CHOMSKY’S GENERATIVE GRAMMAR AND HALLIDAY’S SYSTEMIC FUNCTIONAL GRAMMAR: TWO SIDES OF A COIN IN SENTENCE ANALYSIS

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Abstract
This paper makes a comparative study of the approaches adopted by Chomsky’s Generative Grammar and Halliday’s Systemic Grammar in the analysis of English sentences with a view to ascertaining their significant differences and similarities. The imperative for the comparison derives from the popularity enjoyed by these two theories among grammarians and researchers. The specific areas examined are their positions on sentence generation, rank scale, thematic roles, category levels, endocentricism of the head of a phrase/group, deep and surface structure, models for representing syntactic structures, and levels of language. The study reveals that each of these two influential linguistic theories has its unique contributions to sentence analysis which cannot be totally dwindled by the merits of the other theory. It concludes that the two theories are complementary to each other given that the seeming weaknesses of one theory are remedied by the other.

Introduction
The theory of Generative Grammar (GG) was developed initially as Transformational Grammar (TG) and published by Noam Chomsky in 1957 in his book entitled Syntactic Structures. The book was revolutionary, contrasting sharply with prevailing structuralist orthodoxy in grammatical theories. Chomsky jettisoned Structuralism which is limited to the surface structure of sentences without regard to the mechanisms which underlie the creative aspects of language, proposing instead that grammar should adequately account for certain types of intuitive judgments native speakers make about their language as well as the human innate ability to generate and understand
an infinite number of novel sentences (their grammatical competence). According to Lyons, Transformational Grammar has undergone many modifications by the chief proponent and has dominated theoretical syntax for over twenty years (128). Thus, the theory which through its development goes by such names as Transformational Grammar, Transformational Generative Grammar, Standard Theory, Extended Standard Theory, Government and Binding Theory, Principles and Parameters approach, and Minimalism is often given the blanket name Generative Grammar (Carnie 5).

On the other hand, Systemic Functional Grammar (SFG) originated from M.A.K. Halliday with emphasis on exploring the ‘meaning-making’ potential of language. There are two key terms in this theory: systemic and functional. Systemic means that “language is a resource for making meaning, and meaning resides in systemic patterns of choices” (Halliday and Matthiessen 23). Thus rather than an inventory of abstract structures, the grammar of a language consists in system networks. This presupposes that the construction of meaning requires the making of choices and the way the choices are realized forms the structure thereby making the structure of a text the manifest or outward form of systemic choices. The second key term in SFG is functional. The theory recognizes functionality as the essence of language. Language is language because it performs certain social functions ‘metafunctions’ which in turn affect its structure. Bateman believes that the centrality of linguistic function in SFG is due to “its origins within, on the one hand, anthropological (e.g., Malinowski 1923) and sociological (e.g., Firth 1957/1935) approaches to language and, on the other hand, European functional linguistics—particularly the Prague School and its forerunners (e.g., Bühler 1934)” (11). The comprehensive nature of SFG and its functionality paradigm therefore derive from the influences from different approaches to language.

This paper assesses the similarities and differences between these two theories in the analysis of English sentences and highlights how complementarity relationship between these two popular linguistic theories can be exploited in linguistic analysis. Tomori justifies the need for such comparative analyses: “Different types of theory govern different types of linguistic analysis …. It happens that the end-products may look alike, and this is as it should be, if the material used is the same – the English language, for instance. Differences of terminology resulting from different practical approaches have contributed to obscuring the similarity of some identical forms (39).”

