

# **Language Acquisition: Chomsky and Beyond**

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**By**

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**Children are more  
creative than adults.  
They have the benefit  
of not knowing what  
is not possible.**



Certified that the Thesis entitled **Language Acquisition: Chomsky and Beyond** submitted by me for the award of the Degree of Doctor of Philosophy in Arts at Jadavpur University is based upon my own work carried out under the Supervision of Dr. Jhuma Chakraborty and that neither this thesis nor any part of it has been submitted before for any degree or diploma anywhere/elsewhere.

**Supervisor**

**Dated**

**Candidate**

**Dated**

## Contents

	Page
<i>Acknowledgements</i>	
<i>Introduction</i>	1-13
<b>Chapter-1</b>	
<b>Formal Introduction on Language and Language Acquisition</b>	<b>14-38</b>
<b>Section-I</b>	
1 Definition of language	
1.1 Units and aspects of language	
1.2 Types of language: Natural vs. Artificial	
1.3 Purpose and function of language	
<b>Section-II</b>	
2. Different Dimensions of Language study: Background of Chomskyan model	
2.1 Descartes' view on language	
2.2 Darwin's view on language	
2.3 History of language study of twentieth century	
2.4 Bloomfield's account of language study	
2.5 Chomsky's model of language study	
<b>Section-III</b>	
3. The notion of language acquisition	
3.1 A table with some pioneer models on language acquisition	
<b>Chapter -2</b>	
<b>Pre-Chomskyan Approach on Language Acquisition</b>	<b>39-69</b>
<b>Section-I</b>	
1. The Theory of Behaviorism	
1.1 Watson's theory of language acquisition or learning	
1.2 B.F. Skinner's theory of language acquisition or learning	
<b>Section-II</b>	
2. Bloomfield's view on language acquisition	
2.1 Critical analysis of these approaches	

## **Chapter -3**

### **Language Acquisition with Special Reference to Noam Chomsky 70-141**

#### **Section-I**

1. Introduction
- 1.1 Limitations of Imitation Theory
- 1.2 Limitations of Bloomfieldian model
- 1.3 Chomsky's standpoint
- 1.4 Distinction between Competence and Performance
- 1.5 Introduction of Language Acquisition Device or LAD and its relation with competence-performance

#### **Section-II**

2. Study of Traditional Grammar and Chomsky's theory of Universal Grammar (UG)
- 2.1 Creative aspect of language use and its relation with UG
- 2.2 Difference between Chomskyan Generative Grammar (GG) and other Traditional Grammars
- 2.3. Chomskyan notion of GG or Finite State Grammar (FSG) and its properties: recursive rules and constituent structure
- 2.3.1 Modified version of FSG: Phrase Structure Grammar (PSG)
- 2.4 Chomsky's innovative model: Transformational Generative Grammar (TGG)
- 2.4.1 TGG and its rules: Phrase Structure Rules and Transformational Rules
- 2.4.2 Kernel and Non-Kernel Sentences
- 2.4.3 Deep Structure and Surface Structure
- 2.4.4 Phonological Component and Semantic Component
- 2.4.5 Diagram of Standard Theory: TGG and its special claims
- 2.5 Diagram of Extended Standard Theory and its explanations
- 2.6 Diagram of Generative Semantic Position and its development

#### **Section-III**

3. The Actual Process of Language Acquisition
- 3.1 The Role of LAD in Language Acquisition
- 3.2 The Role of Principles and Parameters in Language Acquisition
- 3.3 Formation of Particular Language Grammar (PLG)
- 3.4 The new version of Innateness Hypothesis in Language Acquisition: Poverty-of-the-stimulus argument
- 3.5 Government Binding Theory
- 3.5.1 Language Acquisition=Theory Construction
- 3.6 Critical Period Hypothesis in Language Acquisition

#### **Section-IV**

4. Language Acquisition in Human Brain
- 4.1 The role of Left Hemisphere
- 4.1.1 Language areas in Brain: Broca's area and Wernicke's area
- 4.1.2 Pathological Cases of Language disorder: Aphasia

- 4.1.3 Broca's Aphasia
- 4.1.4 Wernicke's Aphasia
- 4.2 Controversies with Chomskyan Thesis
  - 4.2.1 Karl Popper vs. Chomsky
  - 4.2.2 W. H. Thorpe vs. Chomsky
- 4.3 Critical Analysis of Chomskyan model in Language Acquisition

## **Chapter -4**

### **Some Alternative Models on Language Acquisition**

**142-182**

#### **Section-I**

- 1. Introduction
  - 1.1 Interactionist Theory by J. Bruner
    - 1.2.1 The Social and Cognitive elements
    - 1.2.2 The notion of Language Acquisition Support System (LASS)

#### **Section-II**

- 2. The Theory of Cognitive Development by Jean Piaget
  - 2.1 The factors of Cognitive Development: Organization, Adaptation, Equilibration
    - 2.1.1 Organization
    - 2.1.2 Adaptation: Assimilation and Accommodation
    - 2.1.3 Equilibration
  - 2.2 Controversy between Piaget and Chomsky
    - 2.2.1 Putnam's view
    - 2.2.2 Fodor's view
    - 2.2.3 Fodor and Chomsky in relation with language acquisition

#### **Section-III**

- 3. Vygotsky's Theory of Social Constructivism and its relation with Language.
  - 3.1 Zone of Proximal Development (ZPD)
    - 3.1.1 Difference between Vygotsky and Piaget in Language Development
    - 3.1.2 Inner or Private Speech
- 4. Values of these models in Language Acquisition

### **Conclusion**

**183-193**

### **Bibliography**

**194-200**

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## Introduction

Life cannot be imagined without language. In this world people are always found talking with each other. When there is no one to talk with, people talk with their pets, even with their plants. The language is an essential or inseparable aspect of human species. It has intricate association with human mind as well as human society. It is related to both cognition and communication. In other words, it is both abstract knowledge and actual behavior. Thus, understanding language gives us insights about our thought process and we study language to understand the world. In other words, all members of any verbal community must be able to understand and express themselves unambiguously and clearly. So far, we discover our identity as individuals and social beings when we acquire language in our childhood.

To elaborate this point, we all know that language development occurs in all children with normal brain function irrespective of race, culture or general intelligence. In other words, the capacity to acquire human language is a capacity of the human species as a whole. Many linguists thus hold that though different groups of people speak different languages, all human languages share some common properties like discrete structural units and rules for combining those units in various ways. Therefore, language serves two major functions:

- i. It allows us to communicate with one another.
- ii. It provides a system of symbols and rules that facilitates our thinking.

In this realm, linguists are mainly concerned with the structure of language, that is, speech sounds, their meanings and grammar that relate sounds and meanings. On the other hand, psychologists want to know how we acquire language and how our brain or language faculty functions to acquire this process. These two enterprises are known



as psycholinguistics and they jointly apply their methods to study the mental process underlying the acquisition and the use of language. In this respect, Noam Chomsky was probably the first person to provide the detailed arguments from the nature of language to the nature of mind rather than vice versa. Chomsky himself is claiming that he is doing science. For this reason, in the last twenty five years or more, psychologists, linguists, cognitive scientists and philosophers are coming up with the partial explanation of language and language development.

In our project, we will be concerned with Language Acquisition of Chomskyan system and some other systems, which are not necessarily after Chomsky in the chronological order. But we can place their approaches or views besides Chomskyan hypothesis. Thus, in this project, we have tried to explore Chomskyan position from his earlier works and assumptions. Although there are various modifications perceived in his theory; but for our present purpose, we think that his basic standpoint for the acquisition of language remains fixed. That is why, we have chosen his model as a major contribution in the history of linguistics and compared it with other models. Here, in this project, our aim is to reach a scientific model with more explanatory value. Thus the title of the thesis is- **Language Acquisition: Chomsky and Beyond.**

For the sake of clarity, we have structured this work into following four chapters.

In our **first chapter**, we have furnished a brief account of language study and the acquisition process.

This chapter is divided into two sections.

In section one, we have tried to define the general concept of language and analyzed its different aspects, types and functions.

In section two, we have expounded different dimensions of language study mainly in relation with its communicative aspect. Here, controversy begins with different opinions. That is, philosophers are divided into two groups; philosophers like Wittgenstein defined and analyzed language with its communicative role, whereas few like Chomsky endeavored to define language from its functional aspect. Actually Chomsky was influenced by many thinkers like Descartes, Darwin, Bloomfield, Skinner and others and also differs from them in many respects. Chomsky's naturalistic enquiry into language mainly refutes the assumption that language is a social phenomenon. Because according to Chomsky, philosophers often ignore and overlook the fact that languages are quickly acquired by very young children without training. Thus, if language is never taught, it must somehow be structured in the child's mind at birth. Chomsky took the clue from Descartes that our linguistic behavior is species specific. It proves the existence of mind over and above the body (from the common sense perspective mind is distinct from body) and it is governed by some non-mechanistic principle. On the other hand, he was also influenced by Darwinian observation which refers language faculty as an instinctive tendency to acquire an art. This observation was highlighted and developed later by Chomsky as creative aspect of language use.

In this way, with other disciplines, Chomskyan theory is developed in several ways. Thus, in the second section of this chapter, we have discussed some remarkable movements in language study and its influential impact on Chomsky's work. Here, we have briefly acknowledged the basic tenets of Bloomfieldian which mainly focuses on corpus based methodology and mechanical discovery procedure in language study. It is an external approach of language study accompanied with behaviorism and structuralism. But some major predicaments in Bloomfieldian study was found by

Chomsky in post-Bloomfieldian era, which later helped him to built his own revolutionary work, that is, Innateness Hypothesis and Transformational Generative Grammar. We conclude this section as well as the first chapter with some key points of Chomskyan assumption in language study.

In our **second chapter**, we have discussed the **behaviorist models** as proposed by **J. B. Watson** and **B. F. Skinner** in relation with language learning. Behaviorism will not accept anything over and above overt behavior. All our behaviors are the product of conditioning. Language is then for the behaviorists, is a learned behavior that occurs as a result of this process. That is, the mind of the new born infant is linguistically a blank slate. The child imitates the speech around it, uses a process of trial and error in developing phonetic competence. It is reinforced in these imitations or discouraged from them by the degree of success it achieves in communicating. **Behaviorists can be considered as the proponents of extreme empiricist model.**

This chapter is divided into two sections.

In the first section, we have discussed in detail **Skinnerian hypothesis** as documented in his monumental book *Verbal Behavior (1957)*. Skinner introduced verbal behavior as behavior reinforced through the mediation of other persons. He asserts that humans acquire spoken language as a result of behavioral conditioning. Most of his experiments are on animals. In this regard, he gives us some tentative ideas like stimulus, response, reinforcement, deprivation etc. The goal of this book is to provide a way to predict and control verbal behavior by observing and manipulating the physical environment of the speaker. Skinnerian framework as well as behaviorism has a tremendous impact throughout the twentieth century.

On the other hand, **Biological** or **Cognitive** perspective was documented by Chomsky in 1957; in which, he **challenged** Skinner's approach of language learning on several grounds. So there was a major shift in perspective in language acquisition from behaviorist as well as empiricist to the rationalist standpoint.

In the second section of this chapter, we have extended this pre-Chomskyan story of language acquisition with the detailed discussion of Bloomfieldian model as depicted in his famous book *Language (1933)*.

In the earlier part of the twentieth century, several influences on language study and the acquisition process came from Anthropology and Psychology. It was thought that only observable and concrete part of a language can be described. For example, sounds as observable and concrete physiological activities lead to the production of sound-waves; but meanings are abstract and cannot be observed. American Structuralism was the main proponent of this theory. It is obvious that this perspective was a result of the earlier behaviorist psychology which admits that mental processes like language acquisition are manifestation of overt behavior. This behavior can be structurally observed and studied in a comprehensive way. Thus, in explaining the acquisition process, we should acknowledge the contribution of structuralist school of thought.

**In this pursuit, our second section of this chapter consists of the American school of structuralism mainly popularized by Leonard Bloomfield.** Basically American structuralism was founded upon the empirical tradition. Its main task is to provide an organized account of masses of data. Bloomfield aimed at a serious study of various local languages of the aboriginal tribes. In his monumental book *Language (1933)*, he defines and delimits the area of linguistic enquiry. He did not believe any common

structure. In his book *Language* (1933), he explicitly adopted behaviorism as a framework for linguistic description. Applying the behaviorist approach, Bloomfield explains language as a pattern of stimulus and response. Bloomfield in his endeavor in studying the structures of various languages focused on phonetics and syntax; semantics was left out for he felt that a scientific study of semantics was not an easy task.

So far, in 1930s and 1940s, linguists had the opinion that structures, forms and uses of language could be explained by theories founded on the principles of behaviorism. In this regard, it should be noted that, Bloomfieldian view of language and his description of the scientific study of language are not beyond limitations. It is a purely mechanistic explanation and does not take into account the creativity and variability of language. But structural linguists like him should be credited for his endeavor to provide systematic and precise account of phonology and syntax in various languages.

We have concluded this chapter with the detailed discussion of the critical impact of behaviorist hypothesis accompanied by Bloomfieldian model on language acquisition. It was significant for the development of the mentalistic approach in language study in the post-Bloomfieldian era by Noam Chomsky.

In our **third chapter**, we have focused on language acquisition with special reference to Noam Chomsky. Chomsky is most influential linguist of the second half of the twentieth century. Though he was a pioneer of so many disciplines related to language, Chomsky has consistently claimed that he is doing science. He has defined language from different perspective. For this study, he had chosen English; the most accepted language throughout the world. Most of his works and researches adhere closely to the scientific method. On the other hand, from his period, linguistic study

has been shifted from corpus based methodology to a search for explanatory principles which may reveal the complexity of human nature.

This chapter is divided into four sections. In the first section, we have focused on his objections against behaviorist model and Bloomfieldian account of language acquisition. In case of language learning, behaviorism upholds their position on imitation theory. But Chomsky draws our attention to the basic predicaments of this imitation theory which failed to address the capability of the native speakers to speak and understand grammatically correct sentences.

On the other hand, Chomsky stands in a rationalist position and started his journey with Innateness hypothesis which states that humans are born with a genetic language acquisition device or LAD. It consists of rules and principles common to any language. So far, in respect of language acquisition, Chomskyan hypothesis was rooted in three questions:

- i. What is knowledge of language?
- ii. How is the knowledge acquired?
- iii. How is this knowledge put to use?

In answer to these questions, Chomsky makes distinction between competence and performance. Competence means knowledge of language and performance is the usage of such knowledge.

Thus, we conclude this section with Chomskyan distinction between competence and performance in relation with language acquisition device or LAD.

The second section of our third chapter consists of the study of **Universal Grammar (UG)** which is later considered as **Generative Grammar (GG)**. Actually we have reached the concept of UG as possessed by human beings through the concepts of

competence and performance with several examples. With the detailed discussion of UG, we have seen how it is innately present as a dispositional capacity in human brain and internally represented in the acquisition of language. In this context, we have also presented a historical background in the study of grammar and highlighted Chomskyan revolutionary thinking. Detailed discussion on grammar from Chomskyan perspective has been presented with many examples. Actually Chomskyan theory of Generative Grammar is nothing but a theory about a system of knowledge. It tries to answer the questions implicitly involved in all other grammars, namely, descriptive grammar, prescriptive grammar etc. In this realm, we have shown the inadequacies of Radical Behaviorism in connection with the future tenet of structuralism in order to evaluate human learning process, especially language acquisition. Generative Grammar endeavors to give answers to two vital issues, namely, recursive rules and constituent structure. These properties enable Generative Grammar to generate an infinite set of sentences by means of a finite number of recursive rules and a finite vocabulary. Thus, it is also known as Finite State Grammar (**FSG**). But there are some sentences which cannot be generated by FSG. Thus, a modified version of grammar is required which is labeled as **Phrase Structure Grammar (PSG)**. For Chomsky, PSG is a mode of linguistic analysis which divides sentences into their constituent parts, which henceforth are labeled under different grammatical categories. Gradually we have exposed the inadequacies of PSG and addressed Chomskyan notion of **Transformational Generative Grammar (TGG)**. According to Chomsky TGG is free from all such inadequacies. TGG is gone through a number of modifications. But with one constituent story; the basic syntactic rules are genetically present in human brain. It must be noted in this connection that it could be misunderstand him to think that Chomsky neglected semantics and

phonetical aspects of language. It is universally accepted that Chomsky can be considered to be the pillar of computational model; a revolution in the extended mind story.

Thus, we have preceded our third chapter with special emphasis on Chomskyan theory of language acquisition.

In the third section of this third chapter, we have discussed in detail the actual process of language acquisition with special emphasis on LAD. That is, how LAD and exposure to a language helps the speaker to learn a particular language. To complete the story, we have also discussed **the role of principles and parameters- the two major contributing factors in language acquisition.**

In the fourth section of our third chapter, we have discussed the areas of our human brain where this acquisition process actually occurs. Recently it has been found that there are two major areas, namely, Broca's area and Wernicke's area, of the left hemisphere of our brain that carry out the language activities. Two famous neurologists, Paul Broca and Carl Wernicke studied a pathological case, known as aphasia to explain the language disorders located in such areas. Though there are plenty of opinions in the study of brain and linguistic activity; but we have taken their models to understand and organize our knowledge about the location of language and its function in the left hemisphere. This discussion paves the way in the understanding of the language acquisition process.

In addition, we have mentioned in this section some crucial objections raised against Chomskyan innateness hypothesis in relation with language acquisition. Therefore, in the following way, we have almost closed our story of language acquisition from two famous and dominant perspectives in the history of linguistic philosophy; first,



behaviorist model as proposed by B.F. Skinner and extended by the structuralist thinker Leonard Bloomfield and secondly, Innateness Hypothesis of Noam Chomsky.

In our **fourth chapter**, we have offered a comparative study of three models in context of language development. These models are provided by some renowned thinkers, namely,-

- a. Bruner's Interactionist Theory
- b. Piaget's Theory of Cognitive Development
- c. Vygotsky's Social Constructivism and its relation with language acquisition

We have divided this chapter into three sections.

In the first section, we have analyzed **Bruner's Interactionist Theory**. Bruner has made significant contribution to human cognitive psychology and cognitive learning theory in educational psychology. He rejects the Nativist account of language acquisition proposed by Chomsky and offers an Interactionist theory as an alternative model of language development. His theory has two elements; one is cognitive and another is social. In its cognitive element, Bruner states that babies have a highly action-oriented form of intelligence. That is, they "know" an object only to the extent that they can act on it. On the other hand, in its social element, Bruner argues that parents provide their children a language acquisition support system (LASS), which is collection of strategies spontaneously used by parents to facilitate their children's acquisition of language.

So far, this theory seems to give more emphasis on the child as an active participant and essentially creative in her/his approach to language acquisition. If this is

combined with Chomskyan model, we get a satisfactory explanation of language acquisition.

Our next alternative model in this respect is **Piaget's Theory of Cognitive Development**. We have discussed this theory in second section of this fourth chapter. This Cognitive Developmental theory was developed in the 1960s. We have studied this theory in case of child's language development. Piaget explained the development of cognition as a form of adaptation which involves the interplay of two processes, namely, assimilation and accommodation. Assimilation refers to the adjustment of ones's developed ways of thinking with the environment. It is a process of taking information as far as possible. It depends upon the level of mental organization (scheme) at a particular time. On the other hand, accommodation is another kind of adaptation. It occurs when the level of mental structure of a child is not advanced enough to assimilate (take in) information and the mental structure is gradually modified to fit the materials of the environment or external input to the mental organization or scheme. These two processes function in the four stages of child's cognitive development. These stages are as follows:

- i. Sensory-motor stage
- ii. Pre-Operational stage
- iii. Concrete Operational stage
- iv. Formal Operational stage

We have discussed these stages of development in relation with child's acquisition of language. Piaget repeatedly insisted that cognitive development precedes the development of language. He argued that children form an internal representation of

the world through thinking. Language is not involved in this process. Language is one of the vehicles of thinking.

In this respect, we have also studied and mentioned some controversies and their possible answers arose with Piaget's views.

In the third section of this chapter, we have discussed our third alternative model on language acquisition, that is, **Vygotsky's Social Constructivist theory and its relation with language learning.**

Lev Semenovich Vygotsky was a Soviet Psychologist and one of the renowned thinkers of socio-cultural theory. He was contemporary of great thinkers like Skinner, Piaget and Freud. According to his Socio-cultural theory, society plays a major role for individual development. This theory stresses on the interaction between developing people and the culture in which they belong. Vygotsky believed that parents, peers, caregivers and the culture at large were responsible for the development of higher order functions.

According to Vygotsky, language is not merely an expression of the knowledge that a child has acquired. Language is an essential tool in forming thought as well as concept and it also determines the personality features of a person. He also argued that thought and language develops in a child separately till she/he attains the age of two. We have discussed in this respect, another important aspect of Vygotsky's theory. It is the potential for cognitive development which is known as Zone of Proximal Development (ZPD). The zone is the area in which a child can perform a challenging task, given appropriate help. Thus, for Vygotsky, the process of language acquisition as well as any sort of cognitive development involves two stages. In the first stage, the child needs the help of others to learn how to communicate and solve a

particular problem. In the second stage, the child can handle any problem situation by her/his own. The language of a certain group of people indicates their cultural beliefs and value system.

Thus, this entire story suggests that children learn language in much the same way they learn cognitive skills.

In this section, lastly, we have mentioned some basic predicaments of these alternative models. That is, though these models have major contribution in language development, but none of them by itself can do justice to the complexities involved in the process of language acquisition.

In the **conclusion**, it must be noted that, we have not only confined ourselves in theory building, because the entire endeavor will be fruitless if it is not application oriented. Keeping this in mind, we have tried our best to establish the acceptability of these famous theories through concrete experiment.

# Chapter-1

## Formal Introduction on Language and Language Acquisition

### Section-I

#### 1. Definition of Language

In this chapter, we will define and explain the term ‘Language’ with its units, types and functions; along with different dimensions of language study in relation with language acquisition.

Linguistics is the scientific study of language. The question-“what is language?” can be compared with the question “what is life?” The meaning of this second question can be found in the presupposition that all living creatures share some property or set of properties which distinguishes them from non-living beings. Similarly, the term ‘language’ can be understood better in terms of its properties or characteristics. There are plenty of definitions of language. Let us look at some definitions:

According to Edward Sapir (1884-1939):

**Language is a purely human and non-instinctive method of communicative ideas, emotions and desires by means of voluntarily produced symbols.**<sup>1</sup>

We should start our discussion with two terms in this definition-**human** and **non-instinctive**. Sapir was probably right in his assumption that only humans possess language and all normal humans uniformly possess it. Animals also have their

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<sup>1</sup> Sapir, E. 1921. *Language*. New York: Harcourt Brace. p-8

communicative system, but that is not so developed like human language. That is why language can be considered as **species-specific** and **species-uniform**.

According to John Lyons (1932..), this definition suffers from several defects. There are also some other mediums of communications; such as, dance, music, physical gestures etc. With these activities we can communicate our ideas. On the other hand, it is open to doubt whether languages are purely human and non-instinctive.

According to famous American linguist Robert Anderson Hall (1911-1997), language is-

**...the institution whereby humans communicate and interact with each other by means of habitually used oral- auditory arbitrary symbols. <sup>2</sup>**

Lyons points out that in this definition; both communication and interaction are introduced. Secondly, the term 'oral-auditory' can be roughly equated with vocal, but it (oral-auditory) makes reference to the hearer as well as to the speaker. According to this definition, language is primarily speech and it is produced by oral-auditory symbols. A speaker produces some string of oral sounds that get conveyed through the air to the listener. The listener through his hearing organs receives the sound waves and conveyed these to his brain that interprets these symbols to arrive at a meaning.

Like Sapir, Hall treats language as a purely human institution. That is, language is used by a particular society. Here, the most noteworthy in this definition is his employment of the term 'habitually used'. The sense of this term was used by Behaviorist school in America for thirty years or more and

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<sup>2</sup> Hall, R A. 1968. *An Essay On Language*. Philadelphia & New York: Chilton Books. p-158.

influenced Linguistics and Psychology of Language. The term 'habit' was used with reference to the bits of behavior that were identifiable as predictable responses to particular stimuli. Hall also defines language in terms of 'symbols' or vocal signals that are actually transmitted from sender to receiver in the process of communication and interaction. If 'symbols' is being used to refer to words or phrases of which they are composed, it still does not imply that a speaker uses such and such word as a matter of habit on such and such occasion. For example, we do not habitually produce an utterance containing the word 'bird' when we see the bird. Thus, language is stimulus-free.

On the other hand, we can quote Chomsky's definition of language which is strikingly different from others. Chomsky considers **language to be a set (finite or infinite) of sentences, each finite in length and constructed out of a finite set of elements.** <sup>3</sup>

Following this definition<sup>4</sup>, Chomsky asserts that each sentence has a structure. Human brain has a special capacity to construct different sentences from out of the limited set of sounds or symbols that belong to a particular language. On the other hand, it (human brain) has a productive capacity that a child can at any time produce a sentence that has never been said or heard before.

Chomsky also believes that each natural language has a number of sounds in it and although there may be infinitely many distinct sentences in the language, each sentence can be represented as a finite sequence of these sounds. It is the task of the linguist to determine and distinguish the sentences from non-sentences.

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<sup>3</sup> Chomsky, N. 1957. *Syntactic Structures*. The Hague: Mouton. p-13.

<sup>4</sup> We will further consider this definition for explaining communicative aspect of language.

So far, from the aforesaid account, it is clear that none of these definitions can bring out all properties of language. In other words, on the basis of these definitions, one can list out various features of languages. Some of these features of language are as follows:-

- i. Language is means of communication.
- ii. Language is arbitrary.
- iii. Language is primarily vocal.
- iv. Language is a form of social behavior.
- v. Language is symbol system.
- vi. Language is possessed by humans. It differs from animal communication in several respects:

- Humans convey and receive an infinite number of messages through space whereas animal communication system is extremely limited and undeveloped.
- Human language makes use of clearly distinguishable, discrete, separately indentifiable symbols while animal communication systems are often continuous and non-discrete.
- Animal communication systems are closed systems and permit no change whereas human languages are modifiable, extendable and open-ended.
- Human languages are structurally more complex than animal communication system.



## 1.1 Units and Aspects of Language

A language is made up of units collected in a systematic way. Words, syllables, phonemes, morphemes are examples of such units. These units are concatenated by some formation rules. A language in order to be learnable must have a limited vocabulary that can generate infinite number of meaningful sentences by application of recursive rules.<sup>5</sup> According to these rules meaning of a whole sentence can be computed from the meanings of the constituent words and the order in which they are combined into a sentence. With all these features, any language has three important aspects:

- **Syntax**- that deals with word-word relation.
- **Semantics**- that deals with word-world relation.
- **Pragmatics**- that deals with contextual factors.

Syntax is the level at which we study the arrangement of words in sentences. That is, we study how words combine to form phrases; phrases combine to form clauses and clauses joint to make sentences.

Semantics deals with the level of meaning in language. It tries to give an account of both word and sentence meaning and attempts to analyze and define which is considered to be abstract. For example, we can easily define the meanings of words like ‘tree’, but it is difficult to define the meanings of words like ‘love’ or similar abstract things.

An extension study of meaning or semantics is pragmatics. It deals with the contextual aspects of meaning in particular situations.

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<sup>5</sup> We have discussed in detail on these recursive rules in our third chapter.

There are another two aspects of language, namely, phonology and morphology. Phonology is the study of speech sounds and their function within the sound system of a particular language. It covers both phonemics and phonetics.

Morphology, on the other hand, describes the patterns of formation of words by the combination of sounds into minimal distinctive units of meaning called morphemes. It deals with the rules of combination of morphemes such as how prefixes and suffixes are attached to them to form words.

Now, we should acknowledge language study which has different dimensions. One should be careful in this context about the distinction between a) Linguistic Philosophy and b) Philosophy of Language made by Searle<sup>6</sup> These two approaches of language study are intimately connected. ‘**Linguistic Philosophy**’ consists in an attempt to solve philosophical problems by analyzing relation among words in natural languages. This may be done to solve traditional philosophical problems of determinism, skepticism and causation etc. On the other hand, ‘**Philosophy of Language**’ consists in attempt to analyze certain general features of language, such as meaning, reference, truth, verification, speech acts, logical necessity etc.

## **1.2 Types of Languages: Natural vs. Artificial**

There are mainly two types of language, namely,

- a. Natural
- b. Artificial

Usually all the natural languages are full of vagueness, ambiguity etc, as they are spontaneous outcome of social usages. In case of every natural language, the most

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<sup>6</sup> Searle, J R. 1971. *Philosophy of Language*. Oxford: Oxford University Press. p.1

interesting feature is that any individual born in a particular linguistic community learn that language without any conscious effort. On the other hand, artificial languages have a clearly interpreted formal system for some specific function; their structures and vocabulary are also specified by rules which we learn with conscious effort.

### **1.3 Purpose or Function of Language**

Specialists in language study (philosophers and linguists) as well as ordinary common man agree that the main purpose of language is communication. Language and communication are intimately connected. There is several living languages in the world, but very limited number are spoken by a million or more people. Question might arise that, is there any convenient set of symbols for the communication of our thought? According to the linguist Benjamin L. Whorf (1897-1941), the answer is ‘no’. Whorf argued that higher levels of thinking require particular language and the particular language can shape the ways of thinking of the users of language about the things. In other words, he also said that language determines the contents of thought. This view is known as **linguistic relativity hypothesis**. In its strong version, this hypothesis holds what and how individuals can possibly think, is determined by the language and linguistic categories they use (linguistic determinism). In other words, language pervades thoughts, with different languages causing their speakers to construe reality in different ways. According to Wittgenstein (1889-1951), language is a vehicle of thought in at least the crucial sense in which we ground our communities qua communities. If there is no discernable understanding of language, we can never know whether we share the same meanings, expectations, agreements and so forth.

Thus for Wittgenstein all our behaviour is potentially informative which may be also used for communication. **But there is controversy whether communication is the sole purpose of language.** There are non-linguistic behavior as well, which may serve to communicate, but they act as sentences, not as words in the sense that they cannot be divided further into smaller meaningful units.

Again one must be careful about the distinction between linguistic and non-linguistic communication. Communicative behavior is essentially a matter of convention. For example, if I called out to Bill, 'Hey Bill, come here a moment', my intentions and communication can be labeled as linguistic. On the other hand, if I simply shouted ill articulated noise, it might be difficult to decide whether this was truly linguistic or non-linguistic communication. The line is difficult to draw and different linguists have drawn the line in different places. But most linguists would agree that the central characteristic of linguistic behavior is that it is made up of a large but finite numbers of arbitrary signs, which may combine in various complex ways to convey differences in meanings. A linguistic behavior is typically **verbal**.

Thus, according to Wittgenstein, we could still communicate without language, but we could not influence one another in such and such ways; we could not build roads or machines to make our life better. For these activities, we require a sophisticated grasp of language.<sup>7</sup>

In this context, we might say that philosophy has witnessed a shift in perspective. Philosophers were divided in two groups- those like Wittgenstein emphasizing on the communicative aspect and **few like Chomsky who think that language use is not the only function of language.** That is, 'communication' is not the defining feature

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<sup>7</sup> Wittgenstein, L. 1953. *Philosophical Investigations*. Translated and edited by G.E.M. Anscombe and R. Rhees. Oxford: Blackwell. p-207.

of language. Chomsky's notion of language mainly encompasses its structural aspect, which we will study in third chapter.<sup>8</sup>

The possibility of language without communication entails an emphasis on its structure. Thus for a Chomskyan, communication is not the essential feature of language.

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<sup>8</sup> Second chapter will focus on Behaviourist model of Language Acquisition accompanied with Bloomfieldian model and in the Third chapter we will discuss Chomskyan model of Innateness Hypothesis regarding Language Acquisition.

## Section-II

### 2. Different Dimensions of Language study: Background of Chomskyan model

So far, from the aforesaid account, we might say that language by itself is a marvelous object of study. It has several dimensions. Philosophers have all looked upon language as a very important phenomenon.

Now, in order to understand Chomskyan notion of structural aspect of language and the acquisition process, we should inculcate in our thesis some influential hypothesis which provides a background of Chomskyan model.

