

On the origin and spread of languages: Propositioning Twenty-first century axioms on the evolution and spread of languages with concomitant views on language dynamics

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Abstract

This paper purports to be a starting point to revisit existing approaches dealing with the origin and spread of languages in the light of the changed circumstances of the Twenty-first century without in any way undermining their applicability across space and time. The origin of spoken languages is intricately and inseparably interwoven and intertwined with the origin of human species as well, and in this paper, we propose a 'Wholly-independent Multi-Regional hypothesis of the origin of Homo sapiens' in response to both the highly-controversial and arguably antiquated 'Out-of-Africa theory' which we have stridently and vehemently opposed, along with all its protuberances and the contending Multi-Regional Hypothesis as well. The key tenets of this paper are therefore articulated based on this fundamental premise which is likely to upend existing presumptions and paradigms to a significant degree. Having said that, we must hasten to add that the evolutionary biology of language encompassing physical anthropology or genetics and other related areas of study, are wholly outside the purview of this paper. Structural linguistics and semantics are also outside the scope of this paper. In this paper, we examine the origins of spoken and written languages in pre-historic, proto-historic, historic, pre-globalized and post-globalized contexts and propose an 'Epochal Polygenesis' approach. As a part of this paper, we also provide a broad overview of early and current theories of the origin and spread of languages so that readers can compare our approaches with already existing ones and analyse the similarities and differences between the two. We propose and define several new concepts under the categories of contact-based scenarios and non-contact based scenarios such as the autochthonous origin of languages, the spread of properties of languages from key nodes, the 'Theory of linguistic osmosis' and the need to take historical and political factors into account while analysing the spread of languages. In this paper, we also propose among others, the 'Theory of win-win paradigms' and the 'Net benefits approach'. We also emphasize the need to carry out a diachronic and synchronic assessment of the dynamics of languages spread and propose that this be made a continuous process so that the lessons learnt can be used to tweak and hone theories and models to perfection. This paper is likely to significantly up the ante in favour of a dynamics-driven approach by undermining the relative torpor now observed in this arguably vital sub-discipline and contribute greatly to the rapidly emerging field of language dynamics. We also hope that synchronic linguistics will finally get its due place under the sun in the post-globalised world, and will become a major driving force in linguistics in the Twenty-First Century.

An Introduction to language

A language may be defined as a mode of communication which is intrinsic to all human societies around the globe regardless of their social or intellectual advancement or accomplishments. A language is usually specific to a community and is a mode of communication with a set of rules which are formalized over a period in time. According to Noam Chomsky, "A language is either a finite or infinite set of sentences, each finite in length and constructed out of a finite set of elements." According to Edward Sapir, language, may be defined as "A purely human and non-instinctive method of communicating ideas, emotions and desires by means of voluntarily produced symbols." (Sapir 1921:8) According to Bloch and Trager, "A language is a system of arbitrary vocal symbols by means of which a social group co-operates." (1942:5) According to Hall, "Language is an institution whereby humans communicate and interact with each other by means of habitually and oral-auditory arbitrary symbols." (Hall 1968:158) Languages have been known and attested from at least the dawn of human history, although they are likely to be much, much older.

There are believed to be between five to seven thousand languages in the world today, some of which are unlikely to be full-blown or independent languages in their own right, and some of which are unaccompanied by scripts or literary traditions. The count of languages, of course varies widely from source to source, and depending in part on the methodology adopted for considering languages as full-fledged ones. According to one survey carried out by the Academie francaise, there were only 2,796 full-blown languages in the world towards the end of the Twentieth century, though other sources and surveys suggest a larger number of full-fledged languages. At the other end of the spectrum, The Ethnologue, listed the total number of languages in the world as 6,809.

Unlike written languages, the date of origin of spoken languages cannot also be pinpointed with accuracy in the absence of direct or indirect evidence, despite the fact that some work has been done by researchers such as Alello and Dunbar, among others and estimates of the date of origin of spoken language vary very widely between 75,000 years before the present to over a million years before the present. Languages may be primarily classified into two forms i.e. spoken and written. Written languages typically comprise of a formal dictionary of symbols or lexemes, while spoken language itself is comprised of a formal grammar, and relies on patterns or combinations of sounds to express ideas and thoughts, and combinations of such ideas or thoughts, to express extremely complex ideas and thoughts. All languages spoken around the world today demonstrate some level of standardization and complexity, although this may not necessarily have been the case during the dawn of spoken language. Language is typically acquired by humans early in childhood by imitation, and language is typically formal or structured with a set of codified or uncodified rules. Language is the basis of much of human accomplishment in the fields of science, arts, music or literature, and human civilization as we know it, would most certainly not have been possible without language. Language also plays a critical role in the transmission of knowledge, and therefore augments civilizational complexity. Language is also inseparably associated with culture and human emotion as the ability to communicate is seen as a very vital tool and is deep-rooted in the human psyche. As Henry Bretton (1976, p. 447) points out: "Language may be the most explosive issue universally and over time. This is mainly because language alone, unlike all other concerns associated with nationalism and ethnocentrism ... is so closely tied to the individual self. Fear of being deprived of communicating skills seems to raise political passion to a fever pitch."^{1 2 3}

Properties of language

Language is characterized by several distinct properties such as Displacement (Ability to encode messages that refer to the past, present, future or other locations), Semanticity or meaning, Syntax or combination of phonemes to convey more complex ideas, Encapsulation of messages, Arbitrariness (Absence of a direct co-relation between an object and the word representing it), Productivity or Creativity and the constant coinage of new words through innovation and change, Cultural transmission to future generations, Discreteness of words and their meanings, Learnability (a speaker of one language can learn almost any other language subject to certain constraints and limitations), Interchangeability between speakers and listeners, Organization of sounds to form distinct meanings, Specialization of function, Phonetic and orthographic representation, and transferability from one

¹ Narrative: A critical linguistic introduction: Michael J. Toolan Routledge, 1988

² Semantics: A course book J. R Hurford and Brendon Heasley, Cambridge University Press, 1983

³ Fighting Words: Language Policy and Ethnic Relations in Asia Edited by Michael E. Brown and Sumit Ganguly

medium to another. Linguistic ability is also associated with Competence or ability to communicate in a structured and logical fashion, and Performance or the act of communicating efficiently.

An overview of research in linguistics

The philosophy of language or the ability of language to express the breadth of human experience, has been debated since ancient times, particularly since the times of the Greeks in the first millennium before the Christian era. Other branches of linguistics such as semantics or the relationship between language and meaning were also formalized since the times of the Greeks. Languages are also typically classified into language groups, (an idea first proposed by August Schleicher, an early believer in Darwinian ideas of evolution) even though some such classifications may now be archaic or questionable in the face of newer research. The number of languages spoken may have gradually declined since historic times, and the rate of decline has accelerated in modern times due to the onslaught of globalization.

Language was once believed to have been unique to the species Homo Sapiens, and it was thought that other species have only possessed relatively more primitive forms of communication. Anthropologists once thought that other species such as Neanderthal man did not possess the attributes of speech, but recent research and evidence seems to contest this view, and speech capabilities must have evolved only gradually in primates and humans. Research on language, evolutionary biology and human instinct (a field of study wholly outside the purview of this paper) is also rapidly evolving and linguists such as Steven Pinker have made many contributions to this field in recent times. Fields of study such as language dynamics are nascent, and we believe that this is an area of study with a vast untapped potential.^{4 5 6 7}

Linguistics on the other hand, may be defined as a formal, a scientific and a structured study of all facets of language including its origin, spread, transmutation and all other aspects such as grammar, phonology, orthography, semantics, and semiotics and may alternatively be defined as the science of language. The term linguistics can be traced to the Nineteenth century, even though a formal study of language began long before this. Analyses of the spread of languages may also be classified into a diachronic and synchronic analysis of language spread, the former being a temporal analysis and the latter being a non-temporal analysis of language spread. Linguistics or Linguistic Anthropology is also a major sub-discipline of Anthropology, and comprises Historical linguistics, descriptive linguistics and sociolinguistics. Linguistics may also be classified into theoretical and applied linguistics. Applied linguistics applies the principles of linguistics to practical and real-world situations including language policy and planning.

Curiosity about language has aroused the human mind and attracted the attention of great scholars and thinkers since aeons leading to rampant speculation and a plethora of competing theories. While data on the early origins of language has proven to be hard to find, given the fact that spoken language typically leaves no concrete and incontestable record for posterity, and evidence of full-fledged written language represented by true logo-syllabic writing begins only from around 3200 BC in present-day Iraq. Theories, hypotheses and speculation on this topic have never been in short supply throughout

⁴ The Language Instinct: The New Science of the language and mind: Steven Pinker, Penguin Books 1995

⁵ Classification and Evolution in Biology, Linguistics and the History of Science
Concepts – Methods – Visualization Edited by Heiner Fangerau, Hans Geisler, Thorsten Halling and William Martin

⁶ Language thoughts and reality: Selected writings of Benjamin Lee Whorf, The MIT press 1956

⁷ The origin and evolution of language Brian Stross, WMC Brown Company publishers, 1976

recorded human history, and this topic is probably as hotly debated and widely discussed among scholars and intellectuals as discussions about the weather are in quotidian conversation. ⁸ ⁹ ¹⁰

According to a story told to Herodotus, the Egyptian Pharaoh Psammetichus I had carried out an experiment, known as the Psammetichus experiment in the 7th Century BC, and had concluded that speech was innate to all humans. This is one of the earliest tests of linguistics known to man.

Linguistics developed independently in China and India before the dawn of the Christian era unaffected by the concerns of the West and constraints imposed by work carried out elsewhere. Chinese linguistics began around the fourth century BC. The *Xiaoxue*, the *Erya* (An ancient dictionary) and the *Xiao Erya* were the early notable works from China. The following are the two outstanding early works from India:

- The scholar Panini wrote a grammar of Sanskrit (somewhere between 500 BC and 300 BC) called *Astadhyayi* (literally 'eight books'). Many scholars credit him with having played a crucial role in early linguistics.
- *Tolkappiyam*: was an early grammar of the Tamil language and was written around the second century BC

Greek scholars such as Herodotus (whom some believe to be the world's first anthropologist), Plato, Protagoras of Adbera, Prodicus, Aristotle, Heraclitus, Sextus Empiricus, Hippias and Apollonius made major contributions to various facets of the study of language, and set a motion a process that continued well into later times and impacted the Romans as well. The Greeks also initiated philosophical studies on the origin of languages, and discussions on such topics can be found in the works of Plato. Alexandrian grammarians also made important contributions to various fields of linguistics such as the formal definition and study of various parts of speech. The Romans did not make major changes to Roman ideas but modified them in the context of the Latin language. Aelius Donatus, Honoratus and others compiled the Latin grammar *Ars Grammatica* in the early Christian era, and this is considered to be a notable work of its time. Cross-cultural studies also took root in this period due to the travels and narratives of Hiuen Tsang and Fa Hien both of whom had travelled from China to India and produced copious narratives of their travels. Alexander the Great's conquest of India and Megasthenes' accounts had also kindled interest in distant lands.

Most of the linguistic work from the Middle Ages was focused on grammar, and was merely an extension of Latin and Greek analyses. Some notable scholars of the Middle ages were Isidore of Seville of the 6th Century AD, Peter Helias, Thomas of Ertfurt, William of Ockham, Priscian and the Arabic scholar Sibarwaih. Linguistic studies assumed added importance towards the end of the Middle Ages, and a significant amount of scholarly output was observed in this era. Arabic and Hebrew literary traditions had also reached a zenith during this period. An acute interest in exotic cultures was also prompted by the travels and accounts of Marco Polo and Ibn Khaldun.

During the Renaissance, grammatical treatises were written for several European languages. Gottfried Wilhelm Leibniz, Manuel Chrysoloras, Dante Alighieri and Pierre Ramee were notable scholars of this era. The Académie française and the British Royal Society also did pioneering work on linguistics in this era. J. G Herder, James Harris, James Burnett and Sir William Jones were the leading linguists of Eighteenth Century Europe. The writings of the French philosopher Montesquieu in the Eighteenth Century also triggered an interest in other cultures and languages, and indirectly contributed to linguistics. The Nineteenth Century on the other hand, produced scholars such as Wilhelm von Humboldt, Friedrich von Schlegel, Jakob Grimm, Franz Bopp, Ferdinand de Saussure and August

⁸ R.H. Robins's book *A Short History of Linguistics* (4th Edition, 1997, Longman: New York), Pieter A.M. Seuren's *Western Linguistics: An Historical Introduction* (1998, Blackwell Publishers: Malden, Mass.), and Theodora Bynon and F.R. Palmer's *Studies in the History of Western Linguistics* (1986, Cambridge Press: New York).

⁹ *Language: The basics* R.L Trask Routledge 1995

¹⁰ *The Miracle of Language* Richard Lederer Pcket Books, 1991

Schleicher, many of whom worked on pioneering fields such as the origin of language, Transformation grammar and Comparative linguistics.

The Neo-grammarians made pioneering efforts towards the reconstruction of the Proto Indo-European language and an analysis of its grammar. A formal, structured study of grammar was also an important by-product of this period, and historical linguistics can also be traced to this epoch due to the pioneering and ground-breaking work of William Jones and other scholars. The Nineteenth Century is sometimes referred to as the golden age of philology. The Twentieth Century saw a shift towards structuralism, formalism and behaviourism, and major scholars were Franz Boas, Edward Sapir, Noam Chomsky and B.F Skinner. The Sapir-Whorf Hypothesis or the theory of linguistic determinism which argues that language moulds man's perception of reality, his perception of reality and the ability to process thoughts differently depending on the language of the speaker is an important product of the Twentieth Century. Noam Chomsky's generative grammar, William Labov's and Peter Trudgill's sociolinguistics, Michael Halliday's System Functional linguistics and Kantor's Psycholinguistics are also new concepts in the field of linguistics.

Research linking linguistics with diverse fields such as Anthropology, Genetics, Evolutionary Biology and Brain Psychology is currently under way, and this is already leading to a fundamental transformation in many fields of linguistics. Evolutionary linguistics is another promising area of study. Although progress has been slow in the past due to the fact that spoken language can leave no tell-tale evidence whatsoever, the field of evolutionary linguistics has evolved rapidly since the 1990's with rapid progress in many fields. Since the late 1980s, the field has been revived in the wake of progress made in the related fields of psycholinguistics, neurolinguistics, evolutionary anthropology, evolutionary psychology, universal grammar, and cognitive science. One recent approach is an adaptationist or a Darwinian approach towards language origins (which also encompasses sexual selection and kin selection), and is endorsed by scholars such as Steven Pinker. Computational modelling is another promising field which may eventually solve many riddles and puzzles which were previously considered to be too overwhelming and baffling to grapple with. Research is also being carried out on Phylogenetic, Ontogenetic and Glossogenetic aspects of linguistic evolution. The identification of the FOXP2 gene or the language gene has proven to be another important milestone in linguistics.^{11 12 13 14}

Language theories may also be sub-divided into two subgroups, i.e. Continuity theories and Discontinuity theories. The former, also related to Darwinian models, propose that languages evolved continuously from the grunts and the noises made by primates and other less complex animal communication systems, while the latter propose a more discontinuous approach towards language evolution. Most scholars such as Mario Alinei and Steven Pinker support Darwinian models, while a few scholars such as Noam Chomsky support Non-Darwinian models, and an example of the latter is the Emergent Phenomenon theory. Likewise, Stephen Jay Gould too has on occasion has stated that he does not support Darwinian models fully, and states instead that language is a by-product of many complex forces.¹⁵

Early theories on language

We now present some early theories on the origin of languages. These theories are largely considered to be obsolete now, and given the acrimony debates around them tended to generate, discussions on these topics were even banned by the Societe Linguistique de Paris in a formal communication dated the 8th of March 1866. However, a few aspects of some of these theories would still have currency even in the Twenty-first century, and some others would prove to be instructive on slip-ups early linguists tended to make, and it is for this very reason that we reproduce summaries of them below. While there may be no consensus on the origin of language, few would deny that it was a major cultural innovation with profound and far reaching consequences for the human species and a major milestone in cultural

¹¹ The study of language by George Yule Cambridge University Press 2010

¹² Grimes, B.F. (Ed.), The Ethnologue, SIL International, Dallas, 2001

¹³ Guy Deutscher. The Unfolding of Language: An Evolutionary Tour of Mankind's Greatest Invention, Henry Holt and Co, 2005

¹⁴ Buckley, C., Steele, J. (2002). "Evolutionary Ecology of Spoken Language: Co-Evolutionary Theories are Testable". World Archaeology 34 (1): 26-46

¹⁵ Chomsky, Noam 1986. Knowledge of Language. New York: Praeger

evolution. Thus, while language was facilitated by the evolution of speech organs, language itself was a by-product of social, cultural and technological changes.¹⁶

1. The Bow-wow theory or the Sound Mimicry theory

The Bow-wow theory or the sound mimicry theory refers to the idea that speech arose from people imitating the sounds that various living and non-living things make in the natural world: Examples being sounds made by dogs, cats, snakes, cows, rivers, streams, rain, thunder, lightning etc. This theory was extremely popular some two hundred years ago. While there is a possibility that early human language from derived from onomatopoeia (It is highly unlikely that this hypothesis can ever be proven or disproven compellingly), most words in various languages spoken around the world today do not bear any resemblance to sounds made by objects associated with them, and in fact are far removed from them, apart from minor exceptions. In English, in addition to cuckoo, we have words such as splash, bang, boom, rattle, buzz, hiss and screech. While many of these words may be of relatively recent origin, we would like to hypothesize, based on a common sense approach, this evidence and evidence from other languages, that onomatopoeia may have once been common in languages around the world, and the early attempts of humans to speak may indeed have been based on human imitations of such sounds, but was replaced in due course by more complex and abstract vocabulary in the manner described elsewhere in this paper. The bow-wow theory also refers to theories by various scholars, including Jean-Jacques Rousseau and Johann Gottfried Herder, on the origins of human language.¹⁷

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2. The Pooh-Pooh theory

The Pooh-pooh theory (also known as the expressive theory, the interjectionist theory or the expressions of emotions theory) refers to the idea that speech comes from involuntary vocal responses to pain, fear, surprise, excitement, pleasure or other emotions. Such sounds are made by some animals too, and yet speech is unique only to humans. Examples of such words in the English language include Ouch!, Aaah! and Wow!. The percentage of words attributable to such sources in modern languages is believed to be extremely small, and there is some variation between such words and the related sounds associated with such words. We do not know how ancient these words are, and there is enough reason to believe that some of these words are recent. Our assessment is that while early languages may have indeed contained words based on such exclamations, these may have been eventually overridden by more sophisticated and abstract vocabulary in the manner described elsewhere in this paper. Max Muller, who is known for his popular and scholarly jousts with Darwin, appears to have supported this theory for some time, before abandoning it.

3. The Ding-dong theory

The ding-dong theory refers to the idea that speech reflects a resonance or harmony connected with real-world objects, and that objects were named after their real-world properties. Per this hypothesis, splash would have become the word for rain and oink would have become the name for pig. However, this hypothesis does not explain how abstract words were named. This hypothesis also fails to satisfactorily account for most words in modern languages, and must resultantly be approached with a fair amount of skepticism. This theory was originally proposed by Max Muller, though he himself later abandoned it.¹⁹

4. The Yo-he-yo theory, the Yo-heave-ho theory or the Social Interaction source

¹⁶ Language: The Cultural tool Daniel Everett Profile Books 2012

¹⁷ Francis S Collins. The language of God. Free Press, New York, 2006

¹⁸ The Evolution of Language W Tecumseh Fitch, Cambridge University Press, 2010

¹⁹ Friedrich Max Müller. Lectures on the Science of Language. Lugmans, Green and Co., Fifth edition, 186

The Yo-he-yo theory, the Yo-heave-ho theory or the Social Interaction source reflects the idea that speech started with the rhythmic chants and grunts people used to coordinate their physical actions when they worked together. According to this theory, language evolved from the grunts, groans, made by humans while doing heavy physical labour. This theory does not explain where the words themselves came from. It cannot also account for all words in any language. This theory may also be somewhat over-imaginative as only a small percentage of words may be attributable to such sources. This theory is also somewhat difficult to verify in comparison with other theories.

5. The Ta-ta theory and the Chew-chew theory

The Ta-ta theory proposed by Richard Paget refers to the idea that early human speech originated from the use of tongue and mouth gestures to mimic manual gestures and gestures of the hand. For example, saying ta-ta is like waving goodbye with your tongue. Even Charles Darwin's ideas appeared to have supported this hypothesis at one point. However, the origin of most words cannot be satisfactorily explained through the Ta-ta theory. A similar theory is the Oral gesture theory or the Chew-chew theory which proposes that language originated from gestures that early humans made with their mouths.

6. The La-la theory or the Woo-woo hypothesis

The La-la theory reflects the idea that speech emerged from the sounds of love, romance, poetry, and music. This theory was proposed by the Danish linguist Otto Jespersen and others. This theory is somewhat far-fetched, and it is unlikely to account for a significant percentage of words in any language. Another similar theory is the Lah-di-dah theory. Theories such as these would more appear to reflect the flights of fancy of their respective creators than be mired in ground realities.

7. The Ma-Ma theory

The Ma-ma theory reflects the idea that easiest syllables were attached to significant objects in order to create words. While this may be a possibility, it is by no means the only one, and word coinage may perhaps be attributed to many different sources.

8. Singing theory

According to the singing theory, words were invented as a result of humans' early efforts to sing, dance and mimic the sounds emanating therefrom. It is highly unlikely that this is a plausible idea and it is unlikely that a significant portion of the vocabulary in any language was created through this source.

9. Babbling theory

According to the babbling theory, words were created based on the sounds produced by infants for no particular purpose. Other scholars argue that this is somewhat improbable and unlikely, given that few adults would take infants chatter seriously or ascribe meanings to them, and few objective scholars would be willing to attribute a large number of words to this source.

10. Hey-you theory

According to the hey-you theory formulated by Geza Revesz in 1956, language arose from an assertion of one own identity and belonging and a calling to others. It is highly unlikely that a significant proportion of words arose from this source.

11. Eureka theory or Invention theory

According to the Eureka theory, words were invented as a result of the creative underpinnings of man, and by adopting no particular formal or structured methods. In other words, the coinage of words was wholly random and arbitrary. We endorse this theory wholeheartedly in our paper, as we believe this would account for a significant proportion of word coinage, even though we believe it must be studied in conjunction with other approaches to arrive at a holistic picture.

12. Uh-oh theory

According to this theory, words were coined as a result of a human's desire to warn other humans of dangers arising from reptiles, wild animals, fire or such other perils or hazards. It is highly unlikely that a significant proportion of the words in any language were attributable to this source. However, this source would undeniably account for some basic vocabulary at the very least.

13. Watch the birdie hypothesis

This theory was proposed by E.H. Sturtevant. According to this theory, humans invented language for their own selfish ends and to deceive other humans. This hypothesis appears to be way off the mark and would barely even merit a footnote in a list of plausible hypotheses.

14. Hocus pocus theory

This theory was proposed by C. George Boiree and others and claims that languages originated from magical and religious acts and other similar rituals that were performed by early humans. It is highly unlikely that any modern scholars would take this seriously.

15. Co-operation theory

The Co-operation theory was originally proposed by Grace de Laguna. This theory proposes that speech originated from early humans' effort to co-ordinate their daily social activities in the context of a clan, tribe or community.

16. Contact theory or the Wah-wah hypothesis

This theory was proposed by Geza Revesz. According to this theory, language was developed based on the human need to express and share emotions with other members in the group or to satisfy some other desire.

17. Verb Theory

This theory was originally proposed by A.S. Diamond. According to this theory, language originated from requests made by one or more individuals in a group to other individuals for assistance, and the issuance of orders for executions. This approach barely scratches the tip of the iceberg and does not account for the origin of nouns, adverbs and adjectives.

18. Divine origin theory

Another theory postulates that language was innately divine and was God's gift to humans. While few linguists would take this hypothesis seriously, many early societies actually believed in this theory, and

theory had currency well into pre-modern times. According to Genesis 2:20, Adam personally named all living creatures including beast and fowl (Genesis 2, 19–20). This theory would imply that language is as old as humans, and all things considered, this is highly unlikely. The Biblical theory based on the famous Tower of Babel incident also states that the whole world once spoke one language, and this language split up to give birth to multiple languages as humans spread around the world. This approach is also sometimes referred to as the Noah's Ark theory. Other religions too appear to have endorsed the Divine origin theory in some form. According to some Hindu theologians, language originated from Saraswathi, the Goddess of learning who was also the wife of Brahma, the creator of the universe according to the Hindu holy trinity.

19. The gossip and grooming hypothesis (or the Yakkety-yak theory)

Gossip and grooming, according to Robin Dunbar in his book "*Grooming, Gossip and the Evolution of Language*", did for early societal humans what manual grooming did for apes and chimpanzees: it allowed individuals to service their relationships and maintain alliances on the basis of the principle of mutual co-operation. A similar theory is the looky-look theory which also proposes that language arose primarily from social interaction.

20. Ritual/speech coevolution

The ritual/speech coevolution theory was originally proposed by Roy Rappaport and was later extended by Chris Knight, Jerome Lewis, Nick Enfield, Camilla Power and Ian Watts. These scholars argue that language is not a separate adaptation but an internal aspect of human symbolic culture as a whole.

21. Putting the baby down theory

The 'Putting the baby down theory' was originally proposed by Dean Falk. According to this theory, interactions between mothers and their babies in early human societies eventually led to the coinage of words. The name 'Putting the baby down' arose from the idea that mothers could not carry infants on their backs and had to somehow reassure them that they still loved them. It is highly unlikely that this theory can account for a significant proportion of the words in widespread use today and to most people, such proposals would appear to be somewhat over-imaginative.

22. Behaviourism

B. F Skinner proposed that language is behaviour, and like all other patterns of behaviour, it is learnt. This learning is enforced through "reinforcement of successive approximations". According to an example provided, a child is making unintelligible sounds, such as hi-hi, a-a-a-a and proceeds to say "mi". The mother, on hearing this, gets excited, and then says "Oh, do you want milk?". She then gives some milk. After a while, the novelty of "mi" wears off and mother insists that the baby say "milk" before she provides another bottle of milk.

23. Noam Chomsky's theory of Universal Grammar

Noam Chomsky proposed the theory of Universal Grammar: an idea of pre-fixed grammatical categories, such as a noun category and a verb category found in various related and unrelated languages that facilitate the entire language development process in children and language processing in adults. This theory states that grammar is largely based on logic. According to the Universal Grammar theory, children instinctively know how to combine a noun (e.g. a child) and a verb (to play) into meaningful, correct phrases (A child plays) and further use them to formulate more complex sentences and ideas. This is a mostly descriptive approach that offers neither any clues on the origin of language nor makes any predictions about the future direction of linguistic change. Another somewhat similar concept is the Theory of Construction grammar which is a theory of syntax in which constructions and

form and function pairings are the central unit of grammatical representation. ²⁰ ²¹David Hume had proposed that languages are established by human conventions over a period in time. Similar proposals have also been made by other linguists such as David Lewis of Princeton University. However belief in language universals is by no means universal: it has been called into question by other researchers such as Nicholas Evans and Stephen Levinson. ²²

24. Conversation Theory

The Conversation theory was originally proposed by Gordon Pask. Conversation theory proposes that **social systems** are symbolic, language-oriented systems whose responses depend on one person's interpretation of another person's behaviour and attitudes, and where meanings are agreed through conversations between two or more individuals.

25. The Meme theory

According to this theory first proposed by Susan Blackmore, language arose out of the human ability to imitate animals, objects and other humans. Proponents of this theory argue that imitation is a uniquely human trait, not possessed by any other species.

26. Morris Swadesh's theory on the origin of language

Morris Swadesh proposes that the evolution of language be classified into the eoglottic period, the paleoglottic period, the neoglottic period and the historical period, and that the evolution of language occurred in radically different ways in each of the four periods. He also advocated the monogenesis of language and this would contradict our proposals.