The Concerns of Generative Grammar and Systemic Functional Grammar in the Analysis of English Sentences

A. Position on Rules for Sentence Generation

According to Carnie, “The underlying thesis of generative grammar is that sentences are generated by a subconscious set of procedures (5).” These procedures form a set of grammatical rules for generating the sentences of a language. Thus, from a finite set of rules, an infinite quantum of well-formed sentences of the language can be generated. The well-formedness of a sentence in this theory is viewed from three angles: syntactic, semantic and phonological well-formedness. These yardsticks for measuring a well-formed sentence are illustrated below:

1. *Benjamin injured herself. (Semantically deviant)
2. *Jack sells electrical very good appliances. (Syntactically ill-formed)
3. *He is a reBEL. (Phonologically ill-formed)
Although the three sentences above are composed of the acceptable constituents of sentence in a linear order of Subject, Verb, Complement (SVC) recognized by both grammars, these constituents taken together do not form an acceptable sentence in each case, as the asterisk indicates. In 1, meaning is impaired because *herself* being an anaphor is supposed to agree with the gender of its antecedent *Benjamin*. In 2, the pre-modifiers of *appliances*, the head of the noun phrase serving as the complement, are not arranged in the right sequence. The third sentence captures a case of wrong application of stress at the phonological level, which makes the sentence deviant despite being syntactically and semantically well-formed.

GG is therefore interested in how the three levels of language affect the well-formedness of a sentence and provides rules that systematize how sentences are formed in the language. The rules known as Phrase Structure Rules (PSRs) stipulate how to generate all and only the grammatical sentences of the language. PSRs specify how words can be combined to form phrases and phrases to form sentences based on the native speaker’s intuitions about the structure relations between the words in a sentence (Radford 34). Though finite in number, PSRs can be used to generate an infinite number of sentences. For example, the finite rules below can be used to generate a large number of well-formed sentences in English:

(a) \[ S \rightarrow P - AUX - VP \]
(b) \[ VP \rightarrow V - ADVP - PP \]
(c) \[ ADVP \rightarrow DEG - ADV \]
(d) \[ PP \rightarrow P - NP \]
(e) \[ NP \rightarrow DET - N \] (Radford 41)

An attempt at interpretation shows that:

(a) The sentence can consist of a noun phrase immediately followed by an auxiliary which is immediately followed by a verb phrase, as in:
   \[ S [NP The prices] [AUX will] [VP rise very rapidly before this Christmas]]\]
(b) A verb phrase can be formed from a verb immediately preceding an adverbial phrase that is immediately preceding a prepositional phrase, as in:
   \[ VP [v rise] [ADVP very rapidly] [PP before this Christmas]\]
(c) An adverbial phrase can be formed in the sequence of an adverb of degree immediately preceding an adverb which in turn immediately precedes a prepositional phrase.
   \[ ADVP [DEG very] [ADV rapidly] [PP before this Christmas]\]
(d) A prepositional phrase can consist of a preposition immediately preceding a noun phrase.
   \[ PP [P before] [NP this Christmas]\]
(e) Lastly, a noun phrase can consist of a determiner immediately preceding a noun.
   \[ NP [DET this] [N Christmas] \]

Each left hand entry is a constituent while the right hand side shows the elements that make up the constituent. Note that the AUX is viewed as a separate constituent from the VP in GG unlike in SFG where the auxiliary forms part of the verbal group.

However, Radford’s PSRs presented above does not specify the optional elements of structure as well as recursive constituents of sentence. Thus, a revised version in which brackets depict optional constituents and a plus sign shows recursive tendency is hereby presented:
The optional elements show that the only obligatory element of a phrase is the head from which the category takes its name.

On the other hand, SFL is not interested in the structural rules for generating well-formed sentences but in the ideational, interpersonal and textual metafunctions the sentences of a language can be employed to perform and that these functions shape the structure of language. Bateman captures the difference between SFG and other formal grammars like Generative Grammar thus: SFG “provides a metaphor for linguistic organization that contrasts usefully with structural accounts: rather than describing constraints on what kinds of structures are possible, the SFL view describes language in terms of what a speaker can do with the structures of a language” (11). The interest of SFG therefore does not lie much with knowledge of the structure of language and the rules for generating well-formed sentences but on how the language user employs a huge system network of choices to serve his socio-semantic needs. To construct a sentence, a language uses, rather than plodding through a finite set of rules, traverses through a network of choices which are controlled by the ideational, interpersonal and textual functions of language as the occasion demands.

