The Interaction Between Meaning, Form and Function

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Abstract

This paper deals with how meaning, form and function interact with each other during the processes of producing linguistic expressions that are used by the speaker to convey meanings and ideas in different communicative situations. When speakers of any language communicate with each other, they usually have something in their minds that they want to convey to each other. In order to do that, they use linguistic expressions (forms) that express different functions and meanings. To build the linguistic forms that are used to express his ideas, the speaker has to select words from his lexicon and join them to form phrases and clauses in accordance with the principles and parameters of Universal Grammar (UG) and his language specific constraints and conditions. Predicates specify a number of arguments. The specified argument(s) together with the predicate constitute the proposition that has to be realized in the form of grammatical structures. The forms that constitute the different linguistic expressions have their own semantic and categorical selectional properties that have to be satisfied during the formation of the different structures. X-bar Theory and Theta theory play a very important role in determining the internal representation and shaping the structure of the different linguistic expressions. X-bar theory provides visual representations of phrases and clauses through which a lot of constituent relations can be defined. The different grammatical functions can be defined structurally. Theta theory is concerned with assigning thematic roles to the linguistic expressions that realize the arguments specified by the predicates. All this takes place in structural representations provided by the X-bar schemata.

Key words: Form, Meaning, Grammatical Function, Selection properties, X-bar theory, Theta theory, Argument structure, Merger, Movement

Introduction

Speakers of any natural language share a mental grammar which makes them capable of producing appropriate linguistic expressions needed in different communicative situations. This mental grammar consists of different components, each with its own constraints, conditions and

principles. However, these components or modules interact with each other to serve the ultimate goal of producing well-formed linguistic structures.

It has been observed that there is a very close relationship between the meaning and the structure used to convey it. That is, the meaning or the idea to be conveyed (proposition) determines the grammatical representation of the different semantic participants involved in that meaning. On the other hand, sometimes the same proposition can be expressed in different grammatical structures, which in turn leads to changes in the form and grammatical functions of the linguistic expressions used to realize the proposition.

Speakers, when communicating with their fellow native speakers, resort to a repertoire of words (lexemes) and other listemes in their mental grammar called the lexicon. They select words from their mental dictionary to form phrases and clauses to convey different messages. These words have semantic, phonological and grammatical representations together with their categorical and semantic selectional requirements which have to be taken into consideration when using them in building structures. This paper discusses how meaning interacts with structure (form) and how form is used to express meaning and function. The first part of the paper deals with the interaction between meaning and form. The second part deals with the formation of structures used to express certain meanings, making use of X-bar theory and Thematic theory. The third part is concerned with the relation between form and function and how structures are used to serve different functions.

Meaning and Form

We use language to express meaning, but it is, sometimes, very difficult for us to define meaning, for there are several dimensions of meaning. It is a well known fact that the noun *meaning* and verb *to mean* themselves have different meanings (see Lyons, 1977:1). Within linguistics there are two fields which are concerned with the study of meaning: semantics which studies the literal meaning or the basic linguistic meaning of words, phrases and sentences; and pragmatics which focuses on language use in particular situations. Pragmatics explains how factors outside of language contribute to both literal meaning and non-literal meanings that speakers intend to communicate using language (see Kreidler, (1998) Grundy (2000) and Kempson, (2003). In this paper we limit our discussion to the linguistic

meaning (semantic meaning) of the different linguistic forms and how it interacts with these forms in building larger constructions to express different meanings and grammatical functions.

Speakers of any language have, as one of the components of the grammar of their language, a mental dictionary (lexicon) which lists the lexemes that constitute the vocabulary of their language.

> A person who has a language has access to detailed information about words of the language. Any theory of language must reflect this fact; thus, any theory must include some sort of lexicon, the repository of all (idiosyncratic) properties of particular lexical items. These properties include a representation of the phonological form of each item, a specification of its syntactic category, and its semantic characteristics. (Chomsky, 1995: 30)

These listed linguistic elements include in their lexical entries, among other things, some information about their meaning(s) or denotations. These listemes are related to each other in different ways. Some are related formally and semantically while others are related only semantically. Another important relationship found between these elements is the so called selection: words select each other categorically and semantically. When speakers form structures to convey certain messages, they select words from the lexicon and merge them to form phrases and clauses, but the selected words impose their own selectional properties on each other, one cannot just choose any words and put them together to form a constituent. The following example illustrates what we mean by this.

