

# Noam Chomsky's Contribution to Linguistics

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## Abstract

This research paper explores Noam Chomsky's groundbreaking contributions to linguistics, focusing on his theories and their impact on our understanding of language acquisition and structure. Chomsky introduced the concept of transformational-generative grammar, revolutionising the study of syntax by proposing that all human languages share a common underlying structure, which he termed universal grammar. His work emphasized the innate nature of language acquisition, challenging behaviourist views and suggesting that humans are born predisposed to learn the language. The paper also examines the critical period hypothesis and how Chomsky's theories have influenced contemporary linguistic research and cognitive science. By delving into Chomsky's extensive work, this study highlights his role as a pioneering figure in modern linguistics and his enduring legacy in the field.

**Keywords:** Noam Chomsky, Universal Grammar, Linguistics, Syntax.

## Noam Chomsky's Contribution to Linguistics

One of the most important linguists of the 20th century, Noam Chomsky continues to rule the field of theoretical linguistics today. His distinct language theory is what has made him most renowned. He completely changed, modernised, and upside down the field of linguistics. In the gloomy fields of morphology, phonology, philosophy, and philology, linguistics was applied to actual linguistic issues, such as language structure, acquisition, and functions. Having a rudimentary understanding of linguistics before Chomsky's arrival in the field is crucial to appreciating his contribution fully. We won't be able to recognise the transformation he brought about until then. His much-discussed Theory of Transformational Generative Grammar (TGG), which highlights the mental ability to generate sentences using unconscious knowledge of language, which he calls Universal Grammar (UG), has changed the field of linguistics. According to him, TGG makes an effort to define "what the speaker knows" (Chomsky, 1965: 8). He claims that language ability is intrinsic since the human brain is physiologically wired to learn language. For him, the process of acquiring a language involves mental processes. His idea was unique because of his innatist and mentalist viewpoints, which put him at odds with behaviourism, which was highly popular in the first half of the 20th century. The stimulus-response hypothesis of language learning was abandoned as a result of Chomsky's severe blow to behaviourism, which bolstered cognitive psychology. It is acknowledged that this paradigm change in linguistics history is known as the Chomskyan Revolution. Chomskyan Hierarchy is another name for Chomsky's unique school of philosophy. Neil Smith enumerates his distinctions in the following terms:

*He has revolutionised linguistics, and in so doing has set a cat among the philosophical pigeons. He has resurrected the theory of innate ideas, demonstrating that a substantial part of our knowledge is genetically determined; he has reinstated rationalist ideas that go back centuries, but which have fallen*

*into disrepute; and he has provided evidence that unconscious knowledge is what underlies our ability to speak and understand. (Smith 1999: 1)*

Exploring the dull domains of philosophy, philology, morphology, and phonology, linguistics was applied to actual linguistic issues: the structure, development, and functions of language. Hence, it is crucial to have a quick summary of linguistics before Chomsky arrives in the profession to comprehend his contributions fully. Linguistics Before Chomsky Up until the 1950s, linguistics was seen as a dry subject with limited room for further investigation. Linguistics was described as "the science which attempts to understand the language from the point of view of its internal structure" in the most renowned work of the period. (Gleason, 1955) Only a little discussion of syntax is included in this era-defining authoritative literature. It appears from even that little discussion that syntax is a minor branch of morphology. "The principles of an arrangement of the constructions formed by the process of derivation and inflexion (words) into larger constructions of various kinds" is a crude definition of syntax. (Gleason, 1955). Gleason likely contains some basic derivational principles that would later be advanced by Chomsky and his adherents and form the foundation of contemporary syntax. "Phrase structure rules and transformations are the two explicit grammatical mechanisms as the processes for constructing sentences in the formulation of generative grammar developed in LSLT and SS" according to Freidin (2013) Sadly, though, Gleason did not make this clear in the text that concepts he was thinking about. The lack of study conducted during that period may be attributed in large part to the imprecise definitions proposed by modern linguists. Language: A Transition from Descriptive to Cognitive Perspective Beginning at this juncture, when language was believed to be descriptive and taxonomic—that is, based on categories like parts of speech, etc.—Chomsky initiated his historic shift that brought language into the realm of cognitive phenomena. His most notable contributions to linguistics are as follows:

- He suggested that humans had a special language faculty that includes grammar;
- He made language cognitive phenomena, which led linguists to delve deeply into the human mind to comprehend language;
- Stating that universal grammar is hardwired in the human mind and that it consists of broad guidelines and precise restrictions to ensure that the number of grammar rules is kept to a minimum;
- Changing the perception of language acquisition;
- Giving specifics about such guidelines and limitations;
- Creating concepts such as Transformational Generative Grammar, which subsequently evolved from Generative Grammar
- Strengthening knowledge of grammatical phrase construction norms.