27. Charles Darwin's theory of evolution of language

Darwin's model of the origin of languages, proposes that different aspects of language were acquired sequentially, and one after the other. Darwin's first stage in the acquisition of language was a greater development of cognition. The second step is known as musical protolanguage or prosodic protolanguage. Darwin argues that the evolution of a key aspect of spoken language, vocal imitation, was driven by sexual selection and also to woo members of the opposite sex. ²³

28. The Mother Tongue hypothesis or the Monogenesis theory

According to the Mother Tongue Hypothesis or the Monogenesis theory, language originated from a single group of humans who probably originated in Africa and spread throughout the world. This hypothesis is in diametric opposition to our view which argues for polygenesis. Our approach is therefore related to, and derived from the Candelabra theory

29. More recent work on the origin of languages

More recent work carried out by scholars such as Noam Chomsky and Steven Pinker have also debated the origin of grammar and syntax. There are many theories on how syntax evolved. Some theorists such as Michael Tomasello argue that syntax did not evolve at all and that language is a culturally-

²⁰ Goldberg, Adele (1995). *Constructions: A construction grammar approach to argument structure*. Chicago/London: University of Chicago Press.

²¹ Fillmore, Charles J. and Paul Kay. 1995. *A Construction Grammar Coursebook*. University of California, Berkeley

²² *The Myth of Language Universals: Nicholas Evans and Stephen Levinson* 2009

²³ *The Linguistic Creation of Man: Charles Darwin, August Schleicher, Ernst Haeckel, and the Missing*

derived by-product reflecting the breadth of human experience. Thus, language developed as a result of a cultural process of grammaticalization. An opposite view advocated by Ray Jackendoff and Steven Pinker proposes the idea of 'Universal Grammar', and holds that natural selection plays a key role in enhancing the communicative efficiency for language. Other scholars such as Bickerton, Seyfarth and Cheney have argued for via media approaches or a combination of these approaches. Bickerton proposes a dual-stage model, where a proto-language first developed from primitive grunts, and this in turn developed into more complex languages. Noam Chomsky's work once supported the idea of 'Universal grammar' but he has since moved to more complex models'. Jackendoff has also laid out a scenario for the various stages in the evolution of human language from primate like communication. Some of the steps proposed by him are: Use of symbols in a situation-specific manner; Use of an open, unlimited class of symbols; Concatenation of symbols; Development of a phonological combinatorial system ; Use of symbol position to convey basic semantic relationships; attainment of Proto-language; Symbols that explicitly encode abstract semantic relationships; Definition of Grammatical categories; System of inflections to convey semantic relationships; System of grammatical functions to convey semantic relations; attainment of Modern language. Other scholars have also proposed models that are variations of Jackendoff's approach.

This paper also emphasizes the pressing need to dispel traditional myths, dogmas and superstitious beliefs in the Twenty-first century and a scientific approach towards evolutionary linguistics followed by an eventual widespread dissemination of contemporary scientific approaches in anthropology and linguistics should be seen as a powerful tool towards this goal. Likewise, ideology-driven approaches and approaches driven by parochialism and a desire to boost sectarian pride also need to be marginalized and eventually eliminated, and given the interrelationship between linguistics, other branches of Anthropology and other disciplines such as Sociology and Historiography, a scientific approach to linguistics can prove to be of great value to society as a whole. It is highly unfortunate that highly antiquated approaches akin to the divine source origin of language continue to pervade large segments of the popular public consciousness. We also bear witness to the sporadic resurgence of maverick and dilettante approaches such as new age movements and quasi-religious movements that are an obvious throwback to atavism. If such approaches are to be thrown out of the window, scientifically accurate approaches that are marketed appropriately to the laypeople, taking the perceptions, sensitivities and insights into account are of supreme importance. Do this, and we will be on the verge of a great new revolution in popular scientific awareness.

Towards a 'Wholly Independent Multi-regional hypothesis' on the origin of Homo Sapiens

One of the anchors of this paper is what we would like to refer to as the "Wholly independent multi-regional hypothesis of the origin of Homo Sapiens". This approach which is a modified version of the Multi-regional hypothesis rejects the recent Out-of-Africa origins of Homo Sapiens and argues that humans, like other universal, semi-universal or pervasive species such as canines, felines, bovines, equines and pachyderms, appeared independently around the world having followed similar but distinct evolutionary paths, and without in any way undermining Charles Darwin's principles of Natural Selection or necessitating ideas such as teleology or pre-determinism given that fact that evolution as it is known today does not plan for the future, have any long-term goals and is primarily driven by local considerations. This is the core tenet of this approach, and one which will impact any analysis of the origin of languages considerably. Our approach would constitute a form of polygenism.

While there would undoubtedly exceptions to this in the form of human migrations, these will need to be attested or inferred either directly or indirectly using some form of reliable evidence. An example for this would be the somewhat scanty evidence for human fossils and primates in North America which appears to be the icing on the cake for recent Out of Africa proponents. Instead of basing hypotheses purely on existing or available evidence, it would be preferable to adopt more comprehensive and multi-disciplinary approaches, and look for alternative explanations wherever possible: examples of these could be possible low populations of primates and early humans in the region, loss of fossil records etc. Another possibility is that migrations may have happened much earlier and in smaller numbers. Region-specific approaches and proposals and a combination of both approaches may also bring us closer to the truth, but autochthonous origins would be a much safer bet for most regions than miscegenation.

Dialectical approaches would help too, and reconciling viewpoints from the opposite ends of the spectrum would not be inapposite either. Wherever other explanations fail, migrations may be the only plausible explanation. (Refer the Ten golden rules associated with human migrations in this paper).

Also, never over-simplify: solutions to real-world problems are seldom simple, straight-forward, sensational or based on politically-correct premises and strategies. Approaches such as these are expected to remain controversial for some time in the absence of reliable evidence, but time alone will bear testimony to the eventual outcome of complex debates such as these.

Thankfully, critics of the much-maligned but yet popular and widely marketed (particularly to the non-specialist and the man in the street) recent Out-of-Africa theory are becoming ever more forceful and vocal, and it is now indeed time for this movement to pick up some more momentum; clearly, the salad days of the OAT are over. While most early hominin fossils such as *Sahelanthropus tchadensis*, (This is believed to have lived during the LCA or the Last Common Ancestor epoch), *Ardipithecus ramidus*, *Australopithecus afarensis*, *Australopithecus africanus* and *Homo Habilus* have indeed been found in the African continent, such over-simplifications would appear to fly in the face of common sense. Human fossils have also been found in China and Indonesia to boot, and migrations to every nook and corner of the world from an African homeland without a compelling reason may not be justified. Recent Out-of-Africa proponents flaunt supposed Mitochondrial DNA evidence as their trump card. How valid their interpretations are, remain open to scrutiny, but very little headway will perhaps be made without interdisciplinary collaboration, and serious ventures to this effect may not materialize in the immediate future.

In any case, the Ten Golden rules associated with human migrations as proposed by us in an earlier paper must always be borne in mind, and we reproduce them as under

(a) The possible motives for human migrations which can be broadly classified into pull factors or push factors need to be studied on a case to case basis, the key assumption for our purpose being that humans need not migrate unless they need to do so. Even if this assumption does not always hold good in the real world, we will nonetheless insist on it, as it automatically places the onus on those proposing such migrations to carry out a basic introspection. This may render invalid any possible fantasies or over-simplifications like the crude Out-of-Africa theory. (b) The possible motives for human migrations need to be studied much more critically when larger numbers of migrants are claimed. (c) The possible motives for human migrations need to be studied much more critically when migrations involving larger geographical distances are claimed. (d) The possible motives for human migrations need to be studied much more critically when migrations to regions with less salubrious weather conditions, or those unconducive to agricultural, economic or intellectual development are claimed. (e) The ability of the region in question to produce the numbers to facilitate migrations also needs to be taken into account, i.e. a reconciliation of the populations of the source location to the proposed size of the migrations needs to be carried out. By this we can avoid fantastic claims of large-scale migrations into India which are unsupported by genetic evidence. (f) A reconciliation of the claimed size of migrations with the population of the destination likewise needs to be carried out. If this had been done in the case of India, we could have easily concluded that the number of migrants were small in relation to the Harappans or the residents of the Indus Valley Civilization, and that simplistic models of language replacement in this context would have been virtually impossible. For example, in the case of Ancient India, acculturation involving small groups of people can very easily be explained from what we call a 'Lost tribe hypothesis' – a small group of individuals accidentally crossed the Khyber Pass on horseback, and did not know how to get back, triggering a series of acculturations that was explained. It is expected that the number of migrants will be compared with the pre-existing populations of various destinations taking into account the estimated population of source destinations. (g) The geographical features of the regions involved must always be kept in mind. (h) It is expected that a reasonable quantum of additional direct and indirect evidence will be sought in support of any model to prevent an ideological misuse. This may include linguistic or archaeological evidence. (i) It is expected that this study is done in true letter and spirit and is used to test any model. (j) It is expected that this study is done in true letter and spirit and is used to formulate 'Linguistic transformation models' for each destination separately.

Another concept we refute is the notion of human races canonically, orthodoxly and erroneously classified as Caucasian, Mongoloid and Negroid or admixtures of these. This concept is perhaps virulently anti-scientific and badly outdated in the twenty-first century, even though such concepts along with their less-desirable auxiliaries still have an unfortunately large fan following to this day particularly among the laity and less-informed public. Many leading scholars have already expressed their gravest concerns about the dogged persistence of such antiquated beliefs among the general public, and it

would be instructive to read the publications of Alain F. Corcos among others on this issue.^{24 25 26}It is the sacred duty of the concerned and the better informed to lead the way and to serve and torchbearers so that the rest of the population can follow suit and eventually fall in line. Haplogroups and ethnobiological identity perhaps fit the bill much better than the hazy and nebulous concept of race, and what the author has observed in his native India over the past several decades are continuously varying physical features of human populations from region to region. A keenly observant anthropologist will even be able to discern differences in physical features among populations residing in different parts of Andhra Pradesh and Telangana, both being states in modern India. The idea of race itself may have originated in a narrow European and North American context to account for wide difference in physical features between European immigrants and populations from Africa, and inferences on the equality or inequality of races may have been built over this narrow and limited understanding.²⁷ Awareness of cultures in other parts of the world in the Twenty-first century and universality of scholarship should have proven to be the final nail in the coffin for such concepts, but they never fully disappeared from the popular public consciousness. Even the much-criticised Hindu Caste system argued for a more complex hierarchy which was perhaps reflective of the complex ethnic origins of the populations of South Asia.

The idea of intelligence is perhaps even more poorly defined than the idea of race, and measures to test intelligence are probably far from perfect. The term 'Cognitive ability' is perhaps a much more scientific and measurable term than intelligence and is probably a much safer and surer bet in the long-term. Hence, all arguments on "race" and "intelligence" however wonderfully or artfully presented and articulated, are more often than not, likely to be allied with vested interests and ulterior motives or at least be gross misrepresentations incapable of doing justice to all aspects of the debate. Clumsy theories based on a loose interpretation of a highly ambiguous concept still regularly continue to do the rounds, an example of which can be found in the book "IQ and the Wealth of Nations" Richard Lynn and Tatu Vanhavan.²⁸ This book, which was heavily criticized by other scholars and directly or indirectly endorsed by some racist's attempts to measure IQ or the Intelligence Quotient based on nationality. The Flynn effect on the other hand, presumes that intelligence increases among the general population due to nutritional and other factors.^{29 30 31}We would like to strike a fine balance between racist interpretations on one hand, and utopian and romantic notions on the other here. While the interests of long-term science and scholarship should undoubtedly take precedence over all other concerns, there are many aspects that should merit very serious consideration in addition to the many uncertainties associated with arriving at a satisfactory definition of the term intelligence.

A short list of issues that need to be effectively and systematically eliminated before an assessment of cognitive ability of global populations is carried out includes (a) Nutritional deficiencies in populations in specific parts of the world due to low income levels (b) Biases and deficiencies of IQ tests (c) Factors attributed to Verbal intelligence or the absence thereof and language specific-skills; (d) Difference arising from educational ability (e) Difference arising from Cultural factors such as parental and peer-pressure (f) Aspirational factors and the presence of aspiration deficit in some cultures (g) Differences in parental initiation across cultures and sub-cultures (h) Economic factors playing spoilsport to ambitions (i) Variations in career paths chosen among different nationalities due to economic and other factors. We need to ensure that all effects directly or indirectly arising from these or other similar factors need to be disregarded before a balanced assessment is arrived at. This is an issue that only indirectly and circuitously affects the core and underlying theme presented in this paper, but is nevertheless symbolic of our core values and we therefore do not deem it inapt to take the liberty of mentioning it in passing. We also reiterate that all future tests and measures must be designed in such a way that differences arising from such factors are nullified and neutralized.

²⁴ The Myth of Human races, Alain F. Corcos, Wheatmark, 1997

²⁵ The Concept of Race, Ashley Montague, The Free Press, New York 1997

²⁶ The Myth of Race: The troubling persistence of an unscientific idea: Robert Wald Sussman, 2014, Harvard University Press

²⁷ The inequality of Human races Arthur Comte the Gobineau H. Fertig, 1999

²⁸ IQ and the Wealth of Nations by Richard Lynn and Tatu Vanhavan Westport, CT Praeger

²⁹ What is Flynn effect? James R Flynn Cambridge University Press, 2007

³⁰ The Mismeasure of Man, Stephen Jay Gould, W W Norton and company, 1996

³¹ The Bell curve, Richard J. Herrnstein, Charles Murray, 1994

Theories of language spread and language dynamics

What is language dynamics?

Language dynamics is a rapidly evolving field (in the late Twentieth and early Twenty-first centuries) and comprises a systematic investigation of how languages change over a period in time, how changes take place due to contacts with speakers of other languages and how languages and dialects compete with each other for viability, and either survive, thrive and prosper or decline and die out over a period in time. Language dynamics also partly covers the birth and death of languages. The formal study of language dynamics is divided into theoretical frameworks of various kinds attempting to address various issues pertaining all aspects of the subject, a formal and investigative data analysis and computational modelling. Language dynamics may be classified into diachronic analysis (also known as historical linguistics) and synchronic analysis which is a formal study of language dynamics and changes in languages at a point in time. Another interesting area of study is how diachronic factors impact a synchronic analysis of language dynamics. Thus, this sub-field explores the co-relation between diachronic linguistics and synchronic linguistics.

Changes to language may also be classified as internally-generated or induced or changes wrought through external influences including contacts with speakers of other languages. Another way of classifying changes are changes from above encompassing changes brought about through political influences and intellectual traditions and changes from below which encapsulate more natural changes. The terms “Conservative” and “Innovative” may also be used to describe the rate of linguistic change. The terms “Transformation” or “Progression” are sometimes also used to describe linguistic change. Analysis of linguistic change may also be classified as real-time analysis which assumes that significant changes take place during the lifetime of a speakers and apparent time analysis which assumes that linguistic ability is primarily acquired during a young age. Real-time analysis detects linguistic variations and changes over a period in time. Apparent-time sociolinguistics surveys different generations of populations at a given point in time.³² The approach proposed in this paper is expected to be somewhat in variance with the existing approaches in the marketplace.³³

Classical theories of spread of language

We will now examine some classical theories of language spread and linguistic change which had relatively strong following in the Nineteenth and early Twentieth centuries.

Tree model

The Tree Model was first popularized by August Schleicher over one and a half centuries ago. In its most basic form, the ‘Tree model’ consists of supposed Proto-Language, say ‘Proto-languages ‘A’ branching into languages ‘B’, ‘C’ and ‘D’. ‘B’, ‘C’ and ‘D’ in turn may further branch to form newer language. This is described through a phylogenetic tree or a cladistic tree. From our perspective, this antiquated model is too simplistic and theoretical to have any practical value in the real world. It may be difficult to demonstrate real-world examples of the Tree model, and this model does not perhaps address all kinds of real-time scenarios and may therefore be conceptually and fundamentally limited in its real world applicability apart from being very badly outdated.

The Wave Model

The Wave Model was first proposed by Hugo Schuchardt and Johannes Schmidt around 1870 as an alternative to the ‘Tree model’. Under the Wave Model, an instance of language change arises usually from within a geographical region, and from there spreads to adjacent speaker groups. The propagation of the change is therefore like a ‘wave’ which expands away from its centre as the new feature is adopted by other languages usually in the region.

Additionally, different features may spread independently of each other in different directions and different periods of time. According to Bloomfield (1933: 317), “Different linguistic changes may spread,

³² Apparent and real time in studies of linguistic change and variation by M. Teresa Turell

³³ Linguistics: The ultimate language test Adrian J. Williams

like waves, over a speech-area, and each change may be carried out over a part of the area that does not coincide with the part covered by an earlier change.”

The Wave Model, along with along its complex extensions, may not address all kinds of scenarios arising out of Human migrations, and is already ingrained as a part of one of the scenarios proposed in our paper. ^{34 35}

More recent theories of linguistic change

We will now provide a high-level overview of some alternative models of linguistic change proposed by scholars in the more recent past.

According to the Functional theory proposed by M.A.K Halliday, language changes and evolves in tune with its users' needs and the needs of society, and language is a meaning-making exercise. This theory appears to focus more on lexical changes than other types of changes. Words may therefore be coined to reflect technological changes, new legal requirements, new discoveries, slang etc. The Random Fluctuation theory proposed by Paul Postal and Charles Hockett proposed that linguistic changes are unpredictable, and linguistic changes are more or less random. The Substratum theory of linguistic change proposes that changes in language occur as a result of external changes such as trade relations, migrations, invasions, networking and cultural contacts. The S-Curve Theory of Linguistic change proposed by Chen (1972) and Bailey (1973) proposed that the rate of linguistic change resembles an S-Curve, remaining low initially, increasing rapidly and then levelling off. This theory also proposes that changes in language take place mainly on account of social factors. According to Peter Trudgill's Gravity Model of linguistic diffusion, linguistic changes take place due to social contact between speakers of different languages. Changes are proportional to factors such as distance or proximity and population size. According to the Parameter theory of Linguistic Change, there are core and subset parameters set during the language acquisition process, and these are not prone to conscious manipulation or alteration during adulthood. There are other parameters reflecting factors which pertain to or lead to language changes. The second set of parameters typically induce linguistic changes.

According to the Theory of Lexical Gaps, a word will be invented or borrowed to fill in gaps in usage. This theory states that linguistic changes are mainly driven by lexical gaps. Steven Pinker and Paul Bloom for example recommend adaptationist approaches.³⁶ Evolutionary Biology is a systematic investigation of the evolution of sound patterns in speech and their typological distributions across space and time. Juliette Blevins's theory of evolutionary phonology attempts to account for synchronic phonological patterns as the result of phonetic changes in the transmission of sound systems from generation to generation over time. ³⁷ Lev Vygotsky's sociocultural theory of human learning or the 'Language as a tool' theory describes learning as a social process as a part of emergence of social values and cultural processes in society or culture.

Merits and demerits of these approaches apart, any approach will also need to address underlying causes of linguistic change over a period of time and across geographies including Social factors, Political factors, Technological factors, Cultural diffusion which may arise due to contact with speakers of other languages etc. Our basic assumption here is that the rate of linguistic change is never constant and may fluctuate very widely due to a result in an interplay of various factors in a manner that future trends can be predicted, but to a limited degree and subject to certain constraints. It would also be necessary to understand such changes in conjunction with various factors so that linguistic changes can be better-justified or analyzed with underlying causes, and periods of relative non-linguistic change

³⁴ Indo-European linguistics: An introduction James Clarkson Cambridge

³⁵ Principles of Linguistic change William Labov Wiley Blackwell 2010

³⁶ NATURAL LANGUAGE AND NATURAL SELECTION ,

Steven Pinker and Paul Bloom Department of Brain and Cognitive Sciences Massachusetts Institute of Technology

³⁷ A Theoretical Synopsis of Evolutionary Phonology Juliette Belvins

can be segregated from periods of relative linguistic change and similarly justified with sound reasoning.
38 39 40 41 42 43

There are many underlying causes of linguistic change and we reproduce a few of them below:

Efficiency, economy and simplicity

Speakers typically feel the need to express their thoughts and ideas not just lucidly and eloquently but through the judicious use of words. If these principles are not satisfied, linguistic changes may result over a period in time, and these may manifest themselves in a variety of different ways. For example, the emergence of Vulgar Latin as a counterweight to Classical Latin, the relative decline of French versus English as a global lingua franca and the emergence of Hinglish (a combination of poorly spoken English and Pidgin Hindi) across India and various pidgins and creoles around the world in recent times in lieu of Standard English are cases in point.

Naturalness

Languages must also be as natural to the speaker as possible and must be suited to expressing the speaker's thoughts and ideas without unnecessary strain or effort. A related principle is the 'Principle of least effort'. If this principle is not satisfied, it may trigger changes to language in the long-term, or in some way, lead to its decline.

Emphasis and Clarity

Language must satisfy the principle of emphasis to a reasonable degree i.e. the right emphasis must be placed on different words and parts of speech including different verbs, nouns, adverbs, adjectives and conjunctions. Languages must also be clear and unambiguous; they must possess inbuilt mechanisms to minimize confusion arising from incorrect usage. If these principle are not satisfied, linguistic change may result.

Expressiveness and comprehensiveness of vocabulary

Language must be expressive enough to cover the needs of its users in a wide variety of situations. If this principle is not satisfied, words will either be invented or borrowed from other languages to fill in gaps and satisfy this principle.

Role-based suitability

A language must be inherently and innately suitable for the role it is expected to play. If this does not happen, this may trigger other outcomes such as the loss of functions of a language.

³⁸ Cambridge Textbooks in Linguistics: Sociolinguistics Second Edition R.A Hudson Cambridge University Press 2001

³⁹ Observations on language spread in multi-lingual societies: Lessons learnt from a study of Ancient and Modern India Sujay Rao Mandavilli ELK Asia Pacific Journal of Social Sciences Volume 1 Issue 3 (2015)

⁴⁰ General Linguistics and Indo-European Reconstruction Frederik Kortlandt

⁴¹ Claire; Evans, Bethwyn. The Routledge Handbook of Historical Linguistics, Routledge, pp.161189, 2014, 978-0-41552-789-7.

⁴² Alexandre Fran,cois. Trees, Waves and Linkages: Models of Language Diversification. Bownern

⁴³ Classification and Evolution in Biology, Linguistics and the History of Science, Heiner Fangerau, Hnas Geisler, Thorsten Halling and William Martin, Franz Steiner Verlag, 2013

User or ethnic prestige and pride

Language must also cater to user prestige and pride. If this does not happen, other consequences may result. For example, speakers of certain basilect of Telugu are known to abandon their language very easily as they move to Non-Telugu speaking regions.

Response to technological and other changes

Languages must also respond to technological, legal, economic or cultural changes. If this is not effected in a formal and structured fashion, and in a way that will satisfy all other principles discussed here, other kind of changes will result such as the relinquishment of functions to other languages, or word borrowings.

Innovation due to language contact

Changes often take place due to contacts with speakers of other languages. This may often be due to migrations of speakers from one region to the other or cultural imperialism. In the post-globalized world physical contact between speakers of different languages may not even be necessary; The Internet, Satellite television, mobile phones and other modern technologies may empower people and facilitate intra-cultural contacts among them.

Changes due to imperfect learning

Changes to language may often take place due to imperfect learning. If a significant proportion of speakers of a language do not learn a language properly, it may result in linguistic decay in the long term. Imperfect learning may also occur when a large number of non-native speakers try to learn a language thereby impacting the way native speakers use the language.

Changes due to geographical separation of users

Changes may also result from geographical separation of users. When speakers of a language move away from each other, and lose contact over a protracted period in time, language usage may diverge. American English separated itself from British English due to this very principle.

Changes due to increased competency of speakers

Changes may also take place due to the increasing competency of speakers as a result of increasing standards of education among the wider populace, the universalization or near-universalization of education and any resultant intellectual revolution leading to an illumination and enlightenment among the masses.

Changes due to the abandonment of a language by its own native speakers

In some cases, a language may be abandoned by its own native speakers. In some cases, native speakers of a language continue to use a language only in some contexts. This may result in a loss of some functions in a language. For example, the number of English schools (Where English is the primary medium of instruction) has increased manifold in the state of Andhra Pradesh since the year 2000. Thus many native speakers of Telugu are rapidly losing competency in written Telugu, and are yet more comfortable with spoken Telugu than spoken English. More interestingly, the second language taught in many of these schools is not Telugu but Hindi. As a result, standards of written Telugu are falling precipitously while standards of spoken and written English and Hindi are not increasing appreciably. This trend is expected to lead to an overall decline in linguistic ability among native Telugu speakers in general in the long-term.

Changes due to Innovation

Changes may also take place due to constant innovation and refinement and a language like English has lent itself fairly well to various types of innovation such as word coinage and word borrowings from other languages. Speaker innovation may or may not percolate into the community; it is in the second case that changes to language typically take place.

Changes due to transmission of language from generation to generation

Changes can also take place due to transmission of language from generation to generation. A generation may transmit additional words to the next generation which are more in tune with the times, or place additional emphasis on them, and choose to leave out certain other words which are no longer in widespread use.

Types of Linguistic Changes

According to Marcel Cohen and others, the types of linguistic change encompassing both internal and external change are as follows. These changes usually are widely accepted over a period in time by speakers of the language or by more influential speakers and become the linguistic norm. Thus, linguistic change occurs. Another way a change can occur is through lexical diffusion. In such a case, changes to a phoneme gradually spread throughout or to a part of the language's vocabulary bringing about a language-wide change. ⁴⁴:

Lexical changes

Examples of lexical changes include the continuous coinage of new words and expressions particularly in vibrant languages such as English. English has also borrowed liberally from other languages all around the world, including less prestigious ones and this has endowed it with enormous flexibility and adaptability not seen in languages such as French. On the other hand languages such as Japanese and most modern Indian languages have borrowed words informally from English. The use of English words in Indian languages is widespread even where local equivalents are available, this process appears to have happened entirely informally, and not by imposition of authority. On the other hand, attempts to artificially create words in Rajbhasha or official Hindi have thus far failed miserably. Lexical changes may also lead to a loss of words, as they drop out of general or popular usage. In some cases, the word is retained but the meaning itself changes either subtly or significantly. Thus, lexical changes are of three main categories, addition of new words, word borrowings and deletion of words from the vocabulary through disuse.

Phonetic changes

Changes to pronunciation have also been observed in a relatively short span in time, a case in point being the emergence of American English. Subtle changes in pronunciation have also been observed in American English from the 1920's till date. Changes to pronunciation have also been observed in Proto Indo-European or Base Indo-European as it morphed due to contacts with other languages. A scientific study of phonology encompasses a formal study of the rules by which acoustic signals are generated. In contrast to phonetic changes, phonological changes are said to take place when the language's phonological system itself changes. In general, phonetic drifts tend to take place in many languages over a period in time.

Spelling changes

Spelling changes have also been observed in language. The spelling in American English is at variance with the spelling in British English; the former is relatively simpler than the latter. Spellings in both English and French have changed over the past few centuries, and standardization of spelling and orthography is a relatively recent concept and was largely kickstarted due to widespread literacy.

Semantic changes

Semantics refers to a formal, structured study of the meanings of words in language. Semantic changes refer to changes in the meanings of words over a period in time. Some types of Semantic changes include

- (a) Amelioration: In this case, a term's connotations become more positive
- (b) Pejoration: In this case, a term's connotations become more negative
- (c) Broadening: In this case, a term acquires additional meanings
- (d) Narrowing: In this case, a term loses some of its meanings
- (e) Taboos: In this case a word becomes a taboo word and drops out of use
- (f) Adoption of euphemisms in lieu of words that become socially unacceptable

⁴⁴ Language: It's structure and evolution, Marcel Cohen, Souvenir Press

Syntactic change

Syntax constitutes an independent level of description from either phonology or semantics. Syntax regulates the arrangements of words into larger units such as phrases and sentences, which are crucial to determine meaning. Syntactic changes refers to the evolution of the syntactical structure of a language. Many languages including languages that do not possess literary traditions have actually been demonstrated to be syntactically and grammatically complex, and the reason for this is a mystery. Syntactical changes include changes in word order such and the development of SVO languages into SOV languages and vice versa.

Morphological changes

Morphological changes may include addition of affixes, loss of affixes, changes of language from analytic to synthetic and synthetic to analytic etc. An interesting example is the reduction in the inflexional complexity of English between the fourteenth and seventeenth centuries, the causes of which are still poorly understood.

