PAPER 6 (DESCRIPTIVE LINGUISTICS)
Describe the concept of Transformational Generative Grammar.

If we were to attempt to extend phrase structure grammar to cover the entire language directly, we would lose the simplicity of the limited phrase structure grammar and of the transformational development. This approach to syntactic analysis is not appreciable. Chomsky in `Syntactic Structures' observes that "notions of phrase structure are quite adequate for a small part of the language and that the rest of the language can be derived by repeated application of a rather simple set of transformations to the strings given by the phrase structure grammar. Thus "Transformational Generative Grammar" was introduced. The name suggests that there are two aspects of this theory. The grammar that it provides is both `transformational' and `generative'. These two aspects are not logically dependent upon each other, though the theory gains plausibility from the interaction of the two.

TRANSFROMATIONAL: "Essentially, transformation is a method of stating how the structures of many sentences in languages can be generated or explained formally as the result of specific transformations applied to certain basic sentence structures.", as R. H. Robins observes in his book "General Linguistics". Further, he says, "These basic sentence types or structures are not necessarily basic or minimal from the point of view of Immediate Constituent Analysis, the transformational syntax presupposes a certain amount of phrase structure grammar of the immediate constituent type to provide the basis of the `kernel' from which transformations start." Thus active sentences are `kernel' sentences whereas passive sentences are the transforms. However, the notion of `kernel' has been abandoned by Chomsky since the publication of his "Aspects of the Theory of Syntax".

In "Syntactic Structures" Chomsky handles the active-passive relationship by saying that if S1 is a grammatical sentence with the form
NP1----Aux----V----NP2,
then the corresponding string of form
NP2----Aux + be + en----V----by + Np1
is also a grammatical sentence. We can, that is, state how we convert an active sentence into a passive sentence. We have to change the positions of the noun phrase and insert `by' before the second one in the passive and at the same time change the verb from active into passive. In this way, the sentence "The door was opened by Shaw" is the transform of the sentence in active voice "Shaw opened the door".

There are, however, plenty of other transformations. One that occurs in English but is not paralleled in most languages is that of `permutation'. That is, "Has Jim played the piano?" is a transformation of "Jim has played the piano." This occurs with all the auxiliary verbs of English as "Is he coming?", "Can you go?", "Must I sleep?", etc. If there is no auxiliary verb, the verb `do' has to be supplied to act as one:

He goes.	Does he go?
They play.	Do they play?
We came.	Did we come?

A different and in some ways more important type of transformation is "relative transformation" which involves more than one "kernel sentence". There is a sense in

which one sentence can be regarded as being part of another sentence, that one structure can be embedded into another. The sentence that is embedded into another is known as the "constituent" and the sentence into which it is embedded as the "matrix". For example, the sentence `The boy who was standing there ran away.' can be treated as a transformation of the two sentences:

       The boy ran away.

       The boy was standing there.

Thus the relative transformation places the second sentence after `boy' in the first and then replaces `the boy' in the second by `who'.

       The relevance of transformational grammar becomes obvious when we see the way in which it can resolve ambiguity in sentences. The IC analysis can sometimes disambiguate but because sentences that appear to be identical are often transforms from different kernels, transformational analysis can disambiguate far more. For example,

           `Visiting professors can be dangerous.'

We want to distinguish here two senses-the action of visiting professors can be dangerous, and professors who visit can be dangerous. We can show this by difference in the matrix and the constituent sentence as well as the place of embedding. On the first meaning we have the kernel sentence:

         Can be dangerous.

         (someone), visits professors.

We then transform the second into `visiting professors' and insert it in the place of NP. On the second meaning the kernel sentences will be:

         Professors can be dangerous.

         Professors visit.

Here we must apply a transformation similar to the relative transformation. Professors who visit can be dangerous and then a further transformation to give the required sentence by transforming `who visit' in `visiting' and placing it before `professors'. Thus we see that the deep structure of the two apparently identical sentences are quite different.

Another sentence in which we can resolve ambiguity by transformation is

          They are hanging curtains.

