

Chomsky's Universal Grammar

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Noam Chomsky is one of the most influential linguists of modern times. His linguistic philosophy has had a major influence on linguistics, psychology, philosophy and many other disciplines. This unique philosophy asserts that human brain is biologically programmed to learn language, so language faculty is innate. For him, mind works during the course of learning a language. Chomsky's conceptualization of language as a genetic endowment of man has shifted the focus of scientific study from behaviour and its products to mental processes and biological endowment that underlie all human actions. This shift in focus is sometimes referred to as the Cognitive Revolution of the 1950's and 1960's.

The innatist and mentalist views put forward in Chomsky's linguistic theory stand in diametrical opposition to the behaviorist, structuralist and empiricist claims on language and learning which were much in fashion during the first half of the twentieth century. Behaviourism, for example, deals with observable speech behavior. For Chomsky, actual speech behavior or speech performance is only 'the top of a large iceberg of linguistic competence distorted in its shape by many factors irrelevant to linguistics.' According to him the

very expression “behavioral sciences” suggests a fundamental confusion between evidence and subject matter. Psychology is the science of mind; to call psychology a behavioral science is like calling physics a science of meter readings. One uses human behavior as evidence for the laws of the operation of the mind, but to suppose that the laws must be laws of behavior is to suppose that the evidence must be the subject matter.

About 60 years ago Chomsky captured the attention of the academic world with his severe criticism of Skinner’s account of language as verbal behavior. He pointed out that the notion of ‘creativity’ would suffice to reject almost all of Skinner’s ideas of language. Man can create and understand novel sentences that he had never come across before. This would not have been possible if language learning had taken place by virtue of imitation and repetition. The crux of behaviorism is the stimulus- response theory. Chomsky paraded several reasons why this could not handle language; language is ‘stimulus-free’ not ‘stimulus-bound.’ For example, imagine the situation of someone looking at a painting. The stimulus here is the painting which might trigger unpredictable responses. As Vivian Cook has pointed out, had the behavioral claims on language learning been correct, it would be possible to predict the stimulus from a specific response just like predicting the response from a specific stimulus. This kind of prediction might be possible in the cases of animal behavior but not in the cases of human behavior.

Just like behaviorism, structuralism also faced severe criticism with the emergence of Chomsky’s model of linguistics. Till then linguistics had been conceived as a ‘classificatory science,’ a sort of verbal botany which had aimed at the taxonomy of the elements of human languages. It was claimed that the linguistic theory would provide the investigator with

a set of “discovery procedures” which could be used to extract from the language corpus elements like phonemes, morphemes, and so on. Since the focus was on observable facts, structuralism excluded the study of meaning; it was argued that meanings are patterns of behavior determined by stimulus and response which would be subject matter for psychology, not linguistics. Chomsky pointed out that the structuralist methods would not be able to account for several facts of language. For example, consider the sentences,

- (1) John is easy to please.
- (2) John is eager to please.

These sentences have apparently the same grammatical structure, though the inter relations of the constituents of these structures are not the same. In the first sentence, “John” functions as the direct object of the verb “to please” whereas; in the second sentence “John” functions as the subject of the verb. The first sentence means: “It is easy for someone to please John;” the second sentence has the interpretation, “John is eager that he please someone.” The difference in the meaning is caused by the syntax of the underlying deep structures which is not available from the surface word order. This point gets well established by the fact that English allows us to form the noun phrase “John’s eagerness to please” from the second but not “John’s easiness to please” from the first.

There are several sentences like these that cannot be accounted for within structuralist framework. Let us consider another example:

- (3) I like her cooking.

There are no ambiguous words (or morphemes) in sentence (3); it has a very simple superficial grammatical structure. Nevertheless, this sentence is amazingly ambiguous. It can

mean, among other things, 'I like what she cooks,' 'I like the way she cooks,' 'I like the fact that she cooks,' even, 'I like the fact that she is being cooked.' Structuralist assumptions are inadequate to handle such syntactically ambiguous sentences. Chomsky pointed out that that the methods of structural linguistics which had apparently worked so well with phonemes and morphemes did not work very well with sentences. Each language has a finite number of phonemes and a finite though quite large number of morphemes. However, there is no limit to the number of new sentences that can be produced. Not only that; for each sentence, no matter how long, it is always possible to produce a longer one. There is no way within structuralist assumptions to account for the fact that languages have an infinite number of sentences.

The inability of structuralist methods led Chomsky to challenge not only the methods but the goals and even the definition of the subject matter of linguistics given by the structural linguists. The structuralist goal is to provide a taxonomic account of the corpus. Chomsky rejects this view; he argues that the goal of linguistic description should be to construct a theory that would account for the infinite number of sentences of a natural language. The subject matter of linguistics for him is not the "corpus" of utterances but the speaker's innate knowledge of how to produce and understand sentences he had never heard before. Once the conception of the "corpus" as the subject matter is rejected, then the notion of mechanical procedures goes as well. Chomsky argues that no science has a mechanical procedure for discovering the truth anyway. Rather, what happens is that the scientist formulates hypotheses and tests them against evidence. Linguistics is no different: the linguist makes conjectures about linguistic facts and tests them against the evidence provided by native speakers of

the language. He has in short a procedure for evaluating rival hypotheses, but no procedure for discovering true theories by mechanically processing evidence.