1. The boy wrote a letter to his friend.

Each word in (1) has a phonological form and belongs to a grammatical category. Most of the words have a semantic content, though some of them have grammatical meanings. The words *boy, wrote, letter , to* and *friend* are usually referred to as lexical, or content words while *the, a* and *his* are called functors or functional words. The words that constitute (1) belong to different lexical and functional categories. Because of their meanings and grammatical categories, they have different selectional requirements, the determiner *the*, for example, selects the noun *boy* , it cannot be followed directly by the verb or the preposition. It determines the reference of the noun, that is to say, it makes the noun refer to a specific individual (referent) in the real world. The verb *wrote*, because of its meaning and category, selects at least two participants in the action denoted by it. These two participants are usually realized as noun phrases, the heads of which must carry specific semantic features. Because the verb is finite, it must have a

nominative subject realizing the thematic role agent or actor. The verb, because it is transitive, selects a noun phrase realizing the thematic role patient and the syntactic role or the grammatical function object. The verb also imposes some semantic restrictions on the referential expressions realizing these roles. Thus sentence (2) below is considered anomalous.

2. The cat wrote a letter to its friend.

Predicates, being central in any construction, specify the number of semantic participants involved in the activity or state expressed by them. The semantic analysis of any sentence consists of the predicate and its arguments. Thus, the different types of predicates have different argument structures, for example, there are predicates that have only one argument. On the other hand there are predicates that have more than one argument. Recall that these arguments are realized in different structural forms, there are arguments that are realized as determiner phrases, for example, while others, such as goals, can be realized as prepositional phrases. Moreover, there are arguments that are realized as clauses.

The sentence usually contains other linguistic elements which are not part of the argument structure of the predicate. However, these structural forms contribute to the meaning of the phrase or clause. For example, the italicized items in (3) are not arguments:

3. a. The dog walked *quickly*.

b. The dog barked *in the park*.

c. Mary bought an *old* dog.

d. The dog *which Mary bought* was old

The adverb in (3a), the prepositional phrase in (3b), the adjective in (3c) and the relative clause in (3d) are not arguments of the predicates, but they are adjuncts, yet they contribute to the meaning of the heads of the phrases they are contained within. The more information one wants to add to the basic meaning or proposition, the more complex the structure used to represent the meaning will be.

In language, there are many other simple and complex forms that can be added to the sentence to convey different meanings. In (3d), the relative clause, which has its own predicate, namely *bought*, and in which two

arguments are realized, is used as a post-modifier of the phrase head *dog*. Such clauses are not used to complete the meaning of the phrase head, but rather add meaning to the phrase head they are used to modify. Thus, such grammatical structures (forms) are usually referred to in the literature as adjuncts and can be omitted without affecting the grammaticality of the sentence. The sentences given in (3), repeated below in (4), are still grammatical after the deletion of the adjuncts. They are grammatical because the constituents used to realize the obligatory arguments of the predicates and to which these predicates assigned thematic roles are still intact.

4. a. The dog walked.
   b. The dog barked.
   c. Mary bought a dog.
   d. The dog was old.

Forming Structures

It is well known that part of the speaker's knowledge of his language is his knowledge of its vocabulary items, their forms and meanings (lexical knowledge). Moreover, we know that the argument structure and the theta grid of the predicate determine the sentence structure. However, in order for the speaker to use these items (words) to convey certain messages, he has to put them in appropriate structures, following certain principles, constraints and conditions, some of which are universal, i.e. principles of UG while others are language specific.

The first syntactic operation responsible for forming structures is the so called Merger operation. In this operation, the speaker selects words from his lexicon and combine them in a pairwise fashion, i.e. merging two items at a time. Recall that each word in the speaker's mental dictionary belongs to a grammatical category. Forming sentences usually begins with lexical words which are used to head lexical phrases which in turn can be merged with functional heads to form functional phrases. Let's take sentence (5) as an example to illustrate how we form phrases and sentences.

