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A syntactic study of the head of noun phrase in relevance to semantic relations

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Abstract

Syntax and semantics are definitely of the principal branches of language. The problem appears when the nominal head having specific semantic relation and the other elements within a sentence are connected in some way that leads to misinterpretation. This paper displays how the syntactic structure of the noun phrase affects the meaning of the sentence. The linguistic model adopted is A University Grammar of English adopted by Randolph Quirk and Sidney Greenbaum (1973). The paper aims at: (1) Showing the importance of the relation between grammar and meaning. (2) Clarifying the significance of the syntactic structure of the noun phrase in identifying meaning. (3) Recognizing the semantic relations that can cause ambiguity within the sentence. This study has concluded that (1)The function of noun phrase has a great value in determining the meaning of the sentence. (2) Because of their multiple concepts, semantic relations can result in a lot of cognitive loads.(3) Syntax and semantics as branches of language complete each other in terms of the linguistic linkage between the syntactic structure of the sentence and the meaning of the sentence.

Keywords: Syntax, nominal head, noun phrase, semantic relations, ambiguity

1. Introduction

There is no doubt that the syntactic structure of any sentence determines the meaning of that sentence due to the syntactic-semantic relational dependencies among the components of the sentence. It is intuitive to assume that the linear sequence of the surface structure of a language governs the operations of speaking, writing, listening, and reading. However, language has a hierarchically complex underlying structure: there are syntactic and semantic relationships between neighbouring and non-adjacent words. The processing of language is influenced by structural dependencies.

2. The Noun Phrase

Trask (1999) ^[13] confirms that a noun phrase is a syntactic unit, or element that can be distinguished in two ways. First, it needs to fit into one of the limited number of slots in a sentence structure. Second, it must also possess one of the few types of internal structure that are feasible. There are very few exceptions to the rule that an English noun phrase is always constructed around a single noun, which is the noun phrase's head and the primary factor influencing the NP's nature.

Crystal (2008) ^[4] states that in grammatical analysis, "NP" refers to a single structural element that usually consists of multiple words and does not have the subject-predicate structure seen in clauses. It is viewed as a component of a structural hierarchy that sits between clauses and words.

2.1 The Structure of the Noun Phrase

Three principal types of noun phrase are identified: simple, compound and complex.

Regarding the basic noun phrase, crystal (2008) ^[4] denotes that "the structure of a noun phrase consists minimally of the noun (or noun substitute)".

Compound noun phrase represents the structure when two simple noun phrases are joined with a conjunction such as and, or but.

Concerning complex noun phrases, Quirk *et al.* (1973) ^[10] stress that three elements are distinguished:

- The head, which centers the other elements and establishes concord and various types of congruence with the remaining parts the sentence outside the noun phrase.
1. The small boy running in the garden is my friend: The pre-modification; that includes all the items before the head — substantially adjectives and nouns:
 - The small boy
 - Some pretty college girls
 - a) The post-modification, having all the items after the head—notably prepositional phrases, non-finite clauses, and relative clauses:
 - The man in the field
 - The man standing in the field
 - The man who was standing in the field
- Regarding the structure of complex noun phrase, a noun phrase can be an arbitrary lengthy and intricate structure with a noun as the head, followed by a prepositional phrase or a relative clause, and preceded by additional words like an article, an adjective, or another noun: It is unusual to find all of these elements in a noun phrase:
2. The new race car in the garage which I bought last month has a very excellent engine

Structure	Type	Example
(det.) N	Simple	A man came
(det.) N and/or (det.) N	Compound	He and I went shopping
(det.) (pre-mod.) N (post-mod.)	Complex	The man whose car is red is absent

Greenbaum and Nelson (2009) ^[6] affirm that a noun or a pronoun is the main word in a noun phrase whose structure may be schematically represented in the following way, where the parentheses denote the structure elements that may be absent:

(Determiners)	(Pre-modifiers)	Noun	(Post-modifiers)
a	good	chapter	of the book
some	large	balls	of plastic
the	beautiful	ladyl	who lives there

Noun phrases are introduced by determiners (words like *the, a, those, some*). Modifiers are units which depend upon the main word and can be ellipted. Pre-modifiers represent the modifiers which follow while modifiers that precede the noun are post-modifiers.