B. Position on Rank Scale

Both theories recognize five units of grammar in a hierarchical order, with the sentence as the highest unit of abstraction and the morpheme as the lowest. In both GG and SFG, each higher rank unit is made up of one or more units of the lower. However, there is a point of divergence. In GG’s grammatical hierarchy, the units in a descending order are sentence, clause, phrase, word, and morpheme while in that of SFG the units are sentence, clause, group, word and morpheme. The difference therefore lies in the middle units in both cases – phrase and group respectively. GG’s and SFG’s notion of phrase and group respectively differs sharply from the traditional view in that a single word can be a phrasal category and likewise can constitute a group.

SFG recognizes four groups: nominal, verbal, adverbial, and conjunction groups. The adjective is presumably not emphasized as a group because adjectives are often embedded in the nominal group as modifiers, unlike in GG where, though they are modifiers, they still form a separate constituent as a phrasal category under the NP. The other minor groups, preposition and conjunction groups, serve as complexes of nominals, verbs and adverbs, which serve different functions in the clause unless rankshifted and embedded in other units. The only phrase recognized in SFG is the prepositional phrase. Note that there is a functional overlap between the adverbial group and the prepositional phrase given that the two have the same functional potential but differ in two related ways. Prepositional phrases have greater expressive potential than adverbial groups since prepositional phrases include a nominal group. Secondly, prepositional phrases can construe more experientially complex circumstances (Halliday and Matthiessen 311).

C. Thematic Roles

In SFG, the clause has a modal structure and an experiential structure. In the former, the nominal group serves as Subject or Complement; the verbal group as Finite + Predicator;
and the adverbial group as Adjunct. In the latter, the nominal groups serve in participant roles; the verbal groups serve as Process while the adverbial groups serve in circumstance roles (Halliday and Matthiessen 310). For example, a simple sentence such as *James kicked the ball* is analyzed in SGF to show a mixture of its semantic structure and syntactic structure.

<table>
<thead>
<tr>
<th>Sentence</th>
<th>James</th>
<th>kicked</th>
<th>the ball</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semantic Structure</td>
<td>Actor</td>
<td>Process</td>
<td>Goal</td>
</tr>
<tr>
<td>Syntactic Structure</td>
<td>Subject</td>
<td>Verb</td>
<td>Object</td>
</tr>
</tbody>
</table>

GG recognizes the modal structure analysis of a simple sentence into the SVO elements and the like, but does not emphasize thematic relations (a property of semantics) in syntactic analysis as much as SFL does. But this does not mean that GG does not observe such thematic relations as later development in GG incorporated argument structure. It is only a matter of difference in terminology. For example, the SFG Subject/Actor is analyzed in GG as Subject/Agent.

D. Difference in Number of Categories

Two levels of categories are common to both grammars in sentence analysis: word-level category for both GG and SFG, and phrase-level or group-level category for GG and SFG respectively. At the lexical level in GG we have Noun (N), Verb (V), Auxiliary (AUX), Adjective (A), Adverb (ADV), Determiner (DET), Degree of expression (DEG), Conjunction (CONJ), and Quantifier (Q). The phrasal categories in GG are as follows: NP: Noun Phrase, VP: Verb Phrase, AP: Adjective Phrase, PP: Prepositional Phrase, ADVP: Adverbial Phrase and QP: Quantifier Phrase.

In SFG, the lexical categories are: noun, verb, adverb, adjective, determiner, preposition and conjunction. The group categories are the nominal group, verbal group, adverbial group and conjunction group. Prepositional phrases in SFG are embedded in the nominal group and the adverbial group (Halliday and Matthiessen 310-311).

However, GG has gone beyond the two-level category to postulate a three-level theory of categories in its X-Bar syntax, with their introduction of an intermediate category. The three -level structures recognized have the following components as members:

X": NP, VP, AP, PP, ADVP (Phrasal category)

X¹: N-Bar, V-Bar, A-Bar, P-Bar, ADV-Bar (Intermediate category)

X: N V A P ADV (Lexical category)

The X-double or XP stands for any phrasal category in which X takes its value from the phrase. The X-bar (single bar) is the intermediate category. It is larger than lexical category but smaller than phrasal category. There is no traditional label for an intermediate category but it is customary to refer to them as N-Bar, V-Bar, etc. as the case may be. As seen above, the phrasal category is the maximal projection of the lexical category, while the X-bar is the intermediate (Brown and Miller 106).