In the history of Western Philosophy, 17<sup>th</sup> century witnessed a paradigm shift in perspective in terms of speculations and researches, not only in science, but also in other branches of study. It provides us with a new foundation with a new perspective. Its main focus was on the nature of human mind or intelligence as well as the human language.

#### 2.1 Descartes' view on Language

Our 17<sup>th</sup> century French philosopher Rene Descartes (1596-1650) is first to come up with a very interesting observation about language which later influenced Noam Chomsky. Descartes gave us an influential insight in his metaphysical discussion regarding mind-body or substance dualism. Descartes defined substance **as an existent thing which requires nothing but itself in order to exist**. In accordance with this definition God is absolute substance. Mind and matter or corporeal body is substances in relation to God. They are substances in the sense that they do not depend upon each other in order to exist, but they only depend on God.

In his *Discourse on Method* (1637) Descartes indicates that our use of language is one of the important aspects of human behavior which tend to show that our actions are governed by some non-mechanistic principle. In addition to this, for Descartes, the use of language is a species-specific activity which conclusively proves the existence of the mind over and above the body. We should evaluate these two points in brief. In his own words Descartes writes:-

**If there is such machines having the organs and outward shape of a monkey or any other irrational animal, we should have no means of knowing that they were not of exactly the same nature as these animals, whereas if any such machines resembled us in body and imitated actions so far as this was practically possible, we should still have two very certain means of recognizing that they were not, for all that, real human beings. The first is that they would never be able to use words or other signs by composing them as we do to declare our thoughts to others. For we can well conceive of a machine made in such a way that it emits words, and even utters them about bodily actions which bring about some corresponding change in its organs (if, for example, we touch it on a given spot, it will ask what we want of it; or if we touch it somewhere else, it will cry out that we are hurting it, and so on); but it is not conceivable that it should put these words in different orders correspond to the meaning of things said in its presence, as even the most dull-witted of men can do.<sup>9</sup>**

In order to understand the above passage, we can formulate an argument in the following way:-

**Minds can use language in a novel way.**

**No physical object can use language in a novel way.**

**Therefore, minds are not physical object.**

For Descartes, it is impossible that a physical object could generate and understand the rich variety of sentences produced by a human being. That task only can be effortlessly handled by human beings. In other words, what Descartes actually seems

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<sup>9</sup> Descartes, Rene. 1637. *A Discourse On The Method*. Part-V, 56-57. Translated by Ian MacJean. Oxford: Oxford University Press. p-46.

to mean in the quoted passage is that, it is impossible to construct sufficiently complex machine which may have an appropriate verbal response to the rich variety of sentences to which human beings respond verbally.

The Cartesians tried to show that if the corporeal body is sharpened, clarified and extended to its limits, it is still incapable of explaining the normal use of language as well as the basic properties of thought. Therefore, in Cartesian terms, a second substance whose essence is thought is to be required. This substance is known as mind and it has a **“creative aspect of language use” (in Chomskyan terminology)**. It is a distinctive human ability to express new thoughts and to understand entirely new expressions of thought.

Alongside this above view, Descartes further reiterates that the normal use of language cannot be explained by any automaton or animals. He puts an argument-

**...although such machines might do many things as well or even better than any of us, they would inevitably fail to do some others, by which we would discover that they did not act consciously, but only because their organs were disposed in a certain way. For whereas reason is a universal instrument which can operate in all sorts of situations, their organs have to have a particular dispositions for each particular action.**<sup>10</sup>

Descartes elaborates the same point with reference to animals:

**For it is a very remarkable fact that there are no men so dull-witted and stupid, not even madmen, that they are incapable of stringing together different words, and composing them into utterances, through which they let their thoughts be known ; and, conversely, there is no other animal, no matter how perfect and well endowed by birth it may be, that can do anything similar. Nor does this arise from lack of organs, for we can see that magpies and parrots can utter words as we do, and yet cannot speak like us, that is, by showing that they are thinking what they**

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<sup>10</sup> Ibid Part V, 57. (p-47)



**are saying; whereas men born deaf and dumb, who are deprived as much as, or more than, animals of the organs which in others serve for speech, usually invent certain signs to make themselves understood by those who are their habitual companions and have the time to learn their language.<sup>11</sup>**

Thus, according to Descartes, the automaton or animals do not possess a mind which can have the ability to use language. Although in several actions, animals may exhibit their intelligence or an automaton can be fully endowed with physiological organs necessary to produce speech. Therefore, for Descartes, **language is a species-specific human possession.**

Chomsky took this clue from Descartes in two respects.

First, it is also for Chomsky that the normal use of language is the creative aspect of human mind which cannot be explained in terms of any mechanistic principle. Chomsky drew our attention to the fact that child and the native speakers can understand and produce infinite number of sentences. But Chomskyan notion of creativity is different from Descartes. We will discuss his view in detail in the third chapter.

Secondly, according to both Descartes and Chomsky the use and acquisition of language is a species-specific activity. The animals or automaton neither can possess mind (Descartes) nor they can be able to understand the rich variety of sentences (both Descartes and Chomsky). It is a controversial issue that whether Descartes or Chomsky was right in their assumption about species-specificity of linguistic competence, because they think that only human can possess a mind which has the creative aspect of language use.

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<sup>11</sup> Ibid Part V 58. (p-47)

Since our frame of research is to concentrate on Language Acquisition, we will next take up Charles Darwin-the person who deserves attention in this context.

## 2.2 Darwin's view on Language

Charles Darwin (1809-1882) was a renowned British naturalist. He articulated the conception of language as a kind of instinct in 1871 and considers some theoretical preliminaries which lay out his theory of language evolution.

The theory of language evolution involves mainly three stages:

1. The first stage consists of the general increase in intelligence and complex mental abilities.
2. The second stage involves sexually-selected attainment of the species capacity for complex vocal control, e.g. singing.
3. In the third stage, meaning is added to the songs. The semantic aspect operates at this level. This semantic factor is one of the key determinants in facilitating the increase in intelligence.

Theoretically, Darwin makes several important observations, such as:

1. He makes a crucial distinction language faculty (the biological capacity which enables humans acquire language) and particular languages (Latin or English). Darwin refers the **language faculty** “as an instinctive tendency to acquire an art.” It is shared by all the members of human species.

In order to understand the term ‘instinct’ Darwin writes-

**I will not attempt any definition of instinct. It would be easy to show that several distinct mental actions are commonly embraced by this term; but everyone understands what is meant, when it is said that instinct impels the cuckoo to migrate her eggs in other bird's nests. An action which we ourselves should require experience to enable us to perform, when performed by an animal, more especially by a very young one, without any experience, and when performed by many individuals in the same way, without their knowing for what purpose it is performed, is usually said to be instinctive. But I could show that none of these characters of instinct are universal...**<sup>12</sup>

From the quoted passage, it is to be understood that though instinct is universal feature as it is present in all species; but modes of the behavior of species are not universal. For Darwin, in relation to man the term 'instinct' can be applied to the behavior of babies and to those involuntary actions which accompany particularly vivid sensations and emotions.

In this context, Darwin neatly bypasses the unproductive nature/nurture debate that has consumed so much scholarly energy by observing that language is not a true instinct, as every language has to be learnt. It differs, however, from all ordinary arts, for man has an instinctive tendency to speak, as we see in the babble of our young children. According to the famous American linguist Peter Marler (1928-2014), language is not instinct, but an "instinct to learn" whose expression entails that both biological and environmental conditions are required. It is this "instinct to learn" for which biological evolutionary explanation must be sought. Thus we may say that Darwinian perspective is thoroughly modern in its nature. Darwin knew the peculiarities of human vocal tract, but he argues that human capacity for language must be sought in the brain, rather than in the peripheral vocal tract. According to him, articulated speech is a special feature of human species, but this mere power of

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<sup>12</sup> Darwin, Charles. 1859. *On The Origin Of Species: By Means of Natural Selection*. London: John Murray. Albemarle Street. p-207-8

articulation is also common in animal communication system, for instance, parrots can talk. Darwin states that humans have an immense power of connecting definite sounds with definite ideas. For him, the capacity depends on the development of the mental faculties. In other words, Darwin connected man's facility for language with his extraordinary reasoning power or intellect.

Finally in his theoretical observation, Darwin draws analogy between birdsongs and infants babbling. He inferred his notion of language as 'an instinctive tendency to speak' from the 'babble of our young children'. The key point is that it is not language but the tendency to speak which is the distinguishing attribute of human kind. According to him, like humans, birds have fully instinctive calls and an instinct to sing. Though the songs themselves are learned, but in both birdsong and in human speech system the cultural transmission ensures formation of regional dialects. Sometimes physiological equipments is not enough for learned song, e.g. crows have a complex physical organ like a nightingale's, but use it only in unmusical croaking. So it seems to us that language acquisition process develops through the maturation of the physical organ or speech system of the species. It also requires the development of cognitive phenomenon, which according to the evolutionary process becomes more mature from apes to human species. Thus the Darwinian way of viewing this process has similarities with the observation of modern linguists who identify the creative aspect of language use as a cognitive phenomenon.

2. It is to be noted that for Darwin unlike Descartes language is not species-specific. His several perspectives and observations are thoroughly modern and influential. It is modern in the sense that the phonetic element as well as the semantic aspect is addressed and the prime importance is on the power of connecting speech. On the other hand, he also emphasized mental ability or

cognitive aspect that is, connecting definite songs with definite meanings or ideas. So the potentiality of the creative aspect of language (later highlighted by Chomsky) is also implicitly present in his approach.

### **2.3 History of language study of 20<sup>th</sup> century**

Now in order to study language of 20<sup>th</sup> century and its influence on Chomsky, we should acknowledge the difference between modern philosophy of language and traditional philosophy of language. The analytic philosophers study language not in order to formulate scientific hypothesis about it, but rather because they believe that such a study is an invaluable tool to help them to achieve their primary goal of setting philosophical questions. Some traditional philosophers like Descartes took some partial clue from language to facilitate their philosophical endeavour, but mostly they were interested in system building on the basis of sure and certain foundations. At that time, metaphysics occupied a central position. In this respect, 19<sup>th</sup> century linguistics can be labeled as ‘Historicism’. It is a movement or earlier period of linguistic thought. The Neo-grammarians<sup>13</sup> are the followers of such movements. They consider that the only kind of explanation valid in linguistics is the kind of explanation which a historian might give. The languages have been a subject to a variety of internal and external causal forces. In taking this view, the great 19<sup>th</sup> century linguists were reacting against the ideas of the philosophers of the French Enlightenment and their predecessors in a long tradition. Historicism is one of the movements against which Structuralism reacted and in relation to which it may be defined.

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<sup>13</sup> The Neo-grammarians were a group of scholars, based at the University of Leipzig in the late 19<sup>th</sup> century, who were largely responsible for formulating the principles and methods of historical linguistics that have since governed most work in the subject.

Structuralism appeared in the second half of the 20<sup>th</sup> century, and grew to become one of the most influential approaches in academic fields. It was concerned with the analysis of language, culture and society. It is a general intellectual movement whose headquarters have been in France. The work of Ferdinand de Saussure<sup>14</sup> (1857-1905) concerning linguistics is generally considered to be a starting point of structuralism. The common feature of structuralist positions is the belief that phenomena of human life are not intelligible except through their interrelations. These relations constitute a structure and behind local variations in the surface phenomena, there are constant laws of abstract structure. It drew our attention to the fact that structures are not just listings of items.

American structuralism had similar ideas coming from a different source. It (American structuralism) was founded upon the empirical tradition, and its task was to organize the masses of linguistic data. In other words, we might say that, involvement with language by the 20<sup>th</sup> century linguistic philosophy as well as analytic philosophers was far more widespread and much deeper. Philosophers were more interested in discovering the structure of the world via structure of language and this overpowered their desire for system building. In this context, we are going to concern in brief two pre-eminent figures of American structural linguists (Leonard Bloomfield and Noam Chomsky) who hold structuralism for decades.<sup>15</sup>

#### **2.4 Bloomfield's account of language study**

In the earlier part of the twentieth century some of the most important influences came from anthropology and behaviourist school of psychology. One of the most

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<sup>14</sup> We are not concerned in detail about Saussurian model.

<sup>15</sup> Here we are giving their perspective on language and our later chapters will focus in detail their views on Language Acquisition.

influential linguists was Leonard Bloomfield (1887-1949) who not only studied language and language acquisition, but endeavored to make linguistics autonomous and scientific. In this pursuit he was prepared to restrict the scope of language to the study of syntax; because he believed that the elements apart from the syntax could not be treated with sufficient precision and regularity.

According to Bloomfield, there is no fundamental difference between human language and animal communication, for both are formed out of training and habit. This training and habit situations are observable. Because he felt that only that part of language can be described which is observable and concrete, e.g. sounds can be observed as they are concrete physiological activities leading to the production of sound-waves but meanings are abstract and cannot be observed. He, therefore, stresses that only direct observation of linguistic events can yield statements about language. This belief was based on the behaviourist school of psychology, according to which only that mental process which is manifest in behaviour can be scientifically observed and become the basis of valid scientific conclusions. Since language is also a form of behavior, its external aspect, that is, speech is the focus of linguistic description. He regards that linguists must concentrate on the structure of overt behavior; since we cannot speculate on the underlying process due to our ignorance of underlying physiological and psychological function. Bloomfield also rejects the Universalist ideas about language on the basis that each individual language has its classes and categories; therefore, the only useful generalizations about language are inductive generalizations. So far, he firmly believes that we may depend on induction in gaining insight regarding language.

Now, there are some limitations of Bloomfield's approach, which were addressed and challenged by Noam Chomsky. It seems that Bloomfield's theory<sup>16</sup> is a pure mechanistic explanation and does not take into account the creativity and variability of language.

So far, in linguistics, in the post-Bloomfield era, the most significant development is the Innateness Hypothesis and transformational generative grammar of language enunciated by Noam Chomsky in his *Syntactic Structures* (1957).

Let us take a short look into the Chomskyan notion of studying language.

## 2.5 Chomsky's model of language study

Chomskyan (1928..) definition of language<sup>17</sup> is applicable in both natural language of logic and computer programming theory.

One of the most remarkable things in his definition of language is that a language is regarded as the set of all the linguistic products that can be constructed according to certain rules. An alternatively and intuitively more satisfactory view would be that a language consists of all units and rules which make up the system underlying the products. From the perspectives of language users one could propose a more psychologically based definition; the language of a speaker or listener is her/his knowledge of rules and principles governing sentence construction and interpretation; it is the knowledge that enables the speaker-hearer to produce and identify grammatical sentences. It is also her/his ability to produce and comprehend infinite set of utterances, discourses and texts which fit the underlying system of rules. In

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<sup>16</sup> We will consider in detail Bloomfield's notion of language and acquisition process in our second chapter.

<sup>17</sup> We have already mentioned Chomsky's definition of language in this chapter, p-3.



other words, according to Chomsky, the most striking feature of language is the creativity of the native speakers. The speaker's ability to formulate infinite number of sentences from finite means is the most intriguing feature of language. A native speaker can understand a new sentence not encountered before, in addition to this s/he can response to a familiar stimulus in a completely novel way. All these cannot be explained by the Bloomfieldian model which confines itself to overt behaviour.

In this century, the most famous argument that language is like an instinct comes from Chomsky. He first unmasked the intricacies of the system and he is perhaps the most responsible person for the modern revolution in language and cognitive science. Chomsky focused our attention to two fundamental facts about language. First, virtually every sentence that a person utters or understands is a brand new combination of words appearing for the first time in the history of the universe. Therefore, a language cannot be a repertoire of responses. The brain must contain a recipe or program that can build an unlimited set of sentences out of finite words. That program may be called a mental grammar.

The second fundamental fact is that children develop those grammars rapidly and without formal instructions and grow up to give interpretations to novel sentence constructions that they have never encountered before. Therefore, he argued that children must be equipped with a Universal Grammar which accounts for the formation of the grammar of a particular language from the unorganized corpus and other sentences heard from parents and other members of the speech community.

Thus, Chomsky and other linguists developed theories of the mental grammar underlying people's knowledge of particular language. That is, Chomsky gave us a theory of Universal Grammar underlying particular grammars. In due course,

Chomsky's work encouraged so many scientists, among them Eric Lenneberg (1921-1975), George Miller (1920-2012), Roger Brown (1925-1997), Morris Halle (1923) and Alvin Liberman (1917-2000) to open up a whole new areas by language study, from child development and speech perception to neurology and genetics.

So far, from the given account of language study we might say that language is not a cultural artifact comparable with our learning 'to tell the time' or 'how the federal government works'. Language is a complex specialized skill which develops in the child spontaneously without conscious effort or formal instruction; it is deployed without awareness of its underlying logic and it is qualitatively same in every individual. In other words, learning a first language is something that every normal child does successfully in a matter of a few years without the need for the formal instructions. Language is distinct from more general abilities to process information and behave intelligently. For these reasons, some cognitive scientists have described language as a psychological faculty, a mental organ, a neural system and a computational module. Thus it is not surprising that children's acquisition of language has received so much attention.

## **Section-III**

### **3. The notion of Language Acquisition**

Language acquisition refers to the child's acquisition of her/his mother tongue; i.e. to understand and speak the language of her/his community. In all over the world, children take the same time to learn to speak unless they are isolated during the critical acquisition period or unless they suffer from any sort of extreme deficiency. Language acquisition process in this regard addresses several questions, namely, what enables children to learn words and connect them together into meaningful sentences? What facilitate children to develop the grammatical system of their language? How do the children achieve the communicative competence to express their thoughts? Linguists, psychologists and psycholinguists take their time and effort to denote these problems from their own realm and perspectives.

In this context, our paper will provide some tentative answers to the above questions. For this we have chosen some competing positions or models regarding our present issue, that is, **'Language Acquisition: Chomsky and Beyond'**.

#### **3.1 A Table with some pioneer models on language acquisition**

Over the last fifty years these models have been put forward to explain the process by which children learn to understand and speak a language. These theories can be summarized in the following way:

<b>Theories based on Empiricism</b>	<b>Central Idea</b>
Skinner's Verbal Behavior (Behaviorist Hypothesis, 1957)	Children imitate adults. Their correct utterances are reinforced when they get what they want.
Bloomfieldian account of Corpus based methodology accompanied with behaviorism and its structuralist version (1930s and 1940s)	Mental processes like language acquisition are manifestation of overt behavior.
Piaget's theory of Cognitive Development (1969)	Language is just one aspect of a child's overall intellectual development.
Bruner's Interactionist Theory	This theory emphasizes the interaction between the children and their caregivers.
Vygotsky's Socio-cultural theory	Parents, peers, caregivers and the culture at large were responsible for the development of higher order functions like language development.

<b>Theories based on Nativism</b>	<b>Central Idea</b>
The Innateness Hypothesis (1957) of Chomsky and Critical Period assumption (1967) of Lenneberg	A child's brain contains special language learning mechanisms at birth and the child's capacity to learn a language is circumscribed in time.

With all this overviews, in our next chapter, we are going to discuss our first pre-Chomskyan models, that is, Behaviorist Hypothesis given by J. B. Watson and B. F. Skinner on the one hand and the early structuralist account popularized by Leonard Bloomfield in relation with language acquisition.

## **Chapter-2**

### **Pre-Chomskyan Approach on Language Acquisition**

#### **Section-1**

##### **1. The Theory of Behaviorism**

In our previous chapter, we have already mentioned some pioneer models with their central idea in relation with Language Acquisition. Here, in this chapter, we will examine the Behaviourist account, especially Skinnerian hypothesis and Structuralist model documented by Leonard Bloomfield as two important pre-Chomskyan approaches regarding Language Acquisition.

In the 1950s, the social sciences were dominated by Behaviourism- the school of thought popularized by J. B. Watson and B.F. Skinner. Behaviourism viewed psychology as the science of behavior that can be objectively observed and described. Thus behaviorism stated that the behavior can be explained scientifically without any reference of inner mental states. In other words, mentalistic concepts such as consciousness, images or mind has no place in scientific and objective study. Behaviorists also did not admit the theory of introspection because of its subjective characteristics. They developed their theories with a series of experiments on animals in terms of stimulus and response mechanism. For example, they observed that rats, dogs or birds could be taught to perform various tasks by habit-formation. In other words, the animals have dispositions to behave in certain way under certain circumstances. With the same laws, the behaviorists intended to predict and control human behavior and its activities. In their experiments, they rewarded positive

behavior. This was known as positive reinforcement.<sup>18</sup> Undesirable behavior was punished or simply not rewarded. This was called as negative reinforcement. Thus, it might be said that all behavior is determined by the environment either through association or reinforcement.

In context of language acquisition, behavior teaches that man is nothing more than a machine that responds to conditioning. Man has no soul or no mind. It has only a brain that responds to external stimuli provided by the environment. According to behaviorism the mind of the newborn infant is linguistically a blank slate. The child imitates the speech around it and uses a process of trial and error. It is reinforced in these imitations or discouraged from them, by the degree of success it achieves in communicating.

In our thesis, we are interested in language acquisition. So keeping that in mind, we will focus on J. B. Watson's theory.

### **1.1 Watson's Theory of Language Acquisition or Learning:**

According to J. B. Watson (1878-1958) and his followers, psychologists had no need to postulate the existence of mind or anything else that was not observable. Watson claimed that psychology would be concerned only with external behavior. The behavior of any organism from an amoeba to human beings can be studied objectively and explained in terms of the organism's responses to the stimuli presented by features of the environment. It was assumed that the organism's learning of these responses could be explained satisfactorily by means of the familiar laws of physics and chemistry, just like a thermostat that learns to respond to changes in temperature

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<sup>18</sup> The term 'reinforcement' will be discussed later in detail.

and switches its furnace on or off. Watson had a strong conviction that the whole range of human behavior from coughing to writing poetry can be explained on the basis of the stimulus-response principle.

In his monumental book *Behaviorism* (1924), he considered language as manipulative habit. Because, when we speak, the sounds originate in our larynx. It is a bodily organ. By the help of this bodily organ, we manipulate the sounds to hear our voice. Different sounds come out from the changes of the shape of our throat and position of our tongue. For example, when a baby first cries or utters a sound like “da” or “ma”, it is learning the language. When the child grows up, she/he starts imitating the sounds uttered by her/his surrounding people. Thus, in this way, for Watson, the child can learn language with its vocabulary from three years of age through imitation. Watson claims that **words are but substitutes for objects or situation**,<sup>19</sup>

For Watson, babies form their language by applying sounds they have already formed. He also claimed that speech was one of the directly observable behavior characteristics of human beings and thought was merely inaudible speech.

Watson did not focus much on language learning. He was mainly concerned with behavioral manifestations of animals and human beings. But he should be credited for his endeavor to explain behavior from a new perspective.

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<sup>19</sup> Watson, J.B., 1924. *Behaviorism*. New York: W. W. Norton & Company. p-180-190



## 1.2 B.F. Skinner's theory of Language Acquisition or Learning

Another important person associated with Behaviorism is B.F. Skinner (1904-1990). He made his reputation by testing Watson's theories in the laboratory. His studies led him to reject Watson's exclusive emphasis on reflexes and conditioning.

Skinner modified Watson's theory by arguing that people not only respond to their environment; rather they operate on the environment to produce certain consequences. He carried out experimental work mainly in comparative psychology from the 1930s to 1950s; and developed a distinct kind of behaviorist philosophy, which is regarded as 'Radical Behaviorism'. Radical Behaviorism is sometimes regarded as Logical Behaviorism.<sup>20</sup>In other words, Radical Behaviorism was first promoted by B.F. Skinner. In contrast with classical and methodological behaviorism, it (Radical Behaviorism) includes behavioral approach to 'mental life', through internal states. On the other hand, it maintains that **what it is to ascribe mental state to a person, is nothing more nor less than to ascribe that person some appropriate behavioral disposition**. A behavioral disposition is a person's tendency or propensity to behave in a certain way in certain specified circumstances. Skinner also claimed to have found a new version of psychological science, which he called functional or experimental analysis of behavior. As he turned from his earlier experimental work (on animal) to concentrate on the philosophical base of a science of behavior, human language comes within preview of his research. His famous book *Verbal Behavior* (1957) laid out a vocabulary and theory for functional analysis of verbal behavior.

The brief account of verbal behavior (VB) illustrates that Skinner divides the responses of the animal into two main categories-

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<sup>20</sup> The sophisticated version of logical behaviorism is developed by Gilbert Ryle in his book *The Concept of Mind* . 1949. London: Hutchinson.

- a. Respondants
- b. Operants

Respondants are purely reflex responses elicited by particular stimuli. On the other hand, operants are emitted responses, for which no obvious stimulus can be discovered. Skinner is primarily concerned with the operant behavior.

Now let us explain this operant behavior.

First Skinner had arranged a box for his experiment. The box was attached with a bar to its one wall in such a way that when the bar is pressed, a food pellet is dropped into a tray. Now, if a hungry rat is placed into the box, it will soon press the bar and as a consequence, a pellet will come out into the tray. This state of affairs results from the bar pressing operant and increases its strength. The food pellet is called the reinforcer or the reinforcing event. Moreover, if the release of the pellet is conditioned by a flash of light, then the rat will come to press the bar only when the light flashes. This is called **stimulus discrimination**. The response is known as a **discriminated operant** and the light is called the occasion for its emission. Here, operants may be arranged in another way. That is, the bar pressing may require a certain character, for example, duration to release the pellet. Then the rat will come to press the bar in the required way. This process is called **response differentiation**.

Now, with respect to the bar-pressing experiments, the notions as stimulus, response, and reinforcement are relatively well-defined. ‘**Stimulus**’ is any or only one physical event to which the organism is capable of reacting on a given occasion.

‘**Response**’ on the other hand, is either any part of behavior or only one connected with stimuli. In his major scientific book *Behavior of Organism* (1938), the ‘operation

of reinforcement' is defined as the presentation of a certain kind of stimulus in a temporal relation with either a stimulus or response.

Many experiments indicating bar pressing example demonstrate the influence of social reinforcements upon verbal behavior. In one experiment, subjects were presented with a series of cards on which there appeared six personal pronouns ("I", "he", "she", "you", and "we") with a verb. The same pronouns appeared on each cards, although the verb was changed from one card to the next. Subjects were instructed to compose a sentence for each card by using one of the pronouns and the verb. The interest of the experimenter is to increase the number of sentences that included pronouns "I" or "we". Consequently, the experimenters reinforced the use of these pronouns by saying "good" whenever one was used it appropriately in a sentence. It was possible to control partially the verbal behaviors of the subjects through this simple procedure.

Thus, the results indicated that the reinforced pronouns ("I" and "we") were used with increasing frequency. Studies like this suggest that verbal responses may be strengthened through the operation of verbal reinforcement ("good"). Skinner claimed that careful arrangement by the verbal community is a necessary condition for language learning. According to him, humans acquire spoken language as a result of behavioral conditioning. He writes:

**A child acquires verbal behavior when relatively unpattereded vocalizations selectively reinforced, gradually assumes forms which produce appropriate consequences in a given verbal community. In formulating this process we do not need to mention stimuli occurring prior to the behavior to be reinforced. It is difficult, if not possible, to discover stimuli which evoke specific vocal responses in the young child. There is no stimulus which makes a child say b or a or e, as one may make him salivate by placing a lemon drop in his mouth or make his pupils contract by shining a light into his eyes. The raw response from which verbal**

**behavior is constructed are not “elicited”. In order to reinforce a given response we simply wait until it occurs.** <sup>21</sup>

Skinner defined ‘verbal behavior’ as behavior reinforced through the maturation of other persons. It is a special kind of operant behavior. Verbal behavior (VB) has so many distinguishing, dynamic and topographical properties. The properties of operant VB are related to the effects on its listeners. Here, the listener was conditioned by the verbal community to be a mediator between the verbal behavior of the speaker and its consequences. In order to explain such VB, Skinner provides a functional analysis. By functional analysis, Skinner means identification of the independent variables that control the verbal behavior of the individual speaker in a concrete interaction with listener in a specific and known environment. The controlling variables of VB can be understood in terms of stimulus, response, reinforcement, deprivation etc. Moreover, in his book *Verbal Behavior (1957)*, he provides us a way to predict and control verbal behavior by observing and manipulating the physical environment of the speaker.

Now, we have already discussed that Skinner used the concept of discriminated stimulus to account for the fact that through appropriate training, a rat can be taught to press the bar only under certain conditions and not indiscriminately. A similar process seems to occur in language behavior. A child can be trained so that she/he will say “thank you” only on certain occasion. For example, if a child is given a candy bar, she/he will say “thank you” only that particular occasion. Skinner viewed the child as the passive subject of operant conditioning in which randomly occurring behavior is selectively reinforced. There is no doubt about the fact that children acquire a good deal of their verbal and non-verbal behavior by casual observation and imitation of

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<sup>21</sup> Skinner, B F.1957. *Verbal Behavior*. USA: Appleton-Century-Crofts Inc. p-31.

adults and other caregivers. Successful attempts are rewarded, because an adult who recognizes a word spoken by a child will appreciate the child in the right occasion. Therefore, successful utterances are reinforced while unsuccessful ones are forgotten.

Now, several evidences can be offered to challenge Skinnerian hypothesis of verbal behavior in association with language learning. For instance, a child may pick up a large vocabulary from television, books, music and interaction with others. Even at a very young stage, a child (who has not yet acquired a minimal] repertoire from others) may use those vocabularies to construct a new sentence which she/he has never encountered before. They have also capacity to understand utterances which are quite new. These abilities indicate that in spite of the 'feedback' from environment, there must be some fundamental process at work.

Secondly, the child has the capacity to generalize, hypothesize and 'process information' in a variety of very special and highly complex ways which cannot be easily understood. There may be innate factors which may be largely innate or may develop through the maturation of the nervous system. Therefore, it is often a matter of doubt that whether **innatism** or empirical **support** provides the best solution to the process of acquisition of language.

In response to the above objections, verbal behavior has one unique characteristic that makes it different from other forms of behavior. Skinner felt that verbal behavior does not operate directly upon the environment to produce reinforcements. Instead it (verbal behavior) usually leads to reinforcement through an indirect medium with the actions of others. For example, at the time of dinner, one may be faced with the problem of getting cream for her/his coffee. She/he can obtain this goal quite directly through the non-verbal act of reaching; or in an alternative way. One may verbally

request for the cream and find that her/his behavior (“please pass the cream”) effects upon the behavior of others.

The aforesaid statement of the speaker “please pass the cream” is a kind of **verbal operant**. This type of verbal operants is classified by Skinner in terms of their functional relation to discriminated stimulus, reinforcement and other verbal responses. Skinner called this verbal operant as ‘**Mand**’. In mand, the response is reinforced by a consequence and is therefore under the functional control relevant conditions of deprivation or aversive stimulation. A mand such as “please pass the cream” is a class of responses. Deprivation in this context is defined in terms of length of time that the animal has not been fed or permitted to drink. But sometimes deprivation in association with its relative mands bears a misleading and unjustifiable connotation of objectivity. **Aversive control**, like deprivation is a confusing term. It is intended to cover threats, beating and the like. For Skinner, mands are operants with no specified relation to a prior stimulus.

On the other hand, there is another type of verbal operant, namely, **tact**. In tact, a response of given form is evoked by a particular object or event. Our above mentioned examples of stimulus control are all tacts. Most of the times, the verbal community sets up tacts on the child. In order to explain this fact, we may consider the implication of the tact on both the speaker and the listener. For example, as a speaker, parents often teach their child to acquire new vocabulary and extend their contact with the environment. On the other hand, the response of the listener to tact is as follows:

Suppose that there are two persons: A and B. B hears A says fox and reacts appropriately, that is, looks around, runs away, aims his rifle etc. In explaining B's behavior, we may assume –

- 1) In the history of [B] the stimulus 'fox' has been an occasion upon which looking around is followed by seeing a fox
- 2) The listener has some current interest in "seeing foxes"-that behavior which depends upon a seen fox for its execution is strong and that the stimulus supplied by fox is therefore reinforcing.

This is not a good and convincing example. B may never have seen a fox and may have no current interest in seeing one, and yet may react appropriately, to the stimulus fox. Since the same behavior may occur when neither of the assumptions is fulfilled. There must be some other operative mechanism. For Chomsky, Skinnerian analysis of tact is fundamentally same as the traditional account. But Skinner provides various types of operants such as echoic operant, intra-verbal operant, autoclitic etc in relation with verbal stimuli.