Our approach towards Origin of languages and linguistic change

Our approach towards linguistic change categorizes linguistic changes into changes induced by human migrations, and changes that are not induced or accompanied by human migrations in such a way that scenarios triggered by human migrations are further analysed in the context of more general scenarios proposed as a part of this paper. The evolution and epigenesis of languages as per our 'Epochal Polygenesis' approach will also be naturally be impacted by changes brought about by migrations wherever these are applicable, and we therefore present them below. While these scenarios had initially evolved in the narrow context of the Indo-European debate and the Indo-Europeanization of the world, and solutions proposed by us in this regard, these are general and comprehensive enough to be universalized across time and space and can probably be applied, with insignificant and petty modifications in any general context. Our presentation of human migration-induced changes before non migration-induced changes is deliberate and intentional; the effects of migration-induced scenarios on linguistic change and evolution will then be logical and self-descriptive. The Epochal Polygenesis approach categorizes human pre-history and history into the Pre-historical period, Proto-historical period, Historical period, the Modern pre-globalized period and the Post-globalized period.

The Ten types of Linguistic Transformations associated with Human Migrations

From our perspective, Linguistic transformations arising out of Human Migrations can be of the following ten types, and we briefly explain them below. Some concepts have already been put forth by J P Mallory, Witzel and other scholars, again in the specific context of Indo-European studies, even though our compilation and classification of scenarios is much more comprehensive and detailed. These typically involve changes to two or more languages, and such changes can be of many types including lexical changes, semantic changes, syntactical changes etc. These will have widespread and universal applicability in the pre-historical, proto-historical, historical, modern and post-globalized periods. These are not intended to be close-ended, and other scholars may still identify more scenarios and add them to this list. Our approach is not to discard them altogether but to make an earnest attempt to generalize them in the overall backdrop of linguistic changes induced by human migrations. We anticipate some criticism and animosity as regards the classification in a generalized context, but we will make an earnest attempt to address them in the truest spirit of a collaborative approach.

(a) Complete replacement or Annihilation of languages: We had proposed in our earlier paper that this would be a very simplistic view, and one that may be practically rare and inapplicable to most situations. A scholar wanting to prove or demonstrate the real-world applicability of such a scenario, is expected to provide adequate data ruling out all other scenarios. Such scenarios have however, been observed in the real-world on occasion examples being the annihilation of native languages in the USA and other parts of the world. This can be justified on account of factors such as the degree of development of languages native to the region vis-à-vis those of immigrants, political factors, and the fact that immigrants populations may have been able to assert their identity. The latter contributed to the linguistic suzerainty of English. In spite of this, French, another immigrant language, is only slowly dying out in Louisiana, and is far from dead in Quebec, where it is actually thriving, and is the chief language of the province. This process appears to have taken place in Southern Sri Lanka as well, though in slow motion, as immigrants from North India in 600 BC may have been relatively small in number. It is likely that other languages of the region, like those spoken by the present-day Veddahs of the region,

were subsumed over a protracted span of time. However, as these languages may have also heavily influenced the language of the immigrants, this may be a fit case for what we may refer to as a roller-ball model, and not plain-vanilla or simplistic case of linguistic annihilation. The classification of this scenario as a roller-ball model may also be in order because the Sinhala language in its present form certainly did not exist when immigrations were purported to have taken place, and Sinhala is a product of Sri Lankan soil and is of relatively more recent origin. Furthermore, other languages have not disappeared completely from Sri Lanka and languages other than Sinhala and Tamil are still spoken in pockets including areas where both Sinhala and Tamil are the majority languages. This may also be referred to as the Survival of the fittest model as observed in the case of the USA. On the other hand, a dialect of English which was once spoken in the London area quickly became the standard variety of English. The death of other dialects of English was however only an extremely slow process only aided by factors such as urbanization, education, internal migrations and the popularity of English outside the UK. In much of the Middle East and North Africa, Modern standard Arabic is only used as a formal and a literary language, and the levelling of various dialects of Arabic still appears to be nowhere in sight. Thus, Arabic is not only polycentric but also diatopic. John Gumperz and Robert Wilson (1971) provide data from Kupwar, a small village in South-Western India, whose residents mainly speak Marathi, Urdu and Kannada (A few also speak Telugu). These languages have co-existed for centuries without encroaching on, or destroying each other. This may be in part due to the fact that none of the languages in this case was dominant and all languages were therefore able to flourish alongside each other. All these examples should serve to illustrate that complete replacement or annihilation is not necessarily the de facto method of linguistic transformation. On the contrary, it may be relatively rare and needs to be justified or demonstrated through incontrovertible or relatively strong evidence. It is also a well-known fact that some languages of the Indo-European family are SVO languages, and some others are SOV languages. The process of change in the word order of languages (this itself may be relatively rare) may also be studied in detail so that linguistic transformations may be categorized appropriately. If the transformation of SVO languages into SOV languages or the other way around cannot be justified, we would have hit another linguistic jackpot: this would automatically throw light on the nature of linguistic transformation in different cases.

(b) Linguistic Sub-ordination: Linguistic Sub-ordination was another concept we had discussed in our previous paper, and may be relatively more common, at least in the short to medium term. We had also introduced the 'Doctrine of Insubordination' where we discussed that languages could cede functions to other languages much more easily, thereby losing them, rather than complete annihilation. This concept has been explained in detail in one of our previous papers. Linguistic sub-ordination would lead to lexical, syntactical, morphological and semantic changes over a period of time, as well as the coinage of words and expressions and word borrowings. It may also lead to a loss of vocabulary in some cases, and the loss of functions of a language. This process would typically lead to changes in a language's role as well over a period in time. Another interesting example that may fit the bill here is the spread of the Turkish language in swathes of Western Europe on account of successive waves of immigrations of mostly low-end workers in recent times. This has led to some changes to the Turkish language as spoken by immigrants, but the arrival of the Turkish language in Europe has barely impacted languages such as German and French, and even where an impact has been observed, they have been insignificant and trivial.⁴⁵ Another study has documented the effects of Hindi and even Punjabi and English on Bagri, a dialect of Rajasthani which in turn, is variously categorized as an independent language or a dialect of Hindi. In this case, changes have again been found to be unidirectional.

(c) Roller-ball model (Single loop): In this case, an alien language spreads up to a certain point in a given region, loses its original form, and takes over characteristics and influences of a language or set of languages native to the region. The languages native to the region are also heavily influenced by the alien language, such that they are transformed significantly. This process would lead to a transformational change in both languages. One possible variation to this theme is the emergence of new kinds of multiethnolect Englishes in the USA first as a result of immigrants from Africa, and then more recently from Asia and other parts of the world. We believe the Sinhala language originated this way. Hybridized languages or a mixture of one or more languages are also an interesting phenomenon.

⁴⁵ Linguistic Effects of Immigration: Language Choice, Codeswitching, and Change in Western European Turkish. Ad Backus, J. Norman Jorgensen and Carol Pfaff

(d) Roller-ball model (Double or Multiple loop) (This scenario may also be generalized to cover all-kinds of complex and one-off scenarios that have widespread and universal applicability): We had first developed this in the narrow context of Indo-European studies and the impact of Proto Indo-European or Base Indo-European on languages in outlying regions, particularly India, and this was an extension of the Single Loop Roller-ball model where both groups of languages keep influencing each other. Refer our detailed model on the relationship between the PIE, Sanskrit and Prakrits which is also presented in our earlier papers.^{46 47 48} Such complex scenarios may be relatively rare in other contexts and situations, and may have taken place as a result of special conditions. In this case, a descendant of base Indo-European continued to propagate in ancient India, into and out of the Vedic homeland, into the Gangetic plains taking over the influences the ancestors of Prakrits and other indigenous languages before disappearing and reinventing itself as a lingua franca and a liturgical language. However, this type of linguistic change may be generalized outside the perspective of IE studies to cover all kinds of special and complex scenarios applicable in a specific geographical context or time frame that cannot be satisfactorily fitted into the other types of linguistic change. Future researchers must make an earnest attempt to identify as many complex scenarios as possible within their jurisdiction or area of study, particularly those not covered under other scenarios mentioned in this paper. This must be a conscious and deliberate process to avoid over-simplifications and over-generalizations of different sorts. One example we can think of that can be classified under the category of relatively complex scenarios are changes in the Bengali language on account of the settlement of Bengali speakers in Hindi states. The resultant changes to the Bengali language may then be further magnified on account of the eventual relocation of these Bengali language speakers back to their home state.⁴⁹ As already stated, a thorough understanding of the specifics of the region and the time-frame under consideration will unlock the full potential of this approach.

(e) Extended Roller-ball model (Roller-ball model combined with Billiard-like extensions): In this model, a language spreads up to a certain point through one of the methods described above, and then spreads primarily through cultural diffusion at later points in time to various other outlying regions. This may explain the Indo-Europeanization of most of Europe as Latin, already a member of the Indo-European language family, began to influence several other languages of Europe to give birth to languages such as French and Italian. This largely happened due to the power of the Roman Empire and several other political events which took place during and immediately after the fall of the Roman Empire. Latin heavily influenced Old English as late as the Tenth century, and French and even Scandinavian languages also similarly influenced Old English. However, this was unlikely to have been a direct or a simplistic replacement as presumed by most scholars. Most of the influences were through word borrowings, and it would be interesting to note that many Greek words entered languages like English through Latin. Additionally, Greek loan words were borrowed directly into English as well. This clearly demonstrates the complexity of factors causing or determining the interrelationship between the world's languages, and we would again add a cautionary note urging scholars to desist from simplistic assumptions. The key evidence for a billiard-like of a spread comes from the wide variations in the dating of various languages belonging to the IE family, and this approach may be applied if the process of Indo-Europeanization in a given region began late. To study this methodically, a thorough knowledge of histories in various regions along with a knowledge of the Ancient and modern languages of the region is mandatory.

This type of a scenario manifested itself in Ancient India too, with both Prakrits and Sanskrit influencing various Dravidian languages independently. Typically, the second type of a spread begins after the language has already planted itself in a given region or has established itself; examples here are Greek, Latin or Sanskrit. This explains how Sanskrit influenced the languages of South East also. A critical analysis of all our findings would of course rule out any notion that spread of languages necessarily

⁴⁶ Syncretism and Acculturation in Ancient India: A new Nine phase model explaining the process of transfer of power from the Harappan to the Indo-Aryans Part One Sujay Rao Mandavilli ICAI Journal of History and Culture, 2009

⁴⁷ Syncretism and Acculturation in Ancient India: A new Nine phase model explaining the process of transfer of power from the Harappan to the Indo-Aryans Part Two Sujay Rao Mandavilli ICAI Journal of History and Culture, 2010

⁴⁸ The Demise of the Dravidian, Vedic and Paramunda Indus myths Sujay Rao Mandavilli

⁴⁹ Bengali in contact with Hindi, Bornini Lahiri Jawaharlal Nehru University, New Delhi, Journal of the Linguistic Society of India Volume 76, Numbers 3-4, 2015

happened in tandem with the movement of peoples. No other assumption can perhaps be as damaging to our cause than this.

(f) Assimilation: The language(s) of the immigrants die out completely over a period of time, leaving behind virtually no trace. This is diametrically opposed to the idea of annihilation of languages, and may likewise happen under rare or special circumstances. Examples of such scenarios are Non-English speaking immigrants into the USA, and the decline of the Telugu language in Tamil Nadu. Persian in India did not survive long after the decline of the Mughal Empire in spite of the fact that it did impact the languages of the region.

(g) Cultural diffusion without transhumance movements or 'Pure Acculturation': We had declared this to be relatively rare from the perspective of Indo-European studies as linguistic changes unaccompanied by human migrations would have been rare in Ancient times. However, such paradigms are common in the Twenty-first century due to the ubiquity of technology. For example, English has spread worldwide as a lingua franca without accompanying human migrations. Refer the section on 'Linguistic Osmosis' in this paper.

(h) Transhumance movements without linguistic change: In this scenario, there is minimal or no interaction between speakers at least in the short-term to the medium-term and both languages continue to exist in parallel without one language impacting the other permanently or to any significant degree. Such scenarios have been observed in India too, and may have been more common in case of pre-historic migrations. These were also a characteristic of some scenarios of language spread in colonial times. An example of this scenario is the case of French in Pondicherry in India.

(i) Lateral influences (or other influences): Lateral influences were observed in the context of Indo-European studies. I.e. lateral influences between Iran and India which played a key role in the evolution of Vedic Sanskrit. This concept therefore needs to be generalized to make it applicable to various other contexts. For example, Hindi, which is a modern Indo-Aryan language was greatly influenced by Persian during the medieval era and various other influences. Thus, the evolution of Hindi and Urdu can be traced to many complex factors. We may adopt a layer by layer approach here. We may also generalize this scenario and categorize influences into influences from major sources and minor or secondary sources. A case in point may be the impact of English and Hindi on Kannada which are likely to be major. On the other hand, the impact of Telugu and Tamil or Kannada are expected to be minor.

(j) Variants or combinations of the above scenarios may also be pervasive in the real-world and as such it is only expected that scholars will take cues from the above scenarios. Thus we wish to sidestep over-regimented approaches at every stage of the discussion.

We would refer to these as the 'Ten types of linguistic transformations associated with Human migrations.' In our view, and at least from our much more focused perspective which is centred on linguistic change wrought by transhumance movements, the above classification would constitute a vastly superior approach to existing classification models which are also discussed in passing in this paper, and should address linguistic changes arising out of transhumance movements at an enhanced level of granularity. This approach always talks about two or more streams of languages and adds several more dimensions to the issue, including mandating a knowledge of local histories and issues.

The following issues would also be central to the above-mentioned debate, and it is expected that a scholar would analyse them on a case to case basis.

- (a) The number of immigrants vis-à-vis the numerical strength of the local population
- (b) The technological and cultural superiority or attributes of the immigrants vis-à-vis the local population
- (c) Cultural attributes and policy adopted by the local populations
- (d) Attitudes or linguistic loyalties of the immigrants
- (e) The Linguistic distance between the languages of the immigrants vis-à-vis the local languages

(f) The degree of linguistic inequality between the languages of the immigrants vis-à-vis the local languages. This will encompass sentence structure and aspects of Grammar too; for example we had used the fact the IA languages are SOV languages unlike most other IE languages which are SVO languages to campaign for a Roller-ball model.

(g) Other factors such as ‘Linguistic Osmosis’ (Refer to the ‘Theory of Linguistic Osmosis’ proposed in our paper) – This will include both extraneous factors and internal considerations like ethnic rivalry etc. [5]

(h) The level of evolution of the language of the immigrants

(i) The level of evolution of the languages of the destination area

(j) The standing of the immigrants in the social hierarchy of their newly adopted homeland.

(k) Any other factors or considerations understood from a detailed analysis of the issue in question.

Any discussion will be wholly null and void unless accompanied by a thorough knowledge of the local history or histories, culture, languages both ancient and modern, and a working knowledge of any other extraneous factors impacting such issues. A familiarity with the linguistic and archaeological evidence pertaining to the area is also highly preferable. Thus, we do not propose a model where a scholar is required to acquire proficiency in a large number of additional or distantly related languages in an unreasonably short span of time. For the author, or virtually anyone else in question, this would essentially be an unworkable proposition and a humongous waste of human resources or time. What is required is a collaborative effort between scholars of various hues and colours, across cultures and varying backgrounds, in such a way that the resultant synergies lead to an exponential increase in knowledge.

Linguistic changes due to migrations and language contacts can also be categorized as Lexical changes, Phonetic changes, Semantic changes, Syntactic changes, Changes to spelling and Morphological changes. The key here would be to accomplish a thorough understanding of the history of the region in question, a thorough knowledge of the languages in question and the principles of language change.

Non migration-induced linguistic changes

Epochal Polygenesis approach

We present the Epochal Polygenesis approach as explained below. We divide the origin of language and explain the possible high-level changes to language into five major epochs for the purpose of our study and our analysis. These are the Pre-historic period (encompassing the Stone Age (The Palaeolithic age and the Mesolithic age) and the Neolithic age), The Proto-historic age (encompassing the Neolithic age and the Early Chalcolithic age), The historic period (encompassing the Late Chalcolithic age, The Old world, The Iron age, The Ancient world, The Medieval era, The Renaissance, The Age of discovery and The Georgian era), The Modern Pre-globalized era (from the Victorian era to the end of the Twentieth century), The Age of globalization (The end of the Twentieth century and the Twentieth Centuries)

Period	Pre-historic period	Proto-historic period	Historic period	Modern Pre-globalized era	Age of globalization
Time frame	The Stone Age (including the Paleolithic age and the Mesolithic age) and the Neolithic age	The Neolithic age and the Early Chalcolithic age	The Late Chalcolithic age, The Old world, The Iron age, The Ancient world, The Medieval era, The Renaissance, The Age of	The Victorian era to the end of the Twentieth century	The end of the Twentieth century and the Twenty-first Centuries

			discovery and The Georgian era		
Component					
The idea of spoken language	Perhaps autochthonous with other inputs from neighboring regions	Spoken language pre-existed in this epoch and hence this is not applicable	Spoken language pre-existed in this epoch and hence this is not applicable	Spoken language pre-existed in this epoch and hence this is not applicable	Spoken language pre-existed in this epoch and hence this is not applicable
Basic spoken language and early Proto-language)	Perhaps autochthonous; Theories such as Bow-wow theory, Pooh-pooh theory, Eureka theory and Uh-oh theory; Clan codification; Neural transmission of language from key nodes (Refer our explanations)	Proto-language pre-dated this epoch and hence this is not applicable (However, words were constantly over-ridden, and language standardized)	Proto-language pre-dated this epoch and hence this is not applicable (However, the standardization of languages progressed during this epoch)	Proto-language pre-dated this epoch and hence this is not applicable	Proto-language pre-dated this epoch and hence this is not applicable
Basic Proto-language (Late Proto-language)	Neural transmission of language from key nodes partly over-riding autochthonous development	Neural transmission of language continuing into this epoch over-riding autochthonous development and levelling dialects and proto-languages)	Proto-language pre-dated this epoch and hence this is not applicable	Proto-language pre-dated this epoch and hence this is not applicable	Proto-language pre-dated this epoch and hence this is not applicable
Further spread and refinement of Spoken language		Quasi-political factors	Political factors	Political factors, Science and Technology	Linguistic Osmosis, Political factors, Science and Technology
Spread of writing (Proto-writing)	Historical factors (Primarily)	Historical factors (Primarily)	Not applicable	Not applicable	Not applicable
Spread of Writing (Logosyllabic scripts)	Not applicable	Not applicable	Historical factors (Primarily)	Global and local factors (wherever applicable)	Global and local factors (wherever applicable)
Oral traditions	Autochthonous with inputs borrowed as applicable	Autochthonous with inputs borrowed as applicable	Autochthonous with inputs borrowed as applicable; would have been strongly influenced by or subservient to written traditions	Not applicable	Not applicable
Literary traditions	Not applicable	Not applicable	Autochthonous and external influences Intellectual enlightenment	Autochthonous and external influences driven by Intellectual enlightenment	Autochthonous and external influences driven by Intellectual enlightenment and

					Universalization of education
Nature of Lexical borrowings	Limited borrowings from key and subsidiary nodes gradually increasing with time; borrowings still limited to basic vocabulary adding to or over-riding vocabulary in lesser proto-languages.	Increased borrowing including more complex vocabulary; this epoch may have witnessed the introduction of some abstract vocabulary; a higher level of standardization including phonetic and phonological standardization, standardization in syntax and grammar.	Cross-borrowing and literary influences due to political and cultural factors	Cross-borrowing and literary influences due to political and cultural factors	Cross-borrowing, literary influences and permeation due to global factors
Other key characteristics of language	Proto-language No standardizations No complex grammar No abstractions (Refer explanatory notes)	Increasing standardization of vocabulary, syntax and grammar, introduction of abstractions	Increasing literary traditions; some dichotomy literary and common usage; increasing standardization but geographical and social dialects continue.	Increased use of scientific jargon; societal changes due to near-universalization of education; some languages develop much faster than the others.	Further increase in scientific vocabulary; accelerating decline in number of languages; non-contact driven scenarios of linguistic change.
Migration-induced scenarios	Almost never applicable (There may have been case to case exceptions)	Rarely applicable (There may have been case to case exceptions)	Applicable on a case to case basis	Applicable on a case to case basis	High degree of linguistic churn due to human migrations in the Post-globalized world

Pre-historic period

The idea of language

This approach is based on four fundamental pillars or premises. We refer to these as the four key drivers of spoken language. These are very fundamental, and taken together, are meant to encompass all facets of early human endeavour and other factors leading to the emergence of spoken language. We believe that all other theories and hypothesis will be subservient to these four drivers. We also believe that the idea of spoken language would have been autochthonous to most early human societies and basic proto-language would have evolved independently in most early human societies, though at different periods in time. It is also likely that innovation was driven by a few clans and tribes and then imitated by others in a region.

We believe the four key drivers of the emergence of spoken language are:

1. Instinct and facilitated experimentation driven by ontogenetic and other factors
2. Innovation and creativity
3. Necessity and dire necessity
4. Societal pressure, peer pressure and societal needs

Instinct and Facilitated experimentation driven by Ontogenetic factors

The theory of facilitated experimentation carried out by early humans which was made possible due to the sufficient evolution of human speech organs, language processing centres in the brain such as

Broca's area and the Wernicke's area and also mirror neurons. All these factors must be studied together, as even dogs possess the ability to understand basic words, though they cannot reproduce them. These factors, along with the relative advanced social and cultural status of even early humans vis-a-vis other animals would have led to accelerated experimentation even in the very early days. This would have led to the production of primitive speech and was perhaps the first step in the evolution of spoken language. It is most likely that the development of speech organs was a gradual one. Some primates possessed remarkable cognitive ability in relation to other species in the animal kingdom, and some reproducibility of sound patterns. There is also increasing fossil evidence which demonstrates that Neanderthal man and other early hominins such as Homo Heidelbergensis possessed a much greater capacity to process and reproduce speech than previously imagined. These factors, taken together with Darwinian models of evolution would naturally point towards a much slower process of linguistic evolution than early linguists had acknowledged. All these factors call for a more leisurely pace of linguistic evolution in the Pre-historic epoch, and these fit the co-ordinates of our approach rather well indeed.⁵⁰

The idea of language as an instinct was originally proposed by Charles Darwin way back in 1871 and has been ratified by Steven Pinker as well in his book "The language of instinct: The New Science of Language and Mind", and according to him, this is one of the reasons language has become so complex. Darwin's idea of language may be summed up in what he calls "an instinctive tendency to acquire an art." Steven Pinker's ideas are endorsed by some other scholars such as Noam Chomsky who propose that language is an innate human instinct, and was therefore ubiquitous in all early human societies. This was quite unlike other technologies such as early transportation technology and metallurgy which were more consciously learnt and transmitted in ancient cultures; furthermore only a specialized few possessed the ability to deal with these technologies. Another evidence for this comes from baby-talk and the penchant for infants to not only produce gibberish but also to transition to speech smoothly even with minimal structured or formal training, given that even those who are not imparted grammar lessons possess language. Infants also speak because they want to communicate their fears, concerns, anxieties, pleasure or joy. Speech may also be considered instinctive because an infant's prattle may often be at variance with the rules of a formal structured language. While all this is undoubtedly true, we believe that this approach has its own limitations; one must make a distinction between speech and language. While primitive speech may be instinctive; full blown language may not; it must be taught like an art or a science. Wherever it is not formally or correctly taught, either through an external entity or through self-learning, the quality of even spoken language or linguistic ability is bound to be relatively limited, even in native contexts. Therefore, one suggestion is to propose three classifications. One, the capacity for speech would be purely instinctive; Speech would be partly instinctive and partly learnt. Full-blown language would be mostly learnt and driven not just by instinct but by the four key drivers described in this paper namely instinct, innovation and creativity, necessity and dire necessity, societal needs, peer pressure and societal pressure but to varying degrees. Even self-help and a desire to succeed would be driven by peer-pressure or societal needs to some degree. This may also be driven by instinct in part. This would be applicable across all epochs and is applicable to almost all contexts and situations. This is yet another cornerstone of our approach. Fully-developed language has also been observed in people with mental disabilities, schizophrenia, people suffering from autism and even Alzheimer's disease. However, speech disability is common among the deaf, and those with Dyslexia. Even the deaf, who lack language, often make some attempts to communicate. Future researchers may perhaps adopt scenario-driven research taking a complex set of similar parameters as inputs.

S.No	Component	Driven by
1	The capacity for speech	Instinct and facilitated experimentation driven by Ontogenetic and other factors
2	Primitive speech and proto-language	Instinct and facilitated experimentation driven by Ontogenetic and other factors Innovation and creativity Necessity and dire necessity Societal pressure, peer pressure and societal needs

⁵⁰ Observations on language spread in multi-lingual societies: Lessons learnt from a study of Ancient and Modern India Sujay Rao Mandavilli ELK Asia Pacific Journal of Social Studies, 2015

3	Full-blown spoken and written language	Societal pressure, peer pressure and societal needs Other higher order factors such as Intellectual enlightenment driven by societal needs and Innovation and creativity.
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Another related concept would be 'Mentalese', a term coined by Steven Pinker. A related concept is the 'Language of thought hypothesis' or LOTH, a concept first put forth by the American cognitive scientist Jerry Fodor. Another similar concept we could recall here is i-language or internal or internalized language and e-language or externalized language, a term which was first introduced by Noam Chomsky. These relate to man's supposed inborn propensity to grapple with complex linguistic and grammatical concepts without consigning them to writing and without resorting to complex or formal memory aids. There an abundance of data from cultures around the world to support this view. The literacy rate in India was just 9% in the early Twentieth century rising very slowly to 12% in 1947, to 75% in 2011 and close to 80% in 2016. Parts of Africa have fared much worse than India with countries like Liberia, Mali, Sudan and Burkina Faso demonstrating literacy rates below 50% even in 2015.

Literacy rates may have never exceeded 1% in Ancient Mesopotamia and writing was the sole prerogative of scribes. Likewise, full-fledged literacy arising from the upkeep of administrative records was known to perhaps even smaller number of people in the Indus Valley. In spite of these factors oral language has been able to propagate from generation to generation remarkably well, and across cultures, and the role of written language in influencing transmission of language was perhaps limited in early times. Proto-language was never coupled with speech and may have naturally constrained a free flow of ideas. When true writing appeared, it was extremely limited in application, having been limited to royal records, decrees and administrative records. Similarly the Rig Veda of Ancient India, which was compiled between 1650 BC and 1380 BC in the Gangetic plains was not consigned to writing until well after the Buddhist era in spite of limited literacy in the region. This is nothing short of miraculous, and the role of writing in regulating the evolution of spoken language may have enlarged more recently, and this may have been non-uniform across regions.

Innovation and creativity

The principle of Innovation and creativity would ensure that early human speech was then further extended in multifarious directions to make it more sophisticated and capable of handling more wide ranging use.

Constant innovation and refinement could be expected in any language and this would have been more common in the early days before languages evolved into literary languages, and before dogma and tradition-induced rigidity took over. Evidence of innovation and creativity in early languages may be hard to obtain. However, a formal study of the evolution of modern languages may greatly help here as far as the evidence will allow it, and parallels can be drawn which will enable us to hypothesize on the trajectory of development of early languages as well. Most Nineteenth century theories such as the Bow-wow theory and the Eureka theory, (some of which were partially endorse) were based on innovation and creativity. Some of them were also driven by necessity and dire necessity.

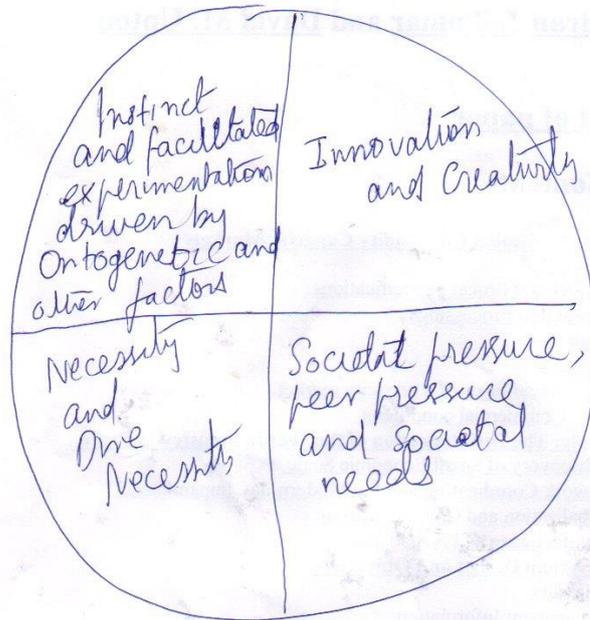
Necessity and dire necessity

The principle of necessity would have ensured that experimentation no longer remained within the realm of purist goals and objectives but began to be applied to practical uses and the solution of real-world problems. The Theory of dire necessity would extend the Theory of necessity a step further and would ensure that language was greatly orchestrated as a tool of social progress. It would ensure that dire necessity played a major role in linguistic evolution, and that as the popular adage goes, necessity was always the mother of invention. Thus, language would have led to social and cultural progress, and this in turn would have necessitated more complex language. This would have one of the key drivers behind linguistic evolution, and would represent some kind of a circular or a Logarithmic Spiral approach. Linguistic development would also be stimulated and galvanized by several triggers examples being evolving needs of society, technological factors, social factors, cultural factors, contact with neighboring regions, quasi-political factors, political factors, the development of proto-writing, the development of writing etc.