2.2 Head of the Noun Phrase

Trask (1999) ^[13] denotes that head is the part of a phrase that is primarily in charge of its character. Every phrase in every language is constructed using a set of relatively strict principles from smaller units. The various kinds of phrase are differentiated from one another mostly by the type of item (typically a word) that they are built around, but also to some extent by structural variations; that item is the lexical head, or simply the head, of the phrase, and it typically gives the name of the type of phrase that is constructed around it. For instance, the noun phrase *the little girl in the red shirt* is constructed around the noun "girl" as its head; the phrase as a whole indicates a female of some sort.

Banks (2019) ^[1] demonstrates that one or more words that provide further information about the head may come before it.

We refer to these as *modifiers*. The definite article *they* also provide information on the head, essentially indicating that it may be identified. The definite article is a member of a unique class of modifiers known as *determiners*. Elements that track the head and inform us about it are also possible. We refer to these as *qualifiers*. The distinction between modifiers and qualifiers is essentially one of position, as they both serve the same purpose of providing information about the head. Nevertheless, it is helpful to have distinct names for these two components. In our scenario, the cat follows the head and informs us about it. Therefore, a cat serves as a qualification. Groups consist of (one or more) words, just as sentences are composed of groups.

23. Head Nouns with Noun Complement Clauses

Biber *et al.* (2002) ^[3] denote that noun complement clauses, on the contrary of relative clauses, take place with a small set of head nouns. Numerous head nouns that have noun complement clauses convey an opinion about the proposition that the complement clause contains. These head nouns—fact, claim, and report—for instance, might be employed to denote the veracity of the assertion or the source of information. One of the main tools for indicating stance in academic writing is the use of that-clauses as noun complements. In these forms, the head noun describes the author's perspective on the proposition, and the that-clause conveys the proposition. The most prevalent head nouns express two primary types of attitude. The first is an evaluation of the certainty of proposition in the that-clause. Nouns that are frequently used include truth, possibility, assertion, notion, assumption, hypothesis, and rumor. However, the fact that leguminous crops did not need nitrogenous manure was still a highly problematic issue. It is possible that this morphology reflects a trait shared by our ancestors. The second type of stance indicates where the information in the that-clause came from.

In a noun phrase initiated by a Wh-word, a relative clause functions as a post-modifier and has grammatical roles in both its joining function and relative clause (Rauf, 2015) ^[11]. Biber *et al.* (2002) ^[3] stress that the head nouns with *to-clauses* usually do not express a personal position, in contrast to *that-clauses*. Rather, chance, attempt, effort, ability, opportunity, decision, plan, bid are examples of words that frequently describe human aims, opportunities, or activities with *to-clauses*. The usage of *to-clauses*, rather than *that-clauses*, is particularly prevalent in journalistic language (as opposed to academic prose). Since they emphasize human objectives and behavior rather than attitudes on propositions, the meanings of the head nouns with *to-clauses* are appropriate for news purposes. An additional kind of complement clause can be taken by a number of head nouns that accept *of- + ing-clauses*. (In contrast, the head nouns that take *that-clauses* and those that take *to-clauses* hardly overlap.) Idea, hope, possibility, symbol, and thought are head nouns that occur with both *of- + ing-clauses* and *that-clauses*. Compared to the other forms of noun complement clauses, *wh-interrogative clauses* are far less frequent. They typically only occur when the head noun inquiry is asked. As noun complements, the *of- + wh-clause* variety is actually more prevalent than simple *wh-clauses*, particularly in academic and journalism writing. For example: The question of how to remove the fear from him has arisen (Biber *et al.* (2002 p304-306) ^[3]).

	Complement clauses	Examples
Head noun	that-clauses	<i>There is a possibility that he will come</i>
	to-clauses	<i>She made a great effort to persuade him.</i>
	of-ing clauses	<i>They discussed the problem of wasting time</i>
	wh-interrogative clauses	<i>The question of how to defeat the fear is still difficult</i>

Fig 1: Head nouns with noun complement clauses

Downing and Locke (2006) ^[5] show that the head, which is the central element, is one of the major elements that form the nominal group with the determiner in addition to the pre-modifier and the post-modifier which can frequently be ellipsed. Nominal heads fall into three main categories: common nouns, proper nouns and pronouns.