For our present context, we may consider the operants autoclitics. It includes negation, quantification, qualification of responses, construction of sentences and the highly complex manipulations of verbal thinking. Skinner considered the notion of grammar and syntax as autoclitic process. It differs from traditional account in respect of the use of the terms 'control' or 'evoke' in place of the traditional 'refer'. For example, in a sentence, 'The boy runs'- the final's' of such subtle properties of a situation as 'the nature of running as an activity rather than object or property of an object.' In another sentence like, 'boy's gun'- the's' denotes possession. For Skinner, a sentence can be considered as a set of key responses (nouns, verbs, adjectives etc)

on a skeletal frame. In philosophy and linguistics the traditional account considers that sentences consist of lexical items placed in a grammatical frame. With this idea Skinner adds that the internal process of composition, like nouns, verbs, adjectives are chosen first and then are arranged, qualified etc by autoclitic responses to these internal activities.

But unfortunately, it has been pointed out that the aforesaid view of sentence-structure phrased in terms of autoclitics is inadequate. There are several English sentences which has no (physical) frame at all, but the arrangement of their words constitute a sentence. For example, 'Sheep provides wool' or 'Friendly young dogs seems harmless.'

Thus the above discussions imply that the child learned language through the process of conditioning. It is the process of stimulus-response mechanism where a result occurs as a consequence of actions and that the environment in which a child lives reinforces behavior. Skinner suggested that the pre-linguistic stage of language in which a baby cries with hunger, pain and anger are the early stage of learning and then she/he progress on to cooing and babbling. It is reinforced by the parents; in particular, the mother, by rewards, such a smile or attention. Skinner and his followers believe that an infant acquires her/his language skills through the reinforced imitation of adult. Some of their (infant's) babbling is reinforced and some babbling is not. Through the reinforcement of correct small language units, the infants proceed to make large combination.

Though there might be some ample evidence in favour of Skinnerian hypothesis, but critics raised several objections. According to the modern psychologists in case of



parent-child interaction, parents often reward incorrect utterances and are not also able to reinforce all the utterances a child will use.

In this way, the very early stages of language acquisition are same in all over the world. During this pre-linguistic stage of babbling, babies produce every known phoneme that occurs in any human language. This is a unit of sound which is narrowed down by the parents to produce random noises, which in turn produces early utterances and then moves on to the one word stage and the stage of one grammar. This stage of language usually occurs between the ages of twelve and thirty months. Initially, this stage starts with one word utterances such as, 'broom' for a car and 'woof' for a dog. Words are also applied to their surrounding environment and then progresses on to simple two word sentences, such as 'mummy gone' or 'want milk'.

We can illustrate this objection in the following way:-

1. Language is based on a set of structures or rules which could not be worked out simply by imitating individual utterances. The mistakes made by children reveal that they are not simply imitating, but actively working out and applying rules. For instance, a child who says, "drank" is not copying an adult, but rather over applying a rule. The child forms the past tense verbs by using a/d/or t by their own rules. Sometimes a child makes the past tense of 'go' is 'goed', rather than 'went'. The mistakes occur because there are irregular verbs which do not behave in this way. Such forms are referred as intelligent mistakes or virtuous error.
2. Children are often unable to repeat the utterance of adults if it contains a structure. The classic demonstration comes from the American psychologist David Mc. Neill. Here the structure involves negative verbs is as follows:  
Child: Nobody don't like me.

Mother: No, say, “nobody likes me.”

Child: Nobody don’t like me (eight repetitions of this dialogue)

Mother: No, now listen carefully: say, “Nobody likes me.”

Child: Oh! Nobody don’t likes me.

3. Few children receive much explicit grammatical corrections. Parents are more interested in politeness and truthfulness.

The most popular and possible argument against Skinner’s behaviorism came from Noam Chomsky in his review of B.F. Skinner’s *Verbal Behavior* in 1959. As a behaviorist Skinner claims that the mind of the new born infant is linguistically a blank slate (*tabula rasa*). It is controlled by outside influences and their conditioning. So, Skinner believed that scientific analysis will someday prove this assumption. He also claimed that one day science will prove that behavior is determined by external factors. Though he does not personally provide any proof, but Chomsky unfathomed Skinner’s dogmatism. According to Chomsky, mind of the new born infant is not *tabula rasa* (clean slate). On the contrary, every child is genetically predisposed to structure how knowledge is acquired. Chomsky claims that Skinnerian account rejects all the postulations of inner states and considers human behavior as entirely a function of antecedent event. For Chomsky, this reduction of human behavior to “conditioned responses” contradicts the actual complexity and freedom of consciousness.

Thirdly, construction of complex type of grammar with its aforesaid properties (for instance, autoclitic, phoneme, morpheme etc) enables us to describe and study the ability of the speaker, listener and learner. This grammar is extremely complex and abstract in character. All normal children rapidly can acquire that complex grammar. It suggests that human beings are somehow specially designed to construct this complex mechanism for generating a set of sentences which she/he has never

encountered before. Thus, it might not be considered grammar as a component in the behavior of the speaker and listener which can be inferred from the resulting physical acts.

In this way, Chomsky challenged Skinnerian approach on several grounds and documented his Biological perspective in 1957. Chomsky shows that Behaviorist hypothesis confines itself in the explanation of what changes occur in our behavioral pattern; that is, in our physical system due to addition of some stimulus. Thus, Skinner's theory implied that children learn entirely through trial and error. They do it by their possible utterances, which they adopt if approved, and reject if they do not. But, according to Chomsky, it may be questioned that children can acquire language and its grammatical rules and extensive vocabulary in such a short time through a trial and error system.

Therefore, we might say that behaviorism is a turning point in philosophy of science where everything is perceived in a novel way. But it's a kind of reductionism from the perspective of language acquisition. It has its limitations. That is, Behaviorism confined its quires into observable and measurable phenomena and rejected the concepts like intuition, soul and consciousness. The main drawback of Behaviorism is that it could not accommodate the intricacies of language acquisition. Behaviorism is gradually loosing its glamour with the initiation of philosophy of language and linguistics in the intellectual stage. Although Skinner's direct influence within mainstream linguistics was relatively short-lived, his work continue to be important in other areas. The new perspectives of the upcoming philosophers drew attention from all corners. According to the historical development, in this respect, the theory that deserves attention as far as language is concerned is 'Structuralism'. In 1930s and 1940s, linguists admit that the structures, forms and uses of language could be

explained by theories founded on the principles of Behaviorism. So far, two major scientific revolutions were the main pillars of 20<sup>th</sup> century Anglo-American linguistics. Their fundamental issue is the ontological status of the sentences and language. The outcome of each revolution is to replace one conception of ontology of grammars with another. In this respect the first revolution is Bloomfield's revolt against the nominalist tradition of the 19<sup>th</sup> century linguistics. Bloomfield writes:

**Non-linguists (unless they happen to be physicalists) constantly forget a speaker is making noise, and credit him, instead, with the possession of impalpable 'ideas'. It remains for the linguists to show, in detail, that the speaker has no 'ideas' and that the noise is sufficient.**<sup>22</sup>

The second one is Chomskyan revolution which mounted an argument against Bloomfield's nominalist view of language and its taxonomic conception of grammars.

Chomsky writes:

**Linguistic theory is concerned primarily with an ideal speaker-listener, in a completely homogeneous speech-community, who knows its language perfectly and is unaffected by such grammatically irrelevant conditions as memory limitations, distractions, shifts of attention and interest, and errors... in the application of his knowledge of the language to actual performance....Hence, in the technical sense, linguistic theory is mentalistic, since it is concerned with discovering a mental reality underlying actual behavior.**<sup>23</sup>

We will gradually discuss these two revolutions in connection with our present context.

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<sup>22</sup> Bloomfield, L. 1985. "Language or Ideas?" In *The Philosophy of Linguistics*, edited by Jerrold J. Katz. Oxford: Oxford University Press. p-23.

<sup>23</sup> Chomsky, N. 1965. *Aspects of the Theory of Syntax*, Cambridge, Massachusetts: MIT Pres. p-3.

## Section-II

### 2. Bloomfield's view on language acquisition

Leonard Bloomfield (1887-1949) was one of the influential figures in the period from the foundations of Linguistic Society of America in 1924 to the beginning of Second World War. He was exposed to various influences; such as, the methodology of comparative and structural linguistics, the increased popularity of empiricism in the natural sciences and the shift from behaviorism<sup>24</sup> to mentalism.<sup>25</sup>

Before and after the Second World War, behaviorism was very popular and influential in America. In his monumental book *Language (1933)*, Bloomfield explicitly adopted behaviorism as a framework for linguistic description. He accepted the principles of behaviorism and advocated them explicitly as the basis for scientific study of language which he mentioned in his classic text book *Language (1933)*. By virtue of his explicit espousal of behaviorism, it became an important movement not only in American psychology, but also in American linguistics. That is, his commitment to behaviorism had little practical effect upon the techniques of linguistic description that he and his followers developed. In other words, his behaviorist model was refined in the generation that followed by linguists like Bernard Bloch (1907-1965), Zellig Harris (1909-1992), Charles Hockett (1916-2000), Eugene Nida (1914-2011) and Kenneth Pike (1912-2000). They developed a theory of language analysis which is known as American structuralism and they are known as neo-Bloomfieldians.

In the year 1933, when Bloomfield wrote his famous book *Language (1933)*, empiricism and positivism played a dominant role. He was strongly committed to

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<sup>24</sup> Behaviorism is the idea that mental activity is not distinct from behavior.

<sup>25</sup> Mentalism states that mental processes are independent of physical interaction.

empiricism and positivism<sup>26</sup>, the unity of science movement and subscribed fully to the principle of reductionism. In America, he made linguistics more scientific. For this, he rejected categorical speculation about unobservable phenomena. He believed that linguists should follow the methods of scientific enquiry and on the other hand, they should conduct their research in an unbiased manner. In this way, he became popular by introducing the methodology of science in linguistics. For Bloomfield, the fundamental assumption of linguistics is that **in every speech community some utterances are alike in form and meaning.**

For Bloomfield, the methods of linguistics resembles with natural science<sup>27</sup> and for this claim he contrasts two theories of human conduct including speech, namely,

1. Mentalist theory

2. Materialist theory.

According to the mentalist theory, the variability of human conduct is due to the interference of some non-physical factor-such as a spirit or a will or mind that does not follow the patterns of succession (cause and effect sequences) of the material world. Thus, mentalist psychologists easily can avoid the difficulty of defining meanings. Because they believe that prior to the utterance of a linguistic form, there occurs non-physical processes like a thought, concept, image, feeling, act of will etc within the speaker. The speaker who utters the word 'apple' has had a mental image of apple and this evokes a similar image in hearer's mind. Thus, for the mentalists, language is the expression of ideas, feelings or volitions.

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<sup>26</sup> This is made very clear in the second chapter of his book *Language (1933)*.

<sup>27</sup> Natural science is the domain in which science has been most successful.

On the other hand, materialist theory supposes that the variability of human conduct including speech is due to the complex nature of human body and its actions that are construed by the cause and effect sequences. They believe that mental images, feelings and the like are merely popular terms for various bodily organs. Thus in context of language, these can be roughly divided into three parts:-

1. Large-scale processes which are much the same in different people and are represented by conventional speech forms, e.g. *I'm hungry (angry, frightened, sorry, glad etc)*.
2. Obscure and highly variable small-scale muscular contractions and glandular secretions, which differ from person to person and these have no immediate social importance and are not represented by conventional speech forms.
3. Soundless movements of the vocal organs, taking the place of speech-movements, but not perceptible to other people (“thinking in words”).

Bloomfield viewed language as the simplest and fundamental social activities. In this respect, every speaker's language is a composite of what he heard words from his surrounding people and a complex habit that results from repeated situations in early life. Thus for Bloomfield, the main task of a linguist is to provide physical and observable explanation of verbal behavior. For demonstration, he proposed an act of speech-utterance under very simple circumstance.<sup>28</sup>

The notion of speech-utterance has some similarities with Skinner's verbal episode. At a glance, the analogy between act of speech-utterance and verbal episode is as follows:-

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<sup>28</sup> Bloomfield, L. 1933. *Language*. New York: Holt. p- 38

- a) Both of these are physicalist analysis of verbal interaction. It comprises the antecedent (deprivation and stimuli) and the consequences (reinforces presented by a listener) of behavior.
- b) Secondly, both of them (act of speech-utterance and verbal behavior) provide the same basic structure. This is the structure of two human organisms, whose behavior is under control of deprivation or stimuli presented by their verbal and non-verbal environment.
- c) For both speech-utterance and verbal episode, verbal behavior is an occurring event. Because verbal behavior produces practical results due to the participation of a listener and it demands interaction between the organisms.
- d) Lastly, they (speech-utterance and verbal episode) identify environmental and behavioral events (response, deprivation and stimuli) that are part of the verbal episode as well as the temporal order in which they occur.

Apart from these similarities, there is an important difference between Bloomfieldian act of speech and Skinner's verbal episode in respect of their theoretical conceptions of functional relations between the stimuli and the responses that they control. For Bloomfield, the relation between verbal stimuli (i.e. antecedent stimuli) generated by speech and the reaction of the listener to them.

On the other hand, for Skinner, the relation between speech and environmental events characterizes operant behavior. The antecedent events in control of verbal behavior are deprivation and discriminative stimuli that control the emission of responses instead of elicitation of responses.

Now, let us elaborate the above account with an example.



For instance, a person is hungry and sees an apple. Here apple is the stimulus. If he takes the apple by himself and eats it, then his action is called a response. But, if he utters some sounds, such as 'I am hungry, bring me that apple'- this is a speech response (r) to the stimulus (s) of hunger ( $s \rightarrow r$ ). This in turn may become a speech stimulus (s) for the other person, or hearer. The hearer may either respond with an actual action (of getting the apple) as response (R) or a speech act ( r). Therefore, the pattern of interaction will be  $s \rightarrow R$ , or  $s \rightarrow r$ . Speech stimuli are substitute stimuli and speech responses are substitute responses. In his own version, Bloomfield explained this example of an act of speech-utterance in the following way:

Suppose that two persons Jack and Jill are walking down a lane. Jill is hungry, she sees an apple in a tree, and she makes a noise with her larynx, tongue and lips. Jack climbs the tree and gives her the apple, and she eats it. Here the act of speech is practical events before and after it depends upon the entire life-history of the speaker and the hearer.<sup>29</sup>

Here Bloomfield focused on the physiological and acoustic characteristics of speech act. According to this speech act, it is a verbal behavior following a pattern of stimulus and response. It leads to habit-formation through repetition and imitation.

Now, this is the way in which we would normally describe the events which consists of three parts; namely:-

- A. Practical events preceding the act of speech.
- B. Speech.
- C. Practical events following the act of speech.

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11. Ibid p- 23.

In the above story, [A] is the speaker's (Jack's) stimulus 'S'. It arises from Jill's hunger; the reflection of the light waves from the apple to her eyes and her past interaction with Jack. [B] is the speech event in our story. The connection between [A] and [C] is possible because of [B]. [C] is another practical event which is related to both the listener (Jack's fetching the apple and giving it to Jill) and the speaker (Jill gets the apple and eats it).

Here, we see the influence of hardcore behaviorist account on these three parts A, B and C. In this case, the more direct response for Jill to climb the tree and get the apple herself. Instead, she makes a '**substitute response**' in the form of a particular sequence of noise with her speech organs. This acts as a '**substitute stimuli** for Jack. It causes him to act as he has seen the apple.

Bloomfield referred behaviorist perspective when he was dealing with **meaning**. According to him, **the analysis of meaning was the weak point in language study and it would continue to be so until human knowledge advanced very far beyond its present state.**<sup>30</sup> In the second chapter of his book *Language (1935)*, he defined the meaning of a linguistic form as **the practical events with which form is connected.**<sup>31</sup> In a later chapter, he defined meaning as **the situation in which the speaker utters it and the response which it calls forth in the hearer.**<sup>32</sup> Thus, the picture will look like:-

Meaning= Speaker's situation → Speech → hearer's response

Bloomfield states that the practical situations which make up the meaning of a speech or linguistic form are not strictly definable. Because, every practical situation in

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<sup>30</sup> Ibid p- 140

<sup>31</sup> Ibid p- 21-27

<sup>32</sup> Ibid p- 139

reality is unprecedented. On the other hand, every person uses the speech-form in a unique way. Thus, for Bloomfield, meaning of a linguistic form is not a mental event.

Here we also find the similarities in four respects between Bloomfield's and Skinnerian account of meaning in four respects:

First, both of them criticize mentalistic conception of meaning as a non-physical process (such as "ideas", "feelings", "image", "desires") which would occur in the speaker and would be expressed by the verbal emission correspond with the similar process occurring in the listener.

Secondly, according to them, speech is related with the physicalist conception of meaning which consists of the antecedent and consequent events.

Thirdly, they think that it is a difficult task for a linguist to analyze these events like sounds produced by speech in complex situations.

Finally, both of them understand that the analysis of the world by language is arbitrary. But apart from these similarities, Skinner differs from Bloomfield in one respect, i.e. he avoids using the term 'meaning'.

So far, for linguistic investigation, all speech forms must be considered. The study of the speech of individuals is the way through which the linguist investigates the language of a community. But in order to provide scientifically accurate definition of meaning for every form in a language, the linguist should have the scientifically accurate knowledge of everything. In other words, she/he would be an omniscient person.

In this way Bloomfield criticized mentalistic conceptions of meaning **as a non-physical process, a thought, concept, image, feeling, and act of will** <sup>33</sup> that happens inside the speaker. Thus, for him, the meaning of a statement is not contained in the statement itself. Rather it is connected to the practical events that precede and follow it and related both to the speaker and listener. Both the behaviorist approach of the situation thus leaves a lot to be explained. In our story, suppose, if Jill had been alone, she might have been just as hungry and might have seen the same apple and eat it; if not, she would have to stay hungry. The lone Jill can be compared with the speechless animal. The state of hunger and sight and smell of the food is the stimulus (which we may symbolize by S) and the movements toward the food are the reaction (which we may symbolize by R). The lone Jill and the speechless animal act in only one way, namely-

S→R

In this way, they get the food. Now, if it does not work, that is, if they are not strong or skilled enough to get the food by the actions R, then they will make a few small movements in their throat and mouth, which produces a little noise. At once, Jack begins to make the reactions for her; he performs actions that are beyond Jill's strength and in the end Jill gets the apple.

Here Bloomfield borrows from 'the sciences of Physiology and Physics' to suggest a model of 'how the gap between the bodies of the speaker and the hearer –the discontinuity of the two nervous systems-is bridged by the sound waves. He divides the 'speech-event' into three parts:

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<sup>33</sup> Ibid p-142.

First, the speaker moves her vocal chords to force the air into the form of ‘sound-waves’.

Secondly, these ‘sound-waves’ set the surrounding air into a similar wave motion. Finally ‘these sound-waves’ strike the hearer’s ear-drums and set them vibrating, with an effect on the hearer’s nerves. This hearing acts as a stimulus. This account makes ‘speech’ as a set of ‘substitute stimulus’ alongside ‘practical stimulus’ such as hunger. The mechanisms for responding to speech sounds are a phase of our general equipment for responding to stimuli.<sup>34</sup> Thus, we can say that language enables one person to make reaction (R) when another person has the stimulus\_(S).<sup>35</sup> In addition, Bloomfield asserts that the division of labour, and with it, the whole working of human society is due to language.

Now, we have to see Bloomfield’s approach in which language has held to operate in response to practical stimulus.

Man utters many kinds of vocal noise and makes use of the variety under certain types of stimuli she/he produces certain vocal sounds. Thus she/he makes appropriate response. In other words, in human speech, different sounds have different meanings. To study this co-ordination of certain sounds with certain meanings is to study language.<sup>36</sup> This phase of language study is known as ‘phonetics’ (experimental phonetics, laboratory phonetics) and a phonetic form which has a meaning is a linguistic form.<sup>37</sup>

Now a group of people who use the same system of speech signals is a speech community. The value of language depends upon people’s using it in the same way.

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<sup>34</sup> Ibid p- 32

<sup>35</sup> Ibid –p-24

<sup>36</sup> Ibid p- 27

<sup>37</sup> Ibid p- 138

For example, if someone did not know the meaning of the word 'apple', we could help her/him handing or pointing at an apple until she/he can use the word in the conventional way. This is the process by which children learn the use of speech-forms. Thus, every member of the social group upon suitable occasion must utter the proper speech-sounds; and when she/he hears, must make the proper response.

Here, we may draw the analogy between two thinkers- Leonard Bloomfield and B. F. Skinner in respect of their view on speech or verbal community. For both of them speech or verbal community is the pre-requisite for the existence of language or verbal behavior. Secondly, speech or verbal community comprises a group of people who emit certain speech forms in relation to the same situations and respond to forms of speech in the same way. Thirdly, speech or verbal community is divided into sub communities formed by people of the same occupation, same age who use the same speech dialects, slang etc.

Bloomfield considered language as the totality of utterances that can be made in a speech community. This standpoint is often called 'behavioristic' and Bloomfield is taken as one of the proponents of Behaviorism. In this regard, it has been seen that the large group of people make up all their utterances out of the same stock of lexical forms and grammatical constructions. Like Saussure, Bloomfield assumes that there are many linguistic forms in a same language. Each linguistic form has a constant and definite meaning. This standpoint is referred as '**structuralism**'. From this standpoint, the notion of sentence was not given special prominence; it was left to be studied within the study of language use. But Chomsky has given emphasis on the notion of sentence because our use of language is almost tied up with newer and newer sentences.

On the other hand, there are two relevant factors:

- a. Responses
- b. Habit

Every child that is born into a group acquires these habits of speech and response in the first years of her/his life. Actually how and when the children learn to speak is not known; but there are so many speculations with regard to this problem. One possible solution might be like this:-

1. The child utters and repeats vocal sounds under various stimuli. It is a universal trait.<sup>38</sup> Suppose the child makes a noise that we may represent as da, but the actual movements and the resultant sounds differ from the conventional English speech. The sound vibrations strike the child's ear-drums while she/he keeps repeating the movements. This results in a habit: whenever a similar sound strikes her/his ear, she/he is makes the same mouth movements to utter and repeat the sound da. These babbling trains her/him to reproduce vocal sounds which strike her/his ear.
2. Suppose, mother utters in the child's presence a sound which resembles one of the child's babbling syllables. For instance, she says **doll** when these sounds strike the child's ear, her/his habit (1, the above mentioned habit) comes into play and she/he utters her/his nearest babbling syllable, da. We say that she/he is babbling to imitate.
3. The mother uses her words when the appropriate stimulus is present. She says doll when she is actually showing or giving the child her/his doll. Repeatedly, the sight and handling of the doll and the hearing and saying of the word doll

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<sup>38</sup> Ibid p- 29

(that is, da) occur together, until the child forms a new habit. The sight and feel of the doll suffice to make her/him say da. To the adults, it may not sound like any of their words, but this is due merely to child's limitation.

4. The habit of saying da, at the sight of the doll gives rise to further habits. Suppose, for instance, that day after day the child is given her/his doll (and says da, da, da) immediately after her/his bath. She/he is now a habit of saying da, da after her/his bath; that is, if one day the mother forgets to give her/his doll; she/he may nevertheless cry da, da after her/his bath. Mother says "He is asking for doll", and she is right, since doubtless an adult's "asking for" or "waiting for" things is only a more complicated story of the same situation. The child has now embarked upon abstract or displaced speech: she/he names a thing even when the thing is not present.
5. The child's speech is perfected by its results. If she/he says da, da well enough, her/his elders understand and they give her/him the doll. When this happens, the sight and feel of the doll act as an additional stimulus, and the child repeats and practices her/his successful version of the word. On the other hand, if she/he says the word da, da imperfectly (that is, at great variance from the adult's conventional form 'doll'), then the elders are not stimulated to give her/his the doll. If the child does not get its desired object after her/his bath, she/he goes into a tantrum which disorders her/his recent impressions. In short, her/his more perfect attempts at speech are likely to be fortified by repetition, and her/his failures to be wiped out for confusion. This process never stops. At much later stage, if she/he says 'Daddy bringed it, she/he merely gets a disappointing answer such as No! You must say, "Daddy brought it"; but if she/he says "Daddy brought it", she/he is likely to hear the



form over again: Yes Daddy\_brought it, and gets a favourable practical response.

At the same time and by the same process, the child also learns to act as a hearer. While she/he is handling the doll, she/he herself/himself says da, da. After a time, hearing the sounds precedes handling the doll. The child forms habits of acting in conventional ways when she/he hears the speech.

This twofold character of the speech habits becomes more and more unified. In each case, where the child learns the connection  $S \rightarrow r$  (for instance, to say doll, when she/he sees her/his doll), she/he learns also the connection  $s \rightarrow R$  (for instance, to reach for her/his doll or handle it when she/he hears the word doll). On the other hand, as soon as she/he learns to speak a new word, she/he also responds to it. When she/he hears others speak it, and vice versa, as soon as she/he learns how to respond to some new word in a proper occasion.

But this is not the complete story. We often find that the speaker understands many speech forms that she/he seldom or never employs in her/his own speech.

In short, we may say that according to Bloomfield, accomplished readers developed an accelerated, effortless ability to connect sounds with written characters. There are four steps in order to grasp this level of proficiency.

- The first step involved teaching children to recognize letters and preparing them for left-to-right scanning. Simultaneously, this time, teachers provide to the children the reading material containing letters with only one phonetic value, e.g. 'b' in bat, bun and bin.

- At the second stage, irregular spelling-patterns, multi-syllabic words and connected texts are introduced. But Bloomfield gave no effort to avoid non-sense syllables. Since he believed that the teachers should appeal to the children's natural playful attitude towards language. It allows them to demonstrate mastery of a particular sound-symbol correspondence.

For Bloomfield, though the mechanistic approach is a simple mode of language, but the human body and its mechanism which governs the speech are so complex that we usually cannot predict whether a speaker will speak or what she/he will say. The possibilities are almost infinite and 'the chain of consequences' is very complicated. In other words, we do not understand the mechanism which makes people say certain things in certain situation, or the mechanism which makes them respond appropriately when these speech sounds strike their ear drums. These mechanisms are studied in Physiology, and especially in Psychology. To study them in their special bearing on language is to study the psychology of speech that is Linguistic Psychology.

### **2.1 Critical analysis of these approaches**

The aforesaid account on language acquisition mainly focuses on the importance of imitation and observations. For empiricists, children learn language analogically. According to them, we produce and understand new sentences by analogy or similarity with the old. We can understand a new sentence because it is obviously similar to the sentences we were acquainted with, in the past. On the other hand, if we admit that the study of language behavior involves describing and explaining the unobservable activity, the situation become much more complicated. Because we have to postulate some set of processes, some internal mechanism which operate

when we speak and understand. In other words, we have to postulate something we can call a mind. The study of language from this point of view is equal as a study of specific properties, whose outward manifestations are observable behavior. For Chomsky the linguist is trying to establish certain general properties of human intelligence. Linguistics is simply the sub-field of psychology that deals with these aspects of the mind.<sup>39</sup>

But we are not born with automatic skill of speaking and understanding language. We have to acquire this skill of speaking. So this approach to language is not only concerned with what goes on when we speak and understand, or what has been called linguistic performance, but how we come to be able to do these things? Language behavior is evidently such a complex skill for an infant to acquire it in a short period of time. Thus some thinkers propose that the disposition to acquire it must be innate. They also intend to propose that the only human beings possess language. It means that there is something peculiar to the human species that predisposes it to acquire language. Some linguists and psychologists go so far as to suggest that the human infant is born with a specific, genetically determined language-learning capacity. Besides these linguists, on the other hand, others provide only that the ability and predisposition to acquire language is a function of the general cognitive capacities of the human being, which enable her/him to learn at all.

So far, in the next chapter we will consider as far as possible the Chomskyan view on language acquisition. For Chomsky, any significant theory must explain the creative aspect of language or the ability of the native speaker to produce infinite number of

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<sup>39</sup> Chomsky, N. 1968. *Language and Mind*. New York: Harcourt, Brace & World, Inc. p-24.

sentences. Chomsky claims that his view has more explanatory value than the previous hypothesis given by the empiricists, behaviorists, and Bloomfieldians. It is also claimed by Chomsky that his view can be scientifically verified and enjoys the prestige of an advanced science.

## **Chapter-3**

### **Language Acquisition with special reference to Noam Chomsky**

#### **Section-I**

##### **1.Introduction**

Our third chapter addresses Chomskyan view on Child's Language Acquisition. The issue itself is a broad canvas, thus we have divided this chapter into four sections to study in detail. In this first section we have discussed Chomskyan influential account of language acquisition on the basis of his objection against the previous approaches, mainly behaviorist theories given by Skinner and later admitted by Leonard Bloomfield.

Noam Chomsky (1928) is a renowned living thinker of this twentieth century. He is the Professor of the Institute of Philosophy and Linguistics at Massachusetts Institute of Technology. His work in Linguistics has revolutionized the study of language. He has written numerous books and articles, in Philosophy and Linguistics as well as on Politics.

It is argued that language is a complex system. It consists of a number of distinct, interacting components. Thus it is difficult to provide a single definition of language. We have already seen Chomskyan definition of language<sup>40</sup>. In the last twenty five years or more, psychologists, linguists, cognitive scientists and philosophers are coming up with the partial explanation of the child's language development. In this context linguistic research has been influenced by Chomsky's revolutionary ideas, mainly his account of language. In his earliest discussion of the foundations of linguistics, he drew our attention to an intrinsic fact about language; that is, the

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<sup>40</sup> Chomskyan definition of language is mentioned in chapter 1, page-25.

language user ‘has observed (only) a certain limited set of utterances of his language’, but can ‘on the basis of this finite linguistic experience, produce an indefinite number of new utterances which are immediately acceptable to other members of his speech community.’<sup>41</sup> It is later used by Chomsky as the ‘creative aspect of language use’ to refer his ideas on language and its development.

Now, for our present purpose, we may consider two important questions:

- a. Whether a human child is pre-programmed for language acquisition?
- b. Whether language faculty is related to other cognitive abilities?

We have already discussed in this context Skinnerian hypothesis which states that all behavior is learned. At birth, human minds are nothing but blank slate. It can be manipulated and molded to acquire almost any sort of behavior. In other words, language is entirely a matter of conditioning. That is, the child is endowed at birth with general learning abilities, but not with any language specific knowledge. So far, linguistic behavior is molded or reinforced by adult speakers. For example, a child’s “learning” a language is corrected when “wrong” and rewarded when “right”. But behaviorism limited its field of enquiry to physically measurable phenomena. On the other hand, American pre-eminent structuralist thinker Leonard Bloomfield (1887-1949) opted for a corpus based methodology and enriched his doctrine based on structuralism.

Now, keeping all the previous approaches in mind, let us consider what Chomsky says regarding language acquisition. For Chomsky, the above view of behaviorism is inconsistent with the facts. In reality, we see language is mastered by human children

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41 Chomsky, N. 1975. *The Logical Structure of Linguistic Theory*. New York: Springer. p-61.

who begin with no frame of reference at all and rarely expose to any formal instructions.

### **1.1 Limitations of Imitation Theory**

For Chomsky, imitation theory (proposed by behaviorism) cannot fully explain language acquisition. It (imitation theory) does not even admit that a human child is pre-programmed for language acquisition. Chomsky published a criticism of the behaviorist theory in 1957. He mainly focused on the impoverished language input that children receive. According to Chomsky, adults do not speak in grammatically complete sentences. A child takes up the language of her/his surrounding linguistic community as its mother tongue. But it does not mean that a child simply imitates the language spoken in its neighborhood. Rather a child gets exposure to a limited sample of language. If it was a performance by imitation, the input or the data coming from experience cannot explain the competence in which child uses her/his language. That is why Chomsky writes:-

**This disparity between knowledge and experience is perhaps most striking fact about language. To account for, it is the central problem of linguistic theory.<sup>42</sup>**

Against imitation theory, it also may be said that whatever a child hears are not always grammatical sentences. We can see that in the initial stage of language learning, they drop non-content words and their sentences take a look of sentences used in telegrams. But we cannot say that they hear such telegraphic sentences around them. On the other hand, adults often say either ‘This Teddy is his’ or ‘This is his

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<sup>42</sup> Chomsky, N. 1967. “The Formal Nature of Language”. In *Biological Foundations of Language*, edited by E. H. Lenneberg. New York: Wiley. p-348.

