb*, *object*, *complement* and *adjunct / adverbial*. These can be thought of as grammatical functions that the constituents can achieve in a sentence. They can be abbreviated as *SVOCA* for shortening.

Najm (2012) focuses on the importance of syntactic structures which are involved with the function of the elements of grammar and their effective roles in understanding the meaning of the sentence.

2. 1. Subject

With regard to the first grammatical function, Green and Nelson (2009) denote that numerous grammatical rules make reference to the subject. Below are some characteristics of the subject:

1. There are guidelines about the subject position. In declaratives, the subject usually appears before the verb, but in questions, it comes after the operator:

(1) (a) *She* (S) wrote an excellent essay.

(b) Did *she* (S) write an excellent essay?

Even in questioning about *who*, *what*, or interrogative phrases like *which one*, the subject comes before the verb:

(2) (a) *Who* (S) wrote an excellent essay?

(b) *Which one* (S) wrote an excellent essay?

2. In imperatives, the subject is typically absent:

(3) Call him, please.

3. The majority of verbs in the present tense have a unique form that ends in *-s* if the subject is in a single case and refers to something or someone other than the speaker, the person or the people addressed:

(4) (a) *The bird* (singular S) *flies* (singular V) over the trees.

(b) *The birds* (plural S) *fly* (plural V) over the trees.

4. When reflexive pronouns—such as *herself*, *ourselves*, and *themselves*—appear in the same clause, the subject selects their forms:

(5) You (S) can do it yourself.

5. The subjects of an active sentence are changed when it becomes passive:

(6) (a) *The policeman* (S) arrested the criminal. (Active)

(b) *The criminal* (S) was arrested by the policeman. (Passive)

2.2 Verb

Quirk et.al (1973) denote that verbs can be categorized in a number of ways. They can be classified according to their functions into lexical verbs and auxiliary verbs in which the latter can also subdivided into modal and main auxiliaries. There are various verb forms that closely correlate to the various object and complement categories. All transitive verbs have a direct object; others, allow an indirect object, and these can be recognized as ditransitive verbs. Several verbs, such as *appoint* have an object complement, they are referred to as complex transitive as in:

(7) They *appointed* him a boss.

It is necessary to distinguish between verbs not just in respect to object- and complement-types but also in regard to whether they themselves accept the aspectual difference of *progressive* and *non-progressive*. Verbs can be classified into two main types: *stative* and *dynamic* verbs.

(a) Stative verbs

Stative verbs include these verbs that do not accept the progressive. They can be categorized into two types:

- (1) Perception and cognition verbs like *abhor, believe, dislike, doubt, feel, hear, ...etc.*
- (2) Relational verbs include *belong to, consist of, possess, remain, seem, etc.*

(b) Dynamic verbs

With respect to dynamic verbs, they include these verbs that accept the progressive. They can be divided into five categories:

- (1) Activity verbs include *abandon, learn, work, write, etc.*
- (2) Process verbs like *change, grow, mature, widen, etc.*

These two types of dynamic verbs are often utilized in progressive aspect to refer to incomplete events in progress.

- (3) Body sensation verbs such as *ache, feel, hurt, itch, etc.* may have either simple or progressive aspect with a slight difference in meaning.
- (4) Transitional verbs like *arrive, fall, land, leave, etc.* take place in the progressive having a change in meaning when compared to simple aspect.
- (5) Momentary verbs like *jump, kick, knock, nod, etc.* have little duration, and thus the progressive aspect confirms redundancy strongly.

For Aarts (1997), the verb always forms the predicate which is one of the most significant parts that identify what we may call the bare-bone content of the sentences in which they appear, i.e., the primary action or procedure indicated by the verb. The verb is functioned to identify the entities involved in the activity.