Radford as well as other proponents of X-Bar theory believes that there exists a considerable amount of empirical evidence to substantiate the existence of intermediate categories and recommends that a theory of syntactic categories should make provision for them (91). The evidence for the existence the intermediate category can be provided by a constituency test using for example the pro-form *one*:

(a) I will nominate this smart young girl and not that smart young girl₂
(b) I will nominate this smart young girl and not that one.

In (b) one replaces only ‘smart young girl’, not the whole NP that smart young girl. This makes smart young girl a constituent albeit smaller than a full-fledged noun phrase. Thus, this smart young girl as well as that smart young girl is an NP; smart young girl is an N-Bar and one is the pro-N-Bar. Evidently, therefore, smart young girl suffices as an intermediate category, N-Bar.

A systemic grammar model of analysis does not recognize the intermediate category. The whole phrase will simply be accounted for as a nominal group in which the head girl is modified by a determiner and two adjectives as seen in that smart young girl:

<table>
<thead>
<tr>
<th>That</th>
<th>Smart</th>
<th>Young</th>
<th>girl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deictic</td>
<td>Epithet</td>
<td>Epithet</td>
<td>Thing</td>
</tr>
<tr>
<td>Determiner</td>
<td>Adjective</td>
<td>Adjective</td>
<td>Noun</td>
</tr>
</tbody>
</table>

The analysis shows the functional elements of the nominal group and their lexical equivalents without regard to their hierarchical relationship or structural affinity.

From the foregoing, X-Bar Syntax is perhaps a better system of representing the structure of sentences in natural languages. It is relevant to the analysis of English sentences in that it captures more appropriately the hierarchical organization of constituents in a sentence. It shows that the constituents of a sentence do not have equal syntactic bond and reveals at a glance the level of affinity shared by constituents in a phrase. It also shows that the head of a phrase, be it a VP or a PP, is to the left of its complement.

In the above tree, the XP node immediately dominates the specifier to the left and an X-bar node to the right. The X-bar node immediately dominates another X-bar node to the
left and an adjunct to the right. Next, the second X-bar node immediately dominates the X (head) to the left and the Complement to the right. The specifier, modifier and complement being optional elements are enclosed in brackets. The occurrence of the specifier and the complement is determined by the syntactic nature of the head which is the only obligatory element in a phrasal category. While the specifier and the complement occupy fixed positions before and after the head respectively, the modifier may occur to the left or to the right of its sister X-Bar node. Thus the X-bar enables a generalized and harmonized discussion of all categories in a hierarchical manner and circumvents a cumbersome individualized treatment.

E. Endocentric Structure of the Phrase/Group

Furthermore, generative grammar recognizes the endocentric relation that exists between the phrase and its head. Any phrasal category derives its name from its head rather than from its complements: NP: noun as its head; VP: verb as its head; AP: adjective as its head; PP: preposition as its head; ADVP: adverb as its head. This can be illustrated using some phrases:

(a) Mandela is [NP the hero of South Africa]]

(b) Aisha did [VP not immunize her new born baby]]
The phrase markers show that N and V are the heads of the NP and VP respectively.

Similarly, the groups in SFG have an endocentric structure. Thus, a nominal group has a noun as its head; and a verbal group, a verb as its head, etc. The nominal group may have a multivariate structure in which the head of the group is preceded by modifier(s) and followed by qualifier(s). Note that in SFG everything that comes before the head in a nominal group is called modifier and everything that comes after the head is qualifier. But in GG, the modifier can occur to the left or to the right of the head by way of pre-modification or post-modification respectively. A typical multivariate nominal group in SFG can be analysed into its MHQ structure thus:

<table>
<thead>
<tr>
<th>M (Modifier)</th>
<th>H (Head)</th>
<th>Q (Qualifier)</th>
</tr>
</thead>
<tbody>
<tr>
<td>These</td>
<td>women</td>
<td>with first class honours</td>
</tr>
<tr>
<td>wonderful educated</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Both SFG and GG recognize that *with first class honours* is a prepositional phrase (PP), the difference, however, is that while this PP functions as a modifier of the head *women* in GG, in SFG it functions as a qualifier. In addition, GG would further analyze the modifier more deeply to show the functional relationships within the elements. The first element *these* is identified as the specifier while *wonderful* modifies *educated women* and *three* modifies *wonderful educated women*. This shows that GG’s analysis of the internal structure of constituents is more detailed.

F. Models for representing syntactic analysis

Furthermore, GG introduced into linguistic analysis a visual and pictorial method of sentence analysis using phrase markers (P-markers) or tree diagrams. As demonstrated above, the use of syntactic trees gives insight into the segmentation of the constituents of a sentence and displays a hierarchical organization of syntactic structures. The constituents represented in P-markers relate with one another by way of dominance and precedence. Syntactic structures are also represented using labelled bracketing as demonstrated in the interpretation of PS Rules in A above. P-markers are often adopted by linguists due to their
explicitness while labelled bracketing is often preferred because it occupies less space on the printed page. However the two systems of representations are logically equivalent and have equal theoretical significance (Radford 54-5; Lyons 122). According to Carnie, syntactic trees (P-markers) used in GG allow us to capture remarkable facts about language, one of which is ambiguity (87).

Conversely, SFG uses tables in analysis and does not make any explicit account of structural ambiguity. The ensuing sentence captures a case of syntactic ambiguity. *The journalist saw the man with a telescope*. This sentence has two paraphrases that depict the two readings:

(a): The journalist saw the man using a telescope. (Instrumental role)
(b): The journalist saw the man that had a telescope. (Non-instrumental role)

The ambiguity revolves around whether the PP forms a constituent with the VP or the NP. In paraphrase (a) the PP *with a telescope* forms a constituent with the VP *saw* and modifies the verb *saw* while in (b) the PP *with a telescope* forms a constituent with the NP *the man* as its complement. The phrase markers that follow disambiguate the sentence thus:

```
S
   NP
   The journalist

   VP
   saw

   PP
   PP
   with a telescope
   the man
```

(b)
The journalist saw the man with a telescope

Following the X-bar schema of GG, in (a) the S node immediately dominates the NP to the left and the VP to the right making the NP and VP daughters of the S node and therefore sisters. The VP which houses the PP attachment that constitutes the ambiguity is of primary interest. It immediately dominates the V-bar to the left and the PP to the right making the PP the adjunct of its sister node, the V-bar. Notice that the NP does not form a constituent with the PP but with the V-bar. Thus, both the V (head) and the NP are sisters and as such daughters of the intermediate category, the V-bar, in which case the NP is the complement of V.

On the other hand, the phrase marker in (b) differs in meaning from (a) in the structure of the VP. Here the VP immediately dominates the V-bar to the left and the NP to the right making both daughters of the VP and thus sisters. The V-bar expands into V while the NP branches out to immediately dominate the specifier to the left and the N-bar to the right. The N-bar in turn immediately dominates the N to the left and the PP to the right making the ambiguous PP attachment in this regard a sister to N as well as the complement of N as opposed to its status in (a) as adjunct and sister to the V-bar. Notice that the bond between the specifier and the head, on the one hand, and the head and its complement, on the other hand, is hierarchically and syntactically different in that the specifier is syntactically related to both the head and the complement taken together (N-bar) while the complement is syntactically bound with only the head. Evidently, the phrase markers above have helped us to capture vividly the subtleties that underlie the ambiguous readings of sentences with the same surface structure.