Teddy’, but usually we see that two years old children generalize ‘This Teddy is mine’ to produce ‘This is mine Teddy’. It shows that children do not simply imitate their parents or adults.

On the other hand, children often produce ungrammatical utterances which are different from adult’s point of view. Our imitation theory cannot also defend this issue. There are several sentences produced by a three year old child in contrast with correct version of the adults. For example:

(Three year old child)

(Adults)

What that was?

a. What was that?

Where it is?

b. Where is it?

Imitation theory cannot also explain the child’s problem of pronunciation of long words with an unstressed syllable. The child correctly pronounces the words ‘recorder’ and ‘remember’, but generalize the same prefix ‘re’ to other words for which such prefix is not required. For example:

Attack.....pronounced.....retack

Guitar.....pronounced.....retar

Elastic.....pronounced.....relastic

So far, it is not surprising to claim that children of any linguistic community of this world pass through the same phase. Now, with all these inadequacies of imitation theory, lastly we may say that children whose speaking ability is impaired by some sort of neuro-physical illness, start attempting to speak as soon as they recover. This again cannot be explained by the imitation theory. Let us take an example, suppose a person knows how to play a violin. One day he had a serious head injury in a road accident which causes him to lose his instrumental ability, although his physical



capacities are unaffected. When his injury heals, his musical ability returns. Thus we might say that the cognitive system was left intact. That is, a cognitive system of knowledge that the mind-brain retained. It resembles with the notion of connectionist networks of the brain, which has a highly parallel structure with an enormous amount of interconnection between neurons.

Let us take a thought experiment. The human brain degrades gracefully. Like the previous example, a small stroke in the area of the brain responsible for the partial loss of language. The victim will very probably retain some capacity to use language. According to Chomsky, the central nervous system and cortex are biologically pre-programmed not only for the physiological aspects of speech, but also for the organization of language. The capacity for organizing words to each other is inherent. In other words, we may say that competence (the inherent capacity of knowledge of language) is independent of performance. In the above case, after an accident or stroke, people are found speechless. According to Chomsky, those who get back to their language in this way must retain their competence even in the absence of the ability of use or experience that knowledge.

## **1.2 Limitations of Bloomfieldian model**

On the other hand Chomsky opposes Bloomfieldian account of language study as well as the acquisition process. Bloomfield opted corpus based methodology to study and define the structure of language. It means that languages are out there in the external world. It is the task of the linguist to collect the samples of those languages and study their structural properties irrespective of their meaning. Actually Bloomfield was closely associated with the Unity of Science movement and subscribed to the theory of reductionism. Thus he intended to make linguistics scientific. For this purpose he

also took inductive generalization. In case of language acquisition, Bloomfield accepted Behaviorist model as the basis of scientific study of language. He also thinks that language originates from a physical need and is a means to a physical end. His method relied on observation and tried to explain language learning with the help of analogy. That is, thinkers like Bloomfield, Quine (1908-2000) and others explain creativity in language through the analogy. Quine says that, **it is evident how new sentences may be built from old materials and volunteered on appropriate occasions simply by virtue of analogies.**<sup>43</sup>

In opposition to their theories, Chomsky attacks the notion ‘analogy’ in the following way:

**Knowledge of language cannot arise by application of step by step inductive operations (segmentation, classification, substitution procedures, analogy, association, conditioning and so on) of any sort that have been developed within linguistics, psychology or philosophy.**<sup>44</sup>

Chomsky raised the objection against Bloomfieldian doctrine in two respects:

- First, according to Chomsky, it (Bloomfieldian doctrine) could not explain creative aspect of language, that is, the native speaker’s ability to produce infinite number of sentences from finite means and also failed to understand novel sentences not encountered before within a short period of time.
- Secondly, for Chomsky, the study of analogy to study the language and its development could not address intuition of the native speaker.

### 1.3 Chomsky’s standpoint

In this way, we see that for one’s native language, imitation and instruction are required to learn some vocabulary and pragmatic function. But the relevance of

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<sup>43</sup> Quine, W.V. 1960. *Word and Object*. Cambridge: Cambridge University Press. p-9.

<sup>44</sup> Chomsky, N. 1966. *Cartesian Linguistics*. New York: Harper and Row. p-12-13.

imitation is very limited according to Chomsky. Because the knowledge of language or competence of the native speaker is embedded in her/his mind. So far, we get two theories which are concerned about the 'knowledge' or competence of language. First, the proponents of imitation theory believe that our knowledge of language is empirical and theoretical in nature. On the other hand, the rationalist camp would suggest that language behavior is not learned only through experience. Thus the most pre-eminent questions in the realm of language acquisition are therefore:

1. What is knowledge of language?
2. How is this knowledge acquired?
3. How is such knowledge put to use?

In relation with these questions, Chomsky claims that language is not a set of generalized stimulus-response connections; rather it is our ability to produce novel utterances not heard before. Thus it cannot be defined in terms of analogy. But it can be defined by a set of rules and principles that we internally possess in our brain. It is the subjectivistic view of language. Chomsky thus claims that he will explain scientifically this subjectivistic view of language with his theory of Transformational Grammar.<sup>45</sup>

Chomsky reiterates that 'a language is set of sentences-actual and possible. A grammar is a recursive definition of this entire set. The ability of a language user to produce and understand sentences not previously encountered stems from his mental representation of this grammar. Therefore, a grammar is a theory of mental states underlying the production and comprehension of utterances; it is a system of rules that a speaker knows unconsciously, that he has internalized, and the linguist constructing a grammar of a language is in effect proposing a hypothesis concerning this

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<sup>45</sup>We will shortly discuss Chomskyan theory of Grammar, especially Transformational Grammar.

internalized system. It follows that grammar or language has no existence independent of the speaker's (unconscious) knowledge or beliefs about it, independent of the speaker's mental representation of it. Languages are thus subjectively constituted entities in a strong sense, and this individuates them from inanimate objects of familiar kinds.<sup>46</sup>

In this way, we see that Chomsky shifted from Behaviorist and Bloomfieldian account of linguistic tradition which was based on corpus collection and mechanical discovery procedure. Thus, Chomskyan project to study language is with its structural aspect and for that reason communication cannot be the sole purpose of language.

Now the answer of the first question is rooted in the Langue-Parole concept of Ferdinand de Saussure (1857-1913). He made a distinction between langue (language-system) and parole (language behavior). Langue is a set of conventions shared by all the speakers of a language. Secondly, it is abstract, as these particular conventions exist in the minds of the speakers who belong to that society that has created language. To quote Saussure:

**It is a fund accumulated by the members of the community through the practice of speech, a grammatical system existing potentially in every brain, or more exactly in the brains of a group of individuals; for the language is never complete in any single individual, but exists perfectly only in the collectively.**<sup>47</sup>

On the other hand, parole is individual performance of language in speech or writing. It is concrete and physical. It makes use of the physiological mechanism such as speech organs in uttering words and sentences.

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<sup>46</sup> Sengupta, Kalyan. 1990. *Mentalistic Turn: A Critical Evaluation of Chomsky*. Calcutta: K. P. Bagchi & Company in collaboration with Jadavpur University. p-3.

<sup>47</sup> Saussure, F.D. 1916. *Cours de Linguistique Generale (Course In General Linguistics)*, ed. Tullio de Mauro, Translated by Wade Baskin. London, U.K.: Fontana. p-13

### 1.4 Distinction between Competence and Performance

Chomsky has made a similar distinction between competence and performance. That is, understanding of competence vs. performance as given by Chomsky closely resembles the langue-parole dichotomy given by Saussure.

According to Chomsky, competence is native speaker's knowledge of her/his language, the mastery of the system of rules; while performance is the production of actual sentences in real life situations. So, a speaker's knowledge of the structure of the language is her/his competence. On the other hand, the expression of competence in actual life situation is her/his linguistic performance. Competence is free from interference due to slips of memory, lapses of attention etc, while performance reflects many such lapses. That is, it (competence) is independent of situation. For example, people may know the Highway Code or the rules of arithmetic independently of whether they can drive a car or add up a column of figures. Thus the description of linguistic competence provides the knowledge of language. The study of language is therefore the study of grammar which are psychologically real and which contain all the linguistic knowledge (whether innate or acquired) possessed by a speaker of language. Such grammars are considered as competence models. On the other hand, the study of performance is concerned with the principles which govern language use. Performance usually provides more evidence as well as some justification for the fact that modern generative linguists are more interested in the study of competence.

It is to be noted in this context that there is a significant difference between Saussure's **langue** and Chomsky's **competence**. The first is specified as something belongs to the society or language community, whereas the second remains the

possession of the individual. Saussure more or less ignores the question of how the individual acquires a mastery of the essentially collective system and Chomsky repeatedly hammers on this point.

Here Chomsky also makes difference between grammatical competence and pragmatic competence.

Chomsky defines grammatical competence as:

**By “grammatical competence” I mean the cognitive state that encompasses all those aspects of form and meaning and their relation, including underlying structures that enter into that relation which are properly assigned to the specific subsystem of the human mind that relates representation of form and meaning.<sup>48</sup>**

### **1.5 Introduction of Language Acquisition Device (LAD) and its relation with competence-performance**

This subsystem is to mean by Chomsky as “the language faculty” that is, an **inbuilt language acquisition device (LAD)**<sup>49</sup>. In humans, it enables a person to acquire competence. In other words, it is such device which helps to internalize the system of the rules of the language; enabling the speaker to generate an infinite number of sentences. This is the reason that enables a child to produce novel sentences, not encountered before. This has been aptly referred as ‘creativity’<sup>50</sup> by Chomsky. In case of individual’s linguistic creativity, he accepts a ‘tacit knowledge’ of the language-system as a whole, an internalized grammar which enables each of us to generate potentially a number of new sentences. In this respect his view is totally different from behaviorist stimulus-response mechanism.

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<sup>48</sup> Chomsky, N. 1980. *Rules and Representations*. New York: Columbia University Press. p-59.

<sup>49</sup> LAD- we will discuss the notion of LAD very soon.

<sup>50</sup> We will discuss in detail this notion of creativity in the section of this third chapter.

It must be noted that ‘creativity’ is used in various senses by different thinkers like Rabindranath Tagore, Karl Marx and others. The sense of creativity can be understood with their systems of thought.

Chomsky’s notion of competence has sometimes been attacked from the pragmatic point of view. That is, it is criticized in the sense that it fails to deal with the following vital question ‘how language is used.’ It can be related to the communicative competence (Hymes, 1972).<sup>51</sup>

As has been already mentioned Chomsky is not concerned with the pragmatic aspect of languages. This does not mean that Chomsky is ignoring the application aspect.<sup>52</sup> In his *Rules and Representations* (1980) <sup>53</sup>he has introduced the word ‘pragmatic competence.’ To quote Chomsky in this context:

**Pragmatic competence underlies the ability to use such knowledge along with the conceptual system to achieve certain ends or purposes. It might be that pragmatic competence is characterized by a certain system of constitutive rules represented in the mind, as has been suggested in a number of studies.<sup>54</sup>**

Pragmatic competence is characterized by a certain system of constitutive rules represented in the mind. For example, a policeman may know the syntax of traffic signals (red and green lights and their sequence etc) but lacking the knowledge of how to use them to direct traffic.

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<sup>51</sup> Hymes, D. 1972. “Competence and Performance in Linguistic Theory”. In *Language Acquisition: Models and Methods*, edited by R. Huxley and E. Ingram. New York: Academic Press. p-269-93

<sup>52</sup> Application aspect=pragmatic aspect

<sup>53</sup> Chomsky, N. 1980. *Rules and Representations*. New York: Columbia University Press.

<sup>54</sup> Chomsky, N. 1980. *Rules and Representations*. New York: Columbia University Press. p-59.

Therefore, in this respect, lastly we might say that the study of competence and the study of performance are mutually supportive.

In this regard, it is better to understand Chomskyan notion of competence – performance distinction with reference to **Universal Grammar (UG)**. Chomsky argues that every normal child genetically possesses a linguistically specific system of principles which is known as the **Universal Grammar (UG) or Language Acquisition Device (LAD)**. So, child's language acquisition cannot be accounted without considering the notion of LAD or UG.

Thus our next section will focus on the detail study of Universal Grammar or **UG**.



## Section-II

### 2. Study of Traditional Grammars and Chomsky's Theory of Universal Grammar (UG)

In this second section, we have discussed in detail the study of grammar and its modifications as depicted by Chomsky, in relation with language acquisition.

UG is a theory of knowledge which is concerned with the internal structure of the human mind. Chomsky writes:

**...universal grammar is an element of the genotype that maps a course of experience into a particular grammar that constitutes the system of mature knowledge of language, a relatively steady state achieved at a certain point in normal life.**<sup>55</sup>

Within Chomskyan model, the interrelation among mind, language and grammar has been worked out in detail. It has been already mentioned that language and grammar have been used in a technical sense. This attempt can be compared with early Wittgenstein (1889-1951) in his book *Tractatus* (1921)<sup>56</sup>. He endeavored to give us a structural approach regarding the interrelationship of Thought, language and reality in the following form:-

Thought \_\_\_\_\_ Language \_\_\_\_\_ Reality

In the year 1953, Chomsky and his followers made a dramatic shift in the study of grammar. It becomes an attempt to discover universal rules governing the construction of meaningful utterances. According to Chomsky, grammar is not only tagged with the question of language structure, but is a sort of theory of mind, corresponding with some universal forms of thought. But for that matter, he does not

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<sup>55</sup> Chomsky, N. 1980. *Rules and Representations*. New York: Columbia University Press. p-65.

<sup>56</sup> Wittgenstein, L. 1922. *Tractatus Logico Philosophicus*. Translated by D. F. Pears and B. F. McGuinness. London: Routledge.

claim that grammar of any one particular natural language is innate. As we have already seen, he takes language faculty to be a biological component of human organism. As human organism is genetically determined, the linguistic faculty also, being a part of that organism must be cued genetically and only in this biological sense, the faculty may be said to be innate. Thus, it is clear that, Chomsky's innatism is different from Descartes' as his ontological stand is different. Chomsky believes Identity theory of mind and his innatism is genetic. According to Chomsky every grammar will possess a common core, in spite of their difference based on the ability of human beings to learn languages. From this standpoint, it follows that any native speaker would possess universal grammar which is a priori in the Kantian sense. In this sense, the UG is totally independent of experience.

The grammar consists of rules which separate grammatical from ungrammatical sentences. For example:

**(Grammatical sentence)-The dog bit the man**

**(Ungrammatical sentence)- Dog the bit man the**

**So, to know a language, is to know a mentally represented grammar consists of rules. The innate possession of rules as has been already mentioned is referred as competence.**

Actually Chomsky draws our attention to the linguistic structures and innate capacities which are essential ingredient of our psychological understanding. He also gives emphasis on some ordinary facts about language which reveal a sensitivity of language speakers to fairly complex grammatical structures, not encountered before. According to Chomsky, the native speakers have some "linguistic intuitions" about grammatical phenomena. This can be explained with the help of adverbial use of

English sentences. This has been illustrated with the adverb ‘occasionally’ in the following way:-

All the examples under (1) are equally acceptable but (2) seems to be perceived as odd.

**(1) A. Occasionally John speaks French.**

B. John occasionally speaks French.

C. John speaks French occasionally.

(2) John speaks occasionally French.

We may take another adverb like “fluently”. Here, the range of possibilities becomes limited. The example in (3) is acceptable, but examples under (4) are of marginal acceptability and (5) like (2) is ungrammatical.

**(3) John speaks English fluently.**

**(4) A. Fluently John speaks English.**

**B. John fluently speaks English.**

**(5) John speaks fluently English.**

A linguist in this case can find that (2) and (5) are not acceptable like (1) and (3). In this case, the linguists like the natural scientists should rely on the evidence rather than just data.<sup>57</sup> So far, considering the above facts, we may say that a major and innovative characteristic of Chomsky’s linguistics is its special emphasis on the ‘linguistic intuitions’ of the native speakers.

In this context, it is to be noted that native speakers have different intuitions about their language. For example they can judge:

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<sup>57</sup> The word ‘evidence’ has been used in the scientific sense. It has been mentioned earlier that Chomsky has taken up a scientific project in his attempt to explain language acquisition (LA)

- a. Certain strings are well formed while others are ill formed.
- b. Certain sentences are closely related. For instance, ‘The man opens the door’ and ‘Did the man open the door?’
- c. Certain sentences are different in spite of apparently close similarities between them. For instance, ‘John is eager to please’ and ‘John is easy to please.’
- d. Certain sentences are synonymous. For instance, ‘He opens the door’ and ‘The door is opened by him.’
- e. Certain sentences are ambiguous. For instance, the sentence “He rents the house” is ambiguous in the sense that it means either ‘he rents the house *to* someone’ or ‘he rents the house *from* someone.’ There are two different meanings embedded in this particular sentence and makes it ambiguous.

Therefore, this major trend of linguistic theory considers that a **language is rule-governed**; that is, it can be described in terms of a **grammar**. It also implies that rules are constructed and operated by a single individual. There are two types of case where single individuals unconsciously operate with their own private linguistic rules. There are-

- a. The case of children learning their first language.
- b. The case of adults with idiosyncratic speech patterns

Both provide arguments against linguistic conventions and in favor of linguistic rules. So languages are not definable in terms of customs, habits and conventions according to Chomskites.

### **2.1 Creative Aspect of Language use and its relation with UG**

Now, by reference to such rules, children can produce and understand an infinite set of sentences. They are also able to produce and understand arbitrary novel sentences

of their own language as has been mentioned. These sentences are intelligibly appropriate to the context in which they occur. This has been labeled as “**creative aspect of language use**” by Chomsky. Therefore, we might say that our use of language is creatively rule-governed, and it is very prominent in the speech of children acquiring their first language. That is, the language development of children has focused on initially interconnected properties of human language.

First, it is rule-governed that is, humans master and follow rules for forming and using expressions of their native language.

Second, it is creative, that is, humans spontaneously produce and understand expressions that they have never encountered before in their linguistic experience. The understanding aspect is the linguistic intuition of the native speakers and the production aspect of competence is Chomskyan creativity.

Let us take a look how does a child apply these rules for constructing a sentence. For example, the child has over generalized the rules for regular past tense and plural formation to cases, whereas adults do not apply such process. This again shows that the child makes the rules of her/his own which only she/he follows with experience, and the rules undergo constant modifications. The surprising fact is that children are able to construct generalizations or make up rules on the basis of extremely limited data. For example:

The adult’s system:-

- a. I talked, she danced, she moved etc.
- b. One car, two cars, one elephant etc.

On the contrary, the child comes up with sentences like:-

- a. I commed, John runned, they signed etc.
- b. Two sleeps, lots of tooths, some mouses etc.

Imitation theory once again fails to explain this type of ungrammatical utterances or rather over generalization of rules. If the child's learning or speaking a language is based on imitation, then it would be almost impossible for them to come up with exceptions.

In this way, Chomsky claims that unlike Behaviorism, this assumption has more explanatory value regarding child's acquisition of first language. A child can learn a language within a short period of time and such a capability cannot be explained by the Behaviorist model.<sup>58</sup>

Chomsky reiterates that the speakers of a language use their internalized grammar in producing and understanding sentences. They also apply such grammars in correcting mistakes, and so on.

Therefore, knowing a language is equated with knowing a grammar and the speaker's knowledge of this internalized grammar is not conscious. Chomsky argues that our lack of awareness of many facts about our language shows that knowledge of language is a special sort of knowledge. Because there are many facts about our language which we can recognize even if we are never taught or learnt before. Here some philosophers like Chomsky argue that our knowledge of language is largely unlearned or innate. Thus, this innate knowledge of language is not an ordinary sort of knowledge as has been mentioned. It is also considered as f-knowledge ('functional knowledge') that enables the speakers to speak and understand their native language.

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<sup>58</sup> Behaviorist model has already been discussed in Chapter-2.

It can be noted in this connection that we may label this knowledge as a form of ‘knowing how’ in contrast to ‘knowing that’.<sup>59</sup> Thus the Chomskyan story is in contrast to the traditionally accepted definition of ‘knowledge’ in terms of ‘knowing that’. From the aforesaid account, now we may easily acknowledge the study of grammar in relation with language acquisition. Now let us see how Chomskyan study of grammar is different from other traditional study of grammars.

## 2.2 Difference between Chomskyan Grammar (GG) and other Traditional Grammars

There is more than one type of grammars, namely

- a. Descriptive grammar,
- b. Prescriptive grammar,
- c. Reference grammar,
- d. Pedagogical grammar.

But Chomsky’s attempt to respond to the classificatory model of descriptive linguistic was **Generative Grammar (GG)**. The above grammars<sup>60</sup> presuppose that the speakers know something about the language. They only concentrate on the outlines of sentence structures with information on irregularities, idiosyncratic facts and so on. In contrast, **GG** is a theory about a system of knowledge. It tries to answer the questions predisposed by all other kinds of grammar. In other words, it tries to answer

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<sup>59</sup> Gilbert Ryle (1900-1976) in his famous book *The Concept of Mind (1949)* makes the difference between ‘knowing how’ and ‘knowing that’ in defining ‘knowledge’.

<sup>60</sup> A **descriptive grammar** describes a very selective number of grammatical constructions that are used in a language.

A **prescriptive grammar** represents a kind of manual of attitudes to grammatical usage: good French and bad French.

A **reference grammar** is a description of as many grammatical aspects of the language as are thought useful for some particular purpose. It is meant to be an authoritative compilation of facts.

A **pedagogical grammar** is a book for teaching and learning a language.

the question regarding 'knowing how'. So, it (**GG**) is a **theoretical grammar**. It is also concerned with deeper principles of the language.

The term '**generative grammar**' was introduced into linguistics by Chomsky in the mid 1950s. It was employed in two different senses. In its original, narrower and more technical sense, it refers to a **set of rules** which define various kinds of language-systems. In its broader sense, it is used as the term '**generativism**'. It refers to a whole body of theoretical and methodological assumptions about language structure.

**GG** is concerned with those aspects of form and meaning that are determined by '**language faculty**'. The language faculty is understood to be a particular component of the human mind. It must be noted that Chomsky consistently claims that he is giving us a scientific theory<sup>61</sup> that actually describes the language faculty. This language faculty is genetically determined. It is because of the presence of this language faculty or language acquisition device, the humans can attain the knowledge of English or Japanese or so forth, while rocks, birds or apes cannot construct any grammar on the basis of given data. This particular standpoint is shared by the Social anthropologists and Chomsky in contrast with Behaviorism. Like Chomsky, social anthropologists also believe that only language can differentiate human beings from other primates. In other words, language is species-specific. Secondly, in contrast with behaviorism, both Chomsky and Social anthropologists agree that the interacting parts of cultural intercommunications do not develop upon stimulus-response mechanisms; rather they are linguistic in nature. They are generated within a context of grammatical rules. Chomsky illustrates this point with an example. According to him, the structures of English grammatical sentences are not constructible by local

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<sup>61</sup> This claim is mentioned in his (Chomsky's) book *New Horizons in the Study of Language and Mind* (2000).



links alone. That is, the local links are required if the structures are built up by response chains. For instance, if the word 'either' appears at some place in a sentence, then 'or' must appear at certain (not just any) point later. Therefore, Chomsky claims that human speech behavior is governed by discoverable grammatical rules.

So far, introducing 'Generative Grammar' was his fundamental break with structuralism. For Chomsky, structuralists focused mainly on structures. In this regard, we may take a short look into the historical background.

In America, the study of language had a particular vision. Most of the languages were getting extinct. The linguists invented observation based procedures to study languages. They were popularly labeled as '**corpus based methodology**' or **field methods**'. In this way, blooming of structuralism comes out from the publication of Saussure's *Cours de linguistique generale*<sup>62</sup> in 1916. At that time, it was thought that languages are there in the world and a linguist should study these languages along with their properties. According to the famous German anthropologist Franz Boas (1858-1942) every language has its own unique grammatical structure and the linguist should discover for each language the categories of description appropriate to it. This view is also regarded as '**structuralism**'.

Boas was followed by two influential and popular figures in American linguistics (the period from the foundation of the Linguistic Society of America in 1924 to the beginning of the Second World War) were Edward Sapir (1884-1939) and Leonard Bloomfield (1887-1949). Bloomfield was famous for his attempt to make linguistics autonomous and scientific. He confined his study of language to syntax and phonetics. On the other hand, Sapir takes a 'humanistic' view of language. For him,

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<sup>62</sup> Saussure, F. D. 1916. *Cours de Linguistique Generale (Course in General Linguistics)*, ed. Tullio de Mauro, Translated by Wade Baskin. London, U.K.: Fontana.

language is ‘purely human’ and ‘non-instinctive’. Unlike Bloomfield, Sapir did not think that language study should be scientific in nature. Bloomfield in his famous book *Language* (1933) adopted behaviorism and corpus based methodology as a framework for linguistic descriptions. He studied language and its structure with special emphasis on syntax and phonetics. Even his followers like Zellig Harris (1909-1992) carried on this trend of study of the principles and phonology and syntax without reference to meaning. Harris’s work attempts to study the structure of sentences through Immediate Constituent (IC) analysis.<sup>63</sup>

### **2.3 Chomskyan notion of GG or Finite State Grammar (FSG) and its properties: recursive rules and constituent structure**

Now, Chomsky rejected empirical method of concept formation. In many respects his theory as presented in his famous book *Syntactic Structures* (1957) are same as Bloomfieldian school and his teacher Zellig Harris. Just like them, Chomsky proposed that phonology and syntax of a language should be described as a purely formal system without the reference of semantics. But in two respects Chomsky’s earlier work distinguishes him from Harris and other Bloomfieldians.

- On the one hand, Chomskyan philosophy of language has a different perspective as it emphasizes on the ‘creative aspect of human language’. He claims that the theory of grammar should reflect the possession of the ability of the native speakers to produce and understand sentences which they have never heard before. Before Chomsky, this creative aspect of language use was also acknowledged by Humbolt (1767-1835) and Saussure (1857-1913) in their respective theories. But it was neglected in Bloomfieldian school of linguistics which confined itself to corpus based methodology. They were

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<sup>63</sup> We will shortly discuss the IC analysis.

more concerned to make the distinction between descriptive and prescriptive grammars. In brief, descriptive grammar deals with the rules that are actually followed by the native speakers and the prescriptive grammar, on the other hand, provides the rules which according to the grammarians, the native speakers ought to follow in order to speak correctly. Thus the creative aspect of language was not addressed by the Bloomfieldian schools.

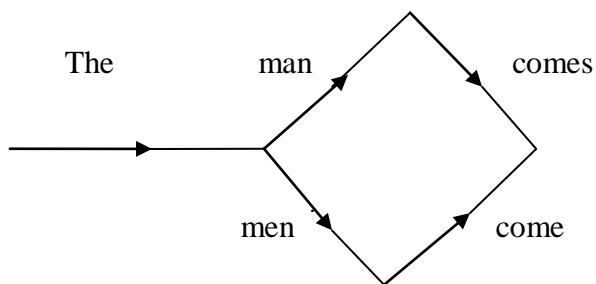
- On the other hand the grammar of a language or LAD in Chomskyan perspective is similar to the hardware of a computer. In his earliest work, Chomsky demonstrated that only the possession of generative grammar by the native speakers can explain the creative aspect of language use. According to him, the grammar of a language should generate ‘all and only’ sentences of a language. Chomsky drew our attention on two properties of English and other natural languages which must be considered in the study of Generative Grammar. One of such properties is ‘**recursiveness**’ and another is ‘**constituent structure**’. The Generative Grammar is capable of generating an infinite set of sentences by means of a finite number of recursive rules and a finite vocabulary. It is also known as ‘**Finite State Grammar (FSG)**’. In this respect Chomsky says:-

**Suppose that we have a machine that can be in any one of a finite number of different internal states, and suppose that this machine switches from one state to another by producing a certain symbol (let us say, an English word). One of these states is an *initial state*; another is a *finite state*. Suppose that the machine begins in the initial state, runs through a sequence of states (producing a word with each transition), and ends in the final state. Then we call the sequence of words that has been produced a “sentence”...Any language that can be produced by a machine of this sort we call a *finite state language*; and we can call the machine itself a *finite state grammar*.<sup>64</sup>**

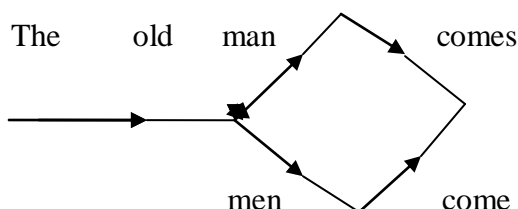
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<sup>64</sup> Chomsky, N. 1957. *Syntactic Structures*, The Hague: Mouton. p-18-19.

**FSG** can be represented graphically in the form of a “**state diagram**”<sup>65</sup> with two sentences-‘the man comes’ and ‘the men come’ in the following way:-



Here, we can also ‘extend this grammar to produce an infinite number of sentences by adding closed loops’<sup>66</sup> We may add the adjective ‘old’ with the nouns (man/men) of the above sentences and represent them in the following diagram:-



There are some predicaments of **FSG**.

First, if we accept this conception of language, our native speakers will be reduced to a machine.

Secondly, there are some sentences which cannot be generated by **FSG**. For example, in English language, we may find the structures, such as:

- i. If  $S_1$ , then  $S_2$
- ii. Either  $S_3$ , or  $S_4$

<sup>65</sup> Chomsky referred the notion of “**state grammar**” from *The Mathematical Theory Of Communication* by C.E. Shannon and W. Weaver, 1949, Urbana, pp-15f.

<sup>66</sup> Chomsky, N. 1957. *Syntactic Structures*. The Hague: Mouton p-19.

iii. The man, who said S<sub>5</sub>, is arriving today.

In the above structures, 'there is a dependency between words or opposite sides of the comma (i.e. 'if'-'then', 'either'-'or', 'man'-'is'), and we can insert a declarative sentence S<sub>1</sub>, S<sub>3</sub>, S<sub>5</sub> between the interdependent words.'<sup>67</sup> Thus the set of all such sentences cannot be described by **FSG**.

Moreover, according to **FSG**, language structure consists of a finite set of 'level of representation.' Thus Chomsky states that:-

**A finite state grammar is the simplest type of grammar which, with a finite amount of apparatus, can generate an infinite number of sentences. We have seen that such a limited linguistic theory is not adequate; we are forced to search for some more powerful type of grammar and some more 'abstract' form of linguistic theory...At least one linguistic level cannot have this simple structure. That is, on some level, it will not be the case that each sentence is represented simply as a finite sequence of elements of some sort, generated from left to right by some simple device.**<sup>68</sup>

### **2.3.1 Modified version of FSG: Phrase Structure Grammar (PSG)**

For this reason, a modified version of grammar is required. This modified grammar is labeled as **Phrase Structure Grammar (PSG)**. Chomsky characterizes the formal properties of **PSG** with its particular function more carefully than his predecessor Harris. Chomsky's aim was to determine the mathematical and logical designs of possible grammars and evaluate their comparative strength. For Chomsky, **PSG** is a mode of linguistic analysis which divides sentences into their constituent parts, which henceforth are labeled under different grammatical categories.

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<sup>67</sup> Chomsky, N. 1957. *Syntactic Structures*. The Hague: Mouton. p-22.

<sup>68</sup> Chomsky, N. 1957. *Syntactic Structures*. The Hague: Mouton. p-24.

Under **PSG**, the immediate constituent analysis analyze this sentence- ‘The man hit the ball’ in the following way:-

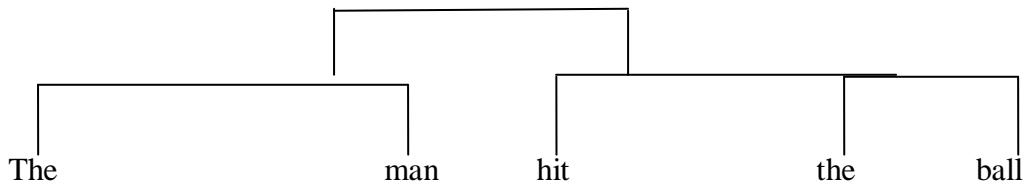


Diagram: - Immediate Constituent Analysis

In this diagram, different analytic divisions as well as their relationships with each other is not clear. So in **PSG**, Chomsky proposes a set of rules which overcome the above predicament. These rules are mentioned in *Syntactic Structures* (1957) in the following way:-

- Sentence  $\longrightarrow$  NP+VP
- NP  $\longrightarrow$  T+N
- VP  $\longrightarrow$  Verb +NP
- T  $\longrightarrow$  the
- N  $\longrightarrow$  man, ball etc,
- Verb  $\longrightarrow$  hit, took etc.