2.3 Object

Butt et al (2012) affirm that verbs can be transitive or intransitive. Once again, these terms pertain to traditional grammar and their meaning may be determined in their morphology: *trans* indicates across and the rest of the word involves passing across the verb to another nominal group, traditionally known as the object. Naturally, intransitive verbs do not exhibit this phenomenon. In Traditional Grammar, the object is specified by asking *Whom?* or *What?* after the verb. For instance, *a ball* is the object in the statement *Jack broke the vase* since it provides an answer to the question: *What did Jack break?* All nouns and pronouns in certain languages have case ends that indicate the fundamental role they play in a given clause. English has only the retained case endings that English has include some subject, possessive and relative pronouns; for instance, *she* is subject (nominative), *them* is object (accusative), and *their* is possessive (genitive). The idea of transitive or intransitive works well for doing verbs in active voice, like *broke* in the example above. When this phrase is turned into passive: *The vase was broken by Jack*, the vase is subject not object but, in a very real sense, we still wish it to be the object of the breaking. In order to prevent this awkwardness, Systemic Functional Grammar avoids using the term *object* and, more significantly, maintains the analyses of experience and interaction in two distinct systems. In experiential analysis, the term *transitivity* is used to describe the interaction, regardless of whether the verb is transitive or intransitive.

Regarding the direct object, Kim and Sells (2008) affirm that it is a noun phrase undergoes the process specified by the verb:

(8) My friend bought this vehicle.

Once more, a far more strong condition is the syntactic construction of passivization, in which a notional direct object emerges as subject.

Sentence (9 a) can be transformed into passive as in (9 b):

(9) (a) Her brother bought this computer for her.

(b) This computer was bought for her by her brother.

What we can note here is that the object in (9 a) are 'promoted' to subject in the passive form as in (9 b). The test stems from the fact that non-object NPs cannot be promoted to the subject, so the sentence:

(10) This bag belongs to Jenny.

cannot be passivized which means that *Jenny* cannot be the subject since it is non-object NP.

Greenbaum and Nelson (2009) demonstrate that one approach of recognizing the direct object is by asking a question initiated by *who* or *what* followed by the verb serving as an operator and the subject. The object is the constituent that *who* or *what* questions:

(11) *Who* (Od) *is Allen* (S) phoning?

(12) *What* (Od) *did Sandy* (S) write?

For more clarity, some characteristics of the direct object are shown below:

(a) The verb usually comes before the direct object.

(13) Carl has been painting (V) high *walls* (Od) recently.

(b) When a pronoun serves as the direct object, it might take on a unique form:

(14) We called him (Od) earlier today.

(c) If the subject and direct object relate to the same person or thing, the direct object is a reflexive pronoun:

(15) He clothes himself.

(d) When we change an active sentence into passive, the direct object of the active sentence becomes the subject of the passive one:

(16) (a) She tore *her paper* (Od). (**Active**)

(b) *Her paper* (S) was torn by her. (**Passive**)

As far as the indirect object is concerned, Quirk et al (1973) show that it is (usually animate), that is placed first:

(17) They gave the little girl a gift.

We can eliminate indirect objects with preserving the meaning of the sentence:

(18) She bought the boy a pie.

(19) She bought a pie.

we can usually substitute them with a matching prepositional phrase following the direct object:

(20) They gave a gift to the little girl.

(21) She bought a pie for the boy.

Only the indirect object can be subject in a sentence whose direct object is involved with ditransitive verbs that must be introduced by a preposition, in this case, the sentence can bear only one passive:

(22) (a) We reminded him of the agreement.

(b) He was reminded of the agreement.

2.4 Complement

According to Quirk et al (1973), two types of complement can be recognized: subject complement and object complement. The subject complement in the sentence:

(23) His brother seems very *happy* today

is the adjective *happy*. It is involved here with the subject of the sentence such that the subject is comprehended as a happier brother.

Greenbaum and Nelson (2009) show that a verb is considered a linking verb if it needs a subject complement to complete the sentence. The person or

thing indicated by the subject is usually identified or described by the subject complement, which is highlighted in the following examples: The most prevalent linking verb is *be*. Other typical linking verbs include *become*, *seem*, *feel*, *get*, *seem*, *sound*. Subject complement can be either a NP:

(24) My friend is a pilot.

or an AdjP:

(25) My friend is upset.