Societal needs, Peer influences and Societal influences

Peer influences and other societal influences may have greatly facilitated the development of languages as the creative synergies of society may have played a positive role in fostering the development of languages. Cross-borrowing of words both in the 'Pull mode' and the 'Push mode' would have been driven by societal needs. Similarly the desire to pass on knowledge of language from generation to generation, and the desire to acquire language would also have been driven largely by societal influences, and peer influences.

The origin of proto-language and language : the four key early drivers



As per our approach these were the four key early drivers leading to the emergence of Proto-language and language. All other factors such as the 'Eureka' hypothesis and familial imitation were derived from these four key drivers.

S. No	Observation or hypothesis	Attributed to
1	Infants babble	(a) Instinct and facilitated experimentation (b) Innovation and creativity

2	Parental initiation and transmission of language from generation to generation	Societal pressure, peer pressure and societal needs
3	Sound mimicry (Bow-wow)	Innovation and creativity
4	Expression of emotions (Pooh-pooh)	Instinct and facilitated experimentation
5	Eureka theory or invention theory	Innovation and creativity
6	Warning of dangers (Uh-oh theory)	Necessity and Dire necessity

The evolution of Proto-language in the Pre-historic period

- (a) There would be no single proto-language, but several; and language would have evolved in scores of different places, at different points in time.
- (b) Our approach towards proto-language must not be confused with the mechanistic split up of supposed proto-languages to form daughter languages as per the tree model (we have all along been highly critical of this concept); it is expected that readers will draw a clear distinction between the two.
- (c) Proto-language would have owed its early origins to the key drivers mentioned above all of which would have manifested themselves in most parts of the world.
- (d) All other theories and hypothesis discussed as a part of this paper or proposed by any scholar would be subservient to these four key drivers
- (e) Among all other theories and hypothesis, we pick the Bow-wow theory, the Pooh-pooh theory and the Eureka theory as the most plausible and accounting perhaps for the largest number of words.
- (f) We would like to categorize the evolution of Proto-language into distinct phases as stated below. Different parts of speech and figures of speech (wherever applicable) are associated with either of these phases. This classification is purely indicative, and may be subject to reinterpretation or reclassification by other scholars. Within each phase, we advocate no particular order for the emergence of parts or figures of speech.

In addition, we propose the following additional theories of origin of language, which we believe would have played a crucial role in the development of early proto-language. We also emphasize that language would have owed its origins not just to one source, but multiple sources including those we propose below, and others which were already discussed in this paper.

Theory of Vocal effectiveness and auditory emphasis

Vocal effectiveness and sound emphasis would also have been a primary consideration in the coinage of new words. In this case, more emphasis would have been placed on verbs (particularly some classes of verbs). This would have been followed by some categories of nouns, and then adjectives and adverbs. Thus, an emphasis would have been placed in most cases on the right syllables to produce a maximal and a satisfactory auditory and acoustic effect in line with the word's meaning, and taking into account the listener's perceived needs or reactions. This would account for some early word coinage, but such words have been overwritten at a later date with more complex words as per the 'Epochal Polygenesis approach'.

The Familial Initiation Theory

As per this theory, language would have been first invented in the narrow context of familial traditions and would have later spread through one or more other approaches. In this case, patriarchal or matriarchal traditions may have been strong, or conversely, the political structure of the clan or tribe may have been weak or non-existent.

Follow the leader theory or Big man Theory

In this case, words would have been words coined in a clan or group by a man possessing clout or inventiveness and the rest of the population would have followed suit. Words may have been coined using the 'Eureka' approach, or other approaches such as the 'Bow-wow' approach. Words invented through this approach would have been also overridden by more complex words at a later date as per our 'Epochal Polygenesis approach'. Our approach therefore proposes repeated overrides of words and grammatical concepts at various points in time in the pre-historical, proto-historical and historical periods. Words coinage through the 'Eureka' approach may have consciously avoided the use of

onomatopoeia, as it would have required a crucial seal of authority or approval, and may have had to demonstrate or exhibit genius to the laity as well. Words invented through this approach necessarily had to be different from the words in common use at the time, and would have had to eschew onomatopoeic crudity and be representative of sophistication and erudition.

'Show off before the big man' Theory

As per this hypothesis, language would have arisen from less influential families in a clan or tribe to imitate more influential families, show off in front of them, earn their respect or win favours from them by any other means. Thus, less influential families would have acquired language to prove their mettle. This would have produced more complex scenarios in the real world, as less influential individuals would have made constant effort to bridge gaps in proficiency. This would have been one of the key drivers in early spoken language acquisition.

'Follow thy neighbour' Theory

As per this hypothesis, language would have gradually spread from one family to another in a clan or tribe due to mutual contact. Language may have typically spread from one influential family to another influential family before spreading to less influential families in the clan or tribe. We may also refer to this as the 'Keep up with the Jonases' theory.

'More power to the big man' theory

According to this hypothesis, a key driver behind early attempts to standardize language would be the added power it bestowed upon leaders, and their ability to enforce their writ with relative ease. They would then have tried every trick in the book to standardize spoken language even in the pre-literate era often adopting innovative means such as contact with subsidiary or remote regions. This is an approach many leaders follow even today.

Clan contact Theory

As per this hypothesis, the idea of language was borrowed from other either friendly or antagonistic tribes and then modified to suit the tribe's own needs. The first key premise of this hypothesis is that the duration of contact with the other tribe would have been extremely limited, and that only the idea of speech could have been borrowed. Secondly, the requirements of each clan would have been different, and speech would have been modified to suit the clan's own needs. This would have ensured that early proto-languages would not have been uniform in a given region. However, standardization of speech would have taken place at a later point in time due to the factors discussed in this paper, as early proto-languages would have been constantly over-ridden.

Clan codification Theory

Clan codification leading to standardization of proto-language would have taken place at some time in the context of the clan of the early society in question and would have replaced even more primitive speech, but within a narrow geographical contact. This would be one of the earliest stages of replacement as per the 'Epochal polygenesis approach', but would have in turn been overridden at a later point in time.

The Logarithmic Spiral Theory

As per this theory, evolution would have been first triggered by either a linguistic or a non-linguistic factor (The earliest such factor would have been instinct-driven rather than non-instinct driven), which would have then induced augmented societal complexity. This would have further amplified the need for language. According to Frances D. Burton and Richard Wrangham, the discovery of fire a few million years ago was an important trigger in human evolution because it paved the way for other complex discoveries. It also had a far more profound effect than most would imagine not only because it chased away the darkness and dispelled the fear of wild animals and the forces of nature, but because it led to other discoveries such as cooking, which may have triggered the need for agriculture much later, and further complexity in society. This is just an isolated example, and many others will readily spring to mind; tool-making too would have made life infinitely more complex, as would have been the advent of

the Chalcolithic age.^{51 52} In this case, it would be necessary to arrange the factors in the current chronological sequence which would be: Development of speech organs followed by Development of primitive speech then followed by an increase in the complexity of society and later by new discoveries and the rapid communication of such discoveries to other societies. This in turn would have necessitated the invention of more complex language. This would naturally resemble an outward spiral. As necessity characteristically triggers and fosters creativity, language would have been adopted either through pull factors, push factors or subconscious adoption, or a combination of all these, and would have spread rapidly, literally like wildfire.

S.No	Phase	Parts of speech
1	Phase One	Basic interjections Onomatopoeia Basic concrete and non-abstract nouns (Common nouns and Proper nouns) Personal pronouns
2	Phase Two	Basic verbs Basic adjectives Other pronouns
3	Phase Three	Basic adverbs
4	Phase Four	Basic propositions

We would also like to classify the evolution of Proto-languages into four stages or phases as follows. These would typically be sequential, though not necessarily always so:

Proto-language Stage A: An early Proto-language in “finished” or “near-finished” form arising purely due to indigenous efforts.

Proto-language Stage B: A proto-language in “finished” or “near-finished” form arising due to influences from neighbouring regions.

Proto-language Stage C: A proto-language that exhibits some level of basic standardization over a wide geographical region. This would have happened due to a repeated spread of influences over a protracted span of time, in some cases lasting several hundred or a few thousand years. This would have also occurred due to spread of influences from major nodes to lesser nodes and then to other areas. In some cases, it would be wise to assume that intra-nodal exchange of information occurred to a fair degree. In other words, no node was dominant in the region.

Proto-language Stage D: A proto-language that has achieved hegemony in a geographical region and is slowly marginalizing other proto-languages in the region. In some cases, other proto-languages continue to flourish or thrive for some more time, and these eventually morph into linguistic isolates. Changes in all the four stages may be brought about either through a ‘Pull mode’ or a ‘Push mode’. In the case of the former, necessity and dire necessity would be the driving factors behind adoption. In the case of the latter, a ‘Push’ would not be possible without reciprocity, and here, societal needs, peer pressure or Societal pressure would be the key drivers behind adoption.

The development of proto-languages is also conditioned by the following factors. The presence of the factors would lead to linguistic boundaries or isoglosses. Similar factors would also lead to the emergence of dialect isoglosses.

- (a) Geographical features such as lakes, mountains, rivers, deserts or semi-arid land which prevented contact between regions.
- (b) Other factors not conducive for intra-regional contacts such as a preference given by residents of a region for trade with other regions due to geographical proximity with other regions.
- (c) “Weak signal”: Influence of a region is too weak on another region and influences are at best restricted to word borrowings or marginal or peripheral influences. A key inference from this is that early proto-languages may have been almost never been spoken over a wide geographical region.
- (d) Presence of quasi-political factors such as clans, confederates, patriarchies, skirmishes, feuds and altercations.

⁵¹ Fire: The spark that ignited human evolution Frances D. Burton University of New Mexico Press 2009

⁵² Catching fire: How cooking made us human Richard Wrangham Profile Books, 2009

- (e) Cultural factors (Non-linguistic) accounting for kinship and affinity or disdain, disregard or derision among clans.
- (f) Social factors such as the presence of disparate or distinct ethnic groups within a region constraining contacts.

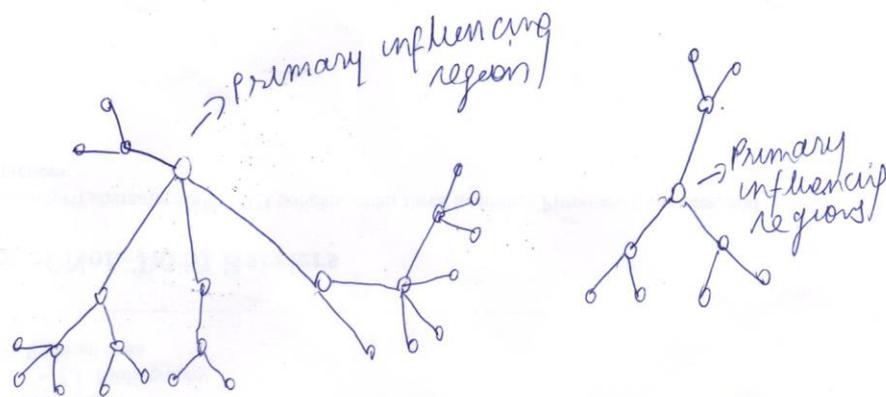
It would also be illuminating to trace the origin of modern languages back in time, always following region-specific methods and approaches, as far as data will allow for, and drawing reasonable inferences and speculations therefrom. The study of the emergence of language groups may also be an enriching and rewarding experience, and may throw up further vital clues on the origin of language. We hope that this will eventually be done for every language and dialect in the world, following the principles in this paper.

The 'Neural mode of transmission' of proto-language and linguistic features in the Pre-historic period

According to the 'Neural mode of transmission' which we propose features of proto-language would have spread from key nodes to lesser nodes, and then to neighbouring geographical regions. More remote regions would have been impacted at a much slower rate. The following are the key features of the approach.

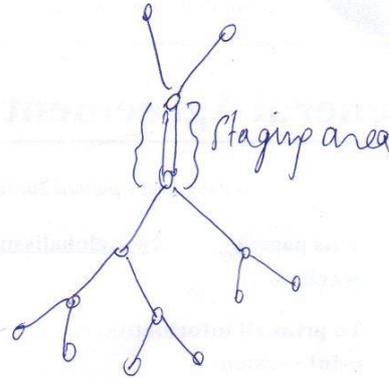
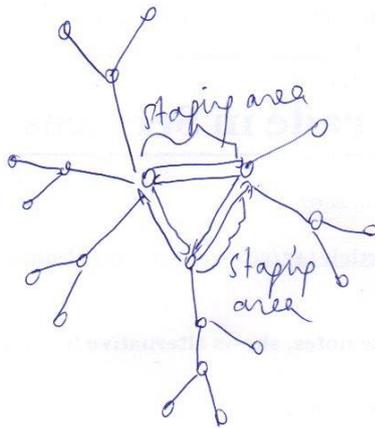
- (a) This type of transmission would have occurred from key nodes because they were more likely to have been hotbeds of early cultural and linguistic innovation, and their possible association with relatively more advanced technology than outlying regions. Such nodes may also have been located in strategic locations, and may have been anchors or some form of primitive pre-historic trade. Of course, there were no roads or digital highways in those days, but it is still very logical to assume, that there would have been key influencing regions, and this would have in many cases, been determined by the physical features of the region. Even if innovation had taken place in other regions, they may have been less influential.
- (b) In certain cases, it would be impossible to identify a key node, but two or three nodes may have cross-influenced each other first before the new proto-language spread to outlying regions. We may refer to this as a 'Staging area'.
- (c) Transmission would have occurred in multiple stages, and over a protracted span of time to lesser nodes and outlying regions.
- (d) Transmission would have been wholly random and sporadic observing or following no defined or observable pattern. Thus, some lesser nodes and outlying regions would have been impacted and been linguistically transformed at varying rates from the others, with far-reaching changes observed to large geographic segments only over an extended span of time.
- (e) Transmission would have been at irregular intervals and not at regular or predetermined intervals; an analogy may be drawn from Stephen Jay Gould's Theory of Punctuated Equilibrium' in evolutionary biology. Thus, there would have been rapid periods of linguistic evolution followed by periods of less accentuated or discernible change. Rapid periods of linguistic evolution would have been driven by social changes, cultural changes, technological changes, political innovation, increased complexity of society etc. On the other hand, periods of non-change would have been as a result of cultural stagnation, political isolation and an emphasis on tradition.
- (f) Changes would have been either through the 'Push mode' or the 'Pull mode', although in some cases one would be hard-pressed to draw a clear distinction between the two. The 'Push mode' would also imply some utility and reciprocity at the receiving end. A weaker version of the 'Pull mode' may be referred to as 'Subconscious adoption', where changes or innovations are subconsciously adopted, often due to prolonged exposure.
- (g) Changes here would have primarily been of three types. The first type of changes would be lexical and would include new vocabulary and expressions. These would be more likely to be through the 'Eureka' and conscious invention approach, and would have relied less heavily on onomatopoeia or methods such as the bow-wow method. These would have replaced earlier words in outlying regions over a period. This would have occurred primarily due to two reasons (a) Prestige associated with the new words and their perceived superiority (b) Practicality due to the applicability of words over a wide geographical region. The second stage would be a basic or a partial level of standardization in 'grammar' comprising syntax, verb inflection and conjugation besides some other parts of speech such as pronouns. Some level of Phonetic standardization would also have been observed as a result. We do not know if any countervailing forces in the form of ethnic pride existed but they have been minor for several reasons. Firstly, early societies of this nature may have practiced need-based innovation and

were probably not tradition-based given their absence of recorded tradition. Secondly, such societies perhaps imposed their writ only over a narrow geographical region, and were keen to borrow ideas and concepts from larger groups. Thirdly, such changes perhaps took place slowly thus eventually marginalizing all forms of resistance. A parallel would be the popularity of Thai food in Mexico and vice versa. Thai food may at first become popular with elites in Mexico City. It may then spread to upper middle class joints in the same city, before making inroads into smaller cities. Its spread into rural areas may be a long-drawn process, and it is highly unlikely that it will ever replace the local cuisine. If such a thing has to happen, it might literally take ages given the sophistication of Mexican cuisine and its association with local culture. There are many differences between food and language, but there are some parallels. That is why we believe that the evolution of spoken language was a slow process.



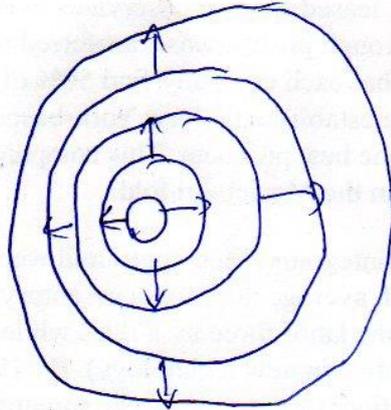
In the very early days, it is likely that the development of spoken language (or proto-language) took place autochthonously in several locations, but attributes of these proto-languages were gradually over-ridden by innovations in influencing regions. Such regions would have also been relatively more conducive for innovations.

In the very early days, it was quite likely that the development of spoken language was autochthonous to many different regions but key attributes of language eventually spread from key nodes, to lesser nodes, and then even smaller nodes, ultimately spreading to a given region in its entirety and replacing other minor proto-languages or endowing them with standardized features. Wherever, this process did not manifest itself to a significant degree, linguistic isolates would continue. This approach would explain the presence of language groups, languages, dialects and dialect continuums the way we know them today. This would be akin to the spread of cultural traits.



In an alternative scenario, proto-languages spoken in different nodes cross-influenced each other before spreading to other geographically more isolated regions levelling other proto-languages and dialects over a period in time. The combination of core nodes here would be known as a 'staging area'.

In an alternative scenario, spoken languages spoken in different influential nodes jointly known as a staging area, cross-influenced each other substantially before influencing proto-languages spoken in more isolated geographical regions and eventually levelling off differences to a significant degree. A combination of core nodes here would be known as a 'Staging area'



In yet another scenario, changes radiate or propagate from a core node to outlying regions concentrically until proto-languages or dialects in outlying regions are gradually killed off. However tempting this approach may be upon superficial examination, scholars may be hard-pressed to demonstrate real-world examples.

In yet another scenario, changes radiate or propagate from a core node to outlying regions concentrically until proto-languages or dialects in outlying regions are killed off. However, tempting this approach may be, scholars may be hard-pressed to demonstrate real-world examples.

The formation of Proto-language groups

As per our approach, proto-language groups (a somewhat ambiguous term) would be formed when defining features and characteristics are shared from one or more nodes, and often across nodes over time. This is also expected to be a gradual or a layered approach. Thus, proto-languages are formed as a result of the following factors:

- (a) Defining characteristics of grammar such as verb structure, verb conjugation patterns and inflectional characteristics are shared across proto-languages without levelling unique features of individual proto-languages.
- (b) Defining phonetic characteristics of languages are shared with each other over time.
- (c) Mutual sharing of new words particularly higher order words among languages.
- (d) Proto-language groups are formed when geographical distances are relatively large and the "Weak signal syndrome" manifests itself. Thus, borrowings are mostly limited to concepts only. Proto-language groups are also formed when borrowed features or requirements are not able to override local requirements or preferences.
- (e) Language groups are also formed due to what we call the 'Unequal development syndrome'. If at any given point in time, proto-languages in say, Region A and Region B are highly unequal in their development, Region B, if it is associated with the less developed proto-language, pulls words and grammatical concepts from Region A, while retaining its own unique features. This leads to the formation of language groups.
- (f) Language groups are also formed due to 'Geographical encirclement'; A language that may have evolved independently devoid of extrinsic influences, may have been impacted by more developed languages in its geographical vicinity at a later point in time due to geographical encirclement or geographical isolation to such a degree that it is mistaken for a member of the larger language groups or is undistinguishable from them in respect of most of its characteristics. For example, the Toda language may have once evolved independently, but is now considered by most linguists to be a part of the Dravidian language family.
- (g) Language groups are also formed due to political and quasi-political factors such as invasions, conquests, military hegemony etc. In such cases, changes to language take place rapidly but are unable to override local languages fully or completely.
- (h) Language groups may also be formed when two or more languages develop in a geographically isolated region.
- (i) Language groups may also be formed when two or more proto-languages influence each other early in their development.
- (j) In some cases, a language can split up from a parent language to form a new language. This clearly happened in the case of Malayalam, a Dravidian language. Malayalam earlier constituted the Manipravalam dialects of Tamil, an older Dravidian language, but has become a language in its own right since the 15th Century AD. Although both of them belong to the same language family, they are no longer the same language. The standard word for 'Dog' in Malayalam is 'Nai' which is the same as in Tamil. In the Kozhikode region however, another word 'Patti' is used, and in the Kodungallur region, 'Naipatti' is used. This is an example of how languages can split up and morph from one another.
- (k) Language groups may also be formed under special circumstances. For example, refer our acculturation model explaining the process of transformation of Harappan India to Post-Harappan India. One may want to use this model to trace the origin of the Marathi language, and its relationship with the Gujarathi and Oriya languages.
- (l) The formation of Language groups is expected to be a gradual or a 'stage by stage approach'. Linguistic evolution may also never take place at a constant rate, a similar analogy being 'The theory of Punctuated Equilibrium' in evolutionary biology. Thus, there would be period of rapid and immense change followed by periods of non-change. Changes are also expected to take place successively at irregular intervals, driven either by innovation in upstream locations or by an amplification of trade or cultural contacts during a period in question.
- (m) Changes may take place either through a 'Pull mode', a 'Push mode' or a 'Subconscious adoption', and may also have been associated with political power.
- (n) More causes are likely; for this globalization of science and intellectual awareness is multiple regions would be the key, and the involvement of researchers and investigators from diverse

cultural backgrounds would be the key; it will prevent narrow perspectives, unbridle a plethora of new opportunities and prevent not only monopoly and geographical concentration of endeavour, but also oligopsony which are twin and mutually interdependent evils.

The status of spoken language at the end of the Pre-historic period

- (a) We have every reason to believe based on fossil and other evidence that spoken language had evolved independently in many different parts of the world long before the end of the Chalcolithic age. Proto-languages would have initially evolved in narrow geographical contexts, and the number of such languages would have increased multifold in the early pre-historic period.
- (b) We have every reason to believe that language had attained a fair degree of grammaticalization at this point, and at least in some parts of the world;
- (c) We have every reason that language encapsulated some abstract ideas at this point and at least in some parts of the world.
- (d) We have a reason to adduce this based on our knowledge of proto-writing towards the end of the Pre-historic period. The Vinca symbols dated to around 6000 BC (These may never be deciphered in the traditional sense of the term) exhibit several properties which were way ahead of their time. Firstly they exhibit standardization over a fairly large area. Secondly, they were highly abstract. Thirdly, they appear to have demonstrated an early effort to combine two signs to create new complex meanings, though this property was still in its infancy. We also know that these symbols were purely non-linguistic and had no speech-encoding properties. However, these appear to have served as semi-formal mnemonic aids. However these demonstrate both abstraction and standardization, and as a crude rule of thumb, we may infer that innovation in spoken language predated innovation in proto-writing. Given the rather limited archaeological evidence, we have every reason to adduce that the development of proto-writing has begun sometime before this. This may be a crude and a defective analogy, but we have no other way of knowing for sure. The second reason we make this point rather emphatically is the rapid evolution of proto-writing to full blown logo-syllabic writing by 2800 BC and early alphabetic scripts (Proto-Sinaitic) by 2000 BC which would indirectly but rather strongly imply that spoken language would have reached some stability before this. Other discoveries include the Dispilio tablet dated to about 5000 BC and the Tartaria tablets dated to 5300 BC and these imply that the use of proto-writing was widespread in the Fifth and the Sixth Millennium BC.
- (e) We do not know yet, neither will we ever know what kinds of meaning these symbols conveyed, but even if we assume that abstract ideas were first conveyed through proto-writing, abstraction would have existed at least at this time. The importance of abstraction should not be underestimated, that would represent another great leap forward in linguistic evolution, and would in our view, be as important an innovation as writing. This may merit an altogether new sub-field of study, with new conjectures and hypothesis. We know that Sumerian was a highly developed language with a rich vocabulary and was also agglutinative in nature with a complex verb structure by 2500 BC, with literature such as the Epic of Gilgamesh dated to 2100 BC and the Instructions of Shuruppak dated to 2500 BC. Before 2800 BC, we have only proto-writing and not writing in the region, but the constraint here was the development of writing. Therefore, we have every reason to believe that Sumerian was syntactically and grammatically complex long before this, as can also be inferred from the general fact that linguistic evolution in the pre-historic world may have been slower than in the proto-historic and the historic periods. Sumerian was also reasonably standardized, despite the presence of dialects. The earliest Egyptian literature are the Pyramid texts and can be dated to 2400 BC, and these were followed by the Coffin texts of 2100 BC, and the later 'Book of the dead'. This is enough to deduce that complex and reasonably standardized forms of spoken language long pre-dated these texts.⁵³
- (f) Our approach for the multi-regional origin of languages would also be vindicated by the fact that Sumerian was a language isolate. Akkadian, on the other hand, despite its relative geographical proximity and its overlapping time frame, appears to have been an early form of a Semitic language as is also Eblaite. The earliest attested languages of Ancient Egypt, on the

⁵³ The Ancient Egyptian Pyramid Texts R.O Faulkner, 2007

other hand, are thought to belong to the somewhat imprecise Afro-Asiatic family. Even though the Afro-Asiatic family itself may be contestable as per our model, few would deny that it puts the hypothesis of recent African origins of humans in very serious doubt, and as such, we now even feel tempted to call Out-of-Africa hypothesis adherents their bluff. The recent African origin hypothesis also fails to satisfactorily account for linguistic isoglosses and linguistic isolates both of which will be abundantly clear from our approach; in many cases, 'special conditions' or 'special historical conditions' would apply, examples of these being the Indo-Europeanization of the world from a Central Asian homeland, the acculturation process accounting for the transformation of Harappan India to Post-Harappan India. All these are fairly complex scenarios, being region and time specific, and to reiterate there can be no substitute for a thorough knowledge of the period and region in question. Our approach would also be to aggregate scenarios from all over the world, always theorizing and conceptualizing better theoretical frameworks, and identifying core and universal concepts and outliers.^{54 55}



Examples of Vinca symbols which are believed to date to at least 6000 BC. We have every reason to believe, given the rather limited archaeological record at present, that the origin of proto-writing actually predates this. This can be used to draw inferences along with other fossil evidence, about the state of evolution of spoken language at that time.

Other inferences from the 'Theory of Epochal Polygenesis'

1. The outline proposed as a part of this hypothesis is expected to work in the widest variety of circumstances, and in any part of the world. However, minor modifications to this hypothesis will certainly be warranted on a case to case basis to suit unique, special and one-off situations which must be the focus of concentrated study. However, we believe these are unlikely to upset the overall principles of this approach.
2. This approach presumes that Homo Sapiens more or less evolved independently around the world (with minor exceptions that need to be proven either directly or indirectly) in a way that does not contradict the Darwinian principles of natural selection. This hypothesis is expected to have a bearing on future research on the early origins of language.
3. Consequently, we propose that language independently around the world and did not originate from a single source, and that no single theory can explain the origin of spoken language comprehensively. Language arose due to what we would like to call 'facilitated experimentation'. We also propose that spoken language arose at widely differing periods across the globe (This is a very reasonable hypothesis, but may never be proven), and similarly the state of evolution of spoken language would have varied widely from region to region at any given point in time. This naturally includes the present as well.
4. Therefore, while all languages in the world are reasonably complex, it would be fallacious to claim that that there are equally complex. While most languages in the world are grammatical, syntactically and inflectionally complex, other attributes of language such as richness of vocabulary, and the active or common vocabulary of native speakers of different languages

⁵⁴ Anthropology A. L. Kroeber Oxford and IBH Publishing Co 1967

⁵⁵ The Study of Society Blaine E. Mercer, Jules J. Wanderer Published by Wadsworth Publishing, 1970

vary very widely. Likewise, some languages may have naturally attained or demonstrated complexity much earlier than some others.

