人類共有知のための東洋的アプローチ（パート 2）
The Oriental Approach for Collective Human Intelligence (Part-2)

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Abstract

To understand the origin, structure and nature of human language has been the nucleus of subject matter of thinkers of diverse disciplines. One group of thinkers derive the origin of language in the divinity with the belief that mankind has been blessed with language and speech congruent with his social, cultural and intellectual needs. This group form the theocratic school of thought. Another group have speculative notions about language which include bow-wow theory, pooh -pooh theory etc. Another School of thought takes into account the scientific parameters to understand origin and evolution of language. The linguist, philosophers, anthropologist, psychologists, biologists have given centrality to this subject to understand faculty of language found in the mankind. The faculty of language is species specific and species uniform trait in Homo-sapiens should be the product of collective intelligence. The present paper aims to introduce some basic concepts of human language; to present the survey of research conducted according to evolutionary theory and at the end make a brief note on genetic and genomic aspects of the language development.

Keywords — anthropology, evolution, bipedality, genome

The material presented below is survey of references and the research carried out so far by scientists. It is not my original work.Before print it is to be developed.

1. Introduction

Alphabets, letters and orthographies will not be considered in developing theories of language. These are like other skills similar to paintings, music etc. There are societies which have not yet developed alphabets, letters and orthographies but we find no society without language with intricate, subtle and complex structures. Language is considered to be biological endowment and linguistics saw language as key to understand how human mind works. Language specific traits are genetically inherited that sets apart humans from rest of the species. The set of design feature associated with human language defines human species the powerful in terms intellectual capacities. The design features like duality of patterning (to generate infinite structures of language from finite set of phonemes), the feature of displacement (to report any past event and create future event), discreteness (the ability to break the linguistic system into smaller units like phonemes, syllables, morphemes, phrases and sentences) and semanticity (to associate meanings to utterances) are the features encapsulated in the human language and communicative system. Legacy of medieval period linguistics hold the view that the world is one, the capacities and operations of the human mind, genetically inherited or, created by God were the same in all men, and therefore in essentials language was one and the same everywhere, surface differences, inconvenient though they might me be, were no more than accidents.Giving centrality to the human mind the theory of language embraced three interrelated levels: external realty or the world existed, its real properties; the capabilities of the mind to apprehend and understand these properties; and means whereby mankind could communicate this understanding. These three were the province of grammar.(Robins1990: 471). Thus one finds it is the distinctive trait of human mind that makes man homo -loquens (man born with the behaviour of speech). Lieberman has incorporated anthropological, ethological and psychological aspects to formulate the language theory.

2. Evolutionary Theory

The scientific study take into account the vocal tract, gestures, bipedality and human brain the primary domains in the evolution of language. Anthropologists believe that terrestrial behaviour (i.e. give up the habit of

living on trees and beginning to live ground) bipedality (i.e. upright walking), and growth and development of the frontal cortex of the brain with concomitant emergence of the higher function have been the key events in human evolution. Some of those traits have been considered involved in language evolution. Sharma (2006:198). Lenneberg (1967) carried out intensive research to ascertain evolutionary evidences of human. Lennberg sketched out the evolutionary tree with Eocene at the basic root of the tree with Oligocene the second evolutionary phase, the Miocene, Pliocene and Pleistocene third, fourth and fifth evolutionary phases respectively. These evolutionary phases have been posited at vertical direction on phylogenetic scale of the evolutionary tree. The species that resulted out from the process of evolution are gibbon, orgunton, chimpanzee, gorilla and man. In the evolutionary process branching has occurred. The species pertain to different barchans are found qualitatively distinct from each other. The man unlike other species has developed anatomical and neurological structures that could support language.

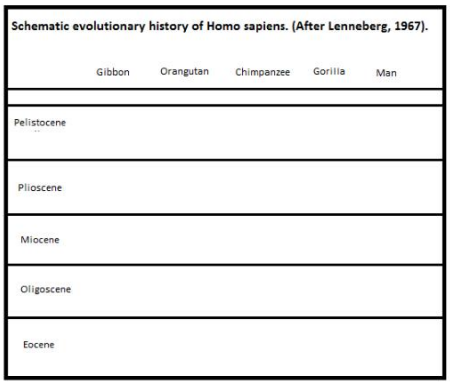

Figure-1

Lieberman (1997) took into account the vocal tract organs unique in mankind in shape and size appropriate for speech mechanism. The experimental lines Lieberman followed are summed up below:

1) Examined and compared the anatomical characteristics of adult homo-sapiens (who obviously has verbal communication) and fossil remains of prehistoric humans, about which we have no direct information, with new born human infants and the chimpanzee (who did not have linguistic abilities as humans have).

2) Using the anatomical structure of skull, the knowledge of comparative anatomy, and the skeletal similarities between the living primates and the fossil remains, the Lieberman constructed the supralaryngeal structures of extinct fossil hominids and compared them with other forms.

3) This experiment constructed the hypothetical model of the larynx, pharynx, velum, tongue and the oral and the nasal passages in each. The differences in the supralarryngeal forms reveal that the adult Homo sapiens is different from the other three, all of which are similar.

4) The findings of the research have revealed that other three species have relatively flat passage from the larynx to the oral cavity as opposed to the right angle passage we humans possess.

5) In the human adult, half of the supralaryngeal vocal tract is formed by the pharyngeal cavity while the opening of the larynx into pharynx is immediately behind the oral cavity in the other three.