2.3.1 Common Nouns

Baugh (2005) ^[2] illustrates that common nouns are nouns which can be categorized into abstract nouns and concrete nouns. While abstract nouns are involved with the description of qualities, states and actions and submit to a significant individual interpretation, concrete nouns indicate something specific, often something which can be seen, heard, touched, tasted, or smelled.

With regard to countable or non-countable nouns, Herring (2016) ^[8] claims that nouns that can be regarded as distinct, separable items—that is, nouns that we can count with numbers—are countable nouns. They can also be used with the plural form of the noun or with the indefinite articles *a* and *an*, which denote a single person or thing. In contrast to countable nouns, uncountable nouns (sometimes referred to as non-count or mass nouns) are unable to be divided into independent units or pieces for counting purposes. Uncountable nouns are not able to be formed plural or bear the indefinite article *a/an*.

2.3.2 Proper Nouns

Downing and Locke (2006) ^[5] affirm that proper nouns and proper names are traditionally distinguished from one another. Proper nouns, which are nouns with no defined meaning in the language, include *Hilary* and *Madrid*. They are capricious. In other words, unlike the entities denoted by the common noun *horse*, we are unable to identify the properties of entities like Hilary or Madrid. The structure of proper names may be more intricate as they may contain a proper noun like *real Madrid*, *the university of Cambridge*.

2.3.3 Pronouns

Pronouns that can stand for heads of the noun phrase include the following pronouns:

Personal Pronouns

Greenbaum (1996) ^[7] states that there are three different personal pronouns in person: first, second, and third. Additionally, the majority distinguish between singular and plural numbers as well as subjective, objective, and genitive cases. Gender distinctions exist in the third person singular as well: non-personal, feminine, and masculine. In general, the subjective case is employed when the pronoun serves as the subject, while the objective case is employed in other situations. *He* generally indicates males, *she* to females, and *it* to everything else. *She* and (less frequently) *he* are

sometimes used to describe inanimate items like *tables*, *trees*, and *rivers*. When sex is unclear or ignored, it is applied to infants and animals.

Personal pronouns as heads of noun phrase can be represented in *he* and *she* in *He thought that she passed the exam*.

Reflexive Pronouns

They are a unique category of pronouns since some of them are composed of the object form of personal pronouns like themselves (third person plural) and himself (third person masculine singular). The possessive determiner plus self (*herself*, *itself*, *myself*, *you*, *ourselves*, and *yourselves*), along with all persons, numbers, and gender, make up the other forms. In actuality, reflexive pronouns are mostly used to highlight the sentence's topic. However, they are employed to convey reference when a word or noun phrase that serves as an object and has the same referent as the sentence's subject is replaced (Najm, 2012) ^[9].

Greenbaum (1996) ^[7] denotes that in terms of person and number, reflexive pronouns typically resemble personal pronouns: first person *myself*, *ourselves*; second person *yourself*, *yourselves*; and third person *himself*, *herself*, *itself*, *themselves*. *Yourself*, *yourselves* which are singular and plural respectively are the reflexives that distinguish number in the second person, in contrast to the personal pronouns. The reflexive pronoun *herself* indicates head of noun phrase in *She taught herself how to play music*.

Interrogative Pronouns

They include *what*, *who*, *whom*, *which* and *whose*. There are differences in the personal interrogatives *who*, *whom*, and *who's* in the following cases:

Subject Who gave you a book?

Object Who (or whom) did you see?

Possession Whose is that car?

The head of the noun phrase is *what* in: *What did he read?*

Indefinite Pronouns

For Downing and Locke (2006) ^[5], the indefinite pronouns that are constructed from *some*, *any*, *no*, and *every* are rather distinct. For example, *somebody*, *someone*, *something*, *anybody*, *anybody*, *anything*, *everyone*, *everybody*, *everything*, *nobody*, *no-one*, *nothing*. Rather than referring to a referent that is already in the discourse, these pronouns explicitly address an undefined person or thing, or a broad class of persons or things. In this area, they act. The indefinite pronoun *someone* in *I saw someone jumping the fence* denotes the head of the noun phrase.