5. Resultantly the number of languages would have increased at first during the stone age, and would have then gradually declined as a result of contacts between various societies in the pre-historic period and the proto-historic period. The rate of decline of languages would have then have accelerated slowly owing to the factors discussed in this paper, and the rate of decline in the number of spoken would have further increased in the historical period, the modern period and the post-globalized period. The decline in the number of language is expected to increase in the Twenty-first century, but will eventually level off due to the limitations of the 'Theory of Linguistic Osmosis'.
6. This paper proposes that different hypothesis such as the Bow-wow theory and a combination of them would have played a role in the formation of language, with some hypotheses being more likely than the other. However, the role played by each of these hypotheses would vary widely from epoch to epoch.
7. Word coinage during an epoch would have been replaced (in many cases not just once, but perhaps repeatedly) in an overwhelming majority of cases at a later stage in the same epoch, or in later epochs, and modern language was formed as a result of polygenesis.
8. This approach also advocates constant refinement by analyzing scenarios from all over the world; this approach is emphatic in stating that the probability that any two scenarios would be alike is extremely low; Therefore, this approach proposes constant refinement of models through analysis of scenarios and case studies, and garnering data from such studies.
9. Language is a purely cultural construct; it is not in any way influenced by 'race', and the idea of race is itself very fuzzy and imprecise, if not outright erroneous and misleading.

The Proto-historic period

The Proto-historic period would have been marked by larger clans, social groups and the rise of confederates and the earliest proto-kingdoms with a quasi-political structure. These would have culminated in even larger kingdoms such as proto-dynastic Egypt before morphing into full-blown civilizations. This process would have accelerated the standardization of language across larger and larger geographical territory. The languages spoken in key and other nodes would have continued to influence and override proto-languages spoken in more isolated regions. This epoch would have been characterized by innovations in transportation technology such as the invention of the wheel from after 6000 BC, horse-riding in Central Asia probably near the Dnieper River in present-day Ukraine after 4000 BC and the invention of the bullock cart either in Mesopotamia or other locations such as the Maykop culture in Southern Russia or elsewhere around 3500 BC and its subsequent adoption in the Indus Valley and other regions. Another innovation would have been proto-writing both in Southern Europe and the Middle East, though its use may have been somewhat limited, and may not have influenced spoken language significantly. The spread of agriculture during the Neolithic period in the Levant or the Eastern Mediterranean, and followed by China and India would have further stimulated economic activity and would have undoubtedly been a harbinger of greater innovation and complexity in spoken language collimating grammatical concepts and "Universal grammar".

Interestingly, many core concepts of grammar would have been similar regardless of their geographical origins, and this may bear testimony to their logical underpinnings. It may have also triggered the need for proto-writing (which saw greater abstraction and a combination of signs to convey more complex meanings during this period), and eventually would have led to full-fledged literacy. This epoch would have seen greater grammatical, syntactical and inflectional complexity as well as a rapid increase in vocabulary and standardization. Another factor that has been given the short shrift was the possible emergence of oral traditions at a very early date, possibly as early as the Palaeolithic age in Mesopotamia, Egypt, China, India (Vedic, Jain and Buddhist religions have had a strong tradition of oral transmission in spite of the existence of a rather limited literacy in the region, and this included not just religious literature, but complex medical texts such as Sushruta Samhita), South America and elsewhere. These are not just a reasonable, but a very strong possibility and may have been driven by the desire to transmit folklore and traditions. It is also likely that oral traditions pre-dated the historical period. Parallels in English literature exist in the form of Caedmon's hymn and the later Beowulf.

The Historic Period

The historic period would have borne witness to the culmination of trends first observed in the proto-historic period. Full-fledged writing or true writing emerged in this period, and as early as in the middle of the Third millennium BC, though the use of acrophony, the Rebus principle and determinatives. A key and a distinct feature of the historic period would have been the ever-increasing role played by political factors in modulating the role of language and setting the direction for its future evolution. This would have been the forerunner of changes brought about through Intellectual enlightenment, artificial regulation of languages, or further changes brought about through universal literacy such as 'plebianization'. These would not have however, not been possible during much of the historical period, owing to low levels of literacy. Most early literature in Egypt and Mesopotamia was driven by royal diktat or decree and not through the creative urges of common man; The Indus valley civilization stuck out like a sore thumb, and deserves to be studied in an altogether different light. Even though the Indus script may have been fully logo-syllabic, it may have lagged considerably behind its contemporaries in the production of a corpus of literature except administrative records, given the absence of kingly patronage.

Another unique feature of this epoch would be the non-permeation of literary or liturgical languages in the popular context due to its association with religious and ecclesiastic tradition in particular, and with tradition in general. An example of this was Vedic Sanskrit, which may never have been in use as a widely language at any point in its history. In some other cases, the popular usage of a language may have diverged from its literary form to result in diaglossia.

Also, the vocabulary of spoken languages would have been rather limited in comparison with its written variants due to non-universalization of literacy. This observation holds good for most Indian languages as well. We propose to call this 'Dialexia'. (To put it simply, dialexia would refer to a situation where the vocabulary in widespread use is small even though the total vocabulary of the language is relatively large). This may sound like a bagatelle, but it can throw up crucial clues on the origin of languages when studied in combination with several other factors. Some scenarios would be a low active vocabulary and a low total vocabulary resulting in no dialexia at all, a low active vocabulary and a moderate total vocabulary, a moderate active vocabulary and a high total vocabulary. It would be instructive to carry of a root cause analysis of each of these scenarios, and for each language.

Another feature of this epoch would have been the continuation of geographical and social dialects, also known as sociolects or ethnolects, due to limited literacy and the possible sanctity of formal language. Standardization of language would have undoubtedly progressed throughout this epoch, but would have been limited by the factors specified above.

The case of Telugu, the Dravidian language with the maximum number of speakers is extremely interesting indeed. This language did not break out into a literary language until the Seventh Century after the Christian era, even though Iravatham Mahadevan predicts that older literature existed. The earliest relic of the Telugu language is in the Kalamalla inscription of 575 AD. The language is however indirectly attested from Maharashtri Prakrit records in the Second Century BC in the Shatavahana Kingdom which flourished in the Krishna Godavari basin, and one of the oldest literary anthologies in India, Hala's Satta Sai was compiled in Maharashtri Prakrit language in the region. In this context, Maharashtri Prakrit appears to have been borrowed from North India for epigraphic and administrative needs, while the common man's language was either an ancestor of Telugu, or an early form of Telugu. The Bhattiprolu inscription of Guntur district in Andhra Pradesh is dated to 200 BC, but is not in Telugu. Telugu was heavily influenced by Prakrits and Sanskrit in parallel, but these languages appear to have impacted Telugu from above, and the impact in rural areas appear to have been marginal. Furthermore, the impact of Prakrits and Sanskrit on Dravidian languages could not have begun earlier than 600 BC, while early dialects and ancestors of present-day Dravidian languages would have pre-dated them by tens of thousands of years, perhaps much, much more.

On the other hand, the earliest inscription in Kannada is the Halmidi inscription of 450 AD. It has also been recently suggested that an Asokan rock edict found in Brahmagiri in Karnataka dated to 230 BC contains some Kannada words. Among all the Dravidian languages, Tamil was the first to break out into a literary language even before 200 BC. A careful comparison of all this data, and its critical examination along with historical factors would appear to endorse our approach on the origin

of language and should eliminate ethnic rivalries of various kinds besides opening up new avenues for study. The evolution of these languages was therefore, clearly a protracted and a long-drawn process.

The Later Telugu kingdoms of the Andhra, Telangana and Rayalaseema regions included the Kakatiya dynasty of the 13th Century AD, and the Vijayanagara Empire of the 14th and the 15th century AD. In spite of its long history, all Telugu-speaking regions were never united except for a brief period between 1956 AD and 2014 AD. The Telugu-speaking regions are also spread over a large area with extreme ends separated from each other by over a thousand kilometres of territory, and resultantly, dialects have not been snuffed out yet. Dialect levelling has been accomplished only partly in urban regions, while this process appears to be in an early stage in rural regions. The Telugu spoken in extremely isolated regions is barely intelligible to urban speakers, and often appears crude and unsophisticated, although it is essentially the same language. Social dialects also exist in Telugu owing to the geographical isolation of some of its rural areas, and the prevalence of a caste system and other social ills particularly in rural areas. Literacy in Telugu-speaking regions has increased rapidly only since the 1980's, and most parents today prefer English schools. The results of this are very interesting, indeed. Speakers in most rural regions, especially amongst the lower strata of society exhibit a rather limited vocabulary, not exceeded a few thousand very basic words. This is in spite of the fact that Telugu is a much more evolved and a complex language, and has borrowed heavily from the Prakrits and Sanskrit. Advanced vocabulary has clearly not yet percolated into daily, regular use, and there are some indications that it never will. Many native speakers prefer the use of English words (In spite of the fact that most cannot speak English competently or comfortably) despite the existence of Telugu equivalents. This has led to what one may refer to as 'Hybrid language'. Telugu grammar and sentence construction are the norm, even though they are liberally peppered with English words and phrases. In modern Telugu, the English words 'wait', 'problem' and even 'red', 'blue' and 'green' are often used more frequently than their Telugu equivalents, of late even in rural contexts, and often by speakers possessing a rudimentary knowledge of English. This may be because native Telugu speakers may be more comfortable with Telugu syntax, and yet English words carry more prestige, are sometimes simpler, and possess more universal applicability. Even a Telugu speaker with practically no English knowledge typically possesses a knowledge of a few thousand English words, and may even be clueless as to the origin of these words. In Hyderabad city, Telugu has borrowed liberally not only from English but from Hindi and Urdu as well. We categorize this as an example of subconscious change, and one that is driven by popular demand. We do not know, if ever, these changes will be formalized or regularized. We also do not know if the process of dialect levelling will ever be complete. The situation has become more complex and interesting since 2014, with the formation of the Telangana state, which speaks its own dialect of Telugu.

Another interesting fact is the Chenchu language of Andhra Pradesh and Telangana states which is spoken by no more than 30,000 people, mostly tribes. The speakers of this Dravidian language live in isolated regions and some are not in regular contact with speakers of Telugu. Likewise, the Toda, the Badaga, the Irula and the Kurumba languages of Tamilnadu, though Dravidian, are distinct, and some of these are related to old Kannada. Had it not been for the cultural and social divides between speakers of these languages and Telugu and Tamil speakers, these languages may have been annihilated a long time ago. The Kumaoni and the Garhwali languages both of which are Pahadi languages, are spoken by over a million people each. These are being overridden by Hindi, and are being slowly marginalized. It is even doubtful if they will survive the present century.

The Munda family of languages refers to a group of languages spoken in Central India. The Munda group of languages of the Austroasiatic family is spoken by so-called 'tribals' in central and eastern India. They are classified into North and South Munda. The Munda group of languages consists of languages such as Sora, Ho, Gorum, Gta, Gutob, Remo, Kharia, Juang, Bhumij, Asuro, Korwa and Kurku, but Santhali is the most widely spoken. They are the least well-known and most poorly documented languages of the Indian subcontinent, and the history of the evolution of these languages is notoriously unreliable despite the fact that some work has been done by Norman Zide, Heinz Jürgen Pinnow, Peter W Schmidt, Michael C. Shapiro, Harold F. Schiffman, Jeremy H. C. S. Davidson and many others. It is thought that these languages are in some way related to Khymer and Vietnamese. To understand the evolution of this group of languages, and its interrelationship with other languages in the region, a thorough knowledge of the local history or histories, and the

formulation of historical modes using multi-disciplinary approaches is of great importance. This is what we have attempted to do.^{56 57 58}

South Asia has two major language isolates i.e. Nihali and Burusharski. Nihali is spoken in Madhya Pradesh and Maharashtra in Nimar and Buldhana districts, is threatened and contains many words which do not exist in any other language. It contains many words that belong to the “Indo-Aryan family of languages”, and some Dravidian words. (Read our acculturation model to find out why this may have been so. It also reinforces our model on the origin of languages). It also appears to be related to the Korku language. Burusharski is another linguistic isolate spoken in the Gilgit-Baltistan region in the northernmost tip of Pakistan. A large number of linguistic isolates exist in Papua New Guinea due to the geographical and cultural isolation of many of its tribes. It appears logical and plausible that many such linguistic isolates existed in different parts of the world barely a few centuries ago, but did not survive till the present day. A thorough study of such languages to the extent data will allow may validate our model. The indigenous languages of North America, many of which are extinct, moribund or endangered, are very large in number, possibly due to the limited contact between speakers of many of these languages. Many of these are isolates, and many are unclassified. A proposal has been made to classify all these languages into broad families such as Eskimo-Aleut, Na-dene and Amerind. Proponents of this approach may be skating on thin ice because these classifications may correspond to a geographical distribution of features. What is likely is that language development was largely an indigenous effort in many different regions, occurring at different points in time, and full-blown languages evolved in the manner explained in this paper. What is also obvious, in the case of North American Indian languages, is that this process culminated in a rather abrupt end.

A dialect may be defined as a form of language which may be unique to a geography or to a social group, and are typically sub-ordinated to the main language in question. Dialects are typically mutually intelligible, although this is not always the case. Dialects also sometimes form continuums, and dialects that are geographically close to each other may often be closely related to each other. Dialectology may be defined as a formal study of dialects, and is a branch of sociolinguistics. Dialectology has attracted the attention of many scholars in the recent past, such as Peter Trudgill and William Labov. Surveys of dialects have often been carried out in the past, such as a formal survey of the dialects in the English language in the 1960's. A grammatical codification of dialects has been attempted in the past, but the field is still nascent. Dialect levelling refers to the process by which variations between dialects disappear over a period in time usually, though not always merging into the standard form of the language. Dialect levelling happens due to a universalization of education, movement of people from one region to another, urbanization, effect of the popular media, ability to differentiate between standard and non-standard forms of speech and gentrification of neighborhoods. Opposing factors include social stratification, geographical separation of speakers, and the desire to boost ethnic pride. Dialects are classified into geographical dialects and social dialects. Social dialects are also known as sociolects. Social dialects may be classified into three types, namely acrolects, mesolects and basilects. In the descending order of prestige. Speech habits unique to a person are referred to as idiolects. An example of a social dialect may be Ebonics or African American vernacular English, which some exponents claim is an independent language.

Dialect levelling may be categorized into the following types:

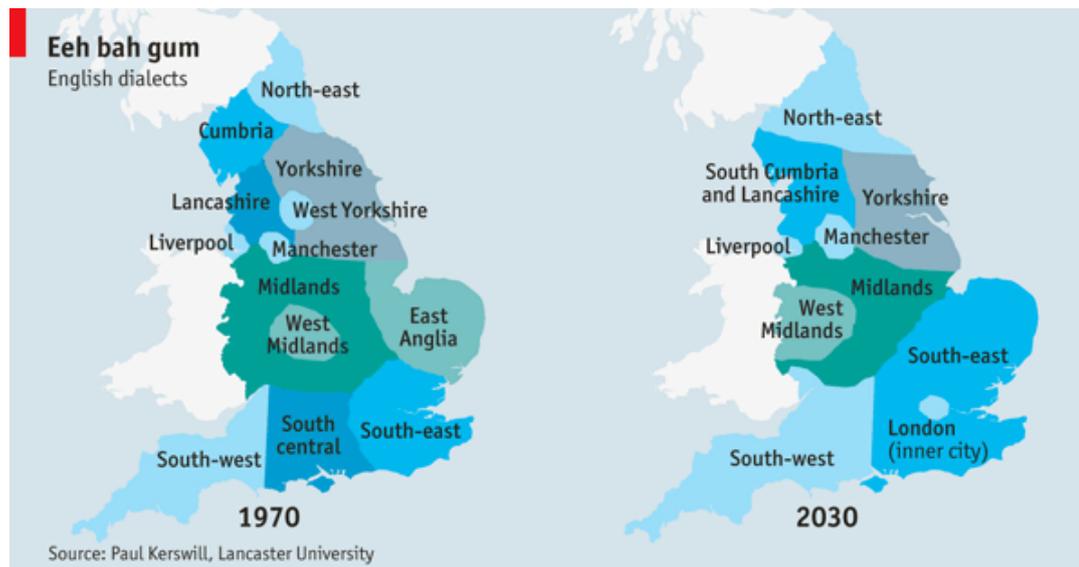
- (a) Replacement of dialects by the dialect spoken in one region i.e. from one node to lesser nodes, and then to outlying regions. This is often referred to ‘Geographical diffusion’. This typically happened in England, where the dialect spoken in the London area i.e. Cockney, overrode most other dialects in England and some Scottish dialects. In spite of this many dialects such

⁵⁶ Syncretism and Acculturation in Ancient India: A new Nine phase acculturation model explaining the process of transfer of power from the Harappans to the Indo-Aryans Part One Sujay Rao Mandavilli ICFAI University Press January 2009

⁵⁷ Syncretism and Acculturation in Ancient India: A new Nine phase acculturation model explaining the process of transfer of power from the Harappans to the Indo-Aryans Part Two Sujay Rao Mandavilli ICFAI University Press January 2010

⁵⁸ The Demise of the Dravidian, Vedic and Paramunda Indus myths Sujay Rao Mandavilli 2013

as Cheshire, Cumbrian, various Lancashire dialects, Northumbrian Highland English and Yorkshire have continued to thrive, even though there is some assimilation.



Map showing anticipated dialect shifts in the English language (Source: Paul Kerswill, Lancaster University)

- (b) A much more limited form of levelling where dialects are levelled within a limited geographical region, known as 'diffusion'.
- (c) Cross-influences between two or more dialects spoken in different nodes or regions which then spread to other regions. This happens due to 'mutual accommodation' or the inability of one region to exert an influence over other regions. (Trudgill 1986: 1-4). A parallel in Cultural Anthropology is 'Cultural Synchronization'.
- (d) Part-replacement of dialects by the dialect spoken in one region (Some regional features continue to be used). This has been observed in the case of Britain, and it is unlikely in a majority of situations that dialectal differences will vanish entirely due to the factors discussed in the paper
- (e) Spread of the sphere of influence of one or more dialects in a concentric fashion. This will happen slowly, and over a period in time. It is unlikely that dialect levelling takes place in such a linear or a systematic fashion, and scholars may be hard-pressed to demonstrate real-world examples.
- (f) Parallel use of dialects: both the standard language and dialects continue to be used alongside each other as in the case of France. In France, languages such as Picard, Limousin, Provençal, Gascon and Aranese are similar to French but may be independent languages. These are thriving in spite of the dominance of standard French. In addition, many French-based creoles are also used in former French territories. Arabic, similarly is spoken over a very wide geographical region comprising most of the Arabian Peninsula and North Africa and comprises many dialects classified into dialect groups such as Egyptian Arabic, Cypriote Arabic, North African Arabic, Iraqi Arabic, Gulf Arabic and Hassaniya Arabic. In addition Standard Arabic or Literary Arabic is widely used across all Arabic-speaking regions in formal contexts.
- (g) Dialects evolve into two or more different languages: An example of this is the dialect continuum seen of the Dutch-German border. Many of these dialects are now disappearing, and are being absorbed into either Dutch or German, depending on their geographical proximity.
- (h) Diaglossia: the standard languages are used in formal contexts and one or more dialects continue to be used informally. In some cases, widespread differences between dialects may not exist, yet the informal variety differs widely from the formal variety. Examples of diaglossic languages as Arabic and Tamil. Diaglossia may arise due to many reasons, but a common explanation is a rapid change in colloquial forms of a language with slower innovation in formal language. Another reason may be the institution of one variety of a spoken language as the formal language and its reinforcement through tradition.

- (i) Widespread prevalence of two or more varieties of a language as in the case of English. In such a case American and British English may continue to exist alongside each other with minimal cross-influence and little chance of convergence.
- (h) The elimination of social dialects due to the universality of education and plebianization. (Social diffusion) In this scenario, the elites move up the socio-economic ladder, bring about a linguistic change in society, and provide some kind of a feedback to the rest of the population. They may either provide a model for the rest of the world to emulate or keep the rest of the population out of the economic equation through elitism. This kind of an action may often result in the elimination of basilects or the enrichment of vocabulary. Social dialects would also tend to weaken with the passage of time. This can happen through several modes. In the first case, the lower classes tend to interact with the upper classes (Interaction). In the second case, the lower classes tend to emulate the upper classes. (Emulation and Conscious adoption). In the third case, social dialects are levelled due better education, or the spread of technology (Empowerment). In the fourth case, social dialects weaken through economic ascendancy (Economic Ascendancy). In the fifth case, social dialects are levelled due to geographical movements of its speakers (Geographical Dispersion). All other factors may be lumped together as residual factors (E.g. Mass media).
- (j) The emergence of Pluricentric or Polycentric languages such as Hindi and Urdu or West-Armenian and East-Armenian is another scenario. In such a case, there are two or more standard versions which are unlikely to encroach on each other. Hindi and Urdu and mutually intelligible to each other's speakers. However, they follow a different script. Some researchers claim that Arabic is pluricentric as well. In Yugoslavia, many languages are spoken. These are Serbo-Croatian, Slovenian, Macedonian, Albanian, Hungarian, Turkish, Bulgarian, Romanian etc. Out of these, linguists opine that Serbo-Croatian is not one language, but two and the usage and preferences for words vary in each of these languages.
- (k) Reversal of dialect levelling due to ethnogenesis takes place when speakers of a dialect demonstrate heightened ethnic awareness. This may result in the dialect diverging from other standard varieties of the language and the manifestation of centrifugal tendencies. Another related concept is the emergence of new dialects which may take place due to geographical separation and social stratification. Bhojpuri has seen a revival in recent times in India, and is now associated with a vibrant entertainment industry, and its speakers have now begun to demand official recognition by the government of India. Spanish in Paraguay is estimated to be spoken by only seven percent of the population as a native language. It is known to a larger percentage of the population in the country, however. Guarani is the mother tongue of ninety percent of the population, and a large percentage of the population is bilingual, with Spanish only more popular in cities and in formal usage. Although education has been traditionally in Spanish, the trend is now changing, and education is now being made available in Guarani as well. The Jivaros or Shuars of Ecuador have succeeded in implementing their language in education, and Spanish is only taught in addition to the local language. Likewise, Swahili, unlike other languages native to the region, has made some progress in checking the spread of English in Tanzania, and Bambara, has made some progress in challenging the power of French in Mali. This is in contrast to countries like Zambia where English reigns supreme, but has led to a cultural alienation between the privileged speakers of English and the rest of the population. Ngugi wa Thiong'o likewise blames English for creating a gap between the haves and the have-nots in Kenya (Ngugi 1981).

In all such cases, we reaffirm that a root case analysis be carried out, and these may throw insights that will help analyse scenarios from other related contexts and help draw parallels for a more detailed study.

Historical Period

The historical period is chiefly remembered not just for its expansion of political power and rise of larger kingdoms and civilizations, but also for the rise of intellectual traditions in many parts of the world. These were often not driven by political writ, but by the aristocracy, the elite and independent scholars. Among the early civilizations, none probably matched the intellectual achievements of Greece, and Greek philosophers included Plato, Aristotle, Herodotus, Pythagoras and Herodotus. The Greeks made stellar contributions to philosophy, art, architecture, astronomy, mathematics, historiography, linguistics and literature, and their contributions were not matched even by the Romans.

The renaissance which began in the 14th Century in Europe, was triggered by the invention of the printing press and the rediscovery of Greek philosophy. It saw stalwarts such as Michelangelo,

Leonardo da Vinci, Mirandola, Lorenzo Valla and Machiavelli. The fall of Constantinople in 1453 also boosted the renaissance movement as many intellectuals fled the region to the West. There was an explosion of scientific knowledge around this time, and Tycho Brahe, Nicholas Copernicus, Johannes Kepler and Galileo lived in this era.

The increasing number of scientific terminologies that were coined during this era, the spread of the printed word and the end of feudalism would have greatly impacted the development of important European languages, but a systematic study of lexical borrowings and new word coinage studied against the backdrop of the changes in this period may be required. Even though we know that many words were introduced into the English language during this period (The number of words in the English language is said to have doubled between 1500 and 1650 AD), the earliest dictionaries such as those compiled by Robert Cawdrey, Thomas Blount, Thomas Elyot Knight and Edward Phillips contain only a partial compilation of words. Of these, the work by Edward Phillips may have been the most comprehensive, containing 11,000 words in 1656, 17,000 words by 1696, and 38,000 words by 1706 (This is on par with many modern languages).

The standardization of the English language also appears to have begun in the 1500's and phonetic changes known as the 'Great vowel shift' took place at this time. The English version of the Bible contains around 7,200 words, Shakespeare is said to have used around 22,000 words, and Milton 17,000. Today, the English language has over a million words (1.025 million, according to one count). On the other hand, even the most optimistic surveys conducted a few decades earlier, place the count at 700,000 to 800,000. The Oxford dictionary however, lists some 250,000 distinct words excluding technical words and newly coined words. The English language probably has more words than any other language on the planet, as a result of its readiness to borrow, and as a result of the fact that many major scientific contributions were made by English-speaking countries. English also became a global lingua franca to boot, and is understood in most parts of the world. Most other major modern languages like French and German boast a large number of words too, though nowhere near English.

Some measures to measure linguistic complexity have been proposed, but there is no consensus on the efficacy of these measures. Thus, modern languages. The growth and development of the English language were never artificially regulated by any entity, and this should validate our approach to linguistic evolution. On the other hand, L'academie francaise has attempted to regulate the development of the French language and counter the infiltration of English words into the French language. The fact that such bodies were supported by many governments shows that language is still seen as a source of political power and cultural hegemony.

A study of complex factors leading to the emergence of modern languages must be carried out wherever required, in collocation with historical factors, and in general one must be prepared to deal with a fair degree of complexity where such complexity appears warranted. An example was the spread of a component of Base Indo-European into the Vedic homeland in the northernmost tip of India and its subsequent spread into the Gangetic plains. This language absorbed influences of remote ancestors of the Prakrit languages as well as influences of the ancestors of the present-day Munda family of languages, before dousing itself out, and reinventing itself as a liturgical language and a lingua franca of the elite. The remote ancestors of Prakrits, spoken in the Indus Valley Civilization, morphed into the early Prakrits of the Gangetic plains, and were subjected to a large number of changes from sources both internal and external to the region before developing into modern languages of the Gangetic plains. Similarly, there is every reason to suppose that the Genetic input from North India to Sri Lanka would have been extremely small, and instead of proposing massive migrations (This would any way be unfeasible), we will need to strike a fine and a delicate balance between data drawn from myriad and opposing forces. This data will then need to be used to reconstruct the proto-history and history of the Sinhala language, the seed of which was clearly implanted from outside. Therefore, this is a migration-induced scenario.

The origin of Tamil is likewise complex in its own unique way, and though a Dravidian language, borrowed liberally (Though not as liberally as Telugu) from Prakrits and Sanskrit. The evidence for this comes from the description of such words as alien in the ancient Tamil treatise on grammar, Tholkappiyam. Likewise, history of writing is likely to be at variance with the history of spoken language in an overwhelming majority of scenarios and circumstances, and we have demonstrated this convincingly in our previous papers. Another point to be borne in mind is that the historical period would be associated with the heavy borrowing of vocabulary including those that are not in daily or regular use. An example of this is the borrowing of words from Latin, French and German into English and from Prakrits and Sanskrit into Telugu, Kannada and Tamil. These are some of the critical takeaways from

our approach, and aspects that must be kept in mind under all circumstances and will constitute the key swivel around which all analysis must be orchestrated and coordinated.

Modern Pre-globalized period

The modern Pre-globalized period, which lasted till around 1990, coinciding with the collapse of the Soviet Union and the end of the pre-internet age similarly saw many changes to language. The age of discovery from the 1490's saw overseas exploration on an unprecedented scale, and led to the discovery of the Americas. The USA would later become a major economic power, and this would later lead to a paradigm shift in economic power and play a role in ushering in liberalization. The Industrial Revolution refers to the introduction of several new technologies and manufacturing processes from around 1750 AD to 1840 AD. This included a replacement of manual methods of production by machines, new chemical manufacturing and metal production processes, new techniques to harness water power, the introduction of steam power, the introduction of machine tools and large-scale industrialization including the rise and diversification of the textile industry. The industrial revolution first began in England and spread elsewhere. The Industrial Revolution marked a major turning point in history; and every aspect of daily life of the people was radically transformed. This also led to a general increase in the standard of living for large sections of society, and for all but the most deprived people. Income levels began to exhibit unprecedented growth and population also increased due to a fall in the death rate and increased standard of living.