### **Chomsky's Rationalism**

Philosophical rationalism's central finding is that human creativity largely depends on intrinsic idea creation and combining systems. Chomsky asserts that infants exhibit "ordinary" creativity, or the proper and inventive application of conceptual complexes from almost their very first words. When they play, when they create, when they communicate with and understand each other, they apply thousands of rich and eloquent notions to language. They appear to know a great deal more than they could ever learn. Thus, in some way, such information must be intrinsic. To claim it is intrinsic, however, is not to argue that it exists, fully developed, at birth, or even that the kid is aware of it. It has often been noted that youngsters pick up concepts and language amazingly quickly, especially in the lack of substantial teaching and proof throughout their early years. There are features of what Chomsky referred to as the "fundamental problem"

of linguistics in LSLT, namely defining precisely what infants acquire and how they acquire it. He referred to this as "Plato's problem" in his work, alluding to Plato's attempt (in his dialogue the Meno) to explain how a kid without formal education may solve geometrical problems when given the right prompts, even in the absence of any prior mathematical instruction or background. In contrast to Plato, Chomsky believed that natural science—more especially, cognitive science and linguistics—should be responsible for resolving Plato's quandary. Chomsky's linguistic-philosophical formulations also owe much to the ideas of Plato and Leibniz. He recalls:

*Much of the interest in the study of language, in my opinion, lies in the fact that it offers an approach to the classical problem that I call 'Plato's problem': the problem of explaining how we can know what we do know. Plato answered that much of what we know is inborn, remembered from an earlier existence. Leibniz argued that the idea is correct, but must be purged of the error of pre-existence. He held that much of our knowledge is innate, virtually present in the mind even if not clearly articulated. (Chomsky, 1986: 263)*

### **Analytic Philosophy**

Chomsky's writings belong within the school of analytical philosophy, which emphasises the importance of language and logic in theorization. In his linguistic analysis, Chomsky employs mathematics and logic to produce a unique formal language. In TGG, Chomsky develops a concise set of rules that can accurately produce every word combination needed to construct every grammatical sentence in a language. He does this by predicting every grammatically accurate statement using an algorithm. Grammar is represented at two levels: the deep structure, which is produced by the recursive rules of a context-free phrase structure grammar, and the surface structure, which is obtained from the deep structure by using transformation rules, as demonstrated in *Aspects of the Theory of Syntax* (1965).

### **Shift from E-Language to I-Language**

Before Chomsky, there existed another approach in linguistics known as the E Language approach, which saw language as entirely external. To determine the characteristics of language, linguists used to gather language samples and analyse the data. Without considering how the samples would have been formed in the first place, their goal was to identify patterns and regularities in the ones that had been gathered. According to Chomsky, this kind of thinking is the furthest from reality. He believed that any concept of language that did not consider the mind was inherently flawed. Chomsky's discoveries led to the concept of language changing from being externalised to internalised, or I-Language. Language linguists have attempted to highlight the knowledge that a speaker of a language possesses about it. However, research on this kind of implicit, or unconscious, information was challenging. Data has to be examined and processed to achieve this. Chomsky rejects E-language as undeserving of study and suggests I-language as the only suitable object of study in linguistics. I-languages can and should be studied in isolation from their external environments. Chomsky says:

*For H to know L is for H to have a certain I-language. The grammar statements are statements of the theory of mind about the I-language, hence the brain structures formulated at a certain level of abstraction from mechanisms. (Chomsky, 1986: 23)*