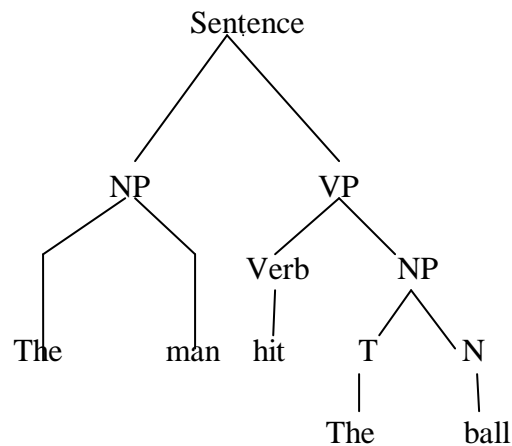
Each of these rules denote  $X \longrightarrow Y$  where X stands for a single element and Y is a string consisting of one or more elements. The arrow stands for instruction to rewrite or replace an element of the left into the string of elements on the right. The noun phrase (NP) consists of a determiner (T) and a noun (N), and the verb phrase (VP) consists of a verb (V) and a noun phrase (NP).

Thus the sentence ‘The man hit the ball’- is derived from the above rules in the following way:-

## Sentence

- NP +VP i.
- T + N +VP ii
- T + N + Verb +NP iii
- The + N +Verb +NP iv
- The + man + Verb + NP v
- The + man + hit + T + N vi
- The + man + hit + the + N vii
- The + man + hit + the + ball viii

We can also represent the derivations by means of a phrase marker in the following way:-



Chomsky pointed out that immediate constituent analysis focuses only on the superficial structures of syntax without getting into the deeper analysis. The example like “He put the book down” cannot be diagrammed by the constituent analysis method. This is because the words “put” and “down” actually form one single unit (the word ‘deposit’). These two words should be considered as one unit from the same branch of a tree. On the other hand, **PSG** like immediate constituent analysis is

confined to the apparent syntactic structure and fails to exhibit the underlying structure which is more significant than the apparent structure.

Now, if we accept such model of **PSG**, we are bound to state ‘rules and restrictions twice-once in deriving active sentences and again in deriving passive sentences.’<sup>69</sup> For example, suppose, if we derive the sentence ‘*The man hit the ball*’ from **PS** rule, then it ‘will contain a constraint on what V can be re-written as; similar constraint works also in case of the derivation of the passive sentence, ‘*The ball was hit by the man*’. Therefore, we see that in these two sentences, **PS** rules and restrictions are stated twice.

Even **PSG** could not explain the possibility of the production of the infinite number of sentences from a finite base.

#### **2.4 Chomsky’s innovative model: Transformational Generative Grammar (TGG)**

Here, being a grammarian, Chomsky showed that supplementation of **PSG** with an additional kind of linguistic process that would solve these predicaments. He next proposed a transformational perspective in syntactic analysis. Actually Chomsky was conscious about addressing the ‘iterability’ feature of language which for him is the most significant characteristic of language. The inerrability feature now can be explained by means of the addition of transformational rules on the previous structure, that is, the phrase structure. This transformation from **PSG** is labeled by Chomsky as **Transformational Generative Grammar (TGG)**.

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<sup>69</sup> Sengupta, Kalyan. 1990. *Mentalistic Turn: A Critical Evaluation of Chomsky*. Calcutta: K.P.Bagchi & Company in collaboration with Jadavpur University. p-14.



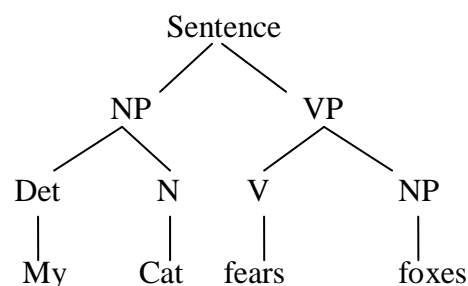
**TGG** is the most significant development in the history of linguistics. According to Chomsky it has more explanatory value than the Bloomfieldian model which failed to explain discontinuity, ambiguity and transformation in sentence structures. He takes deductive approach in building a theoretical account of **TGG**. Chomsky in his book *Syntactic Structures* (1957) worked out the syntactic details of **TGG**. In his later work *Aspects of the Theory of Syntax* (1965), he referred the **TGG** theory as ‘**Standard Theory**’.

#### 2.4.1 TGG and its rules: Phrase Structure Rules and Transformational Rules

**TGG** is a theory of language in which syntactic aspect of language is considered to have two kinds of rules:-

- a. **Phrase Structure Rules**
- b. **Transformational Rules**

**Phrase Structure Rules** show how a sentence is divided into its component parts or phrases. We can write the sentence ‘My cat fears foxes’ in the following way



The tree diagram of the above is one way to represent the phrase structure of a sentence. Each constituent of the structure is represented by a node of a tree which is labeled with its name; elements which are grouped into a constituent are linked to the node by branches.

On the other hand, transformational rules convert one kind of structure into another (for example, an active structure into a passive structure).

Actually for Chomsky, the crucial fact of linguistic study is to deal with the generation of infinite number of sentences out of limited resource. This is done by the derivation from kernel sentences to non-kernel sentences by means of transformational rules. Let us explain the process in the following way.

#### 2.4.2 Kernel and Non-Kernel Sentences

In this context, it is to be noted that every language has some kernel sentences.

**Kernel sentences** are simple assertive, declarative and active in form. For example:-

‘John is playing football.’

‘I wrote a letter’.

**Non-kernel sentences**, on the other hand, can be considered as having derived from their kernel forms with the help of some transformations. For example:-

‘Is John playing football?’ (Interrogative)

‘A letter was written by me’ (passive)

Similarly, the sentences like ‘Sophie flew the kite’ and ‘The kite was flown by Sophie’ are different in syntactic forms. According to the traditional terminology, the first sentence is active and the second one is passive. It must be noted that all the study with regard to kernel sentences were addressed in *Syntactic Structures (1957)*. Apparently *Syntactic Structures (1957)* did not give any emphasis on the semantic aspect of language. Chomsky believes that ‘syntax’ is the skeleton of a language that can take care of the semantic aspect. In other words the syntactic study can pave the way for semantics. The linguists and philosophers criticized his view in *Syntactic Structures (1957)* for its negligence of the semantic aspect. In response to these criticisms Chomsky developed his Standard Theory in 1965.

### 2.4.3 Deep Structure and Surface Structure

Thus in Standard Theory, a sentence was seen as organized syntactically on two chief levels:-

**a. Deep Structure**

**b. Surface Structure**

In other words, Chomskyan analysis states that any grammatical analysis would have to be carried on two levels; one is superficial or apparent structure of sentence (**surface structure**) and the other about the underlying structure (**deep structure**).

According to Chomsky, surface structures of language are not enough, because sometimes they are ambiguous or capable of more than one meaningful interpretation. This is due to another level of linguistic structure, that is, the '**deep structure**', to which Chomsky has given emphasis over the years. The deep structures are not ambiguous. They are open to only one semantic interpretation. At the same time, they are transformed into surface structures by the transformational rules. Thus the pair of sentences like 'John is eager to please' and 'John is easy to please' would have identical surface structures, but different in deep structures. The first implies that John pleases someone and second that someone pleases John.

Application of Phrase Structure rules open up the **deep structure** of a sentence. It is an abstract level of organization where the syntactic relations are represented. Deep structure has more cognitive content. It contains all information necessary to the automatic formation of full syntactic structure. The deep structure of a sentence consists of complex words in certain elementary functional relations with each other. These relations are known with the traditional names '**subject**', '**predicate**', '**object**' etc. The deep structure is said to be an abstract level of representation of a sentence

containing all information relevant to its meaning. Transformations work upon this deep structure ordering and attaining its components but apparently without changing meaning to derive a surface structure. For instance:-

- a. He put the book down.
- b. He put down the book

These two sentences have the same deep structure but are two distinct surface structures.

It has already been noted that the surface structure of a sentence was derived from the deep structure by means of transformational rules. It involves operations like the deletion of constituents, the movements of constituents from one part of a sentence to another part etc. It must be noted that a set of sentences may have the same surface structures are different in respect of their deep structure. In other words, the transformation depends on the syntactical organization. The sentence 'Mary has lived in Princeton' is transformed into the interrogative form, i.e. 'Has Mary lived in Princeton?' in Chomskyan framework, by interchanging a noun phrase ('Mary') with the first element of the auxiliary ('has'). Thus, a native speaker of a language can understand both deep and surface structure of a sentence. She/he can easily apply transformational rules to produce sentence which she/he has never heard before.

The rules which specified the deep structure were phrase structure rules which spelt out the basic constituent of sentences in terms of categories like Noun Phrases, Verbs etc. These rules made up the basic component of syntax and with their output of deep structures. The transformational rules made up the transformational component of syntax and their respective output as surface structures.

## 2.4.4 Phonological Component and Semantic Component

There are also interpretive components apart from syntax, that is, there are:-

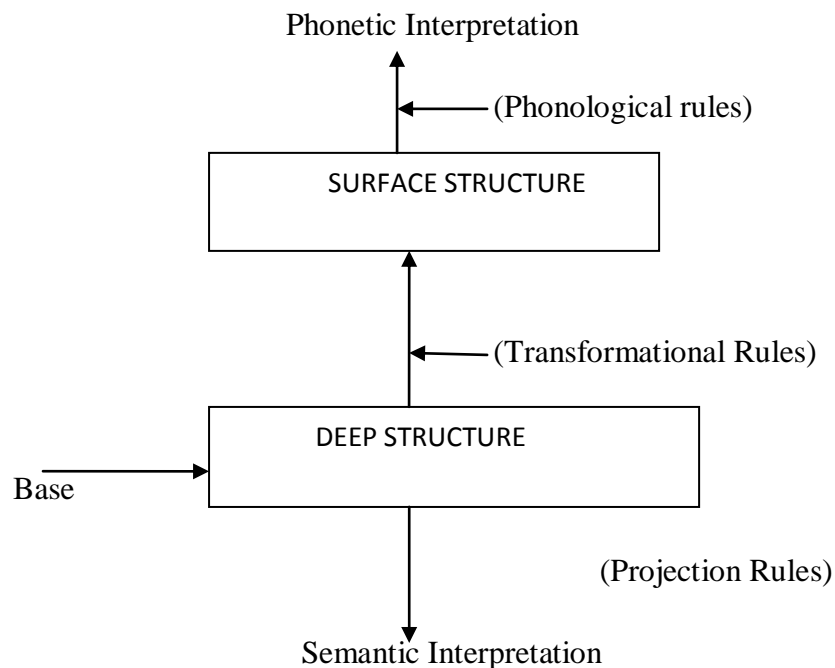
- a. **Phonological Component**
- b. **Semantic Component**

The **phonetic interpretation** of a sentence was derived from its surface structure by means of phonological rules; on the other hand, **semantic interpretation** of a sentence was derived from the deep structure through the operation of the so called projection rules of semantics. Let us see the diagram below for proper understanding

## 2.4.5 Diagram of Standard Theory: TGG and its special claims

### Standard Theory

### Transformational Generative Grammar (TGG)-1965



The special claims of Standard Theory are:-

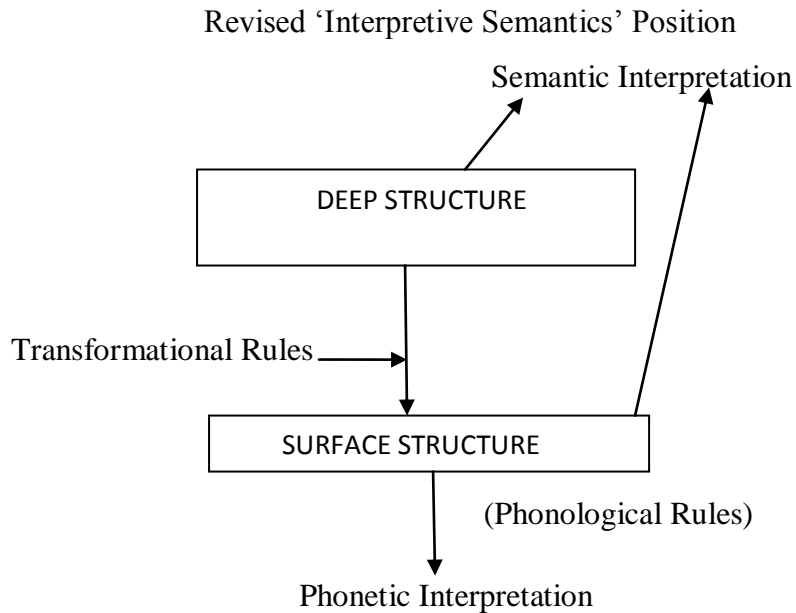
- a. Syntactic deep structure is the only level of syntax relevant to semantic interpretation. This claim brings with it the important principle that

**transformational rules are meaning preserving**, that is, they do not in any way alter the meaning of structures that they operate on. It seems all sentences that have **same deep structure have the same meanings**.

- b. Syntactic **surface** structure is the only level of syntax relevant to the specification of **phonetic interpretation**.

Standard Theory provides an interpretive semantic component, that is, the meaning of a sentence is specified by the application of semantic rules to syntactic base. But later Chomsky and others pointed out that some aspects of meaning (e.g. scope of negation, quantification etc) appeared more related to surface structures than deep structures. Therefore, they proposed the 'projection rules' which specify that meaning should operate on surface structures rather than on deep structures. Thus it cannot be claimed that **all sentences with the same deep structures have the same meaning**. So the revised picture will look like:

## 2.5 Diagram of Extended Standard Theory and its explanations



The above diagram does not represent the possibility of Projection Rules operating at interpretive points between deep and surface structures.

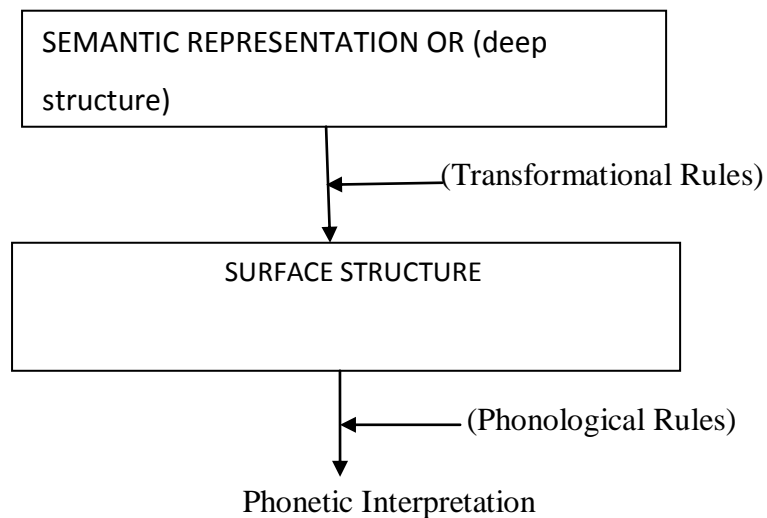
In context of a meaning of a sentence, one should consider the difference between the sentences like:-

- My wife has a new dog
- My new wife has a dog
- My new dog has a wife

Here syntax is more abstract. The deep structure of a sentence is so deep as to be identical with its semantic representation. According to Chomsky, the 'base' component is no longer syntactic, but semantic. Since the deep structure was related to the semantic interpretation, there was no longer any need for the projection rules to supply an interpretation of deep structure. Projection rules were redundant. The following picture denotes this:-

## 2.6 Diagram of Generative Semantic Position and its Development

### Generative Semantics Position



Generative Semantics like Interpretive Semantics arose out of Standard Theory. But it developed in a different way.

Chomsky's Standard Theory and the later Revised Extended Standard Theory are based on the notion that the deep structure of a sentence and the meanings of words (lexical items) used in that structure represent the total meaning of the sentence. The lexical items are inserted into syntactic forms (at the level of deep structure, with the application of **selection-restrictions**) and concepts (such as subject and object are defined by sub categorization rules).

Selection-restrictions are rules which permit the possible combinations of lexical items in language. These rules prevent the generation of meaningless sentences such as 'colorless green ideas sleep furiously' or combinations such as 'red hope'.



There are some unacceptable utterances which result from the violation of these **restrictions**. For example-

- a. 'Water is in love with my friend'. ('Water' is inanimate not animate)
- b. 'The girl is assembled'. ('Girl' is singular, not plural)
- c. 'Happiness is green'. ('Happiness' is abstract, not concrete)

Chomsky's Standard Theory endeavored to explain semantics with the help of the rule Selection-Restriction which he considered to be syntactic. But Generative semantics proposed by Katz and Fodor,<sup>70</sup> argue that there are reasons why selection-restrictions cannot be defined syntactically. According to them, the rule incorporates semantics. For example:-

1. If words are synonymous, their selection-restrictions are the same. So, the word 'frighten' and 'scare' have the same sense (although they are syntactically different). One and the same condition explains why 'The idea frightens the girl' and 'The idea scared the girl' are acceptable whereas 'The girl frighten the idea' and 'The girl scared the idea' are equally unacceptable.
2. If two expressions are converses (for example own and belong to), they have the same selection-restrictions, except that these restrictions apply in the reverse order. Same restrictions explain why 'The man owned a fortune' and 'A fortune belonged to the man' both make a good sense, whereas 'A fortune owned the man' and 'The man belonged to a fortune' are both non-sense.

Therefore, from the aforesaid account it implies that Chomsky's definition of language totally ignores the communication aspect of natural language and non-

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<sup>70</sup> Fodor, Jerry A., and Jerrold. J Katz. 1964. *The Structure of Language (Readings in the Philosophy of Language)*, New Jersey: Prentice-Hall Inc. Englewood Cliffs.

natural language. It focuses purely on the structural properties of language. Chomsky claims that his theory is scientific with maximum explanatory value in comparison to other theories. For Chomsky, human beings are genetically endowed with knowledge of the allegedly arbitrary general principles which determine the grammatical structure of all languages. In other words, all language systems enable their users to construct and understand indefinitely number of utterances not encountered before.

In the next section we are going to discuss in detail the process of language acquisition with the aforesaid account.

## Section-III

### 3. The Actual Process of Language Acquisition

This section of the chapter contains the main issue, that is, Chomskyan theory of language acquisition.

The language acquisition is the process which helps the child to understand and speak the language of the community in which she/he is born. The process is both mysterious and controversial.

The controversy arises with the origin of the child's linguistic competence and the causes of her/his acquisition of this knowledge. Two questions are important with regard to the issue of language acquisition.

- a. How does a child become a language user?
- b. Is it because she/he has an intrinsic pre-disposition as a member of certain species or there is a great attribution of experience, imitation or practice to her/his learning of language without appeal to a pre-existing faculty?

These controversies remind us about the previous dispute regarding the conception of 'innate ideas' which dominated European Philosophy in the 17<sup>th</sup> and 18<sup>th</sup> centuries. It has also provided the basic framework for most epistemological speculations ever since.

In case of language acquisition according to the innatists, man talks because she/he is disposed to talk. The empiricists on the other hand, believe that man talks because she/he is in community of speakers. She/he picks up the non-natural code used around for social integration and survival.

Modern science also supports the empiricists' ideals. In this regard, we have already discussed Bloomfield's account of language-learning and language function which is strongly empirical. It reflects the behavioral psychology that culminated by the famous and influential behaviorist B.F. Skinner in his work *Verbal Behavior* (1957).

Chomsky vehemently attacks Skinner and his work by claiming that there are aspects of children's language that cannot be explained as 'imitations' of adult speech. He also asserts that language is free from stimulus control. On the other hand, Chomsky holds that there is a language faculty that pre-exists in human brain. That is in his own words:-

**One of the faculties of the mind, common to the species ...a faculty of language that serves the two basic functions of rationalist theory: it provides a sensory system for the preliminary analysis of linguistic data, and a schematism that determines, quite narrowly a certain class of grammars. Each grammar is a theory of a particular language, specifying oral and semantic properties of an infinite array of sentences. These sentences each with its particular structure constitute the language generated are those that can be used to understand what is heard and produce discourse as an expression of thought within the constraints of the internalized principles, in a manner appropriate to situations as these are convinced by other mental faculties, free of stimulus control....<sup>71</sup>**

So far, Generativists like Chomsky are more concerned with the problem of language acquisition by children. According to them, a child begins to acquire her/his native language without have any sort of previous knowledge of rules. They just infer these rules from the patterns of correspondence between form and meaning. Even at a quite early age, children are able to produce and understand utterances that they have never heard before. It implies that language is not learned solely by means of imitation and memorization. In other words, if children are able to produce novel utterances which a competent speaker of the language will recognize as grammatically well-formed, then

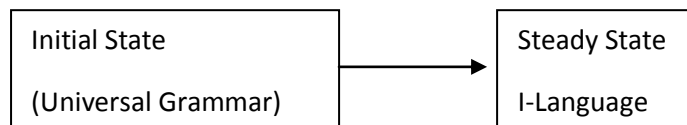
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<sup>71</sup> Chomsky, N. 1976. *Reflections on Language*. London: Temple Smith. p-12-13.

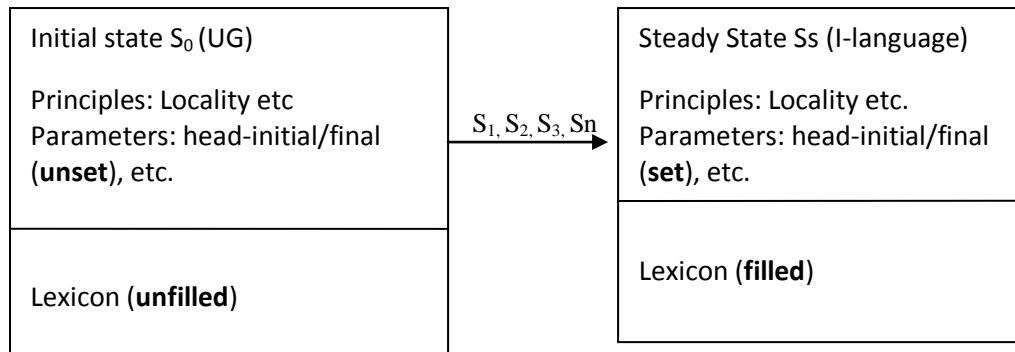
there must be something other than imitation. They must have inferred, learned or acquired the grammatical rules by virtue of utterances encountered. These rules are the properties of human mind or the language faculty and they determine the productivity of human language. Hence, according to Chomsky, the productivity of natural languages is structured by certain well formed grammatical rules. The grammatical structure of principles is in nature complex and heterogeneous. For Chomsky, this complexity and heterogeneity is rule-governed. Thus the native speakers can construct infinite number of rule-governed sentences without any conscious knowledge of the rules.

### 3.1 The role of LAD in Language Acquisition

It has been already mentioned that Chomsky talks about language acquisition in terms of a **Language Acquisition Device (LAD)**. The language faculty is central to the UG theory.<sup>72</sup> The language contains the knowledge of language or grammar or I-language of the native speaker. In this respect the language faculty can be considered as having two states in the following way:-



Picture: The states model of the development of the language faculty



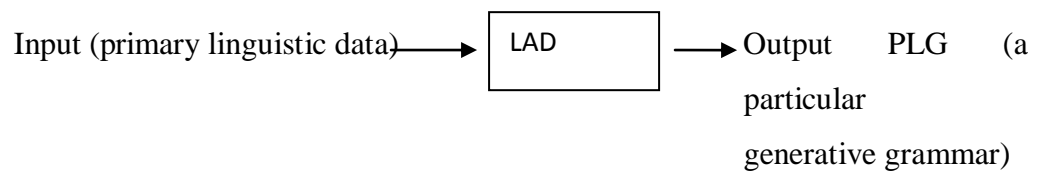
Picture: The development of the language faculty: zero to final states

According to the above pictures, the children are not born with the knowledge of all lexical items in the language. In the initial state, parameters have not been set and the lexical items have not been learnt. In this state, the language faculty is with the minimal contents. In the final state, with an exposure of a particular language, the mind knows a complete I-language. Thus the language acquisition process comes down to how the human language faculty changes from the initial state to the final

<sup>72</sup> The word 'Language' is used in different senses in the Chomskyan scheme.

state. That is, how the children come to acquire the knowledge of language like any other adult.

It must be noted that Chomsky assumes LAD as a black box. Something goes into a black box and something comes out.<sup>73</sup> In case of language acquisition, children hear a number of sentences from the near and dear ones specially their parents and other caregivers. It is their **primary linguistic data**. They process these data within their black box, that is, the LAD, and they acquire linguistic competence, that is-‘a generative grammar’ in their minds. This can be illustrated with the following pictures:-



Picture: The Language Acquisition Device (LAD) model of first language acquisition

According to Chomsky, the LAD is **a procedure that operates on experience acquired in an ideal community and constructs from it, in a determinate way, a state of the language faculty.**<sup>74</sup>

In discussing LAD or the Universal Grammar, Chomsky draws our attention to three kinds of adequacy. Unlike the previous theories, his theory can provide a further explanation and can give us a satisfactory justification at the meta level of the

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<sup>73</sup> Black Box is the Universal Grammar (UG) and input is the corpus of a particular language.

<sup>74</sup> Chomsky, N. 1990. "Language and mind". In *Ways of Communicating*, edited by D. H. Mellor. Cambridge: Cambridge University Press. p-69

grammar acquired by the native speakers. This makes his theory more powerful. The adequacies are as follows:-

- a. Observational adequacy
- b. Descriptive adequacy
- c. Explanatory adequacy

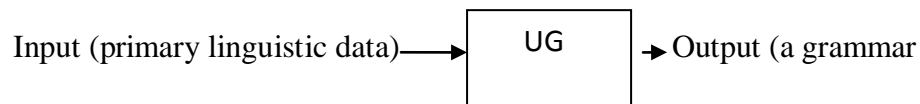
- a. Observational Adequacy:-** The linguistic theory first has to meet this sort of adequacy. That is, a theory is observationally adequate if it can predict grammaticality in samples of language. In other words, it has adequacy for predicting grammaticality in the primary linguistic data.
- b. Descriptive Adequacy:-** The second level of adequacy shows that a theory achieves descriptive adequacy if it deals properly with the linguistic competence of the native speaker, that is, the generative grammar-output from LAD. In this level the grammarian endeavors to provide an explanation by remaining confined at this level.
- c. Explanatory Adequacy:-** A theory has explanatory adequacy if it can explain the connections between linguistic competence and primary linguistic data that are concealed within the LAD itself. Unlike the level of Descriptive adequacy, it goes beyond the level of linguistic data in search for a final explanation.

### **3.2 The Role of Principles and Parameters in Language Acquisition**

Chomsky endeavored to explain the model of LAD with the Principles and Parameters Theory (**P & P Theory**). The language faculty comprises a computational system with **principles, parameters and a lexicon** required for a particular language.



So the previous picture may look like:-

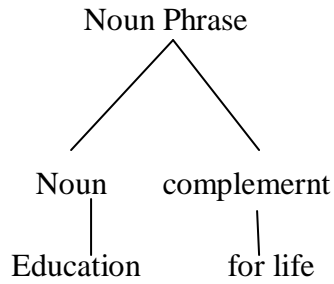


Picture: - The Universal Grammar model with principles and parameters in first language acquisition

Chomsky's theory is explanatorily adequate because unlike other theories, it not only describes PLG but explains how PLG is generated. The cartesianism of Chomsky is established by the acceptance of LAD in child's mind-brain and Chomsky consistently claims that it is a scientific perspective.

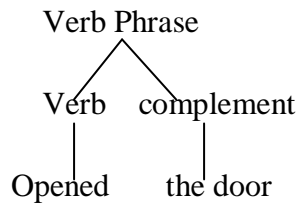
In the early 1970s, Chomsky claims that all phrases have a central element or a **head** around which other elements of the phrase revolve and which can minimally stand for the whole phrase. For example in the sentence- 'Child drew an elephant', the **VP** 'drew an elephant' has a head **Verb** 'drew'; the **NP** that is the child has a head **Noun** 'child' and so on for all the phrases. The speakers know that all languages have heads either to the left or to the right of their complements.

The complements are the location of the head in relationship to other elements of the phrase and an important aspect of language variation. The head of the phrase can occur either on left of a complement or on its right. For example, in the NP: 'education for life', the head Noun 'education' appears on the left of the complement 'life'.



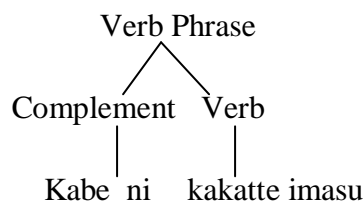
Thus, the nature of the Head Parameter of syntax determines the position of heads within phrases. For example, Nouns in NPs, Verbs in VPs etc. A particular language consistently has the heads on the same side of the complements in all phrases, whether head first or last. For example:-

English- Opened the door. Here ‘open’ is the head verb. The head verb precedes the complement ‘the door’.



On the other hand, in Japanese- E wa kabe ni kakatte imasu (picture wall on is hanging) The picture is hanging on the wall (in English). In Japanese the order is just the reverse.

The head Verb kakatte imasu occurs on the right of the Verb complement kabe ni



Therefore, in English language, we set the head parameter in a particular way so that heads of phrases come on the left; whereas in Japanese language, we set the parameter on the right.

The child creates a core grammar  $S_0$  that is formed in response to the data or evidence from the environment and it assigns values to all the parameters. It yields one of the allowable human languages- may be Arabic, French. For example, in case of acquiring English instead of Japanese, the child must set the values for the head parameter, and a handful of other parameters. The child does not acquire rules, but setting for parameters, which interacting with the network of principles creates a core grammar. In other words, the child with the exposure to native language eventually forms the parameters.

In addition to this core grammar, the child acquires a huge number of vocabulary items, each with its own pronunciation, meaning and syntactic restrictions. Thus Chomsky writes:-

**A large part of “language learning” is a matter of determining from presented data the elements of the lexicon and their properties.**<sup>75</sup>

So, the grammatical competence is a mixture of universal principles, values for parameters and lexical information. Finally in Chomsky’s words:-

**What we “know innately are” the principles of various subsystems of  $S_0$  and the manner of their interaction, and the parameters associated with these principles. What we learn are the values of the parameters and the**

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<sup>75</sup> Chomsky, N. 1982. *Some Concepts and Consequences of the Theory of Government Binding*. Cambridge, Mass : MIT Press. p-8.

**elements of the periphery (along with the lexicon which similar considerations apply)<sup>76</sup>**

The aforesaid account therefore, implies that mind has separate components, separate modules, each responsible for some aspect of mental life. UG is a theory of language module and has its own set of principles distinct from other modules and does not relate with them. It contrasts with cognitive theories that state or assumes that mind is a single unitary system. Those who believe that mind is a unitary system states that language is a form of cognition, it is cognition packaged for purposes of interpersonal communication.

Therefore, Chomsky concludes that children must have an inborn faculty for language acquisition. According to this theory, the process is biologically determined. The human species has evolved a brain whose neural circuits contain linguistic information at birth. The child's natural predisposition to learn languages is triggered by hearing speech and the child's brain is able to interpret what she/he hears according to the underlying principles or structures it already contains. This natural faculty as has been mentioned earlier is referred as the **Language Acquisition Device (LAD)**.

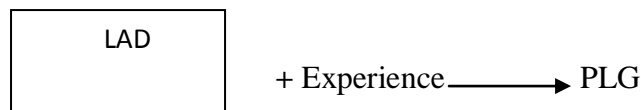
### **3.3 Formation of Particular Language Grammar (PLG)**

Chomsky did not suggest that an English child is born knowing anything specific about English of course. He stated that all human languages share common principles (for example, they all have words for things and actions- nouns and verbs etc). It is the child interacting with the environment develops the language specific grammar or

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<sup>76</sup> Chomsky, N. 1986. *Knowledge of Language: Its Nature, Origin and Use*. New York: Praeger. p-150.

the **particular language grammar (PLG** as it is called). The entire development of **PLG** is automatic and unconscious. That is, though the child has mastered a particular language, she/he will not be able to state the rules of her/his language. Even the child will not be able to identify the rules. The child has mastered her/his language, that is, she/he knows the language in the sense that she/he can fluently speak the language, can create new sentences in novel situations. This view is considered as ‘**creative**’ **aspect of language of a native speaker**. The picture will look like:-



**PLG** is the language formed after LAD gets exposed to a particular language. The child forms **PLG** or the **PLG** is automatically formed. This **PLG** is individual, internal to the brain or mind and intentional as opposed to extensional.