The Second Industrial revolution which began in the 1870's lasted well into the 20th Century, though it is usually dated till 1914. The Second Industrial revolution led to the expansion of several new technologies such as the railroad and the telegraph, and ushered in the electric and the automotive age. The rise of colonialism, despite its association with economic exploitation, led to the spread of the English and French language in many parts of the world, and led to a spread of Western technologies in many parts of the world. This sowed the seeds for the emergence of global languages, and our 'Theory of linguistic Osmosis' would not have been possible without this. The English language also borrowed liberally from many languages around the world, including less important ones, and this includes interesting borrowings from across India such as 'Jungle' from Hindi, 'Mango' from Tamil, 'Catamaran' from Malayalam and 'Bandicoot' from Telugu. The vocabulary of major languages like English increased exponentially during these period, and many new words were purely technical in nature. Many words were also as a result of intellectual traditions and the exponential increase in scientific knowledge. Many words were also coined by thinkers, writers and intellectuals or were subject-specific jargon. This epoch also witnessed the spread of universal literacy in many parts of the world, and most developed countries made school attendance mandatory. This would have naturally led to a rapid increase in active vocabulary in language.

We may also choose to categorize the causes for transformation in languages, into ones that form a part of the general principles of the 'Epochal Polygenesis approach', and ones that must be analysed taking historical, geographical, cultural, social, economic and political factors into account. A study of language must be logically and inseparably tied to all these factors. We would like to reiterate that there is simply no other way. Neglecting this vital fact would not only be doing a grave injustice to the field, but would also lead to a flawed and erroneous analysis on all counts. This is one very core reflection from our inquiry into the subject. Likewise, simplistic and politically-correct notions of the equality of languages as proposed by Charles Hockett, Rulon Wells and others need to be analysed critically from a Twenty-first century standpoint. The rate of evolution of various languages diverged rather widely during this epoch.

The Post-Globalized era

While some researchers such as Andre Gunder Frank consider globalization to have been a slow process that was first put in motion by the emergence of Old Civilizations (This is known as a Deep historical analysis of globalization or simply Archaic globalization), most other scholars trace globalization in its present form to the past couple of decades or so and widespread use of the term 'globalization' dates to as recently as the 1970's. Modern globalization emerged as a result of several factors which emerged at more or less the same time. One of them is the wholly unanticipated and sequential collapse of the communist regimes in Eastern Europe followed by the collapse of the USSR. The second was the easing of autarchic measures in countries like China and India, which led to their rapid integration into the world economy. The third was the dawn of the internet age, due to the ubiquity

of the internet, arguably the most important invention of the second half of the Twentieth Century. This led to the technological, cultural, economic and social integration of world economies on a scale that was considered unimaginable just a few decades earlier.

Globalization also led to the spread of English worldwide, and the cultural, political, economic and technological clout that the English language enjoys worldwide is unparalleled by any other language. English also has become the most widely used language on the internet, in science and technology, in commerce and business as well, and increasingly even in diplomacy. This is not to say English has a complete monopoly or stranglehold worldwide. English has made little headway in penetrating certain Non-English bastions, and the use of English in China, other parts of Asia, parts of Europe and South America is rather limited. The spread of English has been unprecedented and unparalleled in recent times, but it would be foolish to assume that this would be the case forever, and the concepts in this paper should be instrumental in proposing and evaluating scenarios. While the French language was seen in deep and terminal decline around the world, pundits are predicting a small reversal as of the 2010's. Spanish, Chinese and Arabic too, are making strong cases for themselves as global languages. English, which once borrowed amply from a plethora of different and unrelated languages, has now become the biggest donor of words to other languages such as German, French and Spanish. Many of these words, including technical words and non-technical words have permeated into other languages, and yet there is a yawning lexical gap between English and other languages.

What is even more interesting is how languages have spread in the complete absence of contacts between speakers of different languages. The British had sowed the seeds for the English language in India a few centuries ago, and the language had only spread rapidly since the Nineteenth century, entrenching itself gradually in administration, trade, commerce, higher education and technology. Its stranglehold in many realms is near-complete, even though fluent speakers of English only form a small proportion of the population. It is possible for an English speaker in India to speak English fluently without ever having come into contact with a native English speaker. Contrarily, for most other citizens of India, English is quite literally, Greek and Latin, and English has also become a discriminator between the elites and the non-elites. English plays a complementary role in India vis-a-vis other Indian languages, and can never supplant them. Similar situations prevail in most parts of Africa, where English or French are lingua francas of the elite, and are widely used for administrative purposes. In the Post-globalized world, we believe that non-contact based scenarios would have a much greater role to play than contact-driven scenarios. This kind of a scenario is relatively new and unique to the modern world, and would have been unthinkable when modern communication systems and the mass media did not exist. However, the role of contact-driven scenarios should not be undermined (as these can never be eliminated), and this would ensure the continuing role for minor and other indigenous languages.

There would be many factors opposing the globalization of languages and the decimation of minor languages by major languages. These would be not just factors working against globalization, but also factors driven by the properties or attributes of language, and cultural factors. We had referred to these as role-based suitability, context-based suitability (including social, cultural and geographical contexts), role-based indispensability, and context-based indispensability (including social, cultural and geographical contexts). Other factors include educational and social factors and cultural and linguistic pride. Nonetheless, factors stimulating globalization are expected to outweigh factors working against globalization, and this may lead to the death of languages, their marginalization, the rise of pidgins, creoles and hybrid languages and the role-based use of languages.

Role-based suitability

Role based suitability would depend on lexical factors, technological factors, cultural factors, social factors, political factors and economic and other factors. As a result, English is widely used in India in science, technology, higher education and administration, while its use in cultural and religious domains is virtually non-existent. Similarly, in the entertainment industry Hindi and other Indian languages dominate while the role of English is rather limited. Role-based suitability would also be similar to Function-based suitability, though the idea of a function may be somewhat more limited and constricted in comparison to role.

The following are examples of the different roles that a language can play in a geographical region:

- (a) Primary language
- (b) Primary language with a deficit of one or more functions

- (c) Business or commercial usage only
- (d) Administrative usage only
- (e) Quotidian usage only with minimal written or administrative usage
- (f) Literary usage
- (g) For external communication only
- (h) Lingua franca (Lingua francas can be of many different types, and lingua francas can themselves play different roles in different contexts). Samarin (1968, p. 661) lists five potential types of lingua francas: a trade language (e.g., Swahili in East Africa); a contact language (e.g., Greek in the Ancient World); an international language (e.g., English throughout much of our contemporary world); and an auxiliary language (e.g., Basic English) or in some cases, non-linguistic codes.
- (i) Peripheral or Secondary usage

In addition, a language may play other subsidiary roles which may often be driven by intangible factors. Examples of these are:

- (a) Language as a symbol of linguistic pride
- (b) Language as a symbol of cultural power
- (c) Liturgical, sacerdotal or religious usage

Context-based suitability

Context-based suitability would span Social, Cultural and Geographical factors. The command over English among less-privileged social groups is rather limited, and this in turn limits its usage in popular contexts. Cultural mores affect the use of the English language as well. In parts of India, the English language is associated with social ascendancy while in others it is a semi-taboo or associated with colonialism and imperialism.

Role and Context based indispensability

The idea of indispensability takes the idea of suitability a step further. For example, English would become indispensable in global trade and commerce if lexical gaps with other languages increase, and if its spread increases unchecked. If this happens, the language would be further entrenched making it indispensable. This would further increase the demand for it, and in certain cases, endow it with greater legitimacy to encroach other languages. A language may also become indispensable in the context of a geography or a social group for similar reasons.

In the specific context of the Post-globalized world, the dynamics of language spread would be attributable to both Contact-driven and Non contact-driven scenarios. However, the role played by Non contact-driven scenarios would naturally not increase beyond a certain point, and beyond this both contact-driven scenarios and non contact-driven scenarios would continue to play a role in determining the dynamics of language spread. Examples of Non-contact driven dynamics is the rapid spread of English into Oman, Nepal and Bhutan, none of which were ever a part of the British Empire. In Oman, English has a very limited role to play in the street; it is however, the preferred language of choice in science and technology, and increasingly, in education. It is also beginning to play a vital role in commerce, and there are fears of the marginalization of Arabic in vital spheres of public life and the resultant inconvenience Non-English speakers may be put to. In Nepal, English is widely used, and mandatory in schools despite the rather limited proficiency of most Nepali children in the English language. In Bhutan, a much more geographically isolated country, and a multi-lingual country as well, the stranglehold of English is much more complete than in Nepal, and the so-called national language, Dzongkha plays only a subsidiary and a subservient role. It would be edifying to articulate the spread of languages, region by region and in various roles and contexts, and isolating the factors involved. In the context of Post-globalized scenarios, we propose that language dynamics would be primarily driven by 'Linguistic Osmosis' and we present the 'Theory of Linguistic Osmosis' as a part of this paper.

Types of contacts between speakers of different language influencing language dynamics in various epochs are below

S.No	Type of contact	Common in	Possible Impact and Additional notes
1	One-time contact	This scenario would have had some applicability in pre-historic and proto-historic scenarios where stone age tribes sometimes came into contact	This kind of contact may have led to the borrowing of the idea of language from one clan to the other and its adoption in different cultural contexts. It may also

		with each other or warring or sparring clans, tribes, proto-kings, kings or monarchs came into limited contact with each other.	have led to very limited word borrowings.
2	Intermittent or sporadic contacts	This scenario would have had some applicability in pre-historic and proto-historic scenarios where stone age tribes came into contact with each other at regular or irregular intervals.	Word borrowings to cover lexical gaps; earliest factors driving standardization of language in a limited or wider geographical region.
3	Regular contacts (insignificant) (Cultural, Technological, Economic, Political factors etc.)	Would have arisen due to cultural, technological (such as the spread of Iron, writing, horse-trade), political factors etc.	Would have led to the elimination of several proto-languages, isolates and dialects
4	Regular contacts (Deep-rooted) (Cultural, Technological, Economic, Political factors etc.)	Would have arisen due to cultural, technological (such as the spread of Iron, writing, horse-trade), political factors etc.	Would led to early standardization of language
5	Language influences primarily through political, cultural hegemony	This type of language spread would be observed in conquests, invasions, large-scale migrations, annexations, subjugations of other empires etc.	Would led to the introduction or secondary or allied languages in non-native contexts, and may in some cases marginalize or supplant them
6	Language influences primarily through political, cultural hegemony (involving limited or one time contacts)	An example for this is the spread of English in North America, and the spread of English and French in Asia and Africa due to colonialism. These two scenarios bear some resemblance to one another, even though they are unidentical, with differing drivers and principles. The spread of Hindi in India, and Urdu in Pakistan may also be categorized under this category.	Would led to the introduction or secondary or allied languages in non-native contexts despite limited frequent contact, and may in some cases marginalize or supplant them and in other cases, co-existing or leading to a linguistic sprachbund.
7	Non-contact leading to linguistic influences (Push, Pull, Subconscious adoption, Push-Pull, Pull-Churn, Pull-Churn-Feedback)	This type of scenario would be most common in Post-Globalized situations. Refer our section on 'Theory of Linguistic Osmosis'	Would led to the introduction or secondary or allied languages in non-native contexts despite limited frequent contact, and may in some cases marginalize or supplant them. In many or most cases, co-existence would be common,
8	Non-contact leading to linguistic autarchy	Cultural isolation	An example of this would be the gradual changes to the North Korean language (The North Korean language borrowed very few English words, but some Russian words)

The Theory of Linguistic Osmosis

Before we delve into the intricacies of the 'Theory of Linguistic Osmosis', we deem it appropriate to lay bare all the core concepts. A key aspect and building block to be understood is that of linguistic unit or entity. Linguistic units or entities can be at various levels; the lowest level here is the linguistic community, which may have one or more subsets. This term is already in use, and has been defined by Charles Hockett (1958:8) as "Each language defines a speech community: the whole set of people who communicate with each other, either directly or indirectly, via the common language." An alternative definition that has been provided by William Labov is as follows "The speech community is not defined by any marked agreement in the use of language elements, so much as by participation in a set of shared norms; these norms may be observed in overt types of evaluative behaviour, and by the uniformity of abstract patterns of variation which are invariant in respect to a particular level of usage." (1972: pp 120-21) However, in real-world scenarios, linguistic communities around the world typically have several linguistic minorities within their territory in addition to a majority or a dominant group. Linguistic communities may also be characterized by the presence of a large number of dialects, both

geographical and social. In extreme cases, speakers of various dialects may be rival or even mutually antagonistic to each other.

The next higher level may be defined as a linguistic block, which may also be described as a linguistic zone or a linguistic area, and this comprises various linguistic communities which share common linguistic or cultural traits, or alternatively, may comprise of a geographical zone where dynamics of language are similar to one another, closely influence each other, or are driven by the same factors. A linguistic block may or may not comprise of a region with speakers of the same language or the same group of language. However, in most cases, they would speak related languages. A linguistic block may or may not equate with a 'Political or Economic entity', (both terms have completely different meanings) which is another definition for our purpose, and may or may not overlap with them. In case they are synonymous with one another, the dynamics of language spread within the linguistic area are also determined by political or economic factors brought into effect by such a political or economic entity. In case, the linguistic area does not correspond to a political or an economic entity, such political and economic entities will still need to be identified and defined, and their relationship with the linguistic area and the resultant bearing they have on the dynamics of language spread of each other analysed. Therefore it is of utmost importance to get the concept of a linguistic block correctly to avoid errors of any kind, and therefore some examples are provided in this paper for benefit of readers.

We must also reiterate at the very outset that the dynamics of language spread outside the linguistic community or a linguistic block can have a very strong bearing on the dynamics of language spread within the linguistic community or the linguistic block. Similarly, the dynamics of language spread within the linguistic community or the linguistic block can have a bearing on the dynamics of language spread outside the linguistic community or the linguistic block. However, all the principles of 'The Theory of Linguistic Osmosis' will apply. Thus, the internal dynamics will always take precedence in determining the spread of languages within the linguistic community or block, the linguistic community or the block will always be a tighter linguistic unit. There may be exceptions such as the influence of ubiquitous pan-regional or global trends, but these must always be studied separately.

However, for the purpose of our analysis, we will always adopt an inside-out approach first, and then follow it up with an outside-in approach for maximum efficacy. In other words, the dynamics of language spread within a linguistic community or the lowest sub-unit will be analysed first, using one or more of the principles described in this paper. These will then be aggregated sequentially, and analysed thoroughly at all levels. The last level of analysis will be an analysis at the global level, and an analysis at this level will comprise the results of all analysis, carried out at various linguistic blocks, the results of all of which need to be taken into account. The end result will be an analysis of the dynamics of language spread at a global level. The results may then be worked back to linguistic blocks and linguistic communities to the extent it is applicable. This process may be repeated ad infinitum diachronically, but usually only when some kind of changes are observed at one or more levels which warrant a re-analysis.

While doing this, the following factors need to be taken into account.

- (a) Linguistic attributes and linguistic complexity: These need to be taken into account as they would indirectly impact the dynamics of language spread and may be partly (though certainly not fully) for Rwanda's recent switch from French to English, as English was stated to be simpler. A large number of measures have been proposed to assess linguistic complexity, though measures are currently far from perfect, and there is no consensus among linguistics among linguists in identifying the most optimal measures. Measures may be classified into Syntagmatic complexity (measure of syllables, phonemes and morphemes), Paradigmatic complexity (Parts of speech and grammatical complexity), Organizational complexity (Number of ways phrases and clauses can be arranged), Hierarchic Complexity (Recursion and lexical-semantic hierarchies).
- (b) Linguistic distance: Measure of linguistic distance are crucial to our analysis because difficulty of learning language is largely relative and not absolute. A common measure is Levenshtein distance which measures the distance learning. Various measures have also been proposed to assess the speed and efficacy of second language acquisition, such as the Input hypothesis and monitor model of Stephen Krashen, Michael Long's interaction hypothesis, Merrill Swain's output hypothesis, Richard Smith's noticing hypothesis, Elizabeth Bate's competition model, the model proposed by Chiswick and Miller, and some of these are purely empirical methods. Another approach may be the classification of languages based on word order. English, French and Bantu as SVO languages or Subject Verb Object languages. Japanese, Turkish, Korean and Hindi, on the other hand, are SOV languages. Filipino and Tuareg are VSO languages,

while Malagasy is a VOS language as are also Mayan languages and Fijian. A speaker of the SVO language may find it hard to learn an SOV language and vice versa.

- (c) Demographics: Demographics and 'Demographic power' must be expressed not in terms of just overall population, but also other factors such as the Total fertility rate, longevity and population structure, purchasing power, and level of education must also be considered in an overall analysis. This would be important because countries like Japan are associated with economic clout, but a shrinking birth rate. According to a report by the United Nations in 2015, the world population will reach 9725 million by 2050 and 11213 million by 2100. Out of this, the population of almost all continents is expected to shrink after 2015, the sole exception being Africa. Nigeria alone is expected to have 600 million inhabitants later this century, putting it just behind India and China. However, per capita income is expected to remain low. However, some Francophonie associations fail to take this into account while calculating the projected importance of the French language in the Twenty-first century. They also erroneously assume that all inhabitants of Francophonie West Africa will be fluent French speakers. Another interesting question is to what extent Population dynamics can have a bearing on the overall language dynamics of a country like India. This is of great relevance in India where skewed Total Fertility Rates have been observed, and hence the percentages of people speaking different languages is expected to change widely in the coming decades. TFR's by state have varied from a low of 1.6 Children per woman in West Bengal to 3.5 Children per woman in Bihar in 2014. If Union Territories are included, Chandigarh has a total fertility rate of just 1.3 children per woman. If TFR is taken at a district level, the variations in TFR will become much wider as Kolkata has a TFR of just 1.2 Children per woman while Shravasthi in Eastern Uttar Pradesh has a TFR of 5.9 children per woman or twice as that of Pakistan or Bangladesh, higher than every country in the Middle East, and close to that of Sub-Saharan Africa. However, fertility appears to be falling rapidly everywhere, and India on the whole may reach a replacement TFR of 2.1 children per woman between 2027 and 2031, and it is unlikely that any state will have a TFR of over 2.1 children per woman by 2031.
- (d) Political power: The Political power possessed by Linguistic communities, Linguistic units and Linguistic blocks will add more complexity to the issue, but must be assessed nonetheless. Countries like the USA do not need to spread English as a demand has already been created for it, and language adoption happens through a Pull mode. On the other hand, the Indian government promotes Hindi abroad, but not Bengali, Marathi or Assamese. The French government spends a large sum of money in promoting its language and culture abroad, but not so much so, the Italian government. This may be necessary because India and France lack the political or economic might, and this must be studied not standalone, but in combination with all other factors discussed in this paper.
- (e) Economic power: The Economic power of a Linguistic community or a Linguistic block will play a role too in influencing the dynamics of languages spread at a global level. For example, Japan never possessed a major military prowess to speak of after its surrender in the Second World War and neither did it embark on a major campaign to promote its cultural influence, but came to be equated with economic might very rapidly in a few decades after this. Mandarin Chinese is now one of the most sought after courses in the USA particularly since the 1990's, and there is similarly, some demand for Hindi language courses now in the USA and the Middle East.
- (f) Cultural power: The Cultural power or soft power of a Linguistic community or a Linguistic Block can play a part in swaying trends. American music, pop and rap led to the promotion of American culture and raised the demand of English language learning in some areas. The rise of Bollywood has similarly increased the demand for a knowledge of Hindi, and it is not uncommon to find people who can speak a smattering of Hindi in unexpected places such as Sri Lanka and the Middle East. Japanese Cultural power is known as 'Kuru Japan', and icons of Japanese cultural power are J-pop, Manga comics, Anime, Sake and Sushi. China is making attempts to promote Chinese civilizational values abroad, and aspects of Indian culture such as Yoga, Ayurveda, Bollywood and Indian cuisine are well-known abroad. A more extreme version of cultural power is cultural imperialism. For example, a large number of television programs in Scandinavian countries are of American origin, and English words are widely used in most European countries.
- (g) Use of the language: In what role? The predominant or preeminent role played by the language must always be taken into consideration in such an exercise. For example, Chinese, Arabic, French or Japanese may never challenge the hegemony of the English language in the realms of science and technology, and this alone may bestow upon it unrivalled and unparalleled supremacy in the short to medium term. On the other hand, the role played by the English

language in other spheres is rather limited and a role-based analysis of language may be in order.

- (h) Religious factors: Religious factors will play a role in inducing linguistic change to a fair or moderate degree. For example, the living language Arabic has seen fair demand across the world, in places as far apart as Indonesia and India owing to its association with the Islamic religion and clergy. Sanskrit, taught throughout India and beyond, but it cannot impact language dynamics majorly given its status as a dead and a non-living language.
- (i) Technological factors: Technological factors have played a major role in the critical success of English beyond the English speaking countries and have ensured its edge in key fields of science. English has also emerged as the dominant language of the internet, though this dominance is now slowly eroding as other languages play the catch up game. The Digital India mission for example seeks to empower Indian languages as the languages of the Internet and science and technology; mobile service providers are also being asked to make sure that their services are compatible with at least two Indian languages; this is to be ramped up gradually to cover all Indian languages; wikipedia is increasingly providing material in Indian languages; what role this will play in checking the supremacy of the English language remains to be seen.
- (j) Ideological factors: An example of ideology impacting language dynamics is the resistance to the promotion of Hindi and the proposed replacement of English by Hindi as the Central Government's sole official language by Dravidian parties in Tamilnadu and other language speakers in other parts of India. This has consequently hampered the success of Hindi within India, and its success elsewhere. The opposition of DMK, a Tamil party to Hindi imposition was so colossal that it prompted the Central Government to reexamine its language policy and to continue with English indefinitely as an administrative language or 'an associate official language', along with Hindi. Another interesting case is the proposal of the Gambian government to drop English altogether despite its increasing popularity worldwide. How well this proposal will work if it is implemented is open to question.
- (k) Legal considerations: The Indian constitution states that Hindi is the Official language of the central government and that English shall be the 'Associate official language' as long as Non-Hindi speaking states opt for the continuance of English. Furthermore, Non-Hindi speaking states are allowed to adopt their own official languages in official peoples, and most states have chosen the local language and English. The adoption of Hindi as an official language in many parts of India is a touchy issue, and even though "Hinglish" a hybridized mixture of Hindi and English is rapidly becoming an entry level lingua franca, English is preferred in formal usage outside the Hindi speaking states because it is the least controversial. A similar situation prevails in Senegal where French is mostly used in formal situations even though Wolof is increasingly being used as a spoken lingua franca in many parts of Senegal. The idea of linguistic rights is a relatively new concept and may not have been widely known to most planners at the time of India's independence. A treaty signed in 1919, for example, attempted to ensure recognition of many minorities in Europe. Article 27 of the International Covenant on Civil and Political Rights (1966) states "In those states in which ethnic, religious, or linguistic minorities exist, persons belonging to such minorities shall not be denied the right, in community with other members of their group, to enjoy their own culture, to profess and practice their own religion, or use their own language." A major survey was carried out by the UN in 1979 to identify the judicial and conceptual aspects of linguistic discrimination. The UN charter also forbids discrimination on the basis of language, and calls upon nations to formulate equitable policies. The Conference on Security and Co-operation in Europe (CSCE, the Helsinki accords) contains a detailed proposal to protect linguistic rights. The Council of Europe's proposed European Charter for Regional or Minority Languages recommends a massive support for minority languages. Several European Parliament resolutions, including the Kuijpers resolution of 1987 recommend the teaching of minority languages. The UNESCO is also working on the rollout of a "Universal Declaration of Language Rights." Many other studies such as one by the Nuffield Foundation in 2000, emphasize the dangers of linguistic hegemony and recommend the teaching of multiple languages.⁵⁹
- (l) Unipolarity, Polarity, Bi-polarity and Multi-polarity: Unipolarity, Polarity, Bi-polarity and multi-polarity would play a major role in determining the compartment and orientation of language

⁵⁹ The Nuffield Languages Inquiry (2000) Languages: the next generation London: The Nuffield Foundation

spread. For example, French was associated with the Rwandan genocide and the massacre of the Tutsi populations in 1994, and consequently, the government of Rwanda left no stone unturned to orchestrate its downfall and replace it with Kinyarwanda and English. Had it not been for the international importance of the English language, and its lead of the French language as a global lingua franca, the government of Rwanda may have no option but to continue with French for both internal and external usage. Our approach can be productively and prolifically used in the Francophonie and the Pan-African to determine the eventual conclusion of the French versus English debate in the region and what it portends and foreshadows for the world in general.

(m) The Test of True Multi-Lingualism: According to most estimates, India is by far the most multi-lingual country in the world with twenty-two official languages and more than five hundred living dialects. While Papua New Guinea, Indonesia and Nigeria may have a larger number of languages than India in theory, the number of official languages in those countries are less in number. Also, India is unique in that many of the languages in India are highly developed, literary languages, and it should be fairly obvious that no other country in the world has such a large number of written, literary languages with traditions, in some cases, going back two thousand years or more. There are several language diversity indices currently in use. One is Greenberg's LDI. One is the related Index of Linguistic Diversity from Terralingua.org which emphasizes changes in linguistic diversity, while another LDI measure has been proposed by the United Nations Educational, Scientific and Cultural Organization. While all measures unanimously place India's LDI far above China's (the latter can hardly be considered multi-lingual from our point of view), most of these measures have intrinsic limitations in that they fail to consider Linguistic Distances, the state of evolution of languages, political boundaries and other political and cultural factors. We propose the following Twelve measures to determine if a country is truly polyglot or not, and the result would be deemed to be positive if the answer to even one of the questions is in the affirmative.

(a) Does the country have one or more than one fully independent languages spoken by significant segments of the population, which are not for the purpose of our study deemed to be dialects of the other language or languages spoken in the country?

(b) Is the linguistic distance between the most-unrelated but widely spoken languages in the country large?

(c) Does the country comprise of speakers belonging to more than one language group? Are the speakers of languages belonging to at least two language groups significant?

(d) Do the speakers of more than one language adopt a semblance of political power, or are demanding political autonomy with the chief objective of maintaining linguistic status quo or linguistic hegemony?

(e) Does the country have a history of discord in protesting the linguistic power structure or the dominance of one linguistic group, and have such fissures led into demands for significant changes in power structure or autonomy?

(f) Is the power structure of the country sufficiently decentralized to allow speakers of linguistic groups to exercise some autonomy or have a say in policy-making?

(g) Do the speakers of the most widely spoken language in the country account for less than sixty percent of the population?

(h) Is the total number of languages and dialects in the country, including less developed languages or dialects, and variants of major languages, large?

(i) Do regions of the country share close economic, cultural or linguistic ties with other country, often in precedence to economic, cultural or linguistic ties with other parts of the same country?

(j) What is the Least Common Denominator of all the major linguistic groups in the country in terms of linguistic structure, shared cultural elements etc.? Is the range of the LCD insignificant to moderate?

(k) What is the Least Common Denominator of all the linguistic groups in the country including the outlying or the less important or the insignificant ones in terms of linguistic structure, shared cultural elements etc.? Is the range of the LCD very insignificant to moderate?

(l) Is the Chief integrating factor in the country something other than language, or is the role of language in this regard limited?

If the answer to one or more of the above questions is in the affirmative, the country, by our reckoning, is deemed to be polyglot. In the case of India, the answers to all the questions would be a resounding yes, and in such a case, few would deny that some form of enforced multilingualism would be conducive to harmony. India may be thus considered truly polyglot compared to China: In China, for example, speakers of Cantonese and Mandarin may at times even claim that they speak the same language. However, speakers of various dialects of Chinese may not be able to converse with each other easily or comfortably: from a linguists' point of view, they may actually speak different languages, and the distance between the various dialects of Chinese may be relatively large. However, they will be able to communicate with each other much more effectively through their shared writing system. While India has undoubtedly had had periods of political unity since ancient times, and pan-Indian cultures have exhibited a fairly high degree of underlying cultural or religious unity, India's common bonds are more cultural than linguistic; this is despite that fact that various Indian languages and language groups have influenced each other, and the fact that some ancestor of Brahmi morphed into all modern day alphabetic scripts, North and South Indian. For the Chinese, on the other hand, a shared writing system and a shared linguistic inheritance along a strong tradition of political, social, and cultural unity constitute their identity. India is truly a multi-lingual country from a linguist's point of view, while China may not fall into this bracket.