5. That man will buy a car.

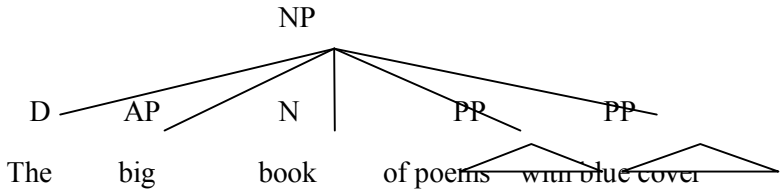
In Forming (5), the speaker first merges the noun *car* with the determiner head *a* forming a determiner phrase (DP), then the DP is merged with the verb head *buy* to form a verb phrase (VP). The VP is merged with the modal auxiliary, a tensed head, forming an intermediate projection which in turn is merged with the DP *that man* The principle which ensures that the lexical properties of lexical items must be accurately reflected at all levels of representations is called the Projection Principle, given in (6) below.

6. Projection Principle

> Syntactic representations are projections of the lexicon in that they observe the subcategorization properties of words. (Borsley, 2000: 230)

Although the projection principle ensures that the lexical properties of lexical items are reflected in all syntactic levels of representation, it does not specify how complements, for example, are structurally represented with respect to the lexical items that subcategorize for them. The mechanism which determines the structural representation of categories is called X-bar theory or X-bar schemata. The first presentation of X-bar theory was in Chomsky (1970) and it has been developed ever since in different works by many linguists (see, Jackendoff, (1977), Radford, (1988) and Ouhalla, (1999), among other introductory syntax textbooks). X-bar schemata has not only replaced the early phrase structure rules, but it has also solved all the structural problems resulted from the application of those rules in the early versions of Transformational Grammar. The introduction of the X-bar (category-bar), for example, has made it possible for syntacticians to distinguish between complements, adjuncts and specifiers, something which was muddled up in P-markers created by Phrase Structure Rules. In (7) below, it is difficult to distinguish between the constituents in the tree diagram used to represent the NP phrase structure rule because the phrase structure rule has yielded a flat representation. The constituents are flat with respect to the head noun *book*. The complement *of poems* and the adjunct *with blue cover* are on the same level hierarchically. Moreover, the representation does not provide us with the exact number of the constituents in the NP (see Carnie, 2002).

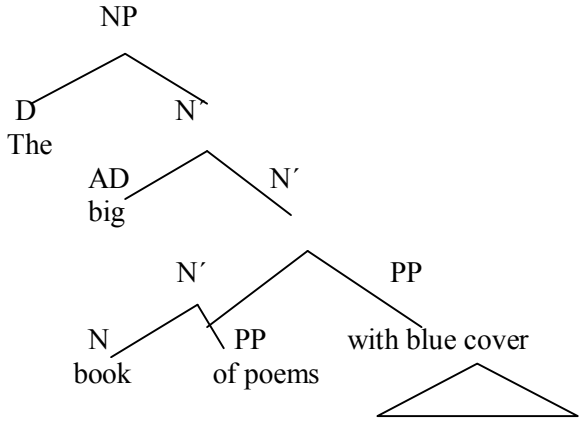
7. NP ⟶ (D) (AP) N (PP) (PP) (Carnie's (2))



Now let's illustrate how X-bar theory provides an adequate representation for the same NP, and thus accounting for the empirical inadequacies of the phrase structure rule representation. In the tree diagram representation given in (8) below, the structural relations between the constituents of which the

NP is composed is very clear and well-defined. This is due to the introduction of N-bar level in the representation. For example, now we can differentiate between the complement *of poems* and the adjunct *with blue cover*: the complement is contained within the lower N-bar, i.e. it is dominated by it and the complement is a sister of the head noun *book*. On the other hand, the adjunct *with blue cover* is contained within the second N-bar, i.e. it is adjoined to the first N-bar. Therefore, the complement is closer to the head while the adjunct hierarchically is higher than the complement and immediately dominated by the second N-bar. The head complement-relation and head-adjunct relation are defined structurally.