Unlike subject complement, the object complement can be recognized as having a correlation to a direct object:

(26) Jenny named the small baby Jack.

Here, *Jack* is the object complement of the direct object *baby* since they refer to the same person. A complement whether subject or object can have the following syntactic features:

- (a) It is a NP, an AdjP, or a clause having a nominal function, associated with a co-referential relation with the subject (or object);
- (b) The subject, verb phrase, and object always precede it.
- (c) When passivization, it cannot be subject (Quirk, 1973).

2.5 Adjuncts

Finch (2000) denotes that adverbials and adjuncts are typically optional in sentences. They convey circumstantial information regarding time, place, and manner as in:

(27) (a) They gave him a rose *last week*

(b) They gave him a rose *in the park*

(c) They gave him a rose *with high laughs*.

If we were to explain these sentences properly, the first phrase is an adverb, while the latter two phrases are prepositional. That is because the term ‘adverb’ is employed in formal descriptions that some linguists prefer to use adjunct’ when talking about this function. It helps to emphasize the notion that additional phrases can be adjuncts and also makes us aware of their optional insertion in

sentences. Being considered optional, these phrases do not form part of the selection limits of verbs. In other words, no verb needs to be preceded by an adjunct.

For Quirk_(1973), adjuncts share some syntactic characteristics:

(1) Predication ellipsis or predication pro-forms may apply to them. For example, in:

(28) John drives very fast, and so does Mary

the pro-form in the second clause *does* incorporates the adjunct of the first clause in order that the sentence can have the same meaning of *John drives very fast, and Mary drives very fast*.

(2) limiter adverbials like only can limit adjuncts :

(29) They only want the computer for half an hour (‘for half an hour and not for longer’)

(3) Adjuncts can be the focus of a cleft sentence:

(30) It was *when we were in Rome* that I first met Alfred.

3. Semantic Roles

Crystal (2008) defines the semantic role as the semantic relations that connect a predicate to its arguments in a described situation. As a result, the entities in the sentence are connected by the action that the verb describes. The number of participant roles that language speakers can play is up for debate. It has been proposed that these roles can be divided into two primary categories: the proto-roles of agent and patient, or, to put it another way, the macro-roles of actor and undergoer. These functions have played a significant influence in the development of verb semantic classes.

According to Trask (1999), semantic role can be involved in an action may involves a or a person, thing or situation in any of a number of ways. Semantic roles—also known as, thematic roles—are crucial to many methods to linguistic description, especially those that support functionalism. The concept

is that any entity involved in an event must have a distinct role. Semantic role analysis of phrases or texts can be insightful, but it is sometimes very difficult to assign roles in a systematic way, and analysts regularly disagree on whether semantic roles should be acknowledged. Owing to the difficulty of identifying the semantic roles of particular words or phrases in particular contexts, many linguists have chosen to completely reject semantic roles when creating their descriptions, but many others are convinced that semantic roles are fundamentally important despite the challenges.

Yule (1996) confirms that rather of considering words as "containers" of meaning, we can consider the "roles" they play in the context that a sentence describes. The verb caught in

(31) The small child caught a bird

expresses an action if the circumstance is a straightforward event. The noun phrases of a sentence explain the functions of various entities—such as people and objects—in the action. The semantic roles that the constituents of a sentence can take can be as follows:

3.1 *Agent and theme*

The noun phrase *The small child* takes the role as the one who performs the action, which is properly referred to as the *agent*. The bird also assumes the function of "the entity that is associated with or affected by the action," often known as the *theme* (or occasionally the "*patient*"). An object (the bird) that is merely being described—that is, not acting—can also serve as the theme, as in

(32) The bird was colorful.