(m) Enforced Multilingualism: There are two competing hypothesis in this respect. One hypothesis states that Enforced Multilingualism is necessary for natural integration and for protecting minor languages from disappearing. This approach also states that Enforced Multilingualism protects speakers of minor language, gives them a feeling of security, and encourages them to learn other languages. Another rival hypothesis promotes a radically different view. The possible effects of each approach may vary depending on the context and scenario, and must be assessed by taking all factor proposed in our paper into account. However, one approach would to assess the strength of the languages and the LDI. It may be emphasized that enforced multi-linguicism is a very reliable and attractive alternative national integration strategy, and is one that is likely to work in a wide variety of scenarios, and especially truly multi-lingual countries. Many countries such as Canada and Switzerland have adopted such strategies successfully. Some other countries have also granted national recognition to two or more languages, examples of these being Belgium, Finland, Ireland, Luxembourg and Malta. Some other European countries have also recognized some minority languages at the regional or a municipal level, examples being Austria, Bulgaria, Croatia, Cyprus, Germany, Hungary, Italy, Lithuania, the Netherlands, Slovakia, Slovenia, Spain, and the United Kingdom. France, however, has a long tradition of not recognizing minority languages. In a multilingual country like Singapore, many people can speak more than one language. Singapore has four official languages: English, the Mandarin variety of Chinese, Tamil, and Malay, the last of which is also the national language. However, the majority of its population are native speakers of a dialect of Chinese. Singapore's national language policy promotes English as the mainstream international language, and the preferred language of trade and commerce, Mandarin as the international 'Chinese' language, Malay as the 'National language', and Tamil as the language of one of the four ethnic groups in the country. Enforced multi-lingualism may also obviate the need for a lingua franca within the region under many circumstances, as people would learn more than one language. Another interesting example to illustrate multilingualism is the case of the Tucano tribe who live along the Vaupes River in Columbia and smaller parts of Brazil in South America and practice linguistic exogamy, normally marrying outside their linguistic group. It is not therefore, uncommon for a member of a tribe to speak several languages. However, Tucano is used as some kind of a lingua franca in the region, owing to its ability to fulfil a need that other languages of the tribe cannot.

(n) Long-term factors versus short-term factors. It also naturally becomes necessary to isolate short-term factors from long-term factors and concentrate more on the latter. As per our terminology, we need to eschew 'presentism', and promote 'aeternitism' and 'omnimodism' i.e. factors that will work across space and time. An example of a short-term factor is Brexit, but can it override other factors working in favour of English? However, local factors need to be studied as they are likely to have a ripple effect across geographies.

There are many inferences and many different kinds of simple or complex analysis this approach will readily lend itself to. Any analysis would demonstrate that Hindi may not spread easily outside India given the resistance within India to the spread of Hindi overseas using political methods as a tactic to modify or alter the dynamics of language spread in India by political or artificial methods. Even if it does spread over a protracted time span, it may have difficulty replacing other languages in India even after it has supplanted or subordinated other languages in select regions outside the country such as Suriname or Fiji except if it happens in conjunction with several other factors over which we presently have no knowledge or control. Thus, the resistance to Hindi within India, may in some way impede its spread outside India. Another example of this is the spread of English outside England over the past few centuries. However, the spread of the English language outside England has not been able to exterminate the dialects of English in England or other languages, or annihilate other languages like Welsh completely. These have revived through the principle of cultural ethnogenesis. Thus, regions may be approached distinctly for the purposes of such studies, and may be further broken down as required so that a thorough region-specific analysis taking into account the peculiarities and the unique characteristics of the region may be applied. Thus, the dynamics of language spread internal to Switzerland and its multi-lingual nature has helped popularize English in the country. Durmuller, for example, has investigated through questionnaires and interviews, the internal usage of English in Switzerland, which entrenched itself in that country fairly recently and speakers' attitudes towards it (Durmuller: 1984). He observed that the Swiss preferred English next only to their native languages and over their other national languages. The dynamics of language in Switzerland are in turn impacted by the dynamics of language spread in Europe after the emergence of the European Union, leading to the rise of English across the continent and the decline of French in the continent, largely independent perhaps of trends in England itself. Likewise, the popularity of English in Switzerland and in Scandinavian countries would help bolster its popularity across Europe.

The popularity of English in Europe would also be impacted by and would in turn impact the spread of English around the globe, and perhaps trigger a decline in the importance French as well, both in Europe, and beyond and at least in the longer-term. On the other hand, if the power of French in Francophonie Africa is to be challenged, a concerted and a well-orchestrated effort involving multiple nations is required, as this is a Political or Economic entity for our purpose. The political inertia in the region may not lend itself very easily to change either, and the region may prove to be immune to global trends at least in the short-term. The impact of Brexit on the relative importance of the English and the French language has already been hotly debated. A comprehensive analysis based on the principles mooted in this paper may be warranted and may throw further light on this issue.

Another noteworthy example in this regard is the very rapid spread of Sanskrit in Post-Harappan India from the Gangetic plains to the north-west of India as a lingua franca even though political unity across the region was non-existent, the only common cultural threads being what one may refer to as overriding elements of 'Aryan' culture. This, in due course, effected the popularization of Sanskrit as a cultural symbol of the region, and greatly enhanced its prestige. This in turn played a role as its eventual importance as a cultural and religious symbol of much of Ancient India, led to a compilation of a vast corpus of oral traditions and written literature, and later led to an interest in the language and its study worldwide.

The concepts in this paper are only illustrative and we define only two levels (a) The linguistic community along with various sub-community and (b) The linguistic block. We also define the term 'Political or Economic entity.' The other levels must be defined on a case to case basis as explained.

Therefore, we may lay down the following broad rules:

1. A linguistic community or a sub-unit or a linguistic community is always the tightest linguistic unit.
2. A linguistic community or a sub-unit or a linguistic community normally sets the patterns for itself, and the spread of languages within the linguistic community would be dictated by the dynamics of language spread within the linguistic community. This is because forces operating within this level are much stronger than, and therefore take precedence over other factors.
3. The dynamics of language spread within a linguistic community can also be influenced by external factors.

4. A linguistic community can influence the dynamics of language spread in neighbouring linguistic communities, or in a wider region. However, dynamics of language spread in other regions would be also determined by other internal and external forces.
5. The dynamics of language spread within the linguistic community normally play a greater role in determining outcomes within the community, than external factors. There may be exceptions, and these need to be evaluated on a case to case basis and justified.
6. The spread of languages within a linguistic block would primarily be dependent on the dynamics of language spread within the block. However, the dynamics of language spread of the constituent linguistic communities would also play a role.
7. The spread of languages within a linguistic block can also impact and be impacted by the dynamics of language spread at the next level which can be user-defined, as the concepts in this paper are only illustrative. For example, while English may have once been a Hobson's choice in India, its domestic strength largely grew as a result of its international strength.
8. In order to understand how the dynamics of language spread in linguistic block affect the dynamics of language spread within the political or economic entity, the patterns of intersection between the linguistic block and the political or economic entity need to be understood. There may be many possible patterns of intersection between the two. In scenario A, the two may be synonymous. In scenario B, a linguistic block may be a subset of a political or economic entity, and the political or economic entity may have only one linguistic block. In scenario C, a linguistic block may be a subset of a political or an economic entity, and the political or economic entity may have more than one linguistic blocks. In scenario D, the linguistic block may lie partly within the political or economic entity and partly outside it.
9. Thus the workings of the political or economic entity will come to bear on the dynamics of language spread in the constituent linguistic blocks and vice versa. If the linguistic block partly lies outside the political or economic entity, it needs to be logically split into two.
10. As the levels proposed here are purely indicative, the researcher is well-advised to prepare a schema before he begins.
11. An analysis should ideally commence at the level of a linguistic community, and should be ideally aggregated by geographical region.
12. This exercise must always be carried out in conjunction with a context-based analysis and a role or a function-based analysis (See section on Contextual Suitability and Role-based suitability in this paper) to understand the forces of language spread more accurately.
13. This exercise may also be carried out in conjunction with the other principles in the paper such as the Theory of win-win propositions, and an exercise in this section explains how this can be done to greater effect.
14. The key to getting this approach correct would be to define Linguistic Communities, Linguistic blocks, Political and Economic entities and other levels correctly. For example, if India is chosen as the focus area of study, a linguistic state would ideally be a linguistic community. In some cases like Karnataka, the state can be split up into two levels. However, a region comprising Karnataka and Andhra Pradesh or Gujarat and Rajasthan, or even the whole of South India (despite the fact that they speak languages belonging to a unique language group) can never be a linguistic block as such a region can produce no unique dynamics and would be irrelevant for the purposes of such studies. Likewise such a region, or even an Indian state, except in rare circumstances in case of the latter, cannot be chosen as a Political or Economic entity either as such is region or a state does not qualify to be a political or an economic unit of any kind.

Another interesting picture emerges from the study of Bangladesh which attained independence in 1971 from Pakistan, when then comprised of two wings, West Pakistan and East Pakistan, separated by a few thousand kilometres of alien and hostile Indian territory. Urdu was chosen as a link language in Pakistan as it was neutral to all language speakers and was the mother tongue of a very small group of people. Moreover, it was seen as a cultural symbol of Pakistan and Islam. Though this policy appears to have worked well in West Pakistan, where Sindhi, Punjabi, Baluchi and Pashto were widely spoken,

the “imposition” of Urdu was not well-received in East Pakistan or Bangladesh, despite the language’s neutrality to all the provinces of Pakistan, East Pakistan included. Thus, not only linguistic pride, but geographical distance, and a feeling of cultural separation played a role here, as globalization in its present-form was unknown then. The Theory of Linguistic Osmosis may apply here, as East Pakistan was a separate linguistic community within a combined Pakistan for our purpose. This approach can be put to practical use in a wide variety of situations, and can be a great boon and can be used to predict language trends in specific regions or across the world, including spread or decline of languages. Readers can also evaluate for themselves to what extent the Indian Government’s attempts to spread Hindi outside India, and at an international level, would succeed in altering the dynamics of language spread outside and within India, given that Hindi is hardly spoken in a handful of countries outside India. The spread of English occurred because it satisfied the principles laid down in this paper, and English Language Teaching programs have succeeded in the recent past because of the underlying demand for such programs, and the large gap between demand and supply. On the contrary, even costly Francophonie programs may at best consolidate the position of the French language in the short to the medium term, and may not prevent its long-term decline unless a new set of factors which we do not have any knowledge of currently manifest themselves.

On the other hand there is no huge demand-supply gap for the learning of Hindi outside India, and it may be wrong to promote the language of one region to the exclusion of all other Indian languages in a federal set-up like India, or even to mislead foreigners about the linguistic scenario in India. Such efforts would be ill-conceived in a post-globalized context. Per the principles of this paper, and to put it extremely crudely, such endeavours would be tantamount to throwing money out of the window. Instead, the same money can be used to increase literacy levels or improve the standard of education across all regions of India. Alternatively, all Indian languages can be promoted outside India, given the increased interest in India across the world in recent times, and the Indian government can play a key role in ensuring that awareness is created for the learning of Indian languages outside India, and that key institutes and universities are roped in for the purpose. In the second case, the Return on Investment for the Central Government would be much, much higher, even from the long-term perspective of Indian national integration. Hindi has already killed, or is in the process of killing many minor languages in North India. In major urban centres like Mumbai, Hindi has marginalized Marathi as an entry-level lingua franca, even though the written use of Hindi is practically non-existent. Hindi still continues to play second fiddle to English in commerce, science and technology, and the replacement of English by Hindi as envisaged by Hindi chauvinists and zealots appears to be nowhere in sight.

We also believe the changes in language take place through the following three dimensions:

Geography-driven propagation: In this type, language spreads primarily through geographies, and usually has one or more roles to play. In the 1930’s, the Gujarati language was very widely used in Bombay, now known as Mumbai, and was likely to have been widely spoken in the streets. Its prominence has somewhat declined as of today, and Hindi and English are widely spoken in addition to Marathi. In addition, Marathi less widely spoken than formerly. Marathi is however the medium of instruction in many schools and there is a popular resurgence of Marathi linguistic pride in the state and attempts to save it from encroachment from other languages or possible eventual marginalization or irrelevance. Another kind of question one may want to ask is this. While Marathi may have been sidelined in Mumbai, it is still thriving in rural areas in the state. Will Marathi be decimated over a period of time in rural areas as well? To what extent will this be driven by migrations from other states? How long might this process take?

Social hierarchy-driven propagation: In this type, dialects may be levelled, thereby adding to the prestige of the language. Alternatively, trends observed among the upper classes or elites permeate through all echelons of society, and example being the current rage for learning the English language.

Role-driven changes: In this scenario, role encroachment takes place, and a language spreads by taking on more and more roles, and eventually restricting the role played by other language. An example of this may be the demand for science and mathematics classes in the English language worldwide. The popularity of English music in Germany is another example of the soft power of the English language. We have discussed this under the heading ‘Intangible roles played by a language’. A term we would like to use here is ‘Role encroachment’ where a language cedes the one or more roles played by it to other languages gradually and over a period in time.

Lexical diffusion, Syntactical changes, phonetic changes etc.: We had already discussed this in our paper, although these would be, for all practical purposes irrelevant to a study of language dynamics.

A formal and a well-structured analysis of changes across all the three dimensions may be carried out from time to time as it would provide further empirical data for analysis and corroboration with other approaches presented in this paper. This will also include a 'Change of status quo.'

We also propose the following modes by which languages can spread in a given region:

Push: In this mode, a language is initially imposed from an external source or entity. A typical example is the 'imposition' of English on India and other languages. However, this must take into account the principles of language spread espoused in this paper, otherwise failure or unintended consequences will result. Push factors may either be hard or soft (i.e. Hard push and Soft push). The former is associated with political and military factors and the latter is predominantly associated with cultural factors.

Pull: In this mode, a language is learnt because demand exists for it. An example of this is the demand for the learning of the Sanskrit language. Another example for this is the implementation of the English language in Rwanda, and its recent introduction in Gabon.

Push-Pull: This is a combination of Push and Pull modes. In this mode, a language is first introduced by push techniques, and is later willingly adopted by a countries or regions denizens. If this is to work, a language must offer specific benefits to the people or at least a section of society. An example of this is the popular adoption of the English language in India. While English was undoubtedly spread by force in colonial times, the USA has both directly and indirectly played a much greater role in the spread of English since the dawn of the Twentieth century than Britain, and the United States has played a much greater role in shaping the forces of globalization as well. Contemporary arguments in favour of English are mostly driven by the state of the market for English and Force of argument i.e. rational analysis in the light of available information. Thus, a huge demand has been created in the recent past for the learning of English in places as far apart as Senegal and Papua New Guinea, and the worldwide demand for English learning has even begun to play a not-so-insignificant role in Britain's economy. As a director of a chain of international schools put it, "Once we used to send gunboats and diplomats abroad. Now we are sending English language teachers." (International House Brochure, 1979).

Pull-Churn or Push-Pull-Churn: In this mode, a language is introduced in society and spreads internally due to the language dynamics of the region in keeping with the principles mooted in this paper.

Pull-Churn-Feedback or Push-Pull-Churn-Feedback: In this mode, a language is introduced in society and spreads internally due to the language dynamics of the region in keeping in the principles mooted in this paper. This then provides feedback to neighbouring or non-neighbouring regions, and impacts the dynamics of language spread at a broader level.

Subconscious adoption: Subconscious adoption is a more subtle variant of the Pull mode. This type of scenario may typically be non-contact based and may be more common in the Post-globalized era or epoch.

Porosity Analysis

Linguistic Blocks and Linguistic units may also be categorized on the basis of their porosity, and this aspect also needs to be borne in mind while carrying out any analysis. The three possible classifications are:

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- (a) Highly porous: In this case, there is very little legal protection for linguistic groups, and languages are open to influences from other linguistic groups. An example of this scenario may be Sri Lanka which does not follow a federal structure. India may be less porous because of its federalism but

is constrained in this respect by the free movement of peoples across its state borders. Pakistan may actually be on a better footing than India because the chosen link or national language is neutral to all its provinces, unlike India

- (b) Moderately porous: An example of this would be a linguistic block comprising fully independent political units. Examples that would readily come to our mind are the European Union and Francophonie West Africa.
- (c) Low level of porosity: Examples of such blocks would be a hypothetical block comprising all English speaking countries or a hypothetical block comprising all countries where French is the official language.

The porosity of a linguistic block would be determined by the legal rights available to its speakers, the political structure including degree of autonomy in decision making granted to speakers of various languages, the design of the federal structure, the design of the education system, the relationship between speakers speaking various languages, the dominance of one or more linguistic groups etc.

Latency time

The Latency time refers to the time taken for changes to propagate within a linguistic community, linguistic block or globally. While there are no reliable measures for measuring this, it is expected that the latency time will gradually decrease owing to the improvement of communication systems, a general rise in the standard of living and improved levels of literacy, and then eventually level off beyond a point.

Factors influencing dynamics of language spread in Pluri-lingual societies

We now propose some factors that will invariably and inevitably affect human behaviour, and consequently alter the dynamics of language spread in any pluri-lingual society. While there were contemplated in the narrow context of India, arguably the world's most diverse pluri-lingual and multi-ethnic society, they are bound to work in the context of any pluri-lingual society and the world in general, and most are based on the fundamentals of human behaviour and disposition. We therefore strongly believe that these principles will be applicable to varying degrees in most societies in the world. There may be other kinds of pluri-lingual societies however, where these principles will not apply. One interesting example to illustrate a unique form of pluri-lingualism is the case of the Tucano tribe who live along the Vaupes River in Columbia and smaller parts of Brazil in South America and practice linguistic exogamy, normally marrying outside their linguistic group. It is therefore, extremely common for a member of a tribe to speak several languages. This therefore constitutes a different and a unique form of pluri-lingualism where the principles described in this paper will not apply.

We must also always bear in mind the fact that a combination of two or more factors described in this paper will come into play in most practical and real-world situations. The factors specified must be necessarily studied for each language and role and within a geographical, cultural and social context before any analysis is done. While carrying out this exercise, DPPF techniques or Dialogue between past, present and future techniques that we had proposed in a previous paper can also be used. The weightage given to these factors during an analysis will influence and partly determine the dynamics of language spread in the region. A few of these may be purely micro factors, but can nonetheless be aggregated or ignored if not applicable.

Theory of aggregated personal advantage

In this scenario, humans subconsciously or consciously evaluate what is good for them, and act accordingly. For example, most South Indians, reject Hindi as a replacement for English, and use Hindi only in situations and circumstances where they stand to benefit.

Theory of perceived aggregated personal advantage

This is a modification of the previous scenario, and in this case, humans act on the basis of perception. Thus, there is a craze for English schools in India, and this may epitomize a herd mentality. According to a recent report, the highest growth in enrolment in English schools was in the Hindi-speaking states. It was the highest in Bihar, where it grew 47 times or 4,700 percent, while enrolment in Hindi schools grew by just 18 percent. In Uttar Pradesh, enrolment in English schools grew over 10 times or by over 1,000 percent compared to just 11 increase in Hindi-schools. In other Hindi speaking states too, the

number of English schools increased steeply – In Haryana by 525 percent, in Jharkhand by 458 percent, and in Rajasthan by 209 percent. In states like Jammu and Kashmir, almost all students study in English schools. What is worse still, is that few opt for their native tongues even as a second language. In most situations, Hindi is chosen. As a matter of fact, the situation is so bad that the Bharatiya Bhasha Suraksha Manch has demanded the shutting down of all English schools in Goa, and their replacement by Konkani and Marathi schools.

Theory of simplicity, practicality and convenience

In an overwhelming majority of situations, practicality and convenience would weigh in. This may explain the rise of Hinglish in India, and the slow and steady decline of the French language in Laos, Vietnam and Cambodia. In Laos, the decline of the French language has been slow, but is being slowly being eroded by English. The decline of the French language has been more rapid in Cambodia, even though there has been some revivalism. The French language also slowly declined in Vietnam after the Second World War, even though there has been a slow rebound. Per our approach, all analysis must be data-driven, and attempts must always be made to carry out a root-cause analysis keeping in mind the principles mooted in this paper.

Theory of non-judgment

This is a more extreme version of ‘follow the herd’ mentality where speakers of a language exercise practically no judgement, but let themselves be carried away by current or prevalent trends. This would lead to further amplification or magnification of current trends, or at the barest minimum ensure that such trends perpetuate unchecked and unimpeded.

Linguistic attitudes and loyalties

Linguistic attitudes can play a role in influencing dynamics of language spread. Tamils, and other linguistic groups in India are undoubtedly worried that the spread of rapid Hindi may lead to cultural homogenization at a certain level, obviating the need for outsiders to learn other Indian languages, thereby pushing them down the road towards eventual oblivion. The opposition towards the imposition of Hindi in Tamilnadu has had a long history. The first Anti-Hindi agitations in Tamilnadu took place in 1937, nearly a decade before Indian independence and were led by Periyar and other Dravidian nationalists, as a result of attempts to make the learning of Hindi mandatory in the Madras presidency. Anti-Hindi agitations resurfaced in 1965 when an attempt was made to position Hindi as the sole official language after a fifteen year hiatus. Needless to say, there were minor Anti-Hindi agitations in other parts of India such as the Sambalpur agitation of Odisha. Some Bengali and Telugu likewise opposed the promotion of Hindi at the cost of other Indian languages or the mandatory study of Hindi. Nonetheless, reactions to the promotion of Hindi varied widely from region.

One factor may have been linguistic loyalties which may have varied widely from region to region. The centrality of language to culture also varies widely from community to community, and this aspect may need to be understood by planners as well. Not all traits exhibited by various ethnic groups may be seen to desirable in a global context. Some may exhibit a high degree of ethnocentrism, consciously or unconsciously, and may in part be even driven by inward-looking approaches and a lack of awareness of other cultures. Ethnocentrism has been observed in many cultures across the world, cultural relativism being the exact opposite point of view. In any case, Community sentiment, which R.M McIver and Page associate with a “we-feeling” and a “role-feeling” is common throughout the world, but to varying degrees. In the state of Tamilnadu in India, the Tamil language is widely worshipped as a God or a Demi-God, and Goddess Tamil or Thamizhthai is deified. This concept is less well-entrenched in Andhra Pradesh and Telangana where the concept of Telugu Talli nonetheless exists. Nonetheless, the songs “Invocation to the Goddess Tamil” and “To my Mother Telugu” are the state languages of Tamilnadu and Andhra Pradesh respectively. Linguistic loyalties to this degree may not be exhibited by all other communities in India. The Bengali language movement of East Pakistan was a similar linguistic movement which sought some rights for the Bengali language in a united Pakistan such as its usage in media, administration, education and politics. Many Thais also consider the Lao language to be inferior, while many Laos tacitly accept the ‘cultural superiority’ of the Thai Language. Most linguists accept the theory of inequality of languages, and the French use the term ‘Langue de Culture’ to distinguish culturally evolved languages from less evolved ones. On the other hand, even languages that may be considered primitive may have a fair degree of complexity. For example, a study by Daniel Everett of the Piraha language spoken in the Amazon region has shown that it is by no means primitive, and possesses a complex protean verb structure and prosody. Many new fields such as Ethnolinguistics

which deals with social interactions and its relationship with language are emerging as distinct fields of study. Such factors are also determinants of the effects of language in fostering cultural pride or a sense of ethnicity among speakers of different languages. From our point of view, one reason for the inequality of languages is the stalling of the development of specific languages in various epochs due to social, cultural, economic and political factors besides dominance from other languages.

Research is currently underway into the extent of social and linguistic accommodation of different cultures, including assimilation and adjustment, and all these factors should have a bearing on language dynamics as well. These may vary widely for each linguistic community, and must be evaluated on a case to case basis

Ideological factors

The opposition of Dravidian parties to the imposition of Hindi was not just logical or analysis-driven; it was also largely ideology-driven. The Dravidian parties, who have somewhat mellowed down now, were seen as Anti-North Indian, Anti-Aryan, Anti-Brahminical and Anti-Hindu as well. Another well-known movement at that time was the xenophobic Thani Thamizh Iyakkam movement which sought to eliminate all Sanskrit word borrowings from the Tamil language which were considered impure. Consequently, the Tamilnadu government does not teach Hindi in schools run by it, and proficiency in Hindi is by far the lowest in Tamilnadu among all Indian states.

Theory of fashionableness, trendiness and chicness

As per this hypothesis, fashionableness, trendiness and chicness play a major role in propagation of language. For example, speakers of certain basliects of Telugu, abandon their language for Tamil within a generation of migrating to Tamilnadu. As observed by the author in a study in the early 1990's, this can happen very rapidly indeed, and less than a generation. However, speakers of more prestigious dialects of Telugu, particularly those higher up in the economic ladder, prefer to learn English instead and opt for a combination of Telugu and English.

Theory of Linguistic dominance

As per this scenario, more dominant and established or entrenched languages continue to propagate while less dominant languages are further pushed into irrelevance and obscurity. This is representative of the 'Big fish eats the small fish syndrome' and languages spoken by smaller number of speakers may be gradually pushed into irrelevance. This may also be referred to as the 'Strong language versus weak language syndrome'. In this case the number of speakers of a language, their geographical distribution, the clout enjoyed by them, the lexical strength of the language, and its suitability for various roles will make a difference in a speaker's choice.

Theory of Elitism

As per this scenario, elites alter the dynamics of language spread so as to maintain their power, pelf or relative advantage. However, only very rarely will they be successful in preventing others from emulating them. Linguistic elitism is exhibited by English-speakers in India and by French-speakers in parts of Africa.

Theory of Emulation

Per this scenario, language speakers tend to emulate speakers of other languages and dialects, and this leads to linguistic change and affects language dynamics. For example, the popularity of Bollywood in India, has led to an increase in the demand for the Hindi language and may eventually erode the popular base of other dialects of Hindi and other Indian languages. Speakers of some dialects may tend to emulate speakers of other acrolects leading to linguistic change willy-nilly, and this would in turn pave the way for dialect levelling, and other forms of linguistic change.

Theory of Pre-existing knowledge or familiarity

As per this scenario, the existing language fluency or proficiency would continue to dictate linguistic trends. For example, the Tamils living in the Northern Province and Eastern Province in Sri Lanka speak very little Sinhala, and among these, speakers at the bottom of the social pyramid, speak virtually no Sinhala. Tamils living in Colombo on the other hand, have some knowledge of Sinhala as do many upcountry Tamils or Indian Tamils. The knowledge of Tamil among Sinhala speakers is rather limited, though it varies from region to region. Thus, individuals need to know a language before they can use

it. Thus, the use of the Hindi language is not widespread in Tamilnadu because most people do not know it.

Theory of Need to know

As per this scenario, individuals acquire proficiency in a language only where it is absolutely necessary. For example, the dominance of English and Hindi in India has ensured that few Non-Kannada speakers make any attempts to learn the Kannada language in Bangalore. The Kannada Rakshana Vedike, a Pro-Kannada organization, argues that this is slowly killing the Kannada language.

Theory of Mutual consensus

As per this theory, two individuals agree upon a language through mutual consensus during the course of an interaction. Often, this may be a sub-conscious process. Thus, a Nepali language speaker who marries a Bengali language speaker opts for either English or Hindi as their language of communication. This must be aggregated to understand its impact on the dynamics of language spread.

Theory of Mutual comfort

As per this theory, two individuals speak the language they are most comfortable in. Thus, a Nepali language speaker who marries a Bengali language speaker opts for Hindi over English as their language of oral communication, bypassing English which may be restricted for more formal situations. In this case, both parties must be relatively or reasonably comfortable in the chosen language. The language usually chosen would be a subset of the 'Least Common denominator' of the linguistic repertoire of both the parties. This factor must be aggregated to understand its impact on the dynamics of language spread. Another interesting variant of this would be two speakers of different dialects of the same language speaking a different languages because the dialects vary somewhat widely. The Author has witnessed such scenarios.

Interlocutor preference theory

As per this theory, a speaker prefers to use the language the other person or people in the conversation are familiar with, so as to make them feel comfortable.

Theory of Neutrality

As per this theory, speakers prefer a neutral language for all their interactions. The benefit of this is that it does not give the speakers of one language undue benefits over speakers of one or more other languages. This may have ensured the survival and predominance of English in formal, written contexts in almost all parts of India. This is a trend which is likely to continue into the foreseeable future. In most parts of Africa, linguistic boundaries do not equate to political boundaries, and this has propped up the demand for either English or French.