### **3.4 The new version of Innateness Hypothesis in context of Language Acquisition: Poverty-of-the-Stimulus Argument**

The concept of innate schematism has been reintroduced in the modern terminology under the banner of ‘**Nativism**’. According to Nativism, there are ideas, beliefs, knowledge or concepts that are inborn or innate. It is not just the notion that we have innate capacities to acquire knowledge from our experience, instead it is the idea that some of what we know is already in us to start with. It is one common interpretation that some very famous thinkers like Plato, Descartes, and Leibniz have held this view.

In support of their view, Nativists often give an argument which is known as the **Poverty-of-the-stimulus argument**. The argument is as follows:-

**We know that X.**

**The facts that we know about X cannot be derived from environment.**

**So, the knowledge of X must be a priori or innate.**

In general terms, we can show that this X could be God, the truths of Mathematics, virtue, goodness or many other things. But our environment or empirical world can provide a very little information about this X. Thus the knowledge of X is already embedded in us. Because, if our knowledge of X is not learned and cannot be learned through experience; then it must be inborn. In other words, we may say that much of our linguistic knowledge must come from the internal structure of the mind. For example, if the adult's grammar Ss incorporates principles that could not be constructed from the primary linguistic data, then they must have been embedded in the mind.

On the other hand, our knowledge of language is complex and abstract. We have a limited experience of language. It is very difficult to explain how human minds can create such complex knowledge on the basis of such limited information. Chomsky here invokes the innate properties of the mind. Therefore, the argument has two main pillars- on the one hand; there is complexity of knowledge of language. On the other hand, there are impoverished data available to the learner or children; on the basis of which it is almost impossible for children to acquire competence in a particular language. Now, if the child's mind cannot create knowledge of language from the data available in surrounding environment, then the source must be within the mind itself. This argument is known as "**Poverty-of-the-stimulus**" argument.

Most of the MIT linguists like Chomsky makes use of this argument to reason that our linguistic knowledge is innate. They claim that we could not possibly have heard all the stuff we know about language. Again we could not know these facts from what we hear around us. These facts could not have been learned. So, they must be known innately, or rather we can say we are born with this knowledge without being conscious about it.

Now, let us consider an example. According to Chomsky, children can differentiate between these sentences-

- a. John loved himself
- b. John loved him?

Even without any sort of prior instruction children can understand that the first sentence means that John loved John, not any other person; and the second sentence indicates that John loved somebody else, perhaps Pitter. A child can also understand the meaning of a sentence like “John thought that he loved himself?” This sentence may have different possible meanings, but amongst them only one or two is correct. The child can easily understand that almost automatically. According to this theory, each and every individual unconsciously possesses this very knowledge which is not learned.

Linguist V. J. Cook<sup>77</sup> in 1991 states that there are four steps to the poverty-of-the-stimulus argument. The steps are as follows:-

**Step-I:** A native speaker of a particular language knows a particular aspect of syntax.

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<sup>77</sup> V. J. Cook is Professor of Applied Linguistics at the University of Newcastle upon Tyne. He is the author of numerous books, namely, *Accommodating Broccoli in the Cemetery: Or Why Can't Anybody Spell?* (2004) and *The English Writing System* (2004).

**Step-II:** This aspect of syntax could not have been acquired from the language input typically available to children.

**Step-III:** We conclude that this aspect of syntax is not learnt from outside.

**Step-IV:** We deduce that this aspect of syntax is built in to the mind.

Thus the poverty-of-the-stimulus argument is fundamentally simple. If we find something that the adults know and both the child and the adult cannot acquire it from experience then we must infer that it is present in human mind a priori or prior to experience with the environment. This poverty-of-the stimulus has been used in many areas apart from language; especially several studies on religion are based on such argument.

### 3.5 Government Binding Theory

On the other hand, in 1980s another development in Chomskyan account has been developed. This account is known as Government Binding Theory. According to this theory, suppose, in the previous examples (“John loved himself.” John Loved John?”), there may be two terms like “John” and “he”. Sometimes they can refer to the same object and sometimes they do not. This is due to mainly three important principles of binding theory, such as:-

- a. **Anaphors** (like “himself”) are bound in their binding domain.
- b. **Pronominal** (like “he”) are free in their binding domain.
- c. **R-expressions** (expressions like noun-phrases that are used to refer to things and events in the world) are free.

The binding domain of a noun phrase is the smallest clause that contains the noun phrase, its case marker and a subject. An expression is bound if its reference is the same as the reference of some other expression within the binding domain.



According to Chomsky, we are not conscious about these principles, but the knowledge or binding theory underlies the meaning of those sentences about John, Pitter etc.

Chomsky and his colleagues (like Steven Pinker, a psychologist at Harvard and the author of an excellent book *Language Instinct* (1994) which is also famous on this issue) accept similar kinds of poverty-of-the-stimulus arguments for the innateness hypothesis. These are principles of structure and organization that act as constraints in the formation of the specific grammars or PLG. According to Chomsky, our innate knowledge of universal grammar is embedded in a special language-specific learning device, presumably by natural selection. Chomsky however does not clearly state us the intricate details of this genetically possessed inborn capacity and its development in human brains. If humans have a specialized language module that embodies their knowledge of universal grammar, then there will be no need for them to learn all these deepest and darkest properties of natural language, like binding theory; for they know it already. All that children have to learn when they get exposure to the mother tongue are superficial features of their language, such as the vocabulary and the rules governing such things as word order or past tense formation. As a consequence, language learning becomes quick, easy and efficient.

### **3.5.1 Language Acquisition=Theory Construction**

Thus, for Chomsky, a child's acquisition of language is a kind of theory construction. There is a difference between scientific theory construction and a child's theory construction. In science, a theory is constructed involving intellectual operations which are quite explicit, but a child's theory construction is an implicit process. A

child rejects a lot of data to which she/he is exposed. The rejection consists of the distortions of the idealized forms. The child needs no explicit instruction in constructing this ideal theory nor is she/he conscious of this operation. When a child encounters some linguistic data, she/he constructs a specific grammar. Thus, according to Chomsky, a child as being born **with a perfect knowledge of universal grammar, that is with a fixed schematism that he uses...in acquiring language.**<sup>78</sup>

This data-grammar relationship is independent of any particular language. So we may say that a principle of universal grammar determines this relationship. There are some unlearned linguistic universals that lead to the knowledge of language.

It is surprising for us that a child has a perfect knowledge of its own language. It may be said that if child is equipped with some sort of linguistic ability, we should have seen every child using human language from the very beginning of its birth, but that is never actually witnessed for two reasons. One possibility is that the child in spite of possessing the unconscious knowledge of rules cannot come up with satisfactory performance. This as has been already discussed<sup>79</sup> is due to certain constrains in the surface level or expression level. Another reason is mentioned by Chomsky as follows:-

**....there seems to be a critical age for learning a language, as is true quite generally for the development of human body. Patterns of growth are determined genetically, for example, sexual maturation, to think a case that occurs long after birth. It would evidently be absurd to maintain that only what one sees at birth is determined genetically.**<sup>80</sup>

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<sup>78</sup> Chomsky, N. 1969. "Linguistics and Philosophy". In *Language and Philosophy*, edited by S. Hook , New York: New York University Press. p-88.

<sup>79</sup> The distinction between competence and performance has been already discussed in the first section of this chapter page 93.

<sup>80</sup> Chomsky, N. 1979. *Language and Responsibility*. Sussex: Harvester Press. p- 98.

A child's knowledge of language is only partial in comparison with an adult. We have given an exegetical account of Chomsky's view on Innateness Hypothesis and its implication on language acquisition; we will consider the approaches of the recent followers of Chomsky regarding language development. They give a sophisticated account in support of Chomsky.

### **3.6 Critical Period Hypothesis in Language Acquisition**

The followers of Chomsky advocate that it does not matter, what language a child hears; it will begin to speak that language at about 18 months of age, and will learn its grammar by about the age of 5. This does not mean that the kindergarten child has the vocabulary or performance skills like the adult speakers. Rather it means that she/he has mastered the basic grammar and its rules of whatever language she/he has been exposed to. It should be taken for granted that the child is exposed to her/his mother tongue. The child can make statements, ask and answer questions, respond to commands, makes negative sentences, form plurals and tenses and so on. Moreover she/he is capable of carrying out a conversation in just the same way as an adult, but necessarily not on the same scale. There are of course exceptions to this. We know that many children start speaking either very early or very late.

But the number of exceptions is far too small to be of any statistical significance, and the 18 months to 5 years span is more or less universal.<sup>81</sup> This sort of invariability cannot be a characteristic of learned behavior. If language were acquired by trial and error, stimulus and response or reinforcement as the behaviorists usually claim; within

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<sup>81</sup> It should be pointed out that this universality of acquisition demonstrates that no longer language is inherently any more "difficult" than any other. If such differences in difficulty existed, the children learning those languages would learn them more slowly; begin to speak them later, and so on. This does not happen.

the behaviorist framework we would expect to find marked variation in age and speed depending upon the child's learning situation. But actually we see a different picture. It can be illustrated by an example.

Suppose if we take a baby as soon as it can be propped up in an infant seat and we provide it with daily language lessons from the finest experts, it will begin to speak at about 18 months and learn its grammar by the age of 5 approximately. If we do nothing at all, expect go about our daily life, preciously the same thing will happen. Compare this to what we would expect if we provided a child with lessons in music, sports, art or similar activities and the difference here becomes clear.

If the behavioral hypothesis were true, we would expect to find variations in the learning time-table correlated with such factors as the scale of language exposure, the speech style of the speakers around the child, the child's intelligence, and the like. Again this is not borne out by the facts. Some children are brought up in such homes where there is a great deal of language activity, whereas others grow up in far less verbal environments. In extreme cases of unusual situations, we see variations in language acquisition of children. For example, children brought up in understaffed institutions and in resulting little exposure to human speech. The same thing is true with regard to intelligence; it is only at the extreme end of the scale. Thus in cases of severe mental retardation, language learning gets severely affected.

Thus the above problem of language acquisition is handled by Chomsky and his follower Eric Lenneberg (1921-1975) by their great contribution in introducing **Critical Period Hypothesis** in context of child's language development.

So, now we may consider Lenneberg's acknowledgement of critical period hypothesis in order to establish innate schematism. Originally the ethologists<sup>82</sup> in their study of species-specific behavior used the phrase '**critical period**'.

In his book *Biological Foundations of Language* (1967), Lenneberg mentions that the capacity to learn a language is indeed innate, and, like many such inborn mechanisms, it is circumscribed in time. If a child does not learn a language before the onset of puberty, the child will no longer learn the language. This is known as the '**Critical Period Hypothesis**'. To quote Lenneberg:

**Primary language cannot be acquired with equal facility within the period from childhood to senescence [old age]. At the same time that cerebral lateralization becomes firmly established (about puberty) the symptoms irreversible within about three to six months after their onset. Prognosis for complete recovery rapidly deteriorates with advancing age after the early teens. Limitation to the acquisition of primary language around puberty is further demonstrated by the mentally retarded who can frequently make slow and modest beginnings in the acquisition of language until their early teens, at which time their speech and language status becomes permanently consolidated.**<sup>83</sup>

Thus our ability to learn language has critical period like other neural functions. The brain goes through "pruning" of unnecessary connections as language development takes place. In other words, the neural synaptic connections are not created or built as we learn language, rather they pre-exist. Such processes occur in the formation of the sensory systems. For example, deaf parents have a non-oral interaction with their children much earlier than normal parents. It is also demonstrated in modern investigations that the neurological development of children born from deaf parents is usually more normal than the development of deaf children born to normal parents.

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<sup>82</sup> Ethology is the scientific and objective study of non-human animal behavior rather than human behavior and usually with a focus on behavior under natural conditions and viewing behavior as an evolutionarily adaptive trait. (Definition of ETHOLOGY: Merriam-Webstar Retrieved 30<sup>th</sup> October, 2012)

<sup>83</sup> Lenneberg, E H. 1967. *Biological Foundations of Language*. New York: Wiley.p-178.

This suggests that although the individual performance is the result of interaction with the environment, the fundamental rules of syntax are determined by neural structure.

## Section-IV

### 4. Language Acquisition in Human brain

In this regard, we should also acknowledge the process of language acquisition which takes place in human brain. In other words, we should discuss the main fundamental question-where in the brain are speech and language localized?

#### 4.1 The role of Left Hemisphere

First of all, we have to admit that the human brain is very complex in nature. We can partly understand its various functions. In recent years, considerable progress has taken place. The brain particularly the cerebrum is divided into two parts or hemispheres, linked by corpus callosum. The right hemisphere controls the left side of the body, whereas the left hemisphere controls the right side. Brain study establishes that there is a special relation between language and the left hemisphere. We can say that language is controlled by the left hemisphere. The process whereby one hemisphere of the brain is specialized for the performance of certain functions is known as **Lateralization**. For the left-handers, left hemisphere is not specialized for language, rather right hemisphere is responsible. The process of lateralization is genetically pre-programmed but develops eventually. It must be noted in this connection that lateralization is responsible for the development of superior intelligence. Cognitive scientists often claim that language faculty is directly connected with the lateralization; because the period of linguistic development of the child and the period of lateralization coincides. In other words, the critical period for language acquisition is simultaneous with the period of lateralization. After the completion of lateralization period, it is almost impossible for a child to learn a language.

The above assertion can be broadly discussed in the following way:

Actually the critical period for language acquisition is not universally acceptable. An exceptional case was found in Los Angeles. It is the case of a girl Genie. In the first stage, she was brought up by her parents and other care givers in totally an isolated environment. She was the victim of emotional and sensory deprivation. Her father even did not allow anyone to speak to her. This impacted her speaking ability and thus she could not speak. In the second stage, a rapid progress has been noticed in her language development when she was under care and guidance of the psychologists and linguists. .

At a glance, it seems that her case of language acquisition refutes the critical age hypothesis. That is, when she was found, there was no evidence that she had any sort of linguistic competence. Although her memory for vocabulary is very good and her general intellectual development is satisfactory; she had some problems with grammatical or syntactical structures of English. Thus according to Curtiss,

**There were attempts to teach her...rituals, for example, to ask specific questions. This attempt failed. Genie could not memorize a well-formed WH-question. She would respond to "What do you say?" demands with ungrammatical, bizarre phrases that included WH-question words, but she was unable to come up with a phrase she had been trained to say. For example, instead of saying the requested "Where are the graham crackers?"she would say "I where is graham cracker, "or "I where is graham cracker on top shelf." In addition, under pressure to use WH-question words, she came out with sentences such as:**

**Where is tomorrow Mrs L.?  
Where is stop spitting?  
Where is May I have ten pennies?  
When is stop spitting? <sup>84</sup>**

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<sup>84</sup> Curtiss, S. 1977. *Genie: A Psycholinguistic Study of A Modern-day "wild-child"*. New York: Academic Press. p-31



Nowadays, the recent data shows that those have difficulty with certain grammatical construction problem is mainly due to the passive function of the left hemisphere as if it has been removed. On the other hand, the right hemisphere can interpret single words denoting physical entities without difficulty. Thus it might be said that language is associated with the left hemisphere of the brain. This component must be acquired by only human beings before the critical age.

So far, this assertion is consistent with the Chomskyan hypothesis which vigorously admitted that the language faculty is a uniquely human. It is genetically transmitted capacity which is distinct from other mental faculties.

We have already mentioned<sup>85</sup> that for Chomsky, the universal grammar works like a network containing a series of switches. Each switch is associated with a language feature or rule, and is set on or off in the course of a child's interaction with the environment. But this account fails to identify the proper location of these switches of the grammar and their operation as well as interaction with other areas of the brain. In other words, this theory fails to describe the relationship between universal grammar and physical structures in the brain.

#### **4.1.1 Language areas in Brain: Broca's area and Wernicke's area**

Thus, in order to resolve the mysteries of the language acquisition and its relation with the human brain; we should study in detail the issues from neurobiological perspective of language development. For this reason, in recent years, biological study of language development becomes an interesting topic of research. But the major progress in this study has come from the individuals with injured brains. In other

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<sup>85</sup> Section-I, page-4

words, disorders often give us a lot of data about the relationship between brain and language. Recently, it has been found that the Broca field and the Wernicke field are cited as the language fields which carry out the language activities.

#### **4.1.2 Pathological Case in Language Disorder: Aphasia**

Towards the end of 19<sup>th</sup> century, the two famous neurologists Paul Broca (1824-1880) and Carl Wernicke (1848-1905) found the two most important areas of human brain that are linked to the speaking ability of the human being. Both studied a pathological case, which is known as **aphasia**.

Aphasia is a broad term that encompasses neurological syndromes of communicative impairments. For example, some aphasic patients endeavor to speak a single word, whereas others effortlessly long but meaningless utterances.

Basically aphasias are disorders of speech production and understanding. On the other hand, aphasia is caused by a brain injury like stroke or brain tumor or by a disease like Alzheimer's or an infection like encephalitis. Aphasia may be temporary or permanent. Now, in this regard, let us first consider Broca's view.

#### **4.1.3 Broca's Aphasia**

Paul Broca (1824-1880) is a renowned French surgeon and anthropologist. In 1861, he was remembered for establishing that the destruction of left frontal area of the brain makes a person unable to speak. After this discovery, the particular area is called Broca's area or motor speech area and the disorder is known as Broca's **aphasia**.

Actually Broca's area is a region which contains the learned programmes for control of the musculature of speech. After destruction of this region, in the left cerebral hemisphere, speech becomes slow and hesitant and the sounds of language are badly produced. In addition, speech is agrammatic, that is, prepositions, conjunctions and auxiliary verbs are often omitted and incorrect endings may be used in verbs or nouns. For example, the Broca aphasic patients often say, 'President live Washinton'.

These discoveries suggest that Broca's area has a major role in the production of grammatically correct language. In this case, syntactic level or representation has been disrupted. That is, their speech does not follow syntactic rules-as seen here:

**Ah...Monday...ah Dad and Paul [patient's name]...and Dad...hospital. Two...ah doctors...and ah...thirty minutes...and yes...ah...hospital. And, er Wednesday...nine o'clock...doctors. And er Thursday, ten o'clock...doctors. Two doctors...and ah...teeth. Yeah...fine.**<sup>86</sup>

The patients with such disorders can understand what is said to them; but irritated and annoyed when they cannot express themselves vocally. Thus it is difficult for the Broca's aphasic patients to distinguish the meanings of the following sentences:

- **The chef burned the noodles.**
- **The noodles burned the chef.**
- **The noodles were burned by the chef.**

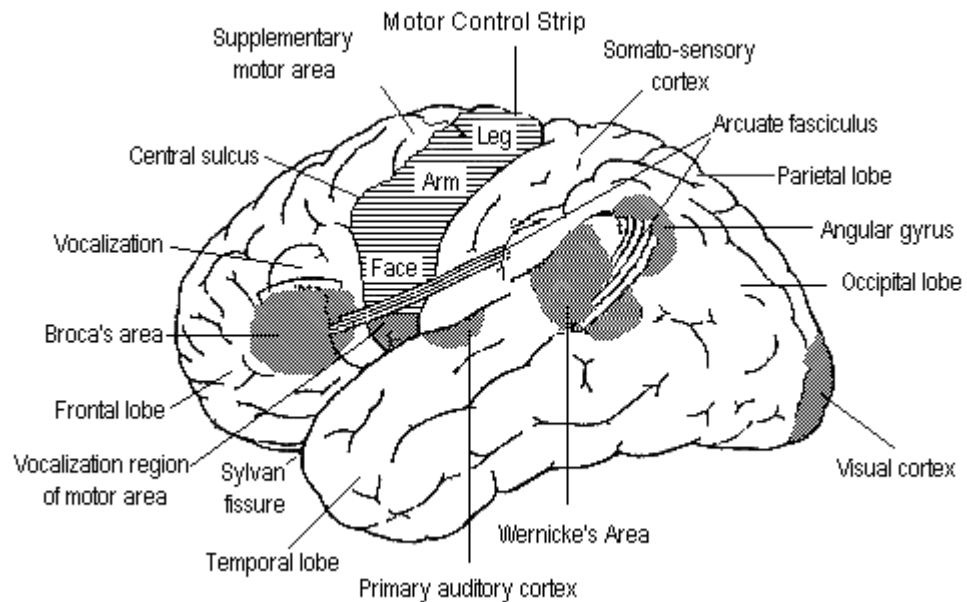
Though the patients know the meanings of the individual words like *chef*, *noodles*; but they cannot relate these words to make a complete meaningful sentence.

Paul Broca studied a case of a patient called 'Tan' (his real name was Leborgne, but all time he could utter only the word 'Tan'). Tan had suffered a stroke and was unable to speak fluently. Broca in his experiment discovered a small, egg-shaped cavity on

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<sup>86</sup> Martin, G Neil. 2008. *Psychology: A Beginner's Guide*. London, England: Onward Publications. p-103

the left side of the front of Tan's brain. Broca indicated that, this particular region is a centre for speech. It is known as Broca's area and the disorder seen is known as Broca's aphasia. But the Broca aphasic patients can produce defective speech and they sing melodies well.



**Picture- Broca's area and Wernicke's area of the human brain**

#### **4.1.4 Wernicke's Aphasia**

Now, in relation to the language acquisition, let us consider the second major speech area; that lies in the left temporal lobe below the lateral fissure. It is known as Wernicke's area, after Carl Wernicke (1848-1905), a famous German neurologist and psychiatrist. The syndrome described by Wernicke in 1874 was quite different from the syndrome (**motor aphasia**) as described a few years ago by Paul Broca. Wernicke's view was much more interesting.

The form of aphasia described by Wernicke was named by a severe defect in the understanding of speech, and correspondingly became known as **sensory aphasia or**

**receptive aphasia.** Wernicke presented very different findings from stroke patients whose speech production relatively fluent, but their comprehension was severely impaired. The patient may speak very rapidly, with good articulation and melody and also with a normal grammatical structure. But she/he fails to find correct words and uses inappropriate words. She/he also uses words incorrectly. In other words, in Wernicke's aphasia, patients' understanding of speech is poor and they produce meaningless speech. We may present an example where a patient is trying to describe a picture showing the theft of a biscuit:

**Well this is...mother is away here working her work out o'here to get her better, but when she's looking, the two boys looking in other part. One their small tile into her time here. She's working another time because she's getting, too.<sup>87</sup>**

Wernicke's aphasic patients often make long sentences with the addition of unnecessary meaningless words and they do not recognize their mistakes in their speech. So, their difficulties lie mainly at the levels of words and morphemes.

Therefore, damage of Wernicke's area leads to a pure word deafness, that is, the Wernicke's aphasic patients are not really deaf and can hear sound; but they often have very little understanding of what is said to them. In brief, other language problems that are related to Wernicke's area are as mentioned below:

- Impaired ability to repeat spoken words
- Reading and writing problems
- Difficulty in naming common objects
- Intrusion of incorrect sounds or words into the flow of speech, namely, 'streeb' in place of street or daughter in place of mother

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<sup>87</sup> Martin, G Neil. 2008. *Psychology: A Beginner's Guide*. London, England: Onward Publications. p-103.

In the adult, extensive damage to one of the primary language areas leads in most cases to permanent disability. However, children who sustain gross damage to the left hemisphere before the usual age of language acquisition will go on to acquire language. Thus the right hemisphere has the potential to become the major seat of language. It is also suggested that a mature brain and a developing brain do not necessarily function according to the same principles. In recent years, it has gradually become clear that findings gained through examination of adult brain injuries are not always applicable to the neuro-psychological maturation of a child who is still going through its developmental stages.

An American group experimented in 1999, a brain function by using fMRI to compare the grammar process and meaning process. According to the result of this experiment, the Broca field appeared to be bound with the grammar process. However, it was claimed in this experiment that the distinction between the grammar process and the meaning process is not very obvious. Therefore, there is insufficient evidence to conclude that the Broca field is solely responsible for the grammar process. Though according to the recent research, the grammar process facilitates the activities of the whole language fields, but it always needs support of the activity of the Broca field. So we may conclude from the above studies that the Broca field is generally related to the grammar process.

Neurologists and other scientists who study brain and language may have different opinions, but we can take this model to understand and organize our knowledge about the location of language function in the left hemisphere.

## **4.2 Controversies with Chomskyan thesis:-**

There is a great controversy on which Chomsky raises his stress. This is with regard to the question of the “evolution” of human language from systems of animal communication. On the basis of recent studies some thinkers endeavored to explain the evolution of human language from more primitive systems of communication that appears at lower levels of intellectual capacity.

### **4.2.1 Karl Popper vs. Chomsky**

According to the famous empiricist Karl Popper (1902-1994), human language has evolved from more primitive systems. He argues that the evolution of language passed through several stages. For example, in a “lower stage”, vocal gestures are used for expression of emotional state. On the other hand, in case of a “higher stage”, articulated sound is used for expression of thought; that is, for description and critical argument. His discussion of stages of evolution of language suggests a kind of continuity. But in fact, he establishes no relation between the lower and higher stages. He also does not suggest a mechanism whereby the transition can take place from one stage to the next. It is too difficult to see what links these stages at all.

Chomsky shows the inadequacy of this assumption. According to him, there is lack of evidence for assuming an evolutionary development of “higher” from “lower” stages than there is for assuming an evolutionary development from breathing to walking; these stages have no significant analogy. Rather these stages seem to involve entirely different principles and processes.

#### 4.2.2 W. H. Thorpe vs. Chomsky

According to the renowned ethologist W. H. Thorpe (1902-1986) mammals other than man have a lack of ability to imitate sounds, and thus it is expected that birds have such ability to a remarkable extent. Thorpe does not claim that human language “evolved” in any strict sense from simpler systems. But he argues that the characteristic features of human language can be found in animal communication systems, though it is not right to think that all such features are present in a particular animal. There are mainly three features common in animal and human language, namely, “**purposive**”, “**syntactic**” and “**propositional**”.

- Language is “**purposive**”; because both in human speech and animal communication, we see a desire of getting something over to somebody else. Thus both of them alter their behavior, thoughts or general attitudes towards a situation.
- Secondly, human language is “**syntactic**” in the sense that an utterance is a performance with an internal organization, with structure and coherence.
- It is “**propositional**” in the sense that it transmits information. We can easily understand that both human language and animal communication system can be regarded as having the feature of “purposive”. In both cases our language helps to communicate us with others.

Communication is necessary for our survival. But Thorpe does not provide an adequate ground for the fact that animal communicative system should be called “syntactic”. The examples of animal communication system that Thorpe presents are “propositional”. He presents the song of an European bird (Robin) as an example in which the rate of alternation of high and low pitch signals show the intention of the



bird to defend its territory. Here the higher rate of alternation indicates the greater intention to defend the territory.

Chomsky does not support the view of Thorpe. He points out that the principle and mechanism that is present in animal communication systems are entirely different from those employed by human language. Human language often expresses many new thoughts, feelings and so on. The animal system accommodates the principle of continuous variation along the linguistic dimension, whereas human language is discrete.

For Chomsky, it is wrong to think that human usage of language as characteristically informative. Human language can be used to inform or mislead, to clarify one's own thoughts or to display one's cleverness, or simply for play. Human language is strikingly different from animal communication system. There is nothing useful to be said about behavior or thought at the level of abstraction at which animal and human communication fall together. Human language is based entirely on different principles. The people who approach human language as natural, biological phenomenon often overlook this point. For this reason it is absurd to speculate about the evolution of human language from simpler systems.

Before closing this chapter, we would like to present some crucial objections raised against Chomskyan account of language acquisition.

### **4.3 Critical Analysis of Chomskyan model in Language Acquisition**

Before closing this chapter, we would like to present some crucial objections raised against Chomskyan account of language acquisition.

First, Chomsky was criticized for his intention to reduce language to its grammar. The critics objected that Chomsky tends to give less importance on meaning. A sentence as ‘Colourful green ideas sleep furiously’ may be considered as part of the English language, for it is grammatically correct. It is therefore the object of study by Transformational Grammarians. On the other hand, a sentence, like, ‘My mother, he no like bananas’, is of no interest to the Chomskyan linguist.

Secondly, Chomsky distinguishes between ‘core’ or central grammar of a language, which is based on his view of UG (Universal Grammar), and peripheral grammar, that is language specific rules (that is, rules of specific language which cannot be generalized). To Chomsky, the real object of linguistic science is the core grammar. But here the objection is, how do we determine what belongs to the core and what belongs to the periphery?

Probably, in answer to this objection, a Chomskyan would argue that the syntactical universal features belong to the core, and the other factors (semantics, phonetics etc) belong to the periphery.

But the critics would argue that there is no convincing reason why the syntax must occupy the core position and the rest are marginalized. This very attitude can be questioned. Again while making this distinction he does not give us a clear criterion of this demarcation.

On the other hand, Chomsky makes another distinction between competence and performance. Every speaker of a language has mastered and internalized a generative grammar that expresses the knowledge of her/his language, that is, competence. It is the knowledge of rules and principles governing sentence construction and interpretation. It is the knowledge of grammar that enables the speaker to produce and identify grammatical sentences. On the other hand, speakers can judge whether a sentence is acceptable or not, but that is connected with the actual occasion of utterances, its appropriateness to the situation. All such things come into the domain of performance.

Thus, in criticism of Chomsky, opponents might say that Chomsky gives more emphasis on competence and ignore performance which is one of the important aspects of language. Here, the problem is that Chomsky relies upon common people's intuition which is not likely to be uniform.

Thirdly, throughout the 1960s, psycholinguists were only concerned with the grammar in their study of child language. According to Chomsky, children deliberately arrive at this grammar that enables them to produce and understand novel sentences. But the perspective has been shifted. In fact it is not impossible to study the developing grammatical competence irrespective of her/his general cognitive, emotional and social development of the native speakers.

The scope of child's language studies is not limited within phonology, grammar and vocabulary; but also the semantic structure of utterances, their role in social interaction and their reflection of the child's beliefs about the world.

In fourth, it seems that the poverty-of-the-stimulus argument might appear convincing at first glance, but it fails to provide any real data showing that children do not get adequate linguistic information.

Thus, in the next chapter, we intend to present some alternative models regarding language acquisition that are free from those major problems discussed and can be acceptable with a scientific justification.

## Chapter-4

### Some Alternative Models On Language Acquisition

#### Section-1

##### 1.Introduction

In our third chapter we have seen that language learning differs in case of adults and children. The adults probably accomplish most of their second language learning through memorization in compatible with the behaviorist model. That is, unlike a child, an adult learns her/his second language with the help of her/his first language. In the initial stages of learning, there is a conscious process of translation. But when she/he has fully mastered her/his second language, it becomes difficult to discover whether there is a simultaneous convert process of translation or not. In other words, we cannot be certain if this difference is due to physical maturation, or if it involves other factors like actual attitudes, stages of cognitive development etc.

At this point, the proposed Innateness Hypothesis splits into a weak and a strong version. According to the strong version<sup>88</sup>, the human infant's language learning capacity represents a kind of biological pre-programming specifically for the acquisition of human languages. The weak version<sup>89</sup> claims that the child has a set of innate cognitive and perceptual strategies for learning, together with a specific ability to apply these strategies to the learning of human languages.

But the weak version has certain limitations. It does not clearly specify whether the applicability of these strategies is pre-given. Though both versions are important and

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<sup>88</sup> The profounder of this strong version of Innateness Hypothesis is Chomsky.

<sup>89</sup> One of the proponents of weak version of Innateness Hypothesis is Bruner and the followers of cognitive theorists.

complement each other, both taken together are not consistent with Chomskyan Innateness Hypothesis.

