Origins of human language: how much non-linear is it?

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Abstract: Language is a human system of communication that is unique in the animal kingdom. Other forms of communication such as sign language, gestures and postures or physical movements are animal characteristics, however evolved these might be. What is the origin of human language? How has it been exclusive to the genus Homo sapiens? Such questions are yet not answered in its entirety.

The origin of linguistic skill in human species has followed a unique evolutionary pathway, through accumulation of mutations and selection run over by its ecological and demographic transition from a primitive social organization to an advanced one, with cultural transmission of learned behaviour in the group. This model of learning is more Lamarckian following “Baldwin effect” (organic selection), which is, so to say, non-linear in contrast with merely DNA base change in the genetic code: An account is provided herewith variety types of inheritance systems and the sequence of events leading to the origin of human language system.

Index words: Inheritance systems, NeoDarwinism, NeoLamarckism, learned behaviour, language system.

Introduction:

The nature and origin of language has been the focus of major attention by linguists philologists and psychologists (Armstrong et al., 1995) since earliest. While the details of language structures differ widely (Seymour et al., 2003) and opinions vary some time on even as to what constitutes language (Vasantha, 2003) a concerted effort has been made to trace the generation of language in human species through an evolutionary route (Brandon and Hornstein, 1986). Such attempts while they have added to information on the genesis of language, have also called for a fresh look on the nature of evolutionary theory itself, a NeoLamarckian adaptive base for mutation, leading to selection and adaptation of traits. This has given way to a more adaptive programme of social and cultural inheritance systems leading to the fructification of symbolic language faculty among humans, unique in the entire animal kingdom.

Genetics of language: Language can be taken as a human organ, whose development as phenotype is controlled by a genotype (Shukla, 2003). Hence mutations affecting speech ‘dyslexia’ are well-known (Mckusick, 2003) as also the genes of speech FOXP2 have already been cloned (Marcus et al. 2003). There has been enough studies on inheritance pattern of grammar blindness (Gopnik, 1990; Gopnik and Crago, 1991) which are well-studied. Thus some aspects of language are genetically specified with its share of genes in the human genome.

However, there is more to language that are non-genetic, but are purely learnt, in contrast with the ‘special language module’ that is inherited. This has led to a threefold classification of language repertoire (a) “language core” with its cognitive system unique to language and humans”, (b) general cognitive systems that subserve the linguistic functions and finally (c) an environment which turns individual and the language system to local contingencies (Hauser et al., 2002).

Evolutionary origin: The construction of a phylogenetic tree for tracing code of
communications, based on DNA base pairs, gives us unconnected groups, defying a common universal code of communication, meaning thereby, the independent emergence of communicative behaviour in different animal groups (Houser et al. op.cit.). It is now universally agreed that human language is a complex behaviour with two types of faculties – Faculty of language in broad sense (FLB) and faculty of language – in narrow sense (FLN), the former is general capacity to acquire language while the latter involves abstract computational exercise, with strong learning component involved. A comparative approach to evolution of faculty of language has been undertaken and exclusive nature of human faculty has been well-recognized. The details can be found in current researches in the area, reviewed in Hauser et al (op.cit.).

**Lamarckian route to Darwinian selection (from NeoDarwinism to NeoLamarkism):**

A strict Darwinian system with its strict mutation- selection adaptation programme is too slow to account for a highly varied and evolved system like social learning and language. Jablonka et al. (1998) have argued at length that ‘genic NeoDarwinism’ is incomplete – it gives natural selection exclusive deterministic role; however, it is silent about new systems of acquiring, storing and transforming information. He further says that Natural selection leads to evolution of eyes, wings and sonors, it gives rise to new evolutionary rules which undermine random variation. He calls mechanism for allowing inheritance of acquired character as Lamarkian hereditary system.

He, therefore, gives four types of inheritance systems viz. EIS (Epigenetic Inheritance system), GIS (Genetic inheritance system), BIS (Behavioural Inheritance System) and LIS (Language Inheritance System). Each of these systems have their characteristic types of variations, means of transmission, or types of information. The interaction between these systems have also been shown (See Figure 1).

Enough examples of these systems are present. While, the epigenetic inheritance system is involved in genomic imprinting (Surani et al., 1984) or individual level, social learning and traditions are important in group, particularly in birds and mammals (Heyes and Galf, 1996; Sinha, 2003). Symbolic language is the most advanced of the social learning and has been the most efficient system so far.

**Symbolic language:** Language is qualitatively different from other information system. It has a syntax, which allows generativity and creativity. Utterances, once organized, lead to formation of hierarchical, recurring construction of meaning relations, leading to production and comprehension of an infinite number of meaningful sentences. It is more powerful because it relates not only to the world by also to beliefs, events of the past and present, and ideas, abstract and absent ones (Jablonka et al. op.cit.).

It is difficult to reconstruct the evolution of language. While language-instructed, higher apes may reach to ‘proto language state’, acquisition of syntax is the base of modern language and is a saltatory event (non-linear). It seems more likely as majority of evolutionists believe, that phonetic system, ability to learn lexical elements, and syntax have evolved through gradual cultural and genetical evolution.

A major role in the evolution of language among our ancestors has been that of intense sociality with social-bonding and social intelligence or mind, a sign system to modulate social interactions and motor control of hands, as well as breathing and expression during emotions.

It seems, therefore, that evolution of language has been driven by cultural evolution, followed by genetic assimilation. Genes and culture coevolved, with linguistic innovations of adults quickly adopted and absorbed by the young to become norm and habit of the next generation.

**Acknowledgement:**

Thanks are due to Mr. A. Sinha of National Institute of Advanced Studies, Indian Institute of Science Campus, Bangalore for fruitful discussion and to Prof. I.H. Khan, Department of Linguistics, A.M.U., Aligarh for having helpful suggestions.
References:


Fig. 1. Interactions between inheritance systems. (a) The basic properties of the four Inheritance systems. (b) The addition during evolution of new inheritance systems and their interactions. Solid arrows indicate how adaptations initially originating from instructive processes in one system channel variation and selection in another system. Some phenotypic adaptations are genetically assimilated (GA). Dotted arrows show that non-instructive ('random') genetic changes affect all types of variation. The GIS is divided to show that although most variations are random, some originate from 'instructive' mutational systems. Abbreviations: EIS, epigenetic inheritance system; GIS, genetic inheritance system; BIS, behavioural inheritance system; LIS, language inheritance system.