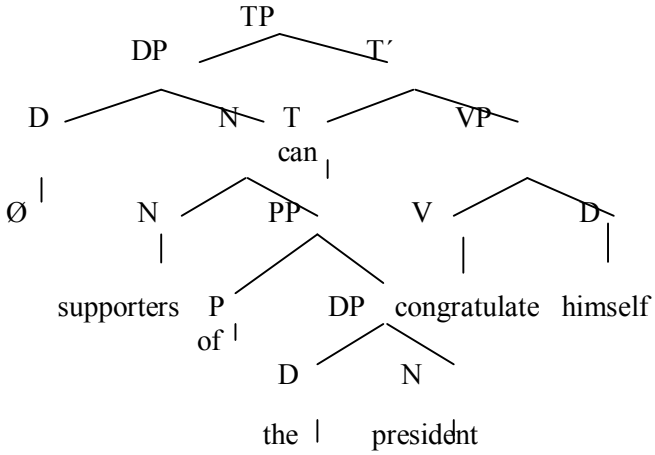
(8)



X-bar schemata provide configurational relations over which a great number of universal and language specific structural relations as well as syntactic notions can be defined. For example, grammatical functions such as subjects and objects are now determined structurally according to X-bar theory: subjects appear in specifier positions which are sisters to X-bar, while objects are sisters to the head (X) and daughters of the first projection of the head. Moreover, as shown in (9), for example, syntactic notions, principles, and conditions that are used to account for syntactic representations and constraints are defined and explained by making use of X-bar schemata.

9. *Supporters of the president can congratulate himself.

10.



Sentence (9) violates c-command condition on binding, given in (11) below.

11. C-command Condition on Binding

A bound constituent must be c-commanded by an appropriate antecedent

(Radford, 1997: 115)

To see how (9) violates c-command condition on binding, let us first give a definition of c-command adopted from Haegeman (1994: 122).

12. C-command

Node A c-commands node B iff

(a) A does not dominate node B and node B does not dominate nod A, and

(b) the first branching node dominating A also dominates B.

(9) violates c-command condition on binding because as shown in its representation given in (10), the first branching dominating the node containing the appropriate antecedent *the president* does not dominate the node containing the anaphor *himself*.

X-bar theory interacts with all other modules of grammar (see Webelhuth,1995), but, in this context, it is closely related to Theta theory, the theory that plays an important role in deriving and shaping linguistic structures. Theta theory is concerned with the assignment of thematic roles to the arguments specified by the predicate. Recall that each argument in the argument structure of the predicate has a thematic role and the semantic analysis of the sentence consists of the predicate and its arguments. The

principle responsible for assigning thematic roles to the arguments of the predicate is called the Theta Criterion, given in (13).

13. Theta Criterion

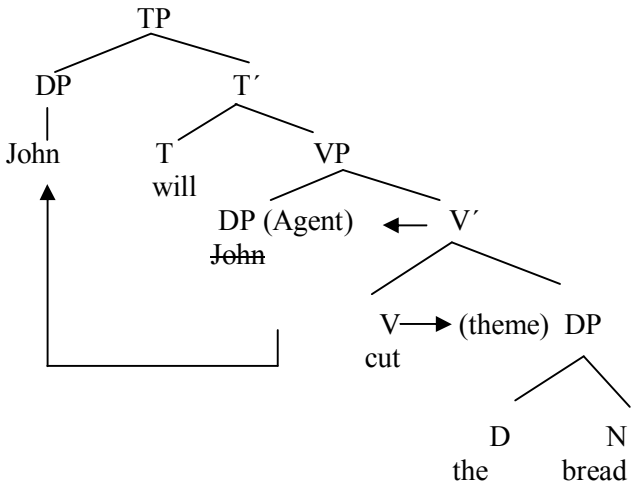
Each argument must be assigned one and only one thematic role, and each thematic role must
be assigned to one and only one argument.

However, the assignment of theta roles is determined by another UG principle, namely the Locality Principle which is well-defined according to the representations produced by X-bar schemata. To show how X-bar theory and the Locality Principle collaborate to ensure that the thematic roles are assigned to appropriate constituents that realize the arguments of the predicates, let us examine the process of theta role assignment in (14) below.

14. John will cut the bread.

The three diagram representing (14) is given in (15).

15.



In (15), the verb *cut* assigns the theta role *theme* first to its complement *the bread* which realizes the internal argument, then the internal argument and the head verb which are immediately dominated by the V-bar assign the theta role *agent* to the external argument *John* in spec VP, assuming that subjects in English originate in the spec VP (VP internal subject hypothesis) then they move to spec TP (see Radford, 2004, among others). Notice here that the theta role assignment is local, i.e. it takes place within the VP.