In terms of meaning, the ambiguity depends on whether some people are hanging curtains or whether some people are performing the work of hanging curtains. The ambiguity is resolved by transforming the sentence into passive.

          `Curtains are being hanged by them.'

In this way TG allows us to state all kinds of relationship that could not otherwise be stated. There is, as a result, a possibility that it may be used to handle features that are better treated as purely semantics.

GENERATIVE: The other characteristics of TG is that it is `generative'. In other words, a grammar must `generate all and only the grammatical sentences of a language'. It means merely that the grammar must be so designed that by following its rules and conventions we can produce all or any of the possible sentences of the language.

       To `generate' is thus to `predict' what can be sentences of the language or to `specify' precisely what are the possible sentences of the language. Thus a grammar should `generate', `specify', and `predict' sentences such as:

He plays the piano.

but not * plays the piano he.

* He the piano plays.

A generative grammar is not concerned with any actual set of sentences of the language but with the possible set of sentences. We are not, then, concerned or even primarily with any observed sentences that have occurred, but rather with those that can or could have occurred.

The advocates of TG point out that any corps has a finite number of sentences, no matter, how large, yet a language consists of an infinite number of sentences. This infinity is a result of what is known as `recursion'-that we can apply the same linguistic device over and over again. For example,

This is the house that Jack built.

This is the corn that lay in the house that Jack built.

This is the rat that ate the corn that lay in the house that Jack built.

We can contrive `ad infinitum'.

The generative grammar is explicit, that is, it explicitly indicates just what are the possible sentences of the language. By its rules and conventions it generates all the sentences so its rules and conventions are totally explicit.

The `competence' and `performance' of a native speaker of a language are related to the TG grammarians' interest not in the neutral text but in what is linguistically possible. Their interest, does not lie, therefore, in the actual utterances of the native speakers of a language but rather in what he can say. This concerns his knowledge of the language, his `competence' not what he actually does at any time, the sentences he actually produces, which are a matter only of performance. According to the theory, the native speaker of a language has `internalized a set of rules' which form the basis of his ability to speak and understand his language. It is the knowledge of these rules that is the object of the linguist's attention, not the actual sentences he produces.

RULES: TG is rule based grammar. Generative rules share some characteristics of both prescriptive and descriptive rules. They are in the first place instructions like the prescriptive rules but instead of being instructions for the production of correct speech, they are instructions for generating all the possible sentences of the language. In the second place, like descriptive rules, they relate to the facts of actual languages not the invented languages of grammarians, and are ultimately based, therefore upon what people say rather than what they ought to say.

The rules of TG are rewrite rules. That is to say, they rewrite one symbol as another or as several others or one set of symbols by another until eventually the sentences of the language are generated. The rules start with symbols `S' (sentence) and then a sequence of rules rewrite this symbol until a sentence is produced. Thus

A---BC

means rewrite A as BC. A simple set of rules is as follows, if we wish to generate a sentence like `A man read the book'.

1. S---------NP + VP
2. VP---------V + NP
3. NP---------D + N
4. V--------- read

5.Det---------a, the

6. N---------man, book

If we apply the rules in sequence, we generate the following strings successively:

            S
            NP + VP
            NP + V + NP
            Det + N + V + Det + N
            Det + N + read + Det + N
            A   man read   the   book.

We can indicate optional elements by the use of brackets. Thus rule 3 can be rewritten as
            NP---Det (adj) + N.

We can now generate such sentences as
            A tall man read the short book.

In TG phrase structure rules form the basic part of the grammar and are technically described as the `base component'. As long as, however, we are restricted to PS rules, we cannot generate passive sentences from active ones. Characteristically then TG must contain not only PS rules but also T rules.