The most prevalent semantic roles are those of agents and themes. Even though agents are usually human, they can also be non-human entities that do actions, as in noun phrases that indicate a machine (A vehicle), a creature (The cat), or a natural force (The wind) as in:

(33) A vehicle ran over the bird.

(34) The cat chased the bird.

(35) The wind blew the bird away.

All of which have an impact on *the bird* as *theme*.

Although the theme is usually non-human, it can sometimes be human, as in *The lamb chased the child*. In a sentence like *Jenny cut herself*, the identical physical object can actually play two distinct semantic roles. Here, *Jenny* is the *agent* and *herself* is *theme*.

Regarding the subject complement, Quirk (1973) indicate that it serves as an attribute of the subject, whether it is current attribute for (stative verbs) or an attribute that results from the event that the verb describes for (dynamic verbs).

(36) He seems *unhappy* - Current attribute:

(37) He became *restless* - Resulting attribute:

The same case is with the object complement which has a current or resulting attribute:

(38) I ate the meat *cold* - Current attribute:

(39) They elected him *President* - Resulting attribute.

With possession verbs like *have*, *own*, etc., the subject may also have the role of a recipient, as shown by the following instance:

(40) Mr. Smith has a very excellent style in writing.

The sense verbs *see* and *hear* are also associated with the subject that has the role of recipient on the contrary of the verbs *look* and *listen*, which are involved with agentive. A recipient subject can also be the role denoted by perception verbs like *think*, ..etc. or desire verbs such as *like*,.. etc.:

(41) I thought you were in a trouble. (It seemed to me that you...)

(42) I liked the play. (The play gave me pleasure)

Recipient subjects are always involved with stative verbs.

3.2 *Instrument and Experiencer*

Yule (1996) denotes that when an agent employs another entity to carry out a task, that other entity serves as the instrument. The noun phrases *a new saw* in *She cut a tree with a new saw* is employed in the semantic role of instrument. The semantic role of experiencer is filled when a noun phrase designates an entity as the person who has a feeling, perception, or state. We are not truly doing an action when we perceive, understand, or appreciate anything; therefore, we are not agents, we play the part of the experiencer. The boy has the semantic role of experiencer in a sentence like *The boy looks happy*. The experiencer in *Have they heard the news?* is *they* and the news is the *theme*.

3.3 *Locative, Temporal and Eventive*

Several semantic roles indicate the position of an entity within an event description. *Location* is determined by where an object is. Where the entity moves from indicates the *source* and where moves to is the *goal*. So, the *source* in: *He took a car from New York to California* is *New York* and the *goal* is *California*.

With respect to the role of subject, Quirk et al (1973) suggest that it could be used to indicate a location to be *locative subject*:

(43) This road is full of risks

or time to be *temporal subject*:

(44) Tomorrow is my birthday

or an event to be *eventive subject* (related to arrangements and activities):

(45) The concert is on Thursday

4. Discussions

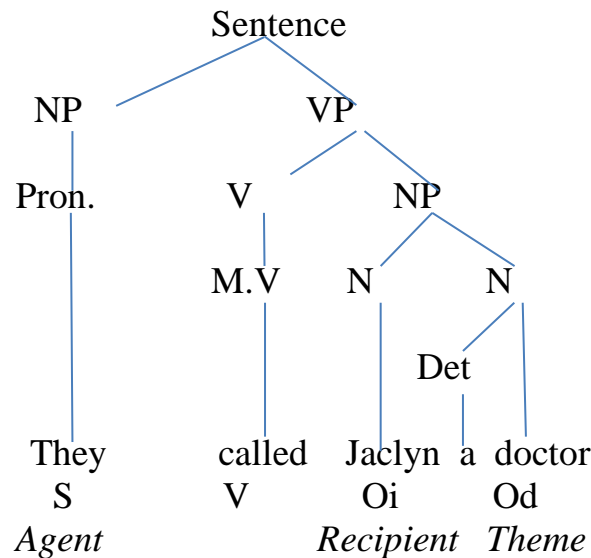
It is known that the roles that the participants take in the field of semantics depend heavily on the grammatical functions that these participants have. Some examples with diagrams are listed below to show the power of grammatical functions in recognizing the semantic roles of these participants.