On the other hand, a systemic grammar-based analysis of the ambiguous sentence using a table would not have revealed the ambiguity. SFG recognizes four elements of structure viz. subject, predicator, complement and adjunct. Thus the ambiguous sentences is analysed into its elements as follows:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Predicator</th>
<th>Complement</th>
<th>Adjunct</th>
</tr>
</thead>
<tbody>
<tr>
<td>The journalist</td>
<td>saw</td>
<td>the man</td>
<td>with a telescope</td>
</tr>
</tbody>
</table>

This analysis has concealed the underlying structural ambiguity.

G. Position on Deep and Surface Structure
Another important feature of GG’s approach to sentence analysis is the concept of deep structure and surface structure. A sentence may convey one meaning on the surface but beneath the string of words may lie another meaning. Thus a sentence with one surface reading may have two or more underlying readings and the ability to account for these meanings is a mark of grammatical competence. Let us consider this sentence: *Richard called Titus a slave*. The surface structure of this sentence shows a stretch of five words sequentially knitted together. However, the deep structure of the sentence is concerned with what lies beneath the sequence of words. Knowledge of deep structure enables us to detect that this single surface structure can be paraphrased to reveal its two meanings as shown below:

(a) Richard called a slave for Titus.
(b) Richard believes that Titus is a slave.

Conversely, SFG is not concerned with deep structure analysis. The position of context as an integral part of the grammar enables the intended meaning of the utterance to be worked out in the context of situation since both meanings cannot be meant at the same time.

H. Position on Levels of Language

Both grammars identify three components or levels of language that affect the meaning of a sentence, namely semantics, syntax and phonology. These levels of language are crucial to the well-formedness of sentences in GG. Similarly, a grammatical description of language in SFG is approached hierarchically from three perspectives: semantics, lexicogrammar, and phonology. Of the three, SFG gives priority to semantics considering that form is shaped by function, and the meaning of an expression determines its phonological and morphological realization. However, SFG additionally introduced another level into linguistic analysis at the apex: Context. Context occupies the ‘highest’ stratum in the theory, and is language external whereas the remaining four strata are language internal. On the other hand GG does not account for context in the analysis of sentence. SFG believe that the meaning of a sentence often goes beyond the encoded semantics. “Looking from above, contextual choices activate semantic choices activate the lexicogrammatical ones; looking from below lexicogrammatical choices construe semantic choices construe contextual ones” (Hasan 170). In other words, to understand an expression it is pertinent to consider the context which influences the speaker’s semantic choices and to account for why certain patterns of wording are used instead of others. Thus, semantics is an interface between context and linguistic form and thus interfaces with the non-linguistic world. According to Akwanya context and function are the shaping agents of language (51) which underscores the inseparability of sentence meaning from context.

Conclusion

In conclusion, the analysis shows that both grammars have their strengths and weaknesses which can be exploited to enrich linguistic analysis depending on the job in hand. SFG’s recognition of context in the levels of language and the primacy it places on functionality and choice in the system network of language are its major contributions to linguistic analysis. This recognition has advanced two fields of linguistics: pragmatics and
discourse analysis. However, with the coming of X-bar theory, functionality was built into GG, albeit not extra-linguistic functionality.

The position of Generativists on the primacy of structure in linguistic analysis is also focal. Their pivotal argument is that the structure of a constituent or clause structure controls its meaning; thus, syntax superposes semantics. One is required to understand the framework of language before grasping the meaning a string of words conveys, and even composing a well-formed sentence. However, to strike a balance between the two grammatical theories, it could be argued that the generativists’ approach is more applicable to the reader/hearer interpretative task than to the writer/speaker encoding task which favours meaning before wording. Arguably, a reader/hearer’s interpretative task commences with looking at the lexicogrammatical stratum, then the semantic layer and lastly the pragmatic colourings that enrich the semantics. On the other hand, the writer/speaker construes experience from a definite context which shapes the semantics encoded which in turn shapes the lexicogrammatical choices. This observation meshes well with Sadighi and Bavali’s view that GG and SFG seem to stand more in a complementary position with respect to each other than in a confronting stance against one another” (2) and underscores a complementary theoretical approach to sentence analysis that accommodates both GG and SFG.

References
Sadighi, Firooz. and Mohammad Bavali. Chomsky’s Universal Grammar and Halliday’s