Actually it is not possible to determine definitely that Chomskyan notion of Innateness Hypothesis as well as Nativism is right and the so-called “learning” theory is wrong. It is a genuine fact that neither the learning theory nor Nativism has all the answers regarding the question of language acquisition. We have introduced in this chapter some alternative models with respect to this issue in order to have a more or less complete picture of language acquisition. There are plenty of such models, but we have chosen three of them for they exhaust almost all possible explanations. They are-

1. Bruner’s Interactionist Theory,
2. Piaget’s Theory of Cognitive Development,
3. Vygotsky’s Social Constructivism and its relation with language.

## 1.1 Interactionist Theory by J. Bruner

We have already noticed that the biological or cognitive perspective was documented in 1957 model in which Chomsky challenged Skinner's approach to language learning on several grounds. According to Chomsky, children acquire language<sup>90</sup> in a short period of time, which cannot be explained through trial and error system. Chomsky proposes that the language acquisition device (LAD)<sup>91</sup>, along with its exposure to her/his native language helps her/him to acquire the particular language grammar (PLG). The picture looks like-

LAD + experience → PLG

In 1983, American psychologist J. Bruner (1915...)<sup>92</sup> comes with his Interactionist theory. He has made significant contribution to human cognitive psychology and cognitive learning theory in educational psychology.

Bruner rejects the sole emphasis on the Nativist account of language acquisition proposed by Chomsky. He offered an Interactionist theory as an alternative model of language development. In this approach, social and interpersonal nature of language is emphasized.

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<sup>90</sup> Chomskian Theory of Language Acquisition (which include complex grammatical rules and extensive vocabulary) has been discussed in detail in the third (3<sup>rd</sup>) chapter of this thesis.

<sup>91</sup> Language Acquisition Device has been also discussed in third chapter.

<sup>92</sup> Jerome Bruner (1915...) is the Professor of George Herbert Mead University at the New School for Social Research in New York. He has been the Watts Professor of Experimental Psychology and Fellow at Wolfson Center for Cognitive Studies at Harvard University. He is the author of some famous books, such as, *Child's Talk: Learning to Use Language* (1983), *Actual Minds, Possible World* (1986); *Acts of Meaning* (1990); *The Culture of Education* (1996).

### 1.2.1 The Social and Cognitive Elements

He combined two previous approaches in his Interactionist theory. This theory has two elements:-

1. Social interactions between the child and the environment.
2. Cognitive

Bruner argued that parents provide their children with a **Language Acquisition Support System (LASS)**, which is a collection of strategies that parents use to facilitate their children's acquisition of language.

### 1.2.2 The notion of Language Acquisition Support System (LASS)

Thus the Interactionist perspective comes up as a reaction to Chomsky's model. According to Bruner, while there may be as Chomsky suggests a LAD, a LASS is equally important. So far, without the interaction of a child with her/his parents, language cannot be acquired. Thus, according to Bruner, this is the most significant aspect of language acquisition. In his own words:-

**....there is a Language Acquisition Support System that frames the interaction of human beings in such a way as to aid the aspirant speaker in mastering the uses of language. It is this system that provides the functional priming that makes language acquisition not only possible, but makes it proceed in the order and pace in which it ordinarily occurs.**

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<sup>93</sup> Bruner, J. 1983. *Child's Talk: Learning to Use of Language*. New York, London: W. W. Norton & Company. p-120.



That is, Bruner postulates a Language Acquisition Support System (LASS) in adults' minds that enables them unerringly to provide the appropriate environment for their children. In his own words-

**Language is not encountered with willy-nilly by the child; it is shaped to make communicative interaction effective-fine-tuned. If there is a Language Acquisition Device, the input to it is not a shower of spoken language but a highly interactive affair shaped, as we have already noted, by some sort of an adult Language Acquisition Support System<sup>94</sup>**

Let us take a concrete example. In a recent study on a child called Jim, a son of deaf parents, it has been found that his parents wanted their son to learn the speech rather than the sign language used by them; but the child could learn speech by getting exposed to television and radio. However, his progress was limited until a speech therapist was appointed to work with him.

Thus the interaction between the child and the parents or caregivers has often been seen in recent years as the mainspring of language acquisition. The social interaction between the children and their parents paves the way for language learning through social exchanges like correction, approval or imitation. Bruner is supporting Chomsky by accepting a language learning capacity inbuilt in our genetic structure. But this project does not aim at demarcating the innate factors from acquired ones. To quote Bruner-

**Undoubtedly, there is something in the human genome that predisposes human beings to interact with each other communicatively in just this way-although again, it is not our object to separate the innate from the acquired, the natural from the cultural. Rather, the inquiry has been**

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<sup>94</sup> Ibid p-39.

**directed to several crucial linguistic functions and to the interactional settings in which children learn to master them.**<sup>95</sup>

Apart from social interaction, Bruner gives importance on cognitive element in LASS (Language Acquisition Support System). In other words, he gives importance on ‘formats’-that is, **a standardized initially microcosmic interaction pattern between an adult and an infant that contains demarcated roles that eventually become reversible.**<sup>96</sup>

A format is a contingent interaction between at least two acting members. It is contingent in the sense that the responses of **each** member can be shown to be dependent on a prior response of the **other**. Each member has a goal and a set of means to achieve the goal. Each has the capacity to affect the other’s progress toward the respective goals. Formats are asymmetrical with respect to the knowledge of the partners or members, that is, one “knows what’s up”, the other does not know or know less. Bruner considers format as a means for achieving several crucial functions in language acquisition.

Now, Bruner states that there are four ways in which Language Acquisition Support System (LASS) works from prelinguistic to linguistic communication.

First, the adults provide to their children those features of the world that are salient to the child and have simple grammatical form. To quote Bruner-

**We shall encounter formats built around games and tasks involving both these prototypical means-end structures and canonical linguistic forms that seem almost designed to aid the child in spotting the referential correspondence between such utterances and such events.**<sup>97</sup>

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<sup>95</sup> Ibid p-120

<sup>96</sup> Ibid p-120-1

<sup>97</sup> Ibid-40

We may take another example to explain this point, where candidates, that is, children are “bioprogrammed” to notice certain distinctions in real world events and to pick up corresponding linguistic distinctions in order to communicate about them. The following distinctions are between-

1. Specific and non-specific events
2. State and process
3. Punctual and continuous events
4. Causative and non-causative actions.

In case of interaction with the adults, the child concentrates on these distinctions both in reality and in speech.

Secondly, the adults encourage and model lexical and phrasal substitutive for familiar gestural and vocal means. It is another way of formatting through which adult helps the child. For example, requesting for an object. That is, learning how to request is not learning language or even just speech acts. It is also learning the culture and how to get things done by language in that culture.

Thirdly, adults provide play formats that are made of stipulative or constitutive “events” that are created by language and then recreated on demand by language. The games are an idealized and circumscribed format. “Idealized” in the sense that they are constitutive and self-contained. For example-there is a game called Peekaboo played by a boy and his mother with an object.<sup>98</sup> In this game the boy or his mother would disappear and reappear from behind a screen. The researchers under Bruner’s Interactionist Theory analyze and record the percentage of games during which-

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<sup>98</sup> The reference of the game peekaboo is taken from the book-Bruner’s book *Child’s Talk: Learning to Use of Language* ( 1983). p-49-57.

- The mother and child initiated hiding,
- The mother, the child or an object was hidden
- Their reappearance with the removed mask
- The vocalizations of the boy occurred before or after reappearance phase

Actually the game formats have a “deep structure” and a “surface structure”. The deep structure of peekaboo is the controlled disappearance and reappearance of an object or a person. The surface structure is constructed by the use of screens or cloths. It is accompanied with the variation of the time and action between disappearance and reappearance and the constitutive utterance used by the person or object who or what is the cause to disappear etc.

Finally, in the routinized formats of the mother and the child, there are various psychological and linguistic processes that generalize one format into another. To quote Bruner-

**A greeting format, for example, can be incorporated in a larger scale routine involving other forms of joint action. In this sense, any given format may have a hierarchical structure, parts being interpretable in terms of their placement in a larger structure. The creation of higher-order formats by incorporation of subroutine formats is one of the principal sources of presupposition.<sup>99</sup>**

**There are similar experiments from which it can be concluded that being exposed to language was not enough. Without the associated interactions, the input or data seems to be of little use. Chomskyan model overlooked this important aspect of language learning.** Actually Chomsky was not interested in working out the minute details of child’s learning procedure, after the child’s

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<sup>99</sup> Ibid-133

exposure to particular language. In this sense, Bruner's theory can be considered as a development on Chomskyan model; where he endeavors to complete the unfinished story. In other words, Chomsky's work on language was theoretical. He was interested in grammar and much of his work consists of explanations of grammatical rules. The actual performances of children were not his project. In other words, we can say more specifically, that he did not study the exposure and detail of language acquisition process of children in actual situation. The story relies on children being exposed to language, but takes no account of the interaction between children and their parents and caregivers.

It seems that Bruner's theory gives more emphasis on the child as an active participant and essentially creative in her/his approach to language acquisition. The theory combined with Chomskyan model has more explanatory value. It provides LASS combined with LAD. Neither LASS nor LAD taken in isolation can explain the entire language learning procedure.

## **Section-II**

### **2.The Theory of Cognitive Development by Jean Piaget**

Developmental psychology rather cognitive developmental theory was developed in the 1960s. Jean Piaget's (1896-1980) theory was the forerunner of today's cognitive revolution with its emphasis on mental processes. He took an organismic perspective to view cognitive development as the product of children's efforts to understand and act on their world. As far language acquisition is concerned, our attention shifted from Chomsky's generative model of Universal Grammar towards data based investigation of children's spontaneous speech.

Many specialists have studied this area of development over the years. Now, we will focus our attention to the work of Jean Piaget, a famous Swiss psychologist. We should understand his theory of acquisition of language in respect of child's cognitive or mental development. So far, in this realm, we should study in brief the basic tenets of his theory of cognitive development.

#### **2.1 The factors of Cognitive Development: Organization, Adaptation and Equilibration**

Piaget believed that cognitive development begins with an inborn ability to interact the environment. He described cognitive development in terms of four qualitatively different stages, which represent universal patterns of development. At each stage, child's mind develops in a new way of operating. Right from infancy through adolescence mental operations evolve from learning based simple sensory and motor activity to logical abstract thought. Cognitive growth occurs through three interrelated processes, namely-

- Organization
- Adaptation
- Equilibration

**2.1.1 Organization:-** It is the tendency to create increasingly complex structures, that is, systems of knowledge or ways of thinking that incorporate more and more accurate images of reality. These structures are regarded as **schemes**<sup>100</sup>.

These are organized patterns of behavior that a person uses to think about and act in a situation. As per children acquire more information, their schemes become more and more complex. For example, an infant has a simple scheme for sucking, but soon she/he develops varied schemes for how to suck breast, a bottle or a thumb.

**2.1.2 Adaptation:-**In Piaget's term, adaptation means how children handle new information in light of what they already know. Adaptation includes the interplay of two processes, namely-

- a. Assimilation
- b. Accommodation

**Assimilation** refers to the adjustment of one's developed ways of thinking with the environment. In other words, it is a process of taking information as far as possible depending upon the level of mental organization (scheme) at a particular time.

On the other hand, **accommodation** is another kind of adaptation. It occurs when the level of mental structure of a child is not advanced enough to assimilate (take in) information and the mental structure is gradually modified to fit in the materials of the environment or external input to the mental organization or scheme.

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<sup>100</sup> Scheme- Specific ways of knowing, an action sequence gained by thought.

**2.1.3 Equilibration:-** It is a constant striving for a stable balance or equilibrium that dictates the shift from assimilation to accommodation. Sometimes children fail to handle their experience within their existing cognitive structures and experience disequilibrium. They organize new mental patterns that integrate new experience and restore a more comfortable state. For example, a breast or a bottle fed baby who begins to suck on the spout of a “sippy” cup is showing assimilation. In this case, she/he uses old scheme to deal with a new situation. When infant discovers that sipping from a cup requires different tongue and mouth movements from those used to suck on a breast or bottle, she/he accommodates by modifying the old scheme. Let us see the following diagrams.<sup>101</sup>

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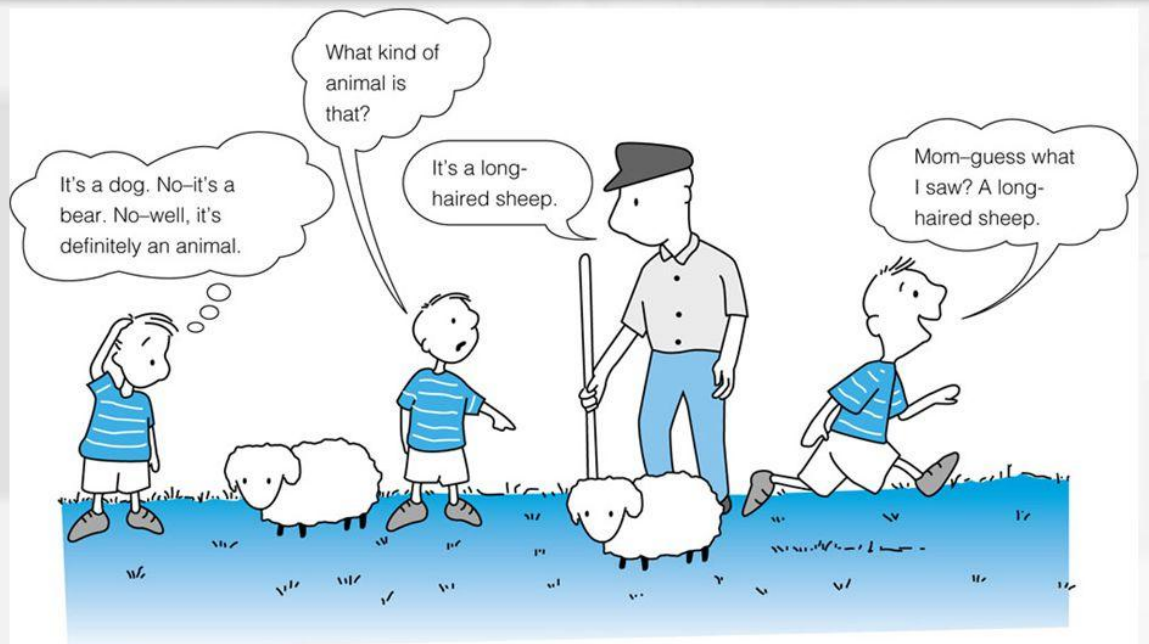
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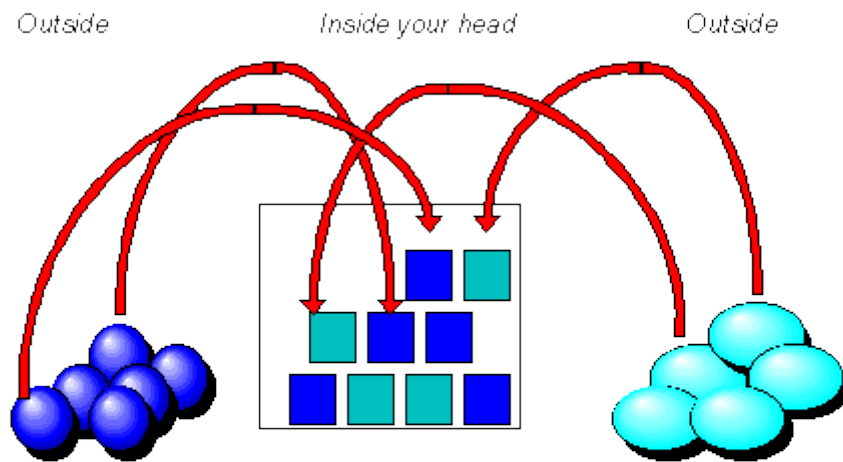


## Major Theories for Understanding Human Development



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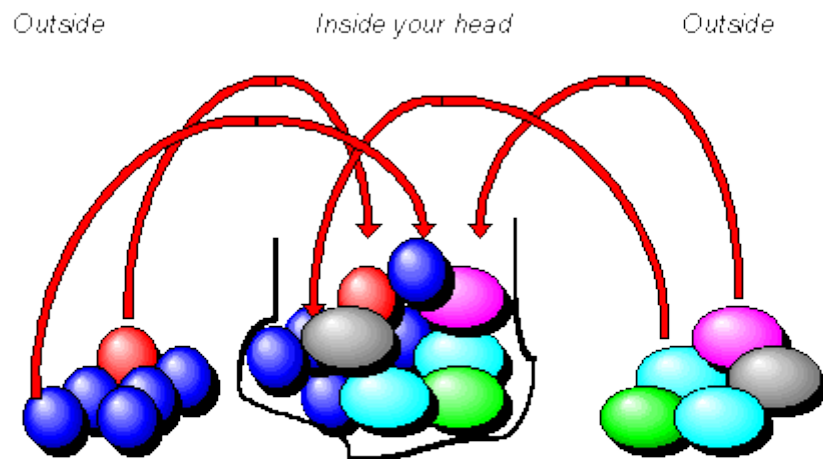
**Figure 4.1** Adaptation = Assimilation + Accommodation



**Assimilation: fit practice to theory**

Complex but familiar external objects are simplified to fit pre-existent categories in your head

25.6 6961124



**Accommodation: fit theory to practice**

You have to change the ideas in your head to fit the realities of external objects

25.6 6961124

Biologically, assimilation and accommodation- these two processes are constant function of brain. Piaget and his Geneva school argued that the child passes through a

series of uniform stages, always following same sequential order. Henceforth, there are four stages, namely-

1. Sensory-motor stage
2. Pre-operational stage
3. Concrete Operational stage
4. Formal Operational stage

We will acknowledge these stages in brief mainly in relation with language learning.

1. **Sensory-motor stage:-** It is first stage of cognitive development in a child. It begins at zero months to two years after birth. Child in this stage is egocentric. Piaget defined egocentrism as occupying an intermediate position (genetically, structurally and functionally) between autistic and directed thought. The child does not differentiate the self from the rest of the world. That is, by egocentrism, Piaget means the failure of the child to distinguish a subjective perspective (how it is to my mind) from objective reality. To analyze the notions of autism and directed speech, Piaget says-

**Directed thought is conscious, i.e. it pursues an aim which is present to the mind of the thinker, it is intelligent, which means that it is adapted to reality and tries to influence it; it admits of being true or false (empirically or logically true), and it can be communicated by language. Autistic thought is sub-conscious which means that the aims it pursues and the problems it tries to solve are not present in consciousness; it is not adapted to reality, but creates for itself a dream world of imagination; it tends not to establish truth, but to satisfy desires, and it remains strictly individual and incommunicable as such by means of language. On the contrary, it works chiefly by images, and in order to express itself, has resource to indirect methods, evoking by means of symbols and myths the feeling by which it is led.<sup>102</sup>**

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<sup>102</sup> Piaget, J. 1959. *The Language and the Thought of The Child*. .Translated in English by Marjorie and Ruth Gabin . London: Routledge& Kegan Paul. p-43.

So far, directed thought is social. It develops through the influence of law of experience<sup>103</sup> and logic proper. In contrast, autistic thought, is individualistic and obeys a set of laws of its own. In Piaget's own words-

**Now between autism and intelligence there are many degrees, varying with their capacity for being communicated. These intermediate varieties must therefore be subject to a special logic, intermediate too between the logic of autism and that of intelligence. The chief of those intermediate forms, i.e., the type of thought which like that exhibited by our children seeks to adapt itself to reality, but does not communicate itself as such, we propose to call *egocentric* thought.<sup>104</sup>**

Henceforth, at this early stage (sensory-motor) of cognitive development, Piaget saw language skills as basically physical. The baby experiments with her/his mouth apart from her/his hands. In other words, the factual basis of Piaget's theory is provided by his investigation of the child's use of language. His systematic observations led him to conclude that all conversations of children fall into two groups, namely-

- The ego-centric
- The socialized

In case of ego-centric talk, the child does not communicate with others. She/he expects no answers or rather cares whether others listen to her/him. Piaget even thinks that the preschool child's talk is ego-centric. It is also proved that seven or eight years old children's speech is not free from ego-centric thinking. In his own words-

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<sup>103</sup> The term 'law' has been used to indicate a particular pattern which the brain functions while taking inputs from the external world.

<sup>104</sup> Ibid- 45.

**This talk is egocentric, partly because the child speaks only about himself, but chiefly because he does not attempt to place himself at the point of view of his hearer.**<sup>105</sup>

So far, in this stage, she/he learns how to imitate some of the sounds she/he hears around her/him with its particular context.

2. **The Pre-operational stage:-** At the second stage of cognitive development, the child acquires new tools that sharpens her/his knowledge. Use of language is one such tool. Language stands as symbol for things or people to understand about them. In other words, she/he tries to identify them with words. In this stage, child can coin some novel sounds to refer to things. But the child is not equipped with proper knowledge of words. Thus, Piaget defines pre-operational children in terms of 'what they cannot do' and not in 'what they can do'. It is an attention seeking period. The child seems to talk constantly. But she/he consistently tries to draw attention by speaking aloud. For example, the child might describe what she/he is doing even though others can easily see what she/he is doing. According to Piaget at this stage of development, there is hardly any distinction between talking with others and thinking aloud.

3. **The Concrete Operational stage:-** It begins at the age of 7 to 8 years. By this time, children are being able to exchange conversations and manipulate concrete objects or situations. Ego-centrism gradually vanishes and their thinking becomes more adult like. At this stage, the child is capable of using logic and solving problems in the form of stories as long

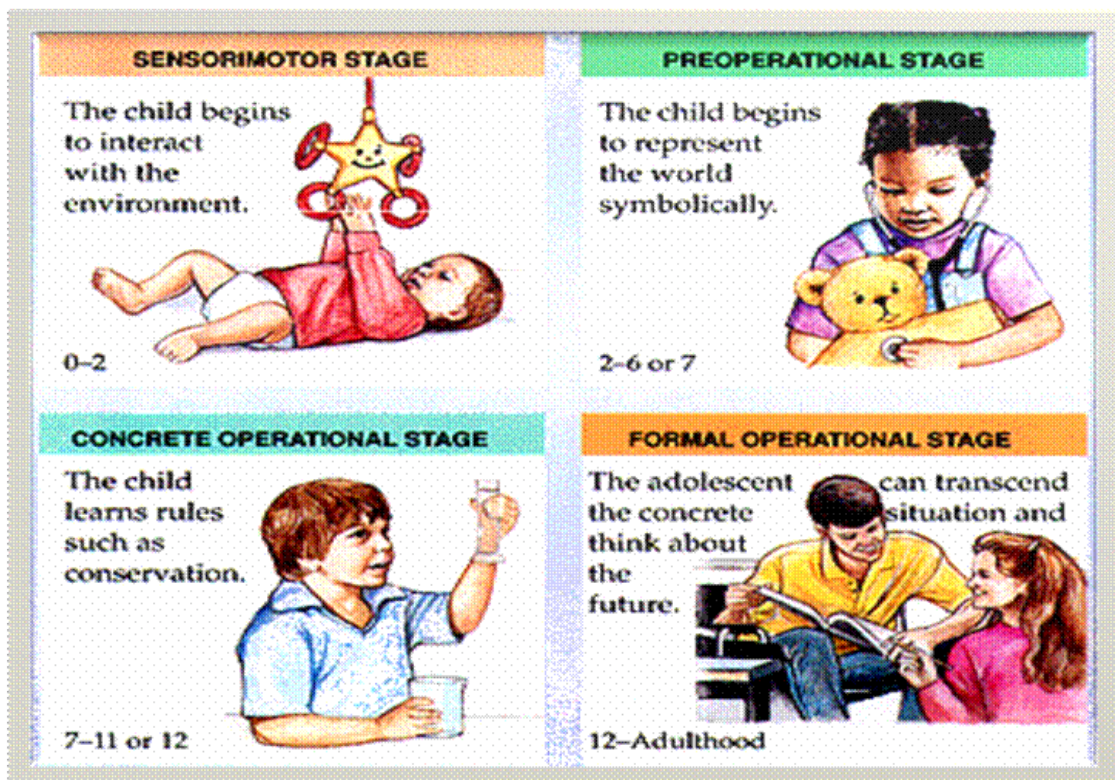
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<sup>105</sup> Ibid-9

as the story deals with facts rather than abstract ideas. Language at this stage is used for specific and concrete facts, but as has been mentioned that the child cannot deal with mental concepts.

4. **The Formal Operational stage:-** This is the final stage of cognitive development among children. It begins around the age of adolescence, that is, during teen ages. By this time, mental operations extend and include formalized and systematic logical operations, such as, search for general principles, application of symbols, explorations, scientific thoughts, exploring hypothesis for themselves etc. Children who have reached this stage can use language to express and debate about abstract theoretical concepts of mathematics, philosophy or logic etc.

The above stages will look like:-



That is, the following table denotes the cognitive development during these stages.

## Piaget's Theory

Stage	Age Range	Description
Sensorimotor	0-2 years	Coordination of senses with motor response, sensory curiosity about the world. Language used for demands and cataloguing. Object permanence developed
Preoperational	2-7 years	Symbolic thinking, use of proper syntax and grammar to express full concepts. Imagination and intuition are strong, but complex abstract thought still difficult. Conservation developed.
Concrete Operational	7-11 years	Concepts attached to concrete situations. Time, space, and quantity are understood and can be applied, but not as independent concepts
Formal Operations	11+	Theoretical, hypothetical, and counterfactual thinking. Abstract logic and reasoning. Strategy and planning become possible. Concepts learned in one context can be applied to another.

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According to this Cognitive Theory, children's first words and first steps occur during their first birthday. It is not a coincidence that language and mobility are co-related, because mobility allows the infant to experience the world and map verbal concepts with their experience.

So far, from the aforesaid view, it is clear that Piaget often spoke about the relationship between cognitive development and language skills, but he has never exclusively focused on childhood language development.

Although as a cognitive theorist, he states that a child has to understand a concept before she/he can acquire particular language which expresses that concept. This perspective can be tacitly explained through the example of **seriation**. We may observe a child's intellectual development when she/he can compare objects in accordance with their size. Piaget suggests that a child who is far away from this stage cannot be able to learn and use comparative adjectives like "bigger" and "smaller".

We know that, Piaget's main interest was the cognitive development of children. According to him, children represent their familiar worlds through the language. It is a reflection of their thought. But it is to be noted that language in Piaget's framework does not contribute to the development of thinking; rather language is the overt manifestation of thought. Piaget repeatedly insisted that cognitive development precedes the development of language. Piaget argued that children form an internal representation of the world through thinking. For example, when children see something and later copy or imitate it, they start thinking. Language is not involved in this process. In other words, a child's observation of other's behavior involves thinking, not language. Thus, language is just one of the vehicles of thinking. For Piaget, in case of learning language, understanding of the words requires knowledge of the understanding of the underlying concepts. Thus, thought is the foundation of language.

According to many developmental psychologists, small children have many concepts that adults do not possess. For instance, as Piaget claimed some time ago, children have single concept that later on gets differentiated into the concept of weight and density. It is not simply that they have the concept of weight and later acquire the concept of density. Rather the ancestor concept runs together with the features of both in a way that makes it implausible that it is either the concept of **weight** or the concept of **density**.

## 2.2 Controversies between Piaget and Chomsky

Piaget thinks that there is a middle path between the bare empiricism and innatism. He does not entertain the possibility of innate ideas. Simultaneously he denies that



ideas and knowledge come from pure unprocessed perception. According to him, our minds always organize experience by fitting it into conceptual structures. But we do not possess these structures from our childhood. The structures are gradually developed with the increasing interaction with the environment. From that time, we form a series of complex or sophisticated structures or “schemata”.

Thus against Chomsky’s views on language, Piaget suggests that an internal language structure would be “inexplicable” from the perspective of evolutionary biology. He will not accept the requirement of any pre-given language structure. The process of language acquisition can therefore be accounted for on the basis of the cognitive potentialities with which a child is born.

Furthermore, Piaget also claims that the symbolic function of language depends upon the general semiotic function that develops out of the sensory-motor stage of cognitive development.

In response to this assumption of developmental psychology, Chomsky argues that the development of a language organ is no more problematic than the development of the mammalian eye or the cerebral cortex. It is not innate in the Cartesian sense. Chomsky has proposed a theory of language acquisition on the basis of genetic innatism. For Chomsky, general learning mechanisms do not solely provide rules for learning a particular language, as for instance English.<sup>106</sup>

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<sup>106</sup> The book *Language and Learning* by Piattelli-Palmarini, 1980 provides a useful debate between Chomsky and Piaget on the issue of autonomy of language from other faculties. Chomsky points to the complexity of the knowledge that is learnt and denies that this could be the product of sensory-motor intelligence or general learning theories.

### **2.2.1 Putnam's view**

On the other hand, Hilary Putnam (1926...), one of the influential empiricists emphasizes on principles of general intelligence in case of language acquisition. According to Putnam, if the learner is able to understand a particular string that has been used to communicate something about an object, she/he can also understand which part of the string is being used to refer to the object. Thus, like Piaget, Putnam also agrees that a language organ would be anomalous from the perspective of evolutionary theory.

In answer to this view, Chomsky claims that, everyone supports the fact that genetic factor along with the environmental input are determining factor for the growth of the embryo. Thus, for Chomsky, that for the same reason, it is better to understand language organ as genetically encoded. For Chomsky, it is more conceivable way to conclude that our different cognitive capacities (for example language or vision) are served by different specialized mental organs or modules.

### **2.2.2 Fodor's view**

In this respect, a famous American philosopher and cognitive scientist Jerry Fodor (1935...) views on 'Language of Thought' hypothesis and 'Modularity of Mind' have some parallels with Chomskyan view on UG (Universal Grammar) theory. Fodor argues that mental states, such as beliefs and desires are relations between individuals and mental representations. He maintains that these representations can only be correctly explained in terms of a 'Language of Thought' (LOT) in the mind. Further,

this language of thought is actually existing thing in the brain and not just a useful explanatory tool.<sup>107</sup>

He studied the relationship between language and mind and his view expresses that language is a modular process. This view has important implications for a theory of language acquisition. The term modular is used to indicate that the brain is (unlike other views, such as behaviorist view of language learning) organized with many modules or cells for a particular ability. For Fodor, significant parts of the mind, such as, perceptual or linguistic processes are structures in terms of modules or “organs” which are defined by their causal and functional roles. These modules are relatively independent of each other and of the central processing part of the mind which has a more global and less domain specific character. If we accept Fodor’s ideas, then the language module is consisting of set of sub modules. This set would minimally include phonology, a lexicon (or vocabulary), a grammatical component, and a semantics. Some would add a component (or components) including pragmatics and extended discourse (e.g. Halliday, 1978; Gazdar, 1979) but other theorists (e.g. Sperber and Wilson, 1986) view language interpretation at this level as external to the language module proper, and governed by general cognitive principles which also apply to other aspects of thinking and reasoning. This modular separateness has been termed as “informational encapsulation” by Fodor. In short, it is to say that each module is open for specific type of data. In other words, modules are domain specific. This is another way of saying that conscious knowledge cannot penetrate one’s visual module or language module or any other sub conscious module.

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<sup>107</sup> Reference is taken from the Fodor’s book *Language of Thought* (1979)

### 2.2.3 Fodor and Chomsky in relation with language acquisition

Here our intention is to show that Fodor's argument is somewhat similar to that of Chomsky or the proponents of UG theory. It is in this sense that external input per se may not account for language acquisition and that language acquisition is genetically pre-determined. To quote Fodor,

**If, for example Chomsky is right (see Chomsky, 1965; for detailed discussion of Chomsky's views of syntax acquisition, see Fodor et al., 1974), then learning a first language involves constructing grammars consonant with some innately specified system of language universals and testing those grammars against a corpus of observed utterances in some order fixed by an innate simplicity metric. And, of course, there must be a language in which the universals, the candidate grammars, and the observed utterances are represented. And, of course, this language cannot be a natural language since, by hypothesis; it is his first language that the child is learning.<sup>108</sup>**

Here, it is important to note that, such a modular approach to language acquisition is totally different from the views of Piaget who has given the primary emphasis on the role of social or environmental factors in language development. This approach also radically differs from Skinnerian model<sup>109</sup>, according to which language behavior is dependent on general learning processes (which are not necessarily specific to humans).

However, the emphasis on modularity within the language system leads to the possibility of some similarities between the theoretical positions proposed to Chomsky and Bruner. If we accept the fact that language is a very complex system

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<sup>108</sup> Chomsky's argument infers the innateness of linguistic information (and hence of the representational system in which it is couched) from the universality of language structure across historically unrelated communities and from the complexity of the information the child must master if he is to become fluent.