## Cognitive Psychology

Chomsky contends that language is a natural phenomenon, an element of the human mind that is physically reflected in the brain, and a component of the species' biological endowment (Chomsky, 2002: 1). He was a critic of behaviourism as a follower of cognitivism, which aims to explain language and behaviour as products of environment or setting. He gave an example of its shortcomings. He asserted that behaviourism has chosen to ignore the fact that many of the characteristics of language are intrinsic and may be discovered in the language's underlying structures. Chomsky observed a serious lack of explanatory adequacy in the scientific application of behavioural concepts from animal research (Harrison 1979: 20). A theory that limits its explanation to outside factors cannot fully explain generative grammar. Chomsky presented evidence of children's rapid language learning, such as their rapidly increasing capacity to construct grammatically correct sentences, as well as the universally inventive language usage of proficient native speakers. He maintained that one must first assume a hereditary linguistic endowment to comprehend human verbal conduct, such as the creative elements of language growth and usage. In 1959 Chomsky published his critique of B. F. Skinner's *Verbal Behaviour*, a book in which Skinner offered a theoretical account of language in functional and behavioural terms. Skinner's approach stressed the circumstances in which language was used. Chomsky thought that a functionalist explanation restricting itself to communicative performance ignored important questions. He stated the view that the experimental data-gathering techniques developed in the behavioural sciences are neither used nor needed in linguistic theorising:

*The gathering of data is informal; there has been little use of experimental approaches (outside of phonetics) or of complex techniques of data collection and data analysis of the sort that can easily be devised is widely used in the behavioural sciences. The arguments in favour of this informal procedure seem quite compelling; basically, they turn on the realisation that for the theoretical problems that seem most critical today, it is not at all difficult to obtain a mass of crucial data without such techniques. Consequently, linguistic work, at what I believe to be its best lacks many of the features of the behavioural sciences. (Chomsky, 1969: 56).*

## Language Faculty

Chomsky makes a distinction between performance and competence as an essentialist. Proficiency is the understanding of language, an implicit comprehension of the grammatical rules governing every sentence in a language. Performance entails actual real-time usage and may deviate significantly from the underlying competence because of environmental disruptions and memory constraints. The capacity to produce every conceivable grammatical statement is known as competence. The conversion of this expertise into common speech is called performance. According to Chomsky, language theory should be able to describe the mental operations that underpin language usage. In other words, competency rather than performance will be the focus of linguistics. Chomsky's nativism suggests that language is an innate faculty, that is, humans are born with a set of rules about language, referred to as UG. The UG is the basis upon which all human languages are built. Chomsky makes it clear:

*The language faculty has an initial state, genetically determined; in the normal course of development, it passes through a series of states in early childhood, reaching a relatively stable steady state that undergoes little subsequent change, apart from the lexicon. To a good first approximation, the initial state appears to be uniform for the species. Adapting traditional terms to a special usage, we call the theory of*

*the state attained its grammar and the theory of the initial state Universal Grammar (UG.)* (Chomsky, 1995: 14)

### Principles and Parameters

Universal Grammar Chomsky and his adherents believe that linguistic knowledge is innate in humans from birth. The process would have become exceedingly laborious and hectic, depriving the vast majority of language users of a good many structures that would have been learned only by intellectuals, and as a result, humans do not acquire the rules and regulations that govern various structures. Rather, humans unconsciously learn language. Principles and parameters make it feasible for all of this. According to the idea of Universal Grammar, people are born with a set of general rules and yes/no constraints. The human mind automatically modifies a parameter from yes to no based on the information it receives. In their early years, kids often set the parameter to either yes or no, or as needed. The fact that a user needs to internalise very few concepts and parameters is their greatest advantage. Hence, Chomsky argues that while grammars vary from one another, their fundamental forms, or deep structures, are universal. In other words, at the most fundamental level of the neuropsychic, there is a universal grammar, or archetypal grammar, upon which all other grammars are built. Learning would be impossible without universal language-specific knowledge. Chomsky says:

*It is reasonable to suppose that UG determines a set of core grammars that is represented in an individual's mind even under the idealisation of a homogeneous speech community would be a core grammar with a periphery of marked elements and constructions.* (Chomsky, 1982: 8)

### Conclusion

The field of linguistics had a revolution thanks to Avram Noam Chomsky. The fact that learners cannot fully comprehend current syntax unless they consider Chomsky's writings is the best way to show his contributions and influences. Syntax now has a whole new realm to discover because of Chomsky. His disciples are continuing his areas of inquiry, offering ever-new perspectives on human language. The language was once an arbitrary phenomenon, but Chomsky's innateness and cognition-based approach have elevated language to the status of pure science. Any more research on language learning, minimalism, transformational generative grammar, syntax, or even the essence of language itself will inevitably have a faint echo of Chomsky's name.

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