T RULES: They contain two parts. The first part of each rule is a structural analysis specifying the class of strings to which the rule applies. The second part of the rule specifies the `structural change'. As an example, we can take the passive transformation

            SA   NP - Aux - V + NP
            SC   X1 - X2 - X3 - X4----X4 - X2 + be + en - X3 - by + X1

Similarly we can generate sentences that involve co-ordination and sub-ordination. We can, for example, generate Bob and John play football, from `Bob plays football' and `John plays football' by a simple rule that combines the two sentences:

            SA   NP + Aux + V + NP; NP + Aux + V + NP
            SC   X1-X2-X3-X4-X5-X6-X7-X8---X8-X5-X2-X3-X4.

There is a further distinction between the two kinds of T-rules- obligatory and optional T-rules. TG can generate among many other passive sentences from active ones, yet it cannot generate even all active sentences without recourse to some transformational rules. Some rules have to be applied in order to produce sentences at all. They are then obligatory. On the other hand, we are not to transform an active sentence into a passive one. The rule, then, that converts active sentences into passive ones is optional.

A good example of obligatory T rules is provided by the element which is used to indicate the occurrence of auxiliary verbs and tense in English. If we recognize all this in a generative grammar, the first rule that explains Aux. is

            Aux.------Tense (M) aspect.

If we consider for instance `would have been taking', we find past tense, the modal, `will', the perfect and progressive, and we shall therefore rewrite Aux. as

            will + have + en + be + ing

This is a result of the fact that we have used PS rules to expand Aspects into successive have + en and be + ing.

An important characteristics of some rules is that they must be `ordered'. That is, one must be applied before another. We must apply them in correct order even though another order is possible, because if we apply them in the wrong order, we shall generate

different sentences. A good example is provided by the rules for the concord of subject and verb for the passive. We have to provide two rules, one the passive T-rule, the other a concord rule that will introduce next to the verb a grammatical formative indicating singular or plural according to whether the proceeding NP is singular or plural.

$$NP + Sing + V ---- NP + Sing + V + Sing$$

But this rule must not be applied before the passive transformation. If we want to generate ` The men are mocked by the boy', our PS rule will generate a terminal string:

The + boy + sing + mock + the + men + pl.

If we now apply the concord rule, we shall introduce -ing to the verb and this will remain when we apply the passive transformation. Our generated sentence then will be:

The man is mocked by the boy.

If, on the other hand, we apply the concord rule the passive transformation, the passive verb will agree with the NP that precedes it, the `subject' of the passive not of the active verb.

Since there is no `God given' definition of the distinction between PS and T rules, the ultimate criterion must depend on what we want them to do.

GRAMMAR: The grammar of a language should describe the linguistic facts of the language economically and accurately. From this perspective we find traditional grammar to be deficient. The western grammarians inherited the basic postulates of Greek tradition and interpreted language through categories of logic. This conceptual interpretation is notional and fails to give a scientific interpretation. Moreover, the traditional grammars distinguish written language and oral language, the formal being the basis of grammatical study for them. But modern linguists have proved that it is speech which is the real language and written language only a representation of it. Therefore no wonder many forms which grammarians declared to be incorrect and unacceptable exist in everyday speech. The traditional grammar notional and prescriptive approach towards language is ephemeral and fails to go into the deeper problems involved.

The point that traditional grammar overlooks is the inherent system, the inner mechanism or what Saussure calls `Langue' at work when an utterance is made. An individual can utter a sentence and this sentence can have unpredictable possibilities of variations. The grammar's role is not to prescribe rules for the correctness of the sentence

but to find out the system at work which enables the individual to manipulate such a great and complex range of utterances.

Chomsky rightly asserted that traditional grammars are deficient in that they leave unexposed many of the basic regularities of the language. They emphasize exceptions and irregularities but only give examples and hints concerning regular and productive syntactic process due to their preoccupation with the extra linguistic view of `natural order of thought' being reflected in the order of words. The rules of sentence formations as formulated by them do not belong to the field of grammar.

In TG sentence refers to the individual elements of which a language contains an infinite number. Grammar is the concept which refers to finite system which specify and generate these infinite number of sentences. TG has a comprehensive approach as it deals with the language on the syntactic, semantic, and phonological level which three put together represent language in both its structural and functional terms. No other grammar is complete in this sense.