Fodor, Jerry. 1979. *Language of Thought*. Cambridge: Harvard University Press. p-58.

<sup>109</sup> Skinnerian model of language learning has been discussed in detail in chapter 2.

with a number of distinct component parts, then it leads to the obvious conclusion that there will not be any one single explanation for the development of language. Though the environment plays an important role in the development of certain components of language, but the main influential factor of this language development is the child's innately given language acquisition device (LAD) or Universal Grammar (UG).

## **Section-III**

### **3.Vygotsky's Theory of Social Constructivism and its relation with Language**

Lev Semenovich Vygotsky (1896-1934) was a most outstanding Soviet psychologist and a founder of the most influential school of Soviet psychology. He was not a post-modern linguist, but his work remained unknown to the Americans for decades due to the political relationship between the United States and the Soviet Union. When the cold war ended, the incredible value of Vygotsky's thesis came to the limelight. He was a contemporary of great thinkers, e.g., Freud, Skinner and Piaget. But his early death at the age of 38 and suppression of his work in Stalinist Russia left him in isolation. Nowadays, it is impossible to exclude Vygotsky from any serious discussion on language acquisition. He has drawn our attention to the influence of socio-cultural factors in language acquisition. His theory can be labeled as a socio-cultural theory.

Socio-cultural theory gives emphasis on the contribution of society and culture in individual development. Vygotsky believed that parents, caregivers, peers and the culture at large are responsible for the development of the higher order functions. His central focus is on social, cultural and historical network of which a child is a part. In other words, a child's growth is determined to a large extent by the social, cultural and historical milieu in which she/he belongs. Vygotsky proposes that, in order to understand the cognitive development of the child, one must look into the social processes from which a child's thinking is derived.

Here our intention is to compare the theory of Vygotsky with other anti-Chomskyan linguists related to language acquisition. Vygotsky discussed the phenomena of cognitive development of children from socio-cultural perspective. For Vygotsky,

highest forms of mental life and conscious behavior are products of social development. His thesis is known as interfunctional interpretation of higher mental functions. His initial concept of higher mental functions focused on the transformation of natural functions into cultural functions under the influence of psychological tools. To quote Vygotsky-

**Studying the development of thought and speech in childhood, we found that the process of their development depends not so much on the changes within these two functions, but rather on changes in the primary relations between them...Their relations and connections do not remain constant. That is why the leading idea is that there is no constant formula of relation between thought and speech that would be all stages and forms of development or involution. Each of these stages has its own characteristic form of relation between these two functions.<sup>110</sup>**

The basic features of Vygotsky's cognitive development help us to understand his view on language acquisition. First, Vygotsky placed more emphasis on socio-cultural factors that affects cognitive development. That is, for Vygotsky, cognitive development begins from social interaction to guided learning within the zone of proximal development<sup>111</sup> as children and their parents' co-construct knowledge. This contradicts Piaget's view of universal stages and content of development. Piaget maintains that cognitive development stems largely from independent explanations in which children construct knowledge of their own. Hence Vygotsky assumes that cognitive development varies across cultures, whereas Piaget states that cognitive development is mostly universal across culture. On the other hand, for Vygotsky, the

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<sup>110</sup> Vygotsky, Lev. 1930. *O psikhologicheskikh sistemakh* [On Psychological Systems] . in the *Collected Papers*, vol-1, p-110.

<sup>111</sup> The notion of Zone of proximal development will be discussed in detail very soon in this chapter.

environment in which children grow up will influence how they think and what they think about.

Actually Vygotsky's thesis emphasizes on the complex network of interaction that takes place among thought, language and socio-cultural factors. Piaget has provided us with a simpler explanation where he overlooks the interaction between language and thought in the psychological development of a child.

Vygotsky in his most popular book *Myshelnie I rech*<sup>112</sup> has drawn our attention to the contribution of the adults in the cognitive development of the child. According to Vygotsky, adults directly contribute to the internalization of cultural values of children.

Since thought is an overt speech at a later stage, Vygotsky thinks that language is not merely an expression of the knowledge or cognitive structure of the child; language in the form of speech plays a double role in the child's psychological system. Not only they act as psychological tools that help in the formation of other mental functions, they are also one of these functions that constantly undergo cultural development and thus are dynamic in nature. It must be noted in this context that thought and language influence one another.

Let us now focus on the intricate details of the interaction between thought and language. Vygotsky's first objective in the book '*Myshelnie I rech*' (*Thought and Language*) is to show that thought and speech have a different roots. They merge only at a certain moment in ontogenesis, after which these two functions develop together under reciprocal influence.

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<sup>112</sup> *Myshelnie I rech* was published in Russian in 1934, a few months after Vygotsky's death, and was reprinted in 1956 and 1982. It appeared in English as *Thought and Language* (MA: MIT Press, Cambridge, 1962.)



There is a fundamental correspondence between thought and speech in terms of one provides resource to the other. Language becomes an essential tool in forming thought as well as concept and it also determines the personality features of a person. Thus, in order to know the intellectual development, we need to understand the interactions between thought and language. Here, in this respect, he differs from Piaget in the following way:

- a. Thought  $\longrightarrow$  Language=Personality
- b. Thought  $\longleftarrow$  Language=Personality

Piaget accepts only the first one (a) while according to Vygotsky both (a) & (b) thought and language influence one another and determine the personality pattern of a person. According to Piaget, language depends on thought for its development (i.e. thought comes before language). For Vygotsky, thought and language are initially separate systems from the beginning of life. He argued that thought and language develops in a child separately till she/he attains the age of two. They merge at round three years of age and produce verbal thought (inner speech).<sup>113</sup>

Like Piaget's sensory-motor stage,<sup>114</sup> Vygotsky states that before two years, thought is pre-verbal and is expressed more in child's actions. The delinking of thought and speech is probably because child uses sounds that she/he picks up from the surroundings just for the sake of making noises or for the fun of it without referring to anything particular. Around two years of age, the child expresses thought verbally and in this stage her/his speech reflects rationality. When the children are able to

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<sup>113</sup>Inner speech: The notion of inner speech is one of the major problems discussed in *Myshlenie I rech* (Chapter 2 and 7). It has been twice: first time in context of polemics with Piaget concerning child egocentrism, and the second time in connection with a problem of the personal senses of words.

<sup>114</sup> Vygotsky does not refer to stages in the way that Piaget does.

manipulate thoughts using soundless speech, the development of thought and language become interdependent.

So far, according to Vygotsky, there are three parallel stages in order to develop thought and speech. In the first stage, the objects or things are organized into categories. The stage is based on perceived similarities and differences in the objects rather than logic or rule.

The second stage deals with the perception of the structural aspects of objects. In this stage, children perceive unchangeable, concrete and factual bounds between individual components of objects.

The final stage is called the stage of conceptual thinking. Here children are able to make abstract links between components and analyze them.

According to Vygotsky, these three stages of the two processes occur in sequential order one by one. During the transition from one stage to another, the original structures are destroyed and new structures are constructed.

For Vygotsky, during the third or final stage of thought and language development, the two become interdependent and when these two overlap, both can be used together to produce verbal thought and rational speech.

Now, for our present purpose, let us consider how a child acquires language. For Vygotsky, a child first seems to use language for superficial social interactions. After some time, this language helps in the formation of the child's thought structures as it constantly helps in the formation of concepts. Once the child realizes that everything has a name, each new object creates a problem situation for a child, and she/he can solve the problem by naming the object. When a child encounters a new object

without a name, she/he demands to know it from her/his caregivers. This is the first stage of language learning. The first few words become the embryos of concept formation. Meaning of words undergoes a complex development in the child's psyche; the words become concrete designations of objects which perpetuates as a bridge in acquiring abstract meaning. This conclusion was followed by the statement that the whole of mental development can be understood as a profound change of psychological systems which mediate the basic forms of activities; and that with each new stage the leading function changes. One of the most important theses of Vygotsky is that the child thinks by memorizing, whereas the adult memorizes by thinking. In case a child, memorizing precedes thought and it is reverse in the adult system. This systematic approach to complex psychological functions was one of the important steps in contemporary psychology. It has been already stated that according to Vygotsky social interaction also plays a fundamental role in the development of cognition over and above the interaction between thought and language. In his own words-

**Every function in the child's cultural development appears time: first, on the social level, and later, on the individual level; first between people (inter-psychological) and then inside the child (intra-psychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals.<sup>115</sup>**

Since cognitive skills and pattern of thinking are primarily determined by contingent, dynamic social factors, that is, they are the products of the social activities within the

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<sup>115</sup> Vygotsky, L S. 1978. *Mind in Society*. Cambridge, MA: Harvard University Press. p-57.

cultural milieu in which a child grows up; in this respect, Vygotsky's theory is in sharp contrast to Chomsky.

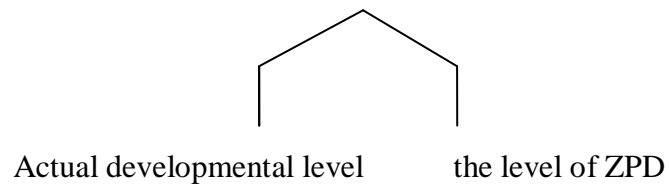
According to Vygotsky, through "dialogues" we actually interact and communicate with each other to learn the cultural values of our society. Vygotsky also believed that human activities take place in cultural settings and cannot be understood apart from these settings. Therefore, our culture helps to shape our cognition. It thus differs in this respect from Piaget's theory that stated children act on environment to learn.

### **3.1 Zone of Proximal Development (ZPD)**

According to Vygotsky, the higher psychological processes have a social origin. It shows us a new approach in the evaluation of the child's mental development and the assumption that not only the actual mental age of the child has to be measured but also its potential capacities.

Thus it implies that Vygotsky's emphasis on the potential capacities of the child is one of the innovative approaches in language acquisition. Actually the potential capacity for cognitive development is limited to a certain time span which he calls the "zo-ped", "the **zone of proximal development**" (ZPD). The zone is the area, in which a child can perform a challenging task; given appropriate help. In other words, full development during the ZPD depends upon maximum possible social interaction. Zone of proximal development is the difference between the child's capacity to solve problems on her/his own and the capacity to solve them with assistance. So far, there are two levels of cognitive development according to Vygotsky, that is,

## Cognitive Development



The **actual developmental level** refers to all the functions and activities that a child can perform independently without the help of anyone else.

On the other hand, the **zone of proximal development** (ZPD) includes all the functions and activities that a child or a learner can perform only with the assistance of someone else. From this socio-cultural perspective, this is called the scaffolding process. In this process, the adult or another peer who has already mastered that particular function provides the non-intrusive intervention, hints or clues to the child for problem solving, suggesting her/him a better approach for the problem situation. It is easy to understand the notion of ZPD with the diagram<sup>116</sup> below:

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<sup>116</sup>[https://www.google.co.in/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwi\\_m4zOp8PLAhVP1I4KHWIUbpMQjRwIBw&url=http%3A%2F%2Fofslides.com%2Fdtr200x-7738%2Fpresentation-7758&psig=AFQjCNEAJhEMCGB\\_HkO\\_4q-06oe8dQuhIA&ust=1458152512843564](https://www.google.co.in/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwi_m4zOp8PLAhVP1I4KHWIUbpMQjRwIBw&url=http%3A%2F%2Fofslides.com%2Fdtr200x-7738%2Fpresentation-7758&psig=AFQjCNEAJhEMCGB_HkO_4q-06oe8dQuhIA&ust=1458152512843564) (15.03.2016)

# Zone of proximal development

## (ZPD)

This is the vygotskian concept that explains the mechanism of cognitive development

ZPD is actually the gap between actual competence level (what problem level a student is able to independently solve), and the potential development level (what problem level could she solve with guidance from a tutor)

ZPD is based on the mental functions that have not yet matured but are being in the process of maturation.



### 3.1.1 Difference between Vygotsky and Piaget in Language Development

Piaget and Vygotsky differs in the sense that while Piaget would assume that the child or learner has not developed mental structures to solve such a problem, Vygotsky would offer encouragement or strategies in the form of scaffolding, in their endeavor to solve the problem (for the child or the learner). The following diagram <sup>117</sup> denotes the difference between them (Piaget and Vygotsky):

<sup>117</sup><https://www.google.co.in/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwik6a7xqMPLAhXQvo4KHTmpB5MQjRwIBw&url=http%3A%2F%2Fwww.slideshare.net%2Fzennboy%2Fvygotsky-25995879&psig=AFQjCNGIvs2-euZER9ARjDX8YQluYcf1Kw&ust=1458152860415451> (15.03.2016)

# Theories of Cognitive Development:

## Vygotsky vs. Piaget

### **Vygotsky's sociocultural theory**

### **Piaget's cognitive developmental theory**

Cognitive development varies across cultures

Cognitive development is mostly universal across cultures

Stems from social interactions

Stems from independent explorations

Social processes become individual-physiological processes

Individual (egocentric) processes become social processes

Adults are important as change agents

Peers are important as change agents

The reason behind this above discussion is to understand Vygotskyan notion of language acquisition which is considered to be a major principle of his socio-cultural theory. Actually the process of language acquisition as well as any sort of cognitive development involves two stages:

- In the first stage the child needs the help of others to learn how to communicate and solve a particular problem.
- In the second stage, the child can handle any problem situation on her/his own. The language of a certain group of people indicates their priorities, cultural beliefs, value systems etc.

For instance, a tribal language may have many words for ‘hunting’, and the words stand for different ways of hunting. This obviously indicates that ‘hunting’ occupies a significant position in their daily life.

This story suggests that children learn language in much the same way they learn cognitive skills. Vygotsky states that humans may have “built in biases, rules and constraints about language that restrict the number of possibilities considered.” In this sense, his theory has similarity with the Chomskyan thesis. Vygotsky’s theory was an attempt to explain consciousness as the end product of socialization. Vygotsky reiterates that in the entire journey of cognitive development the role of socialization is most vital.

### **3.1.2 Inner or Private Speech**

In this case, in the learning of language, the child’s first utterances with peers or adults are for the purpose of communication, but once mastered they become internalized and allow “**inner or private speech**”. So another aspect of language development involves private speech. Private speech is self-talk of children (and of adults) which may be used to guide and aid in thinking. For Piaget, private speech is something ego-centric or immature, but Vygotsky understood the importance of self-directed speech. Private speech is considered to be self-directed regulation and communication with the self, and becomes internalized after about nine years. Therefore, considering this overall approach, we may say that according to Vygotsky, the primary function of language “**in both adults and children is communication, social contact.**”<sup>3</sup>



Therefore, through daily interaction with other language users, children learn how to convey their messages to express feelings and intentions which enable them to function in a society. In other words,<sup>118</sup> language is a cultural tool which provides the means to the members of a group to retain their shared identity and to relate with each other. Through the process of language learning, parents initiate their children to acquire into social and cultural norms, so that they can behave, speak and think in appropriate ways.

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<sup>118</sup> Vygotsky, L S. 1962. *Thought and Language*, Translated and edited by Alex Kozulin. London, England, Cambridge, Mass: MIT Press. p-19.

#### **4.Values of these models in Language Acquisition**

Now, it is clear to us that although this above mentioned theories with their perspectives and approaches have a great contribution in the realm of language acquisition, none of the models by itself can do justice to the complexities involved in the process of language learning. These theories serve as a supplement to Chomsky's position. But they have their limitations. Let us try to highlight some of the shortcomings of the theories discussed above.

It is stated in the Interactionist theory that a child will learn more quickly with frequent interactions. However, it has already been noted that children in all cultures pass through the same stages in acquiring language. We have also seen that there are cultures in which adults do not adopt special ways of talking to children, so CDS (Child Directed Speech) may be useful but is not necessary for language acquisition. According to some Cognitive theories, during the span of first year to 18 months, it is possible to trace the connection between language and intellect, but as a child grows up, it becomes difficult to find the clear links between the two.

Swiss psychologist Jean Piaget and Russian psychologist Lev Vygotsky examined how children acquired language. Both are interested in the relationship of thinking and language learning.

Piaget's idea was that children learn through action. He believed that children are born with and acquire schemas, or concepts to act and respond to her/his surroundings. As children explore their world, they form and reform ideas in their minds. The more actively involved children can gain more knowledge. For Piaget, child is not a miniature adult and her/his mind is not the mind of an adult on a same scale. In other words, Piagetian perspectives of literacy acquisition emphasize on a

child's stages of development and gradual formation of concepts. It precedes developmental stages by simply imitating adults' behavior or following adults' directions.

Chomsky in his criticism of Piaget's theory maintains that Piaget failed to explain the transition of one stage of cognitive development to another. Because Piaget and his school neither admit that the transition results from new information nor from some intrinsic process of maturation. Thus Chomsky says that it is dogmatic to claim that linguistic development runs side by side with other sensory motor skills.

The Vygotskian perspective of language acquisition emphasizes social interaction but places less emphasis on stages of behavior. From this perspective, linguistic and other cognitive developments are simultaneously internalized. Children build new concepts by interacting with others who either provide feedback or help them to accomplish a task. Vygotsky suggested that learning is a matter of internalizing the language. He believed that children need to be able to talk about a new problem or a new concept in order to understand it and use it. Thus concept formation and language formation are simultaneous.

Here, we would like to say that at first glance, Vygotsky's theory might look like a modified version of behaviorism, because of his emphasis on external input and reinforcement mechanism. But his perspective focused on the psychological aspect of language development to demonstrate that language is the means by which reflection, generalization and thought processes are socially formed. According to Vygotsky, the acquisition of language in children is rooted in the social interaction of the child. He writes-

**The acquisition of language can provide a paradigm for the entire problem of the relation between learning and development. Language arises initially as a means of communication between the child and the people in his environment. Only subsequently upon conversion to inner speech does it come to organize child's thought, that is become an internal mental factor<sup>119</sup>**

This is in contrast with Chomskyan hypothesis of innate capacity for language as well as with the behaviorist account of language which stated that language is acquired through some form of crude imitation. Although we might say that Vygotsky's theory is nothing but a mixture of previous approaches, but it also has an explanatory value. It acknowledges the acquisition of language through the social interaction with others and gradually language becomes tool for developing the thought processes. Therefore, we can take this model of language acquisition as one which can supplement the Chomskyan thesis.

There have been more researches going on in this field, and these findings might not be the final result. There are mainly two dominant orthodox positions, namely Nativism and Behaviorism in this area. But the cognitive model defined by Piaget is more approachable. Piaget was primarily concerned with the child's cognitive development which he ascertained through his experiments, interviews and other methods along with the observation of language behavior. Here Vygotsky comes up with his new idea of ZPD, which is interesting and helps to explain more easily the language acquisition process. Vygotsky believed that given proper help and assistance, children could solve a problem that according to Piaget are beyond the child's mental capabilities. The so-called zone is the area at which a child can perform a challenging as well as critical task with the appropriate help and assistance of

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<sup>119</sup> Vygotsky, L. S. 1962. *Thought and Language*, translated and edited by Alex Kozulin. London, England, Cambridge, Mass : MIT Press. p-2.

others. So far, Social Constructivism of Vygotsky, Cognitive Development of Piaget and Bruner's Interactionist Theory are important milestones in the study of language acquisition.

## Conclusion

In our thesis, it has been discussed that neither Nativism nor Behaviorism can provide us with a satisfactory explanation regarding language acquisition. In other words, it has been already mentioned that our work belongs to the domain of philosophy and psycholinguistics where this issue has been studied from three different perspectives, namely, Nativism, Behaviorism and Cognitive Developmental Theory. Thus, in this thesis, we have not only given an exegetical account of the satisfactory accepted theories of language acquisition, but have tried to give an explanation. So far, our conclusion endeavors to take the best of two opposite positions and other additional factors to do justice to this fundamental issue.

In our present context, we see that Chomsky is consistently claiming that he is doing science with regard to this hypothesis of Universal Grammar principles. The Chomskyan principles with the help of which language acquisition is explained are still beyond neuropsychological account of human brain. Chomsky claims that human brain has uniquely abstract structures. Actually Chomsky wished to study language within the framework of concepts and assumptions produced by the natural sciences. For our present issue, we have revealed the fact that the theories of behaviorism and Chomskyan Nativism can partially explain some intricacies involved in language acquisition process. Broadly speaking, all such theories are more or less involved in the actual process of language acquisition. Let us consider the actual process of language acquisition.

It cannot be denied that a child starts her/his journey in the acquisition of language through behavioral procedure. Around the fifth month, there is a gradual transition

from cooing to babbling, in which a particular sound is consistently repeated as in “da-da-da-da” and “lal-lal-lal-lal”. This behavior represents greater control over the speech mechanisms than the earlier unpattered cooing.

The phenomenon of cooing is very similar to the animal communication pattern. Thus, the ecological movements question the fundamental Cartesian presupposition that language is species-specific. This species specific nature of language is the fundamental foundation of Chomskyan language thesis where he was highly influenced by Descartes. Deep ecologists and other ecological theories<sup>120</sup> will consistently claim the continuation in the evolutionary process as far as language acquisition is concerned. According to them, communication or use of language is a special feature of human species. They will consider Chomskyan hypothesis as a type of species chauvinism.

Since we are mainly concentrating on the Chomskyan framework, let us continue our discussion on the phenomenon of babbling. In babbling, infants produce sounds that will later form the basis of language. These babbling noises initially include all adult speech. Many vocalizations of human infants are found in any human speech. In this regard, experiments have shown that we cannot distinguish the babbling of our Indian babies from the babbling of Chinese or Russian babies during this period. Even, from the study of deaf children, it follows that cooing and babbling do not depend on external inputs. They gradually learn to communicate through gestures, speech, drawing and writing.

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<sup>120</sup> The main proponent of Deep Ecology is Arne Naess (1912-2009). He was a Norwegian philosopher who coined the term “deep ecology” and was an important intellectual and inspirational figure within the environmental movement of the late twentieth century. The chief thesis of this theory is the focus on nature that should not be use as an instrument, but with an intrinsic value; where human species is just one part of this interlinked cosmological nature. Deep ecology is very similar with Indian cosmological view, where man is the part of the nature and not overpowering other species.

Now, we are already familiar with the Innateness Hypothesis and Critical Period Hypothesis which state that human beings have a genetically determined predisposition to speak and learn its language within a particular period of time. This theory is further supported by the studies of the sequence of language learning. This learning can be explained in terms of a highly predictable series of stages. The different stages are blurred and a clear compartmentalization is difficult. Thus, different stages have been marked for the convenience for the explanation.

Before the end of their first year, babies begin to distinguish the meaningful phonemes of her/his language. This stage is known as **word recognition**. In this stage, the phonemes function as words for babies. This word recognition consistently appears before the production of language.

At twelve months of age, the infants begin to concentrate on those sounds that will appear in her/his first words. In her/his native language, these first words consist of a front consonant, *p, m, b or t* (produce with the tongue in front of the mouth), and a back vowel, *e or a* (produced with the tongue in the back). For this reason, English children say *tut* before *cut*, Swedish children say *tata* before *kata*, and Japanese children say *ta* before *ka*. Here children often **imitate** the sounds of their family members or caregivers and get tentative responses from them. Actually according to the common sense assumption, the child learns to speak by imitating. They usually try to mimic the sounds of their parents before they become competent with adult language.

Like imitation of classical conditioning, operant conditioning also play a vital role in the child's learning of meaning of words with its associate sounds. In other words, classical and operant conditioning plays a role in the acquisition of meanings. For



example, if a child is hungry, she/he produces a sound that is close to a word, like *muk* (milk) and *oukay* (cookie), then her/his parents try to provide her/him food. The exact meaning of the first words varies with the situation. The successful communicator in these instances is the parents who decode the message, but it is not possible for the child who is just the beginner in the language learning scenario. These one-word expressions are sometimes called **holophrastic expressions**. It means that a single word is intended to convey a more complex idea.

On the other hand, when a child first uses a word, she/he tends to overextend <sup>121</sup>it. For example, suppose the child's first word *doggie* (first learned in reference to a dog) is generally used to refer all animals with four legs or all small animals that move.

Sometimes this overextension occurs because the child is using only one or two features as a criterion. Gradually the child focuses on certain specific factors. These are some necessary steps for concept formation. For example, when she/he sees cow, she/he adds another feature with her/his previous criterion. For cow, she/he might add the feature of size (big compared to dogs) and shape (horns). At this stage, the child also has to deal with abstract concepts. Language is very important in acquiring abstract concepts. For example, suppose a child is asked to help to bury a dead animal, but the child asks "When is she going to wake up?", "Does she like being down there?", "How is she going to get out?" and so on. These questions establish child's limitations regarding certain important concepts like time, life and death. In this case, we usually explain them that, animals that are dead never wake up or cannot get out by themselves. Thus, by the process of observing, questioning and receiving answers continues for years until the child gains an adult understanding of time, life

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<sup>121</sup> Overextend is a technical term that stands for overgeneralization.

and death. In this context, it must be noted that the concept formation is done automatically by the human brain without any conscious interventions.

In their three or four years of age, this overextension of meaning becomes less obvious. But they are still confused with closely related words. For example, they often fail to differentiate between more from less; rather they treat these pairs (more-less, tall-short) as synonymous.

Gradually the child acquires a modest vocabulary to comprehend a primitive or simple sentence. Most experts in this field acknowledge that the beginning of language ability is not the child's first words. Within the first and second year, the normal human child achieves the developmental landmark of using words in combination. These early words combinations are sometimes regarded as **telegraphic utterances**. Like telegrams, they are highly abbreviated. The above assertion is as follows:

Mother: Now your toy is lost.

Child: Toy lost.

Father: Let's go to the tennis court.

Child: Go tennis.

Here, we may compare this telegraphic stage with Piaget's sensory-motor stage. These early combinations have been analyzed in several languages in order to determine the relationships being expressed in that sensory-motor stage of cognitive development.

Eventually the child produces sentences of their own. It is a complicated issue which cannot be explained by Behavioral hypothesis of stimulus-response mechanisms. Here the child starts to apply her/his own rules for generating acceptable sequence of words. Though the adults can clearly understand the content and the meaning of the

communicating signals used by the children; they cannot necessarily decipher the underlying rules. On the other hand, grammatical learning involves an acceptable combination of compatible concepts. It is very interesting to note that in the early stages of the sentence construction with the newly acquired concepts is similar, irrespective of the difference of culture and language. This invariance probably reflects a close dependence between linguistic and cognitive development. Here, in this important phase of acquisition process, we see the significant role of Chomskyan model.

**The following table supports the Chomskyan assumption about child’s language development:**

<b>Average Age</b>	<b>Language Milestones</b>	<b>Motor Milestones</b>
6 Months	At round 2 months of age, babies begin to make vowel-like sounds. At about 6 months, infants add consonant sounds to the vowels to make a babbling sound, which at times can almost sound like real speech.	They can sit using hands for support; unilateral reaching.
1 Year	Around 1 year, most children begin to say actual words. These words are typically nouns and represent an entire phrase of meaning. They are called holo phrases (whole phrases in one word) for that reason. E.g. a child might say “milk” and mean “I want some milk” or “I drink my milk.”	They can stand and walk when held by one hand.
12-18 Months	The children use words singly and have vocabulary of 30-50 words (simple nouns, adjectives and action words), which cannot as yet be joined in phrases but are used.	Grasping and release fully developed, walking; creeps downstairs backward.
18-24 Months	At this stage, the toddlers begin to string words together to form short, simple sentences using nouns, verbs and adjectives. E.g. ‘Baby eat’, ‘Mommy go bye bye’. These are like two-word phrases or telegraphic speech. The vocabulary of the children becomes 50 to several hundred words. They can understand prepositional rules. They can use only the words that carry the	They can Run (and fall), and walk stairs with one foot forward.

Average Age	Language Milestones	Motor Milestones
	meaning of the sentence.	
2-5 Years	Within 2-5 years, children use new words every day in their daily conversations. They do many grammatical errors and idiosyncratic expressions. They can understand language.	They can Jump with both feet
3 Years	At this stage, children can make and use full sentences; they do few errors They have vocabulary of round 1000 words.	They can walk stairs with alternating feet.
4 Years	Children at this stage are close to adult speech competence.	They can jump over rope; hop on one foot and walk on a line.

Such evidences as shown by this above time-table support Chomsky's view of the existence of deep internal structures associated with language acquisition. The interesting fact is the fast rate with which children acquire language. According to the table, in the children of 12 to 18 months old, the vocabulary is about 30-50. In about six months, that is, of 18 to 24 months, the vocabulary becomes more than doubled; it is about 50 to several hundred words. When the child starts to walk at three years, she/he has vocabulary of around 1000 words. This implies that, in a little more than a year, a child learns approximately nine hundred words. Children do not learn how to correct many of their mistakes. The error in language use is usually syntactical errors. Mistakes made by children are reduced by repeated corrections. It is also amazing to see the accuracy with which children learn new words. They pick up the meanings of words from contexts, for example, when I pick up a thick, black pen and tell them it is

a “pen”, children almost understand what I meant by a “pen”. Mistakes are very rare, in such cases. Thus, Chomskyan hypothesis of LAD had a great explanatory value.

Nowadays, most of the psychologists and linguists prefer to use and talk about the acquisition, rather than learning. If language is innate, it is not acquired as Chomsky says, it grows or matures gradually. Therefore, acquisition of language manifests itself, in all normal circumstances, if there are no eternal constraints.

Now, given the above discussion, it is quite obvious that, there are very few vital issues that can be questioned. In other words, there are still certain aspects of language acquisition which should be addressed in our endeavor to complete the story.

First of all, it is very controversial whether we should consider syntax to be the basis of semantic and phonetic interpretation; or we can say that semantics and phonetics precede syntax. In Indian philosophical context, phonetics is the foundation. If we find that the children across the world coming up with phonetics of similar kinds, for example, ma-ma-ma-ma or ta-ta-ta or da-da-da-da; we can always infer that phonetics goes hand in hand with syntax. But probably Bloomfield and Chomsky have emphasized on structures; as they felt that only structures can be studied scientifically. Chomsky in his insistence in claiming that his theory is a scientific theory and it could not indulge comparatively hazy areas of semantics and phonetics. Moreover Chomskyan hypothesis cannot be easily ignored, where the emphasis on structure as the core of language has revolutionized the computational theory of mind. But it must be noted that we are studying the language acquisition process of children and not the computational module.

Secondly, we are not only focusing on the consistent story and explanatory value of different theory regarding language acquisition; we are therefore questioning the concept of language which includes body language, silence, gestures, context-sensitivity etc.

Body language can be considered to be a most powerful media of communication. There are situations where the limitations of language are obvious. The power of body language is explored and researched in dramas, theatres, films etc. On the other hand, in case of learning a language, a child will be more eager to learn the words used by her/his beloved ones; especially her/his teachers. Moreover, a child can also understand happy and unhappy situations by watching silence in her/his surrounding environment. Even she/he tries to use silence when she/he is angry. But it is not a case of generalization. It is to be noted in this context that a silence can be variously used. For example, there is ostracizing silence, caring silence etc. In case of caring silence, body language plays a very important role.

So the language acquisition process does not remain confined to the external input, but it also related to an underline emotional story and context sensitivity.

There is another important factor in language development. That is, in this present century, we live in a globalized world. The technological development, consumerisms have changed the ambiance in which a child is brought up. In other words, a child is not only exposed to her/his parents; she/he is equally surrounded by some technology, gazettes which also play a significant role in her/his language development. For example, when a child tries to utter the word *mom*, she/he also utters *mob* which may stand for the gazette mobile. Because, she/he is so familiar with this particular machine as her/his parents or caregivers use such gazette in their daily life.

Moreover, in our globalised world, stress, tension, competition, anxiety, loneliness-all these are impacting on child's language acquisition.

Lastly we can say that cosmopolitan factor also plays a major role in language development. Suppose, a child whose father is Gujrati and mother is Keralian and thus growing up in a cosmopolitan culture; will face a major problem in acquiring one particular language. In other words, it is difficult for her/his in such a cosmopolitan environment to be an expert of one particular language.

So far, according to the post modern perspective, we cannot ignore the significance of the history, culture, the felt experience and the emotion of the child, its relatedness with other persons and objects; in the process of language acquisition.

Therefore, in our conclusion, we might say that we should revisit the definition of language and decide whether language should be confined to combination of production of grammatical sentences by the children.



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