1. (a) *They called Jaclyn*

It is clear from the sentence that the personal pronoun *they* performed the action of calling which denotes that the subject *they* takes the role of *agent* since the doer of the action is a human being. So, the direct object which is Jaclyn has the role of the *theme*. If we extend the sentence to be:

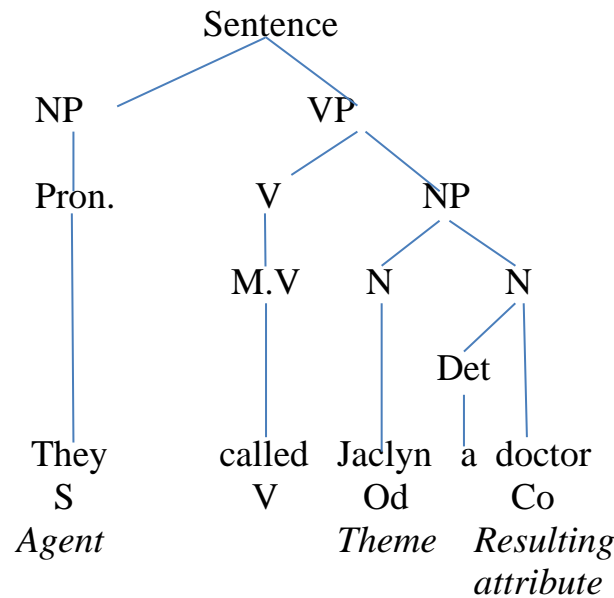
(b) *They called Jaclyn a doctor*

We can consider *Jaclyn* as an indirect object, thus, *a doctor* will definitely be the direct object, which means that the indirect object must have the role of *recipient* whereas the direct object still has the role of *theme*. This sentence means that Jaclyn suffers from healthy problems, so they phoned a doctor for a medical treatment. So, the sentence can be understood as *They called a doctor for Jaclyn*. The grammatical function of the NP Jaclyn as an indirect object makes it receive the action done by the subject and that of the NP a doctor as a *theme* affected by the action. This can be best shown in the following diagram:



But we can also we can consider *Jaclyn* as a direct object which denotes that *a doctor* is an object complement. The case is now completely different from the former regarding the NP Jaclyn. In this case, we are forced to take the direct object *Jaclyn* the role of *theme* while the NP *a doctor* which is the object

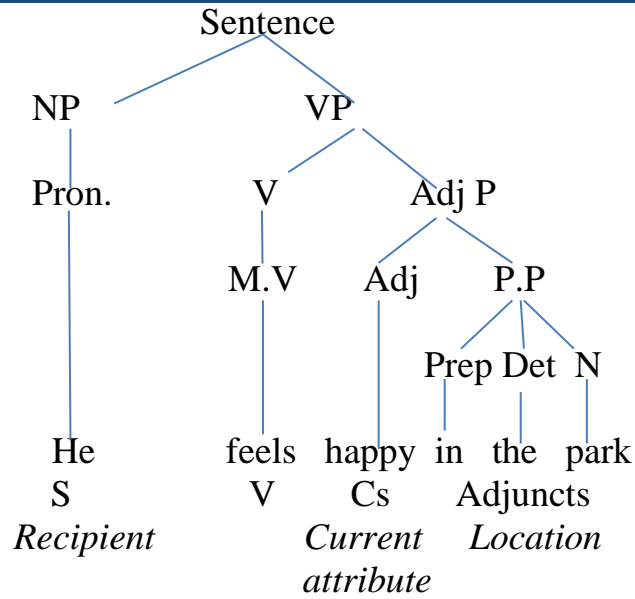
complement takes the role of *a resulting attribute*. The following diagram illustrates this:



This sentence denotes that *Jaclyn* herself is a doctor, so the objects of the two successive NPs belong to one entity, i.e. they refer to the same person. The ditransitive verb *called* in the first sentence of (b) is related to the action of *phoning* while in the second, it is involved with the action of *calling names*. The changes of the grammatical functions of the two sentences in (b) affect the semantic roles that these functions have. The NP *Jaclyn* changes from *recipient* into *theme* in the first sentence of (b) and the NP *a doctor* changes from *theme* to *a resulting attribute*.