Demonstrative Pronouns

When referring to a proposition, situation, or something deduced from it, the deictics *this* and *that* can serve as NG

heads. The pronominal references might be either anaphoric reference, cataphoric reference or exophoric reference. *Anaphoric* (referring to a previous part of the text) like *I watched the film. That is the one I talked you about.* Cataphoric (referring to a later part of the text) as in *This is the film I talked you about.* Exophoric (referring to something outside the text) like *This is my friend.*

Substitute Pronouns

The head-word *one*, plural *ones*, can be used to refer to an item that has previously been discussed or is evident in the conversation. These words merely serve the grammatical purpose of replacing a noun or NG to prevent repetition; they have no semantic identity of their own. To differentiate them from the classes of "pronominal heads" of NGs, these items are categorized as "substitute heads" when used in this manner. For example:

I will not buy that old car. I need a new one.

Nominal heads	Common nouns		Abstract	Concrete		
			Countable	non-countable		
	Proper nouns	Proper names				
	Pronouns		Personal	reflexive	interrogative	
		Indefinite	demonstrative	substitute		

(Greenbaum: 1996) [7] mentions that an adjective that serves as the head of a noun phrase is known as a nominal adjective. Similar to adjectives in general, nominal adjectives can assume comparative and superlative forms like best in *She is the best in the class* and be modified by an adverb as sick in *They take care the very sick.*

3. Semantic Relations

Riemer (2010) [12] states that it has frequently been assumed that one of the major goals of lexical semantics is to describe and expound the semantic relations. These relations all pertain to the paradigmatic relations of an expression: the relations that define which lexical item is chosen over another. When creating any utterance, the speaker usually has to choose from a variety of lexical items. Concerning the categorization of semantic relations, Yule (2010) [14] denotes that it can be as follows:

Synonyms: Are two or more words that have very similar meanings. They can frequently, but not always, be used in phrases in place of one another.

Antonyms: Are two forms that have opposite meanings such as the two primary categories of antonyms are typically "*gradable*" (opposites on a scale) and *non-gradable* (straight opposites). In comparison constructions like *I am younger than you* and *A dog is smaller than a lion*, gradable antonyms like the pair *big/small* can be employed. It is not common practice to utilize comparative constructs with non-gradable antonyms, often known as *complementary pairs*. Usually, we do not say that one person is deader or more dead than another.

Hyponymy: Is the term used to describe a relationship in which the meaning of one form is contained in the meaning of another. Examples are the pairs: animal/dog, dog/poodle, vegetable/ carrot, flower/rose, tree/banyan. The concept of *inclusion* involved in this relationship is the idea that if an

object is a rose, then it is necessarily a flower, so the meaning of flower is included in the meaning of rose. Or, rose is a hyponym of flower.

Prototypes: Refer to the concept of "the characteristic instance" of a term. Although the terms canary, cormorant, dove, duck, flamingo, parrot, pelican, and robin are all equally co-hyponyms of the superordinate bird, they are not all thought to be equally accurate representations of the category "bird." Robin is a good example of the category bird.

Homophones: Are defined as two or more distinct (written) forms that are pronounced similarly.

Homonyms: Are used when a single form (spoken or written) contains two or more meanings that are unrelated.

Polysemy: Is the relation when one written or spoken form having several meanings that are all connected by extension.

Metonymy: Is the relation that is involved with a close connection depended upon a container–contents relation, a whole part relation or a representative–symbol relation.

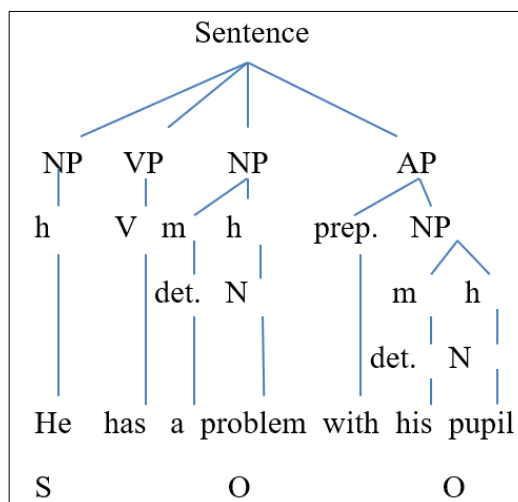
Collocation: Refers to the relation when two words tend to come together for example needle evokes thread and salt evokes pepper.