Notice that X-bar phrase representations are also used to distinguish between the notions external and internal arguments.

The other syntactic operation which is employed in the derivation of syntactic structures is movement. We have seen how the operation select and merge is used in deriving phrases and clauses through selecting words from the lexicon and combining them in a pairwise fashion, i.e. according to the Binarity Principle. Another way of expanding our derivation is through moving elements from positions inside the structure to other positions. The general principle behind this operation is usually referred to as Alfa Movement, given in (16).16. Alfa Movement Move α (where α is a category variable, i.e. designates any random category you choose) (Radford, 1988: 537)
There are different types of movement, for example, head movement, wh-movement, argument movement and adjunct movement. In more recent work on movement, it is assumed that the movement operation involves two phases: first a copy of the element to be moved is made, then the copy is moved and the original element is deleted. Thus, the whole process is now referred to as copy theory of movement (copy-merge and copy-delete). Let us see how the following sentences can be derived:
17. Will John cut the bread?
18. What will John cut?
19. The car was stolen.
In (17), the derivation process goes like this: first the determiner *the* and the noun *bread* are merged, i.e. combined to form the DP *the bread*, then the DP is merged with the verb *cut* to form a V-bar, a projection of the head *cut*, the head assigns the theta role Theme to its complement, then the V-bar is merged with John to form a maximal projection VP. The subject *John* occupies the specifier position in the VP and it is assigned the theta role Agent. The VP is merged with the auxiliary *will* to form the intermediate functional projection T-bar. Because the auxiliary is a finite T head, the T-bar, according to the Extended Projection Principles (EPP) (see Radford, 2004: 73), extends into a maximal projection TP. The thematic subject moves to spec TP to satisfy the EPP and to check its head features against the spec features carried by auxiliary. The auxiliary (the tense head) moves to the complementizer head position (head to head movement) deriving a yes/no question structure. In (18), the same processes of derivation used to derive (17) are utilized together with an extra movement operation that moves the wh-question (operator), which is base-generated as the

complement of the head verb *cut*, to spec CP. (19) illustrates the movement of the internal argument *the car* to spec TP (argument movement). Recall that during the derivation theta roles are assigned to the arguments selected by the predicate. Thus, when the complement (internal argument) in (19) moved to the subject position, it was already assigned the thematic role Theme. Therefore, the subject (grammatical subject) in the passive, though it occupies the canonical subject position, is semantically interpreted as a logical object. This is a good example of how meaning and form interact. Moreover, this lends support to what has already been formulated in some syntactic principles such as the Projection Principle and the Uniformity of Theta Assignment Hypothesis (Baker, 1988). The following tree diagram representations show the different types of movement manifested in the above sentences respectively.

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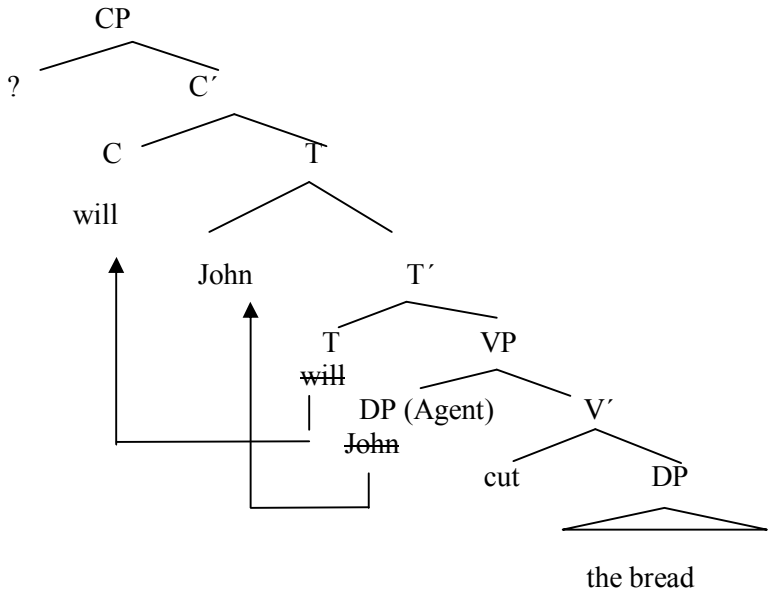

(Theme)