A sentence has three components discussed above. Their function can be exemplified.

(a) Harry loves Mary.

In this sentence three lexical items have been put together. This does not tell us anything about meaning. The same words can be put into another order.

(b) Mary loves Harry.

(a) and (b) have the same lexical items but different meaning. Similarly the phonological aspects-pronunciation, intonation, stress can change the meaning of the structure. Thus syntax combines in semantics and phonological aspects which are integral to language as an integral whole.

[phonology]------[syntax]------[semantics]

The roles of the three components are not equal. The syntax has no input; it generated with rules and lexicon infinite number of sentences. The other two components operate on the structure specified by the syntax assigning further structure of them. Thus we have two aspects of syntactic structure.

DEEP STRUCTURE AND SURFACE STRUCTURE

Deep structure is the aspect of syntactic structure operated on by semantics for the purpose of semantic interpretation. Surface structure is the aspect of syntactic structure operated on by phonology for the purpose of phonetic interpretation. The surface structure is more immediately obvious and the deep structure takes into consideration the transformation. TG accentuates that the structures relevant for semantic interpretation turn out to be different from those which are relevant for phonological interpretation. The following example is a simple model of how TG operates.
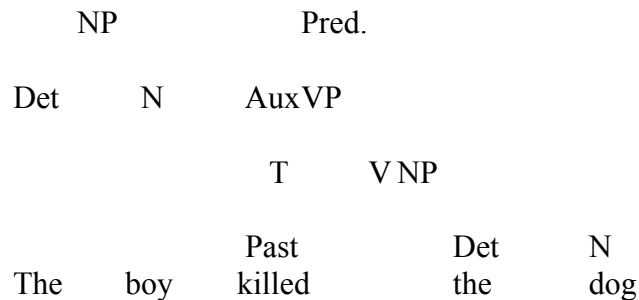
The boy killed the dog.

This sentence is generated by the following PS rules:

1.   S----NP + Pred.
2.   NP----Det + N
3. Pred.----Aux + VP

4. Aux.----Tense (past)
5. VP----V + NP

PHONOLOGICAL SEGMENT   SYNTAX   SEMANTICS

    boy   +[N]   +[human]
                     +[countable]   +[male]

    dog   +[noun]
                     +[countable]   +[animal]

    killed   +[verb]   +[human]

    the   +[det]

```
                         S


            NP                   Pred.

       Det      N        Aux  VP

                          T    V  NP

                         Past      Det    N
          The     boy    killed    the    dog
```

These rules do not only give the string but also exclude the possibility of generating the ungrammatical sentences.

          *The dog boy the killed.

This example makes it apparent that there is an analogy between the human mind and computer. As the computer decides the relevant information and gives the result, similarly the human mind has the capacity to understand the code of each and every lexical item and put them into syntactic structure by following the rules of language. Moreover, it has the unique capacity of avoiding errors by automatic checking and has infinite creativity in sentence formation.

`Flying planes can be dangerous' - has two senses:

(a) The action of flying planes can be dangerous.

(b) Planes which fly can be dangerous.

This ambiguity cannot be resolved by a traditional grammar approach as it would focus on the surface- the word order. But the problem lies in the deep structure. Therefore, only TG can account for the ambiguity. The difference between (a) and (b) can be explained by showing the difference in matrix and the constituents. (a) is the result of the following kernel sentences:

(i)------can be dangerous.

(ii)------someone flies planes.

(ii) is transformed into flying planes inserted in the place of NP. (b) has the following kernel sentences:
 (i)planes can be dangerous.
(ii)planes fly.
Applying relative transformation we get the string

Planes which fly can be dangerous.

`Which fly' is again transformed into flying and then placed before planes. Thus we find that the deep structures of two sentences which were identical on the surface are quite different on the deep level. Therefore to examine and explain ambiguity, TG approach is always preferable to the traditional rules.

In this sense TG is also significant from the perspective of searching the grammatical universals which would reveal the mystery of language and perhaps make it possible to be fed into computers to give desired sentences varied for pedagogic and other purposes.