4. Discussion

The analysis of data collected and provided with very significant diagrams relies heavily on the role of syntactic structure of the head of noun phrase in relation to its semantic relations. It unfolds the impact of the head of noun phrase on the meaning of the sentence due to the semantic relation it involves. Let us consider the following example with its analysis:

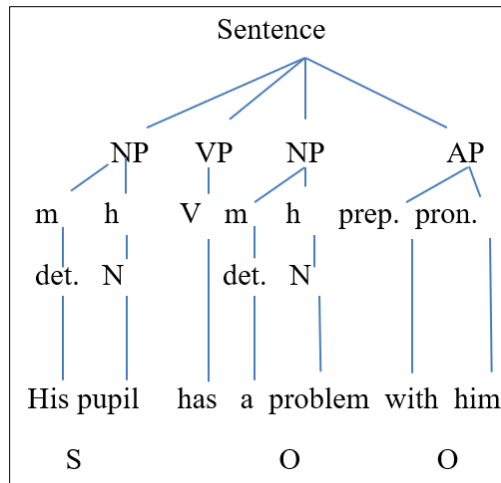
He has a problem with his pupil

This sentence is composed of three noun phrases whose heads are *he*, *problem* and *pupil* functioning as subject, object and object of preposition respectively as illustrated in the following diagram:



Considering *he* as the subject of the sentence entails that the word *pupil* bears multiple meanings which are entirely different. It may denote either the part of an eye or the one

who is involved with an educational system. Interpreting the homonym *pupil* as a term associated with an educational sense necessitates that the subject *he* be a member of that system like a teacher. But if the homonym *pupil* is interpreted as a term involved with anatomical sense, the subject *he* is supposed to be someone suffering from illness within his eyes. Misinterpretation occurs because of the relation of homonymy that the word *pupil* has. As a matter of fact, the possessive determiner *his* is of great significance in linking the object of preposition with the subject. This linkage is of a great value in recognizing the identification of the subject. Suppose that the possessive determiner *his* is replaced with another determiner like the definite article *a*, for the sentence to be: *He has a problem with a pupil*. In this case, neither the pupil as a term involved with an educational sense entails that the subject, *he* denotes a teacher nor the pupil as a term attached to anatomical sense entails that the subject, *he* is someone sick within his eyes. Let us change the position of the homonym into subject rather than object in the example below:



His pupil has a problem with him.

In this case, one interpretation of the homonym can be taken into account which is the one related to educational issues. The function of the nominal head *pupil* as subject affects the relation of homonymy making it bear one interpretation. This is because the word *pupil* related to anatomical issue does not have the ability to have a problem according to its semantic features illustrated in this diagram:

Category	Anatomical (N [-human])	Educational (N [+human])
Animate	-	+
Human	-	+
Female	-	+
Adult	-	+
He has a problem with his..		
His... has a problem with him.		

Not only does the syntactic structure of homonym functioning as head of noun phrase have a primary role of unfolding the meaning of the sentence, but the syntactic structure of homophone also has the same effective role. The existence of homophone whose two words having the same element and consistent with the context results in problematic issues. No problem exists with written language as the two words can easily be recognized through spellings, but the problem is real with spoken language when each one of these two words having the same pronunciation has a syntactic function in a way that makes the sentence syntactically and semantically correct. See the example below:

knighthood recognized by its spelt letters. But the pronunciation of this word in spoken language carries another completely different meaning attached to a period of time. So, there is no evidence for someone to judge which one is intended when spoken language is taken into account.

The lady organized some verses on the knight

In this example, with regard to written language, there is no doubt that the homophone *knight* which serves as nominal head indicates the one who is associated with the world of

Spoken Word	Written Word	Meaning
/ naIt /	knight	One often honored of heroism and knighthood.
	night	Period of time often holds literary issues indicating rest, mystery and other literary symbols.

When analyzing those two words according to their semantic features, the difference in meaning between these words becomes evident:

Category	Anatomical (Knight)	Educational (Night)
Animate	+	-
Human	+	-
Female	-	-
Adult	+	-
He has a problem with his...	N [- human]	
His... has a problem with him.	N [+ human]	

The judgment on determining which one is intended is valuable and fully accepted when making

homophone which is the object of preposition serves as subject of the sentence.