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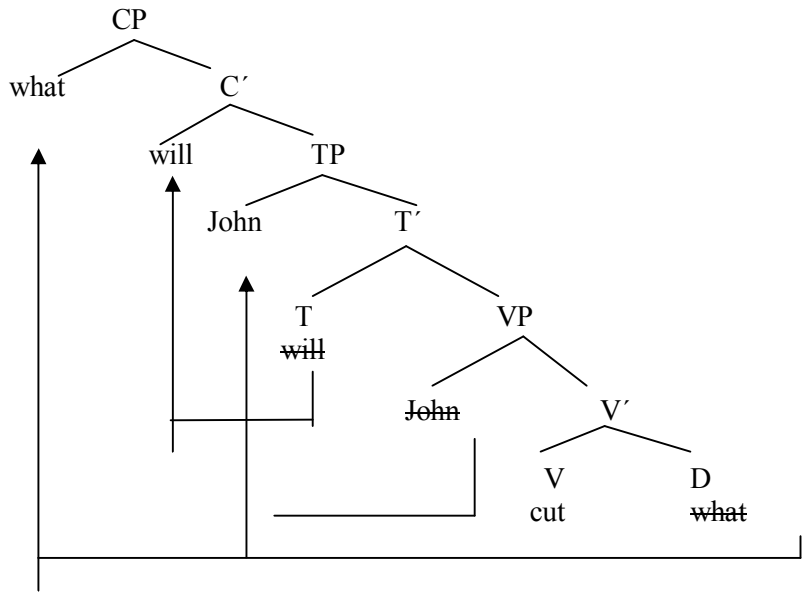
CP
what
C´
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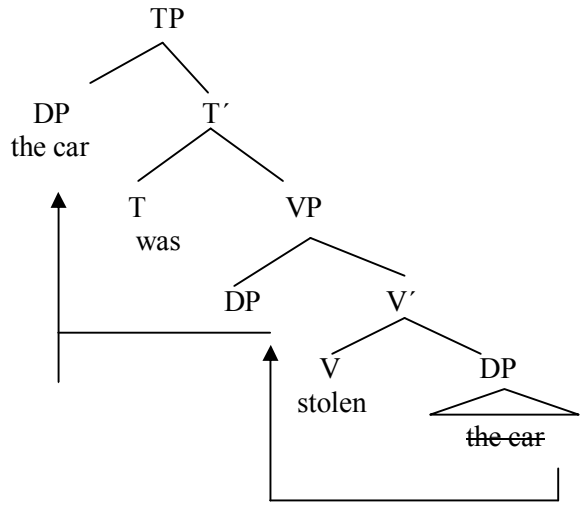
22


TP
DP
the car
T´
T
was
VP
DP
V´
V
stolen
DP
the car

All in all, structures whether are simple or complex are basically derived by these two major syntactic operations, Merger and Move &, taking into consideration other principles, parameters and conditions of UG and language specific constraints and conditions.

Function

As mentioned above, making use of syntactic operations, together with observing UG principles and conditions, we build different structures. We start by deriving phrases and end up by forming different simple and complex clauses. The purpose of deriving these different structures is to use them to convey different meanings and to serve different grammatical functions. In this section, we discuss some of the basic functions such as subject, object (DO/IO), complement, adjunct, etc., how they are realized by different forms (structures), and how these functions are, once again, defined structurally and semantically.

In the first part of this paper, we discussed the selectional properties of predicates and how these properties ensure the right semantic and syntactic representations of linguistic expressions. We have shown how, for example, argument structure and theta roles assignment collaborate to produce grammatically and semantically acceptable constructions. In the second part, we have discussed how structures are formed and how principles and parameters of UG together with language specific conditions and constraints are used in the formation of simple and complex linguistic expressions.

X-bar syntax contains a cross-categorial generalization, and stipulates that all phrases are structured in the same way. Thus, the syntactic structures, whether simple or complex, are built in the same manner. However, they are used to realize different functions. It is very important to realize that there is no unique relationship between form and function in language, i.e. the same function can be realized by different forms and the same form can realize different functions (Aarts, 2001). The form DP, for example, in (23) realizes different functions: subject, IO, DO and adjunct respectively.