The notion of innate language is central to Chomskyan revolution. How does this notion grow in the mind of a person? Surely, it is not taught by anyone. It was inquiry in this direction that led Chomsky to propose the Language Acquisition Device (LAD), which eventually was labeled as Universal Grammar (UG). Linguistic theory revolving around the notion of UG evolved after the 1950's. Certain fundamental questions which had been long neglected were taken up seriously. This was not possible earlier. The core idea of language is that language involves "the infinite use of finite means". Earlier it was impossible to deal with this amazing aspect of language. But the new understanding of innateness makes it possible. This has to do with computational processes, sometimes called 'generative' processes. The Chomskyan model of linguistics deals with the contents of UG. His Transformational Generative Grammar (TGG) explores the structure of UG as represented in the human brain.

Chomsky acknowledges that modern linguistics faces a big challenge. On the one hand, it has to provide a truthful account of the complex characteristics of sound and its meaning. At the same time, the theory has to show that beneath the several dissimilarities manifested by different languages they are all similar. This line of inquiry resulted in the insistence on the theory to meet the conditions of descriptive adequacy as well as explanatory adequacy. When the grammar gives an account of the special characteristics of a particular language it satisfies the condition of descriptive adequacy. Such a grammar can tell us what the speaker's knowledge of his language is. Keeping the boundaries of linguistic experience one

can derive particular languages from the initial state of mind which is assumed to be universal. If the theory can provide precise explanation on how this is done it achieves explanatory adequacy. When the theory thrives to meet more and more of descriptive adequacy, it lands up in more and more rule systems that can account for all the diversities and complexities of languages. On the other hand, when it looks for explanatory adequacy all the diversities and complexities of particular languages disappear as all languages can be shown to have the same structure.

It can be seen that the evolution of Chomskyan model of linguistics over the past 6 decades starting from Syntactic Structures (1957), through the Aspects Model (1965), The Government and Binding (GB) Theory (1980's), Barriers Theory (1986) and the Minimalist Model (1995) has been a natural consequence of the inquiry as to how to make the theory satisfy the requirements of descriptive and explanatory adequacies.

The Chomskyan model of linguistics deals with the contents of UG. His Transformational Generative Grammar (TGG) explores the structure of UG as represented in the human brain and explains how the various modules of UG work. The GB Theory of 1980's assumes that UG has two kinds of sub systems or modules: one is the sub system comprising of rules and the other is that of principles. The sub system of rules has the following components:

- i. Lexicon
- ii. Syntax
 - a. Phrase structure component
 - b. Transformational component
- iii. PF (Phonetic Form) component
- iv. LF (Logical Form) component

The lexicon consists of mental representation of words. The morpho-phonological structure, syntactic features and categorical features of the words will be specified in the lexicon. The Phrase structure component will have rules in conformity with the X-bar Theory. The lexicon and the Phrase structure component together make the base component of grammar. The rules in this component generate structures in which words are inserted as selected by their features. This is how the D- structure is formed. Move α (Move alpha) applies on the D-structure to derive the S- structure. There are other instances of move alpha that apply on the PF component as well as the LF component. The S-structure generated from the Syntactic component gets phonetic realization by virtue of the PF components; the S-structure gets semantic structure by virtue of the LF component. The subsystems of principles are the following:

- i. Bounding theory
- ii. Government theory
- iii. Theta theory
- iv. Binding theory
- v. Case theory
- vi. Control theory

The considerations of Bounding theory decide the boundaries of various constituents of a sentence. This theory imposes constraints on the processes like Move alpha.

The Government theory deals with the relationship between the Head and the other categories that are dependent on the Head. The relationship between the Head and the Complement of a structure comes under the Government theory. The theta theory deals with the assigning of θ –roles (Thematic roles) like the agent of action, the theme of action and the patient of action to various constituents. Binding theory deals with the

relationship between anaphors, pronominals, referential expressions, variables and their antecedents. Case theory that decides which Cases are assigned to various elements appearing in a certain configuration. What are the situations where abstract Case is assigned and how Case is realized on words are also matters coming under Case theory. Control theory decides the interpretation of the abstract pronominal PRO - the pronoun without phonetic content.

The theory of UG of 1980's is also known as the Principles and Parameters Model. The implicit idea is that the child's innate language system comprises a set of well-defined principles which account for the common properties of all possible human languages and a set of parameters which take care of the differences between any two languages (for example, the Head parameter decides the Verb-Object vs. Object-Verb ordering). In the initial state of language the value of the various parameters will not be specified. Depending on the input the child gets from her speech community the value of each parameter will be fixed in one way or the other. So what exactly do we mean by acquiring a language? It is nothing more than learning how the principles of UG are applied in that language and learning the value of each parameter allowed by UG. We have to bear in mind that each parameter makes certain authentic claims about the speaker's mind and the nature of language acquisition. UG theory proposes precise statements based on specific evidences.

In GB Theory, Chomsky posits a very complex structure for UG. Since the constraints insisted in UG are common for all languages, these could not have been learnt from any speech community. Unless we assume that the innate knowledge is very rich, a human child could not have acquired the language of her speech community in an amazingly short span of time. This innate knowledge is not complete. Otherwise, children growing in different speech communities would not have

acquired different languages. What so ever be the differences between particular languages, the scope of such differences is decided by UG. It is assumed that the components of UG interact with the child's linguistic environment by virtue of which the child gets sufficient evidence to fix the value of each parameter. This happens without the awareness of the learner; it is a sub conscious process for which none of the interventions such as teaching, correcting speech errors and providing explanations on grammar are needed.