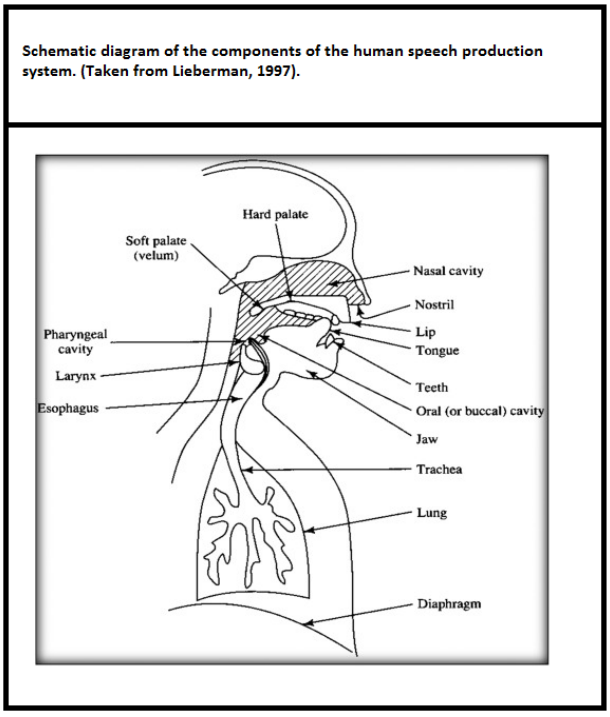

Figure-2

6) Lieberman carried out the experimental study to test the possibility of the articulation of three basic and universal vowels / i/, /a/, and /u/ by the reconstructed model of supralaryngeal vocal tract of all the four forms. It was revealed that only adult humans could articulate these three universal vowels while as other three forms could not. Hence the shape and size of vocal tract organs of adult humans have anatomical capability of speech production mechanism.

According to anthropological theory Homo-erectus has well developed intellect evident from the excavation of olduwan cultural tools and levallios techniques. Brain was well developed to have the capacity of the representation of reality but vocal apparatus were near to gorilla not near to humans. Homo-Neanderthal has relatively improved vocal tract.

Paul Broca and Weinack proposed the concept of brain geography where different areas of the brain perform different linguistic functions. The rise of theory of genomics in recent past has seen a growth of interest in genetic and physical maps of the human genome. The study of genome and its relation to human intelligence and language development has opened new areas of linguistics research in the context of molecular biology. It has been observed that molecular properties of genome in humans is key factor that sets humans apart from rest of the species in cogitative capacities and development of intricate genetic component of human language. The vocal tract in the modern humans is a complex system of the three interconnected cavities, each with its own contribution to the range of human articulation, and having language as an additional role over and above the universal biological functions. This also implies that the emergence of the capability and the consequent adaptability of the vocal tract for generating formant frequencies have contributed to the evolution of an articulate system of communication comprising discrete signalling vocalization. (Sharma2006:197) The preadoptations concerning the mind have been considered necessary to account for the inferential aspects and the intentionality which are characteristics of human language. Donald (1998) holds the view that mimesis- the ability to perform a structured action and its understanding, led to the first fully intentional representations early in the hominids evolution, and thus papered for later evolution of human language [and evolution of human cognitive abilities]. Wyne stated that the psychological abilities that make human culture possible- enthusiasm to imitate others, language, and the ability to place oneself imaginatively into another's perspective on events- are almost entirely lacking in other species.(Sharma 2006:206). Dawkins (1976) had postulated that the evolution of human brain is linked with the continuous need of the survival machine to achieve a more complex and indirect relationship with time and space, and has further given rise to the emergence of consciousness. A certain degree of altruism and mutual cooperation are necessary for socialization and social behaviour. Dawkins and Kerbs (1984) hold the view that altruism has been considered a necessary social preadaptation for the evolution of language [and human consciousness] and a prerequisite for the rise of complex communication system.

The evolutionary enlargement in brain size and the emergence of the necessary neuroanatomical structure have been regarded as a necessary preadaptation for the evolution of human language and human consciousness. Based on the paleoneurological data and other biological and archaeological findings, the study have argued that in about 2 million years the human barin has doubled in size with the frontal areas of the cortex becoming more prominent to cope with the verbal short-term memory, the combinational analysis and the sequential behavioural ability.(Shrama2006: 200).

3. Genetic Aspect (Molecular Biology)

Shrama (2006) has summed up the following concepts in the paradigm of molecular theory worked out by scientists regarding human intelligence and language.

1) Genetically language, human consciousness and cognitive abilities are the product of the genomics unique to human species

2) The emergence of human-like species some 21-33 mya as been explained as due to the rise of a gene named Tre2 which is attributed to the uniqueness of the

humans.

3) Recently the study has shown that FOXP2 gene and KIBRA alleles have been shown to influence language processing and memory respectively.

4) Enard et el. (2002) have estimated that mutation in FOXP2 gene in human lineage occurred between 10,000 and 100,000 years ago.

5) The present form of mankind with unique powers of collective intelligence, cognition, consciousness and language is the product of evolutionary process that has taken place in the uniform order in species specific in Homo-sapiens.

The bottom line of the foregoing deliberations reveals that human language is undoubtedly species specific and species uniform genetic trait. Being species specific and species uniform, the system encapsulates the trait of collective human intelligence across time and space.

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