23. a. [subject *The child*] cried.
    b. John gave [*IO his friend*] [DO *a book*].
    c. The crisis began [Adjunct last *year*].

On the other hand, in (24) the same function, i.e. the subject is realized by different forms, i.e. DP, non-finite clause, finite clause, small clause, gerundive phrase and PP respectively.

24. a. [NP *This man*] smokes cigars.
    b. [Non-finite clause *For her to go to College*] would be a good idea.

c. [Finite clause *That he is a nice man*] is obvious.
d. [Small clause *The kitchen free of cockroaches*] is a welcome prospect.
e. [Gerund phrase *Reading history books*] is very interesting.
f. [PP *After breakfast*] suits me alright.

The same thing can be said with respect to other functions such as adjuncts and complements. The following are some examples that illustrate this observation. In (25) the function adjunct is realized by different constituents.

25. a. She cleaned the house [Adv P *quite happily*].
b. She met her students [PP *outside the university*].
c. He resigned [DP the month before last].
d. [Finite clause *While John was watching TV*], Susan was peeling the potatoes.
e. [Non-finite clause *To pass the exam*], you will have to work very hard.
f. [Participial construction *Working on his essay*], Tom was quickly becoming tired.
g. [small clause *The doctor ill*], they had no-one to look after their daughter.

The constituents used to realize the function adjunct express different semantic notions such as manner, location, time, purpose, reason, cause, etc.

As mentioned above, heads, according to their morphosyntactic and semantic properties, select different constituents to realize their complements. For example, not all lexical verbs can select noun phrases or infinitive clauses as complements. Functional heads as well select different constituents to realize their complements, for example, the complementizer *that* selects a finite clause, while the complementizer *for* selects non-finite clause. Complements can be realized by a wide range of phrases and clauses. The following are examples of some of the constituents that can be used to realize this function.

26. a. Mary admires[NP *her teacher*].
b. I prefer[PP after Easter].
c. They regret [Finite clause that they employed him].
d. I know [Wh-clause what you mean].
e. The company expects [Non-finite clause its employees to dress smartly].
d. He regrets [Gerundive phrase *buying a sports car*].
e. She can [VP *speak Swahili*].
f. For [Non-finite clause *her to look after her sick mother*] is very important
g. He believes that [Finite clause *she is a nice girl*].
h. He looked [PP *at the picture*].

I. They want [Non-finite clause me to [VP look [PP after [DP their children]]]].

(26.I) illustrates some important structural relations: first the non-finite clause (IP), which is a complement of the matrix verb, contains three phrases; VP, PP and DP; second the VP contains two phrases: its complement the PP which itself contains the NP as its complement. In all the examples given above, the different grammatical functions are defined and related to each other structurally according to the principle of UG.

Conclusion

This paper has given a short account for the interaction between meaning, form and function. We have seen how ideas and meanings are expressed linguistically and how these meanings determine the structure of the linguistic expressions used to convey them. We have looked at the role played by the selectional properties of the different forms in building structures and conveying meaning. The paper has discussed how UG principles and language specific constraints are employed in the formation and interpretation of the different linguistic expression. More important, this paper has accounted for the central role of X-bar theory in representing the syntactic structures of the different linguistic expressions, assigning the thematic roles to the arguments of the predicates, determining the structures, and defining the grammatical functions. We can say that components of grammar interact with each other and work together to produce well-formed structures that can be used as utterances in actual communicative situations.

References

Aarts, B. (2001, 2nd edition) *English Syntax and Argumentation*, Palgrave, New York. N.Y

Baker, M. (1988) *Incorporation*, University of Chicago Press, Chicago.

Borsley, R (1999) *Syntactic Theory: A unified Approach*, Arnold, London.

Carnie, A (2000) *Syntax: A generative Introduction*, Blackwell Publishing, Malden, Mass.

Chomsky, N. (1970) 'Remarks on Nominalizations', in R. A. Jacobs and P. S. Rosenbaum (eds.) *Readings in English Transformational Grammar*,Ginn Waltham, Mass, pp. 184-221.

Chomsky, N. (1995) *The Minimalist Program*, MIT Press, Cambridge, Mass.

Grundy, P. (2000) *Doing Pragmatics*, Arnold, London.

Haegeman, L. (1994, 2nd edition) *Introduction to Government and Binding Theory*, Blackwell, Oxford