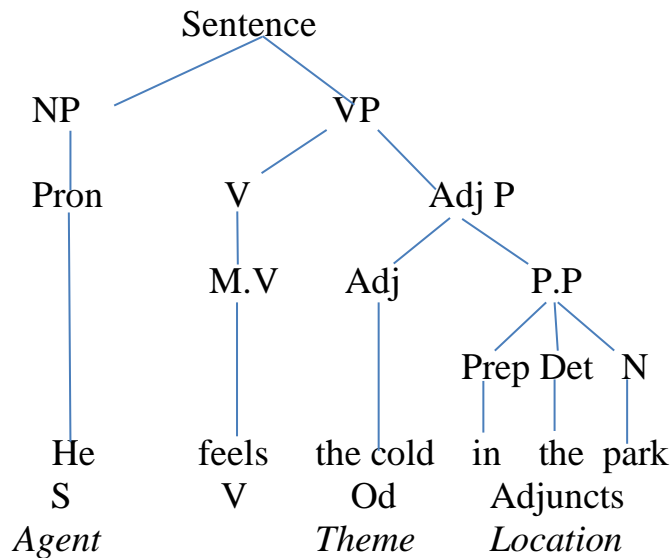
2. (a) *He feels happy in the park*

In this sentence, the subject *he* has the role of *recipient* not *agent*. This is because the sentence can be interpreted as *something in the park makes him feel happy*. The verb *feel* here is a stative verb since it is involved with the process of abstraction. Therefore, the adjective *happy* which is the subject complement denotes a *current attribute* because it indicates a state. The adverbial phrase *in the park* indicates the role of *location*.



(b) *He feels the cold in the park*

The case in this sentence is completely different from that of (a). The verb *feel* here is dynamic not stative which denotes the process of concreteness concerning the event. The grammatical functions as well as the semantic roles of (b) are also different from that of (a). The subject *he* here is *agent* because the sentence does not indicate a state, rather it is a process involved with an action done by the subject that is a human being, the pronoun *he* . As the verb *feel* in this sentence is dynamic, the direct object *the cold* has the role of *theme* since it is affected by the action. The rest of the sentence *in the park* which is adjuncts indicates the role of *location*.



Conclusions

1. While grammatical functions give structural positions, semantic roles give meaning-based interpretations.
2. The participant's involvement in the event is described by the semantic roles. Both grammatical functions and semantic roles work together to produce a cohesive interpretation.
3. Grammatical functions and semantic roles do not correspond exactly. Objects are not always patients, and subjects are not always agents.
4. The assignment and interpretation of semantic roles are affected by grammatical structures. Changes in sentences such as (passive / active) can affect how roles are expressed in a sentence. For instance, causatives present agents, whereas passivization emphasizes the patient.
5. Grammatical functions by themselves are unable to convey the underlying meaning linkages that semantic roles unfold. It is possible for two sentences with distinct grammatical structures to convey the same semantic role relations. For instance, the semantic roles are the same regardless of the syntactic arrangements.
6. In conversation, grammatical functions aid in encoding which roles are more prominent or topical. Semantically significant participants are frequently positioned in prominent syntactic locations in languages, such as the subject. Discourse functions like subject, focus, and information structure are related to this.
7. Inference and interpretation depend on the relationship between semantic roles and syntax. Both syntactic word sequences and semantic role expectations are necessary to understand who does what to whom. When they are out of alignment, ambiguity may result or further pragmatic inference may be needed.

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