Theory of Force of habit

In this scenario, a speaker who is skilled in many different languages, chooses the language he is most used to speaking, and typically on a constant basis. This factor will be aggregated across various speakers speaking one or more languages to determine the dynamics of language spread in a region.

Theory of Relative fluency

In this scenario, a speaker who is skilled in many different languages, chooses the language he is most fluent of comfortable in. This factor will be aggregated across various speakers speaking one or more languages to determine the dynamics of language spread in a region.

Theory of formal initiation

In this scenario, a speaker prefers the language is formally taught or grounded in. Thus, a man who is taught in an English school in India, prefers to send his children to English schools it turn. This naturally increases the demand for the English language over time.

Theory of Social Interaction

According to the Theory of Social interaction, a speaker's preferences are shaped by the company he keeps, and this drives language dynamics. For example, lower-middle class families in India generally do not speak English in social contexts, whereas elites do.

Local language theory

The Local language theory which is a part of 'Nativity versus immigrants' debate proposes that speakers prefer to speak the local language of the region as far as possible or practicable. An example to illustrate this, is general fact that Tamils prefer to learn the language of the region they migrate to, but prefer to use their own language within their ethnic homelands. This may have allowed English to eventually triumph in the United States with barely a whimper of protest from speakers of other languages. The Cajun French dialect of Louisiana appears to have survived but is now slowly dying. An exception to this rule is Quebec, where the French language is now actually thriving, and widespread legislative measures have been implemented to prevent an encroachment by English.

Immigrant language hypothesis

As per this hypothesis, immigrants bring their language to a region, impacting the language dynamics in that region. This gives the language a foothold in that region which enables it to spread its wings even further.

Rival language hypothesis

According to this hypothesis, the spread of a language will also be influenced by the existence and prevalence of other alternatives, and other viable alternatives.

Limitations of, and difficulties in Second language acquisition

According to this hypothesis, the dynamics of language spread would be influenced by the ability or the inability of speakers of one or more languages in a region to learn the other more dominant languages in the region. This would determine the spread of languages in a region, both in totality and by role. As Fishman, Conrad and Rubal-Lopez have pointed out, acquiring a new language requires changes in language behaviour of speakers. According to Cooper, a new language requires awareness, evaluation, awareness and use, and such changes typically take time.

Practical versus Non-practical considerations

As per this approach, a complete list of practical considerations influencing the spread of language must be made. Examples of such causes are technological superiority, economic factors and even role and context based suitability and indispensability. Non-practical considerations would include emotional and cultural aspects or linguistic pride. Without getting into a discussion about the moral and ethical aspects of such debates, we will at least state that a list of practical and non-practical considerations must be made, and their impact assessed on a case to case basis. One hypothesis is that practical considerations would outweigh non-practical consideration in the longer run, thereby impacting the dynamics of language spread, but we would like this hypothesis to be tested more empirically. This may also be alternatively be recast as Tangible factors and Intangible factors. Tangible factors include factors driven by economic or social considerations, while Intangible factors include cultural pride, a feel-good factor associated with language etc. Again, for example, Swahili symbolizes local ethnicity in East Africa, in a way English simply cannot, (Scotton: 1982) and Bahasa Malaysia has become a symbol of Malaysian identity and English cannot play this role.

Context-based suitability, Role-based suitability, Context-based indispensability and Role-based indispensability

Needless to say, this would be crucial to any analysis and naturally cannot be given the short-shrift given the fact that these would play a crucial role in language dynamics, but we have already discussed these factors elsewhere in the paper.

Judgement-driven, Rule of thumb driven and instinct-driven approaches

Judgement-driven, Rule of thumb driven and instinct-driven approaches may be driven by experienced planners and assessors without resorting to formal evaluation methods. These approaches may however lead to errors in many cases.

Changes to factors influencing the dynamics of language

Changes to factors influencing the dynamics of language in a pluri-lingual society can be artificially induced through at least the following five methods. However, by no means can such endeavours ever override the core tenets and principles outlined as a part of our paper:

- (a) Obfuscation of free flow of information: This approach was attempted in many Marxist and Semi-Stalinist societies. For example, Television was practically controlled by the Indian government prior to the liberalization of the Indian economy in the 1990's, and an attempt made to telecast predominantly in Hindi and not in other Indian languages. Similar policies were followed in the erstwhile USSR. Whether this approach is workable in the long run is debatable, as totalitarian societies have collapsed already.
- (b) Creating a situation of indispensability: Another approach is to create a situation of indispensability. The English language has entrenched itself worldwide primarily by the 'Push-pull', 'push-pull-churn', the 'push-pull-churn-feedback' and the 'sub-conscious adoption' modes. The Indian government is promoting Hindi abroad with the hope that it will influence the dynamics of language spread within India. Whether they will be successful is anybody's guess, by readers can use the principles of the 'Theory of linguistic osmosis' to determine this for themselves.
- (c) Waiting for cultural changes to manifest themselves. This is typically a slow process, as languages is often seen to be central to cultural and ethnic identity. Community sentiment, which R.M McIver and Page associate with a "we-feeling" and a "role-feeling" is common throughout the world, but to varying degrees.
- (d) Changes to the education system: Examples of this are the non-introduction of Hindi as a mandatory subject in Tamilnadu schools resulting in a lack of knowledge among the public of the language and the low importance given to English in some Hindi speaking states.
- (e) Political and ideological opposition: Examples of this were the Anti-Hindi agitations of Tamilnadu in 1937 and 1965. While these cannot influence the dynamics of language directly, they can serve to create awareness among the larger public and the laity. Pro-English and Pro-Hindi campaigns many of them shallow and devoid of any substance are common on the internet even today. Similar perfidious, chauvinistic and shallow anti-English campaigns were also unleashed by the Jan Sangh; this was nothing short of utter hypocrisy, tomfoolery and chicanery; these politicians have always had a penchant for sending their children to prestigious and exclusive English schools normally reserved for the elite.

Theory of Win-Win Paradigms

We also propose the Theory of Win-Win Paradigms as follows

- (a) The Theory of Win-win propositions as opposed to the principle of Unnatural Control states that within a given set of circumstances, languages spread in such a way that they provide as far as possible, a win-win proposition to all stakeholders, and any paradigm which results in a win-lose proposition would either fail or throw up a counter-reaction.
- (b) All language interactions are typically based on the theory of win-win paradigms. In other words, the usage of languages in specific situations (based on contexts and roles) must lead to some kind of a gain to all the parties involved in the interaction.
- (c) There may be exceptions to the theory of win-win paradigms and in such a cases the paradigm fulfilling the conditions of this theory to the greatest extent usually prevails over the paradigms fulfilling the conditions of this theory to a lesser extent or not fulfilling the conditions of this theory at all and subject to other principles of language spread.
- (d) Language interactions need to be studied with specific reference to a region and the role played by the language in that region and in a specific context.
- (e) The Theory of Win-Win paradigms must be applied in conjunction with all the other principles in this paper.
- (f) Proposals to address discrimination may be classified into 'Intrinsic bargains' and 'Non-intrinsic bargains' as discussed in this paper.
- (g) In case language interactions are based on win-lose paradigms they will be successful only in specific conditions and must be studied in conjunction with other principles of language spread.

- (h) If this principle is not met, a break-up of the linguistic unit may result e.g. the disintegration of USSR, Pakistan and civil war Sri Lanka. Alternatively, dissatisfaction may result.
- (i) In some cases, the principles of the Theory of win-win paradigm may lead to some kind of loss to one or more parties. In this case, the losing party would attempt to adopt the 'minimum loss' approach by adopting the next best scenario. We have also discussed the 'Doctrine of Insubordination' in this paper.
- (j) In many other cases, linguistic paradigms lead to some kind of a loss to a specific set of users, and these may have other intended consequences, such as the extinction of languages. We have discussed this in another section of the paper under the 'Net benefits approach'. However, this may not necessarily be a violation of this theory, as will be discussed.
- (k) While it is unlikely that systematic violations of this principle can happen, we would like exceptions to this theory, if any, to be formally documented and assessed by other scholars to preclude any possible confirmation bias. One exception we can think of is acculturation or enculturation, and a marginalization of, or a total disregard for speakers of a language, but this is typically a very slow process. We would like such scenarios to be evaluated on a case to case basis.
- (l) Even if the Theory of Win-Win paradigms has bonafide exceptions, few would deny that planners need to evaluate all proposal against this , in the interests of short to medium term communal harmony as violations of this principle can cause unintended consequences in the long term.

Let us now attempt to explain this by means of suitable examples. Maharashtra is one of the most industrialized states in India. Its capital Mumbai (formerly known as Bombay) is the commercial capital of India, and one of the largest metropolises in the world. Pune is another important city in the state and is known for its IT and automobile industries. The state language of Maharashtra is Marathi. Like Hindi, Marathi is a part of the Indo-Aryan family of languages. It is one of the oldest surviving languages of this language group and dates to at least the 10th Century AD. It is written in the Devanagari script, like Hindi, though another script namely the Modi script was once used. Mumbai was a cosmopolitan city long before India attained her independence. In the 1930's, Bombay was home to Parsis, Gujaratis, and some North Indians and South Indians as well. Maharashtra offered very little resistance to India's post-independence language policy. This may have been partly because of Marathi's similarity to Hindi.

However, the language of business and commerce is English, and the elites send their children to English-medium schools or schools where English is the medium of instruction. Marathi is the administrative language of the state, and all state government offices use Marathi. There is some use of English in administration at the state-level. However, Hindi is almost never used as the administrative language of the state. Moreover, the state government runs most of its schools in Marathi. The state government also runs some Non-Marathi schools for the benefit of linguistic minorities. However, Hindi is widely used as a spoken entry-level lingua franca in Mumbai city because the city is home to a large migrant population and a floating population who have not taken the trouble or initiative to learn Marathi, the language of the state. There are now only a few Marathi strongholds in Mumbai such as Shivaji Park. English is too elitist to be used as an entry-level spoken language due to its association with India's elites, and the fact that only a small number of people are comfortable with it. It is also not symbolic of Pan-Indian values. However, the use of Hindi as a formal, written language is rather limited, given the fact that the elites and a significant proportion of Hindi speakers, and almost all those who really matter, prefer English schools. Thus, we say a triangular fight exists between three different languages in the state. No other language really matters in the state. Marathi speakers continue to raise concerns about the marginalization of their language particularly in Mumbai city where native Marathi speakers only constitute a small proportion of the population.

Let us now analyse different scenarios in Mumbai city. Hindi remains is a popular entry level lingua franca in Mumbai. This is by virtue of the fact that the percentage of Marathi speakers is constantly declining in the city. While English is too elitist, the education system is also largely to blame for the citizens' lack of proficiency in any one language. Many parents send their children to English schools with Hindi as a mandatory second language, thereby relegating Marathi to the backburner. Let us now analyse what this entails for Hindi speakers. This is virtually a bonanza and a manna from heaven for them, as it would appear to validate their cultural superiority and numerical strength, and ratify the case of Hindi as a national or a link language. There are no downsides for them either. The benefit of this for citizens for whom neither Hindi nor Marathi is their native language is an ease of communication and the fact that their target audience may not be comfortable in English either. Such an individual would make an effort to learn basic Hindi (and usually not Marathi) over a period in time. However, such a

English	Business and official language (Scenario C)	Maharashtra state, India	Primary and secondary benefits to the group	Disadvantages to the group	Primary and secondary benefits to the group	Disadvantages to the group	Primary and secondary benefits to the group	Disadvantages to the group	
			<Refer text for explanation >	<Refer text for explanation>	<Refer text for explanation>	<Refer text for explanation>	<Refer text for explanation>	<Refer text for explanation>	<Refer text for explanation>

The Theory of Win-win propositions may have worked in colonial times and rather remarkably and admirably. The English rulers promoted the English through clever strategizing and careful planning. English was seen as a tool for empowerment by Indian clerks in the East India Company (who constituted a very small percentage of the population) and other Indians who wanted all kinds of favours from the British, including employment opportunities. This principle was undoubtedly applied subconsciously in other English and French colonies also, and the colonized elites were handed out a carrot-and-stick approach by the colonialists. Another strategy adopted by the imperial rulers, among others, was to divide Indian elites from non-elites for whom language policy may have mattered little, and to again divide Indian on linguistic, ethnic and cultural lines after a careful study of their ways and patterns of thinking. This was famously referred to as the 'Divide and rule' strategy. Thus, it would be very obvious from the very outset, that Imperial language policies involved a fair amount of successful strategizing and deep thought.

Even the Indus Valley Civilization elites showed an implicit respect for the principles of 'Unity in Diversity' or at least the principles that would have fostered communal harmony in a multi-ethnic and polyglot society like theirs. In this case, the polyglot nature of the IVC as acknowledged by the society's architects. Thus, the non-linguistic component of the logo-syllabic Indus script and other non-linguistic cultural icons were chosen as tools of national integration. Post-Independent India's language policy may have emphasized religious harmony over harmony among speakers of various languages to prevent an impending partition of the nation, but this policy was clearly hijacked by people with vested interests as well, who may not even have had the larger interests of the nation in mind. Thus, we can even argue that India's language policy is structurally flawed.

Win-win propositions must again be intrinsic or built into the structure of the proposal itself, as opposed to non-intrinsic propositions. Thus bargains involving reservations for non-Hindi speakers to compensate them from perceived losses would not have worked as this would not addressed a wide variety of scenarios. While Karl Marx may not have spoken about such linguistic paradigms, they were clearly Soviet-style communist constructs and antithetical to the very idea of India and synonymous with a totalitarian and an over-centralized approach. One can even provocatively argue that our ancient ancestors were endowed with more practical common sense and that the failed Rajbhasha policy, despite the success of Hindi in other spheres, was a blot on the idea of a diverse and a multi-lingual India.

The doctrine of insubordination comes into play when the speakers of a language or a group of languages accept the supremacy of another language in spite of a historical track record of opposition to it. This may be a bona fide exception to the Theory of Win-win propositions. While such an equation may rarely lead to the extermination of the oppressed language group in the short term or a medium term, the speakers of the oppressed language group accept the inevitable and may grudgingly accept the supremacy of the other language either on the basis on the numerical strength of its users, its widespread usage, or its cultural or technical superiority. This however works only in conjunction with other principles of language spread in multi-lingual societies. Examples of such cases include the slow acceptance of English in many circles in France as the world's leading lingua franca. The recent desire expressed by many Tamil speakers to acquire at least a basic level of proficiency in Hindi, in addition to Tamil and English is another case in point. In case of the latter, English is however a neutralizing factor, as the extent of linguistic domination by one group in a single country or a political entity may be far more severe as it is at a global level as there may be fewer checks and balances here. We may invoke the 'Theory of Linguistic Osmosis here'. Even so, most French speakers may have climbed on to the English Bandwagon for self-benefit, or to make the best use of a situation in which they have

relatively less leeway, and English is increasingly seen in France as an indispensable tool of internationalization. Tamil speakers, likewise may learn Hindi for the limited purpose of entry-level interstate communication and for the very limited purpose of Central Government jobs. Likewise, although Hindi has lost the race to English, Hindi speakers are not on uneven keel with other language speakers for jobs, and English has greatly benefitted Hindi elites too. Thus, the complete subjugation of one linguistic group by the other may be extremely rare, at least where a change in status quo is involved, and a time-consuming process as all parties always try to make best use of any given situation.

For such a language policy to work the language in question or its speakers must possess and enormous amount of clout of goodwill, and no other roadblocks or impediments must exist. As such, such cases are relatively rare in the real world, and this explains why Hindi failed to replace English. As a matter of fact, few scholars ever expected it would. There may be a few exceptions here, such as the co-existence and linguistic subordination of Tulu and Konkani speakers in Karnataka, the reasons for which have been laid bare in this paper, but this paper proposes a principle and recommends that exceptions be studied separately, as such an approach would always put an onus on those providing differing viewpoints to provide empirical evidence and a logical justification. As Horton and Hunt have pointed out, assimilation and acculturation are always two-way processes involving some amount of give-and-take, and exceptions to this principle may be relatively rare. However, the Doctrine of Insubordination does imply that the subordinating language is not on even keel with the subordinated languages, and as such it may take a greater effort to break its stranglehold. Thus, the doctrine of Insubordination does imply a change in the language hierarchy.

In case of the Rajabhasha policy which would have led to a win-lose proposition, by benefitting only the speakers of one language. In the case, they were many inconsistencies in policy between central and state governments as well. The policy not only failed but also encouraged English even more, by making Hindi and other Indian languages subservient to English. English also may be based on a win-lose paradigm as it may benefit a small number of speakers fluent in English at the expense of the disempowered majority. This may automatically restrict the use of English to specific contexts and encourage another language or set of languages in other contexts.

Here is another example: Hindi has spread in recent years outside the Hindi speaking states. There may be many reasons for this. One is the three language formula followed in most of India; this policy familiarized a large number of Indians with the Hindi language and provided them with a working knowledge of Hindi. The second is the rise of Bollywood which rode piggy-back on India's language policy. The third may be the spread of Hindi-speakers outside non-Hindi states in pursuit of job opportunities. Thus, Hindi has begun to be used even by groups of non-Hindi speakers, none of whose native language is Hindi to communicate with each other in specific contexts. Thus a Telugu speaker in Bangalore who does not know Kannada and is indisposed to learning the local language and is not fluent in English, may speak to a Marathi speaker in Bangalore in Hindi. This is because the usage of Hindi at this level provides a win-win proposition to both the parties. Hence, after providing a modicum of unity to compensate for the impracticality of English in specific contexts, Hindi may actually divide beyond a point, and, obviously encourage English even more. Hindi may not provide a win-win proposition at any other level, either. Hence, as explained, as a written language, or as a language used exclusively in formal communication, it is well and truly defunct outside the Hindi belt, at least at this point in time. As a fallout of this paradigm, both the parties mentioned above may lose interest in Hindi altogether after acquiring fluency in English, and their increased fluency in English would curtail their usage of Hindi. On the other hand, Hindi speakers may have had a false sense of complacency, a kind of wishful thinking that did not ultimately work in their interests, and resultantly, economies of Non-Hindi states were poised for take-off in the early years of liberalization, in spite of the limited English proficiency of the larger populations of Non-Hindi states. A parity across various states in the nation is of course being achieved now. This is a key principle that needs to be borne in mind by while formulating language policies, and any violation of this principle may work against communal harmony.

There may be exceptions to this rule- examples are the spread of Kannada in non-Kannada speaking areas of Karnataka (This may have happened because Kannada was the language through which widespread literacy was achieved throughout Karnataka and the other languages of the state were only spoken ones lacking written records or a literary tradition.) and the spread of English in non-English speaking areas of Britain. In both cases, the status quo may have been achieved only after centuries, and other languages did not die out completely. In case of the latter, the spread of English into parts of Britain may have been effected by that language's prestige as an international lingua franca as well. The relative decline of French and the spread of English does not provide a win-win proposition to

French speakers; however, there is an inevitability to this, and the enforcement of such a scenario through political methods for example, would not have worked.

In spite of the so-called neutrality of the English language from the standpoint of various Indian linguistic groups, the language is obviously heavily biased in favour of English speaking countries, and gives them a clear advantage in fields such as science and technology, for example. Secondly, the English language is at best known to small groups of people outside native English speaking countries, and is heavily biased in favour of urban and educated elites in all parts of India. Thirdly, native English speakers get away by leaning English alone which is their native language and rarely learn any other language. However, English learners in Non-English speaking countries must not only learn English as a foreign language, but must also learn one or two additional language as well. Fourthly, it is doubtful if the elites in Non-English speaking countries can achieve the same level of proficiency in English as native English speakers. In spite of all these factors and the fact that English is known only to a small number of people in India when compared to Hindi, the forces of language spread in the region have booted out Hindi in favour of English, despite the latter's lack of political patronage at any level, and knowledge only among the elites, allowing Hindi only to play second fiddle to it. The forces of language spread in the region clearly took precedence over the forces of language spread at an international level here. Again the principles of the Theory of Linguistic Osmosis manifested themselves.

In India, French, like Portuguese, disappeared after French colonies won their independence and were merged into the Indian Union. The reasons for this would be not too far to seek: French colonies in India were small and far apart like French colonies in Asia, and did not have the benefit of being able to interact with each other. This is yet another example of Linguistic Osmosis. The availability of more practical alternatives like English proved to be the final nail in the coffin for French in India.

In the case of the European Union the usage of English is far greater than French, and English undoubtedly established itself as the EU's most important language far ahead of both French and German. In Scandinavian countries and Holland, for example, the use of English is well-entrenched, and is widely seen to be a second language. However, in the EU, the widespread usage of English does not appear to have been associated with the domination of one group, as the usage of English as a useful lingua franca has currency outside the EU as well. The political independence of constituent nations may have served to allay fears of the linguistic domination of one group. French has been far luckier in Africa, but much of its luck here can be said to be fortuitous. French colonies here are found closer together, with allows for trade and cultural contacts between those regions. In addition, a costly and a controversial Francophonie program run by France may have propped up the importance of the French language somewhat. The availability of a large number of native tongues within each of the Francophonie countries, besides the fact that most are not written languages have helped the cause of French in the region. The absence of any other lingua franca, the low levels of literacy (which may have actually been a blessing in disguise as it empowered a small group of elites), the absence of a political will to enforce major changes to the language policies have also undoubtedly helped the cause of French in the region, and the rapid population growth in the region is perhaps the only icing on the cake for a language that is seen to be steep and terminal decline around the globe. This has not prevented the pidginisation and creolisation of French into mutually unintelligible forms, even though a substantial proportion of the population of some Francophone countries claim a working knowledge of French, and this may be an interesting manifestation of policies involving the import of a language that may not be the best-suited for the region.

In addition, the region has not been immune to wider global forces, and English is making slow inroads into the region as well. In Rwanda, English has almost replaced French. This has impacted neighbouring Burundi as well. Of late, countries such as Gabon, Morocco and Zaire have made progress in introducing English. In Algeria, English is already beginning to take over from French. In Senegal, a bastion of French culture in Africa, Wolof is gnawing away at the hegemony of French despite alarm in some circles, and there are even indications that that country wants to swap French for English in the longer term. In spite of all this, French still remains strong in many parts of Africa and will remain entrenched there for a long time to come.

The unparalleled success of the English language this far can be attributed to the combination of the following factors (a) Colonialization of all the 'right' places (b) The rise of the USA as a superpower (c) Its presence in other important countries such as South Africa and Australia (d) The absence of any other viable alternatives and the demand for a global lingua franca. (e) The spread of the internet and information technology industry (f) the onslaught of globalization and the collapse of the USSR (g) the timing and the order of all the above events which played a key role in its success (g) Its relative

practicality vis-à-vis French and other languages (h) its large technical repertoire of words and the deficiency of many other languages in this regard. Its future is hard to predict, but the rapid spread of English may eventually stop and may level off by around 2050. Another factor that needs to be taken into consideration is the fact that the percentage of native English speakers out of the total number of English speakers and the percentage of native English speakers as a percentage of the world population will decline even as the total number of speakers and users of the English language increase. Other factors such as the future of French may have a bearing on the future of English as a lingua franca, albeit marginally. More importantly and interestingly, the future of English around the world is also likely to have a bearing on its popularity in India, and vice versa.

Net benefits approach

As per the Net Benefits approach, speakers of a language subconsciously evaluate the benefits and demerits involved in using a role in a given role or context. This is a purely subconscious process, but will result in a certain outcome of decision. This approach must again be applied in tandem with the other principles laid out in this paper. For example, speakers of Kumaoni and Garwhali languages, but of which are critically endangered languages, may not choose to speak it outside their native context because they are too embarrassed speaking it, not fluent in it or because they do not wish to inconvenience third parties. This is in spite of the ethnic pride associated with it, which is an intangible factor. Kumaoni and Garwhali speakers may eventually abandon their language if the demerits such as lack of fluency, fluency in an alternative language such as Hindi, convenience, frequent intercourse with composite groups, outweigh the merits such as ethnic pride. Speakers of certain basilects of Telugu abandon the language sooner still because they are too embarrassed to speak it in public. They may continue to speak it with their elders for a generation and then abandon it altogether. This will lead to the death of a language. This is critical because languages seldom die out because all their speakers have died due to declining birth rates, a population implosion, epidemics or some other reason. Languages die out because their speakers have abandoned them in stages. A language keeps losing the roles played by it in society one by one, and its functions one by one. It then dies. This is a very important point to note. It is also important to note that the benefits and demerits in this regard may be either tangible or intangible.

Similarly, speakers of primitive proto-languages in the stone age would have abandoned their tongues at a certain point in time, and assimilated with the larger populations of the region. Even they may have unknowingly followed the tenets of this approach! We may represent this as under, and also state the limitations of this approach below. A speaker subconsciously evaluates the benefits and demerits of using Language A and Language B (and possibly Language C and Language D as well) in a specific role and context and then takes a decision. Other factors will also need to be included in the assessment. These are Cultural factors, Social factors, ethno-biological factors, relative fluency, linguistic distance, relative ease of use, linguistic power and prestige, other factors.

Name of the Language:					
Role played by the language:					
Geographical context:					
Social Context (If applicable)					
Cultural Context (If applicable)					
Speaker Name:					
	Language A		Language B		Remarks
Serial No	Tangible benefits	Demerits (Tangible)	Tangible benefits	Demerits (Tangible)	
	Intangible benefits	Demerits (Intangible)	Intangible benefits	Demerits (Intangible)	
Other factors involved in assessment:					
(a) Cultural factors:					
(b) Social factors:					
(c) Ethno-biological factors					
(d) Relative fluency:					
(e) Linguistic distance:					
(f) Relative ease of use:					
(g) Linguistic power and prestige					
(h) Other factors					

Thus, this approach can also be used as an aid to model the decline and eventual death of languages. If the principles proposed in this paper are violated, several counter-reactions can result. Other factors such as linguistic simplicity, practicality, eloquence and lucidity, productivity and creativity, clarity, emphaticness, flexibility, grammatical and syntactical similarity or dissimilarity with other languages in the region, phonetic compatibility with other languages in the region, lexical strength and attributes. Other factors such as level of education, infrastructure, penetration of technology and other related factors must also be taken into account, and these will constitute the limitations of this approach.

Per our prognosis, the spread and power of English will increase worldwide for the next two or three decades at least, and then level off. After this English will continue to be the world's leading language. However, several key linguistic blocks will emerge, and a clutch of languages, say ten, will dominate the world. Many other languages will either become subservient to them, or try to compete with them. Role-based stratification will increase, and English will continue to dominate in international communication, science and technology. However, the role played by other languages in this regard will increase slowly. Languages will influence each other, more than ever before in the past. This will be bi-directional but the world's leading languages will influence less widely spoken languages to a greater degree. There will be movements to empower other languages and make them more internet and technology savvy. The number of languages will continue to fall precipitously, but will then level off. The total number of languages in the world will level off at a figure greater than one thousand. We also strongly believe that the use of languages will eventually align themselves worldwide in a way that will maximize human creativity and productivity with but minor exceptions and aberrations.

We also categorize factors as predictable and non-predictable factors. Predictable factors for our purpose include those which can be incorporated into the science of language dynamics and those which assume no change in status quo; they simply assume even if somewhat naively and fallaciously, that current trends will continue, that no cataclysmic political or economic changes will take place and that no disruptive and game-changing technologies will enter the fray. Unpredictable factors include those which cannot be incorporated into the science of language dynamics. Example of such factors are political and economic factors. Unpredictable factors may still be expressed as scenarios. For example, Scenario A may assume an increase in the economic power of the USA, scenario B may assume no change in status quo while scenario C may predict a decline. Unpredictable factors will have a bearing on future assessments, more so in the long term. It is sometimes said that the future is a set of possibilities; a list of such scenarios must therefore be made, to the extent possible. In a nutshell, the reliability of predictions decreases with time, and predictions are always fraught with risks and uncertainties.

A short-list of counter-reactions arising from the violation of these principles is given below (This list is purely indicative and demonstrative, and many other types of situations may occur):

- (a) Changes to the role played by a language in a geographical, cultural and social context.
- (b) Linguistic decline in the geographical context leading to possible death of the language in some circumstances.
- (c) Promotion of an alternative language or languages.
- (d) Breakup of the linguistic unit or country such as the disintegration of the USSR or Pakistan.
- (e) The manifestation of factors leading to a breakup of a linguistic unit or country, an example being Sri Lanka.
- (f) Gross dissatisfaction among members of one or more linguistic communities typically manifesting itself in some form.
- (g) Lowered linguistic ability in one or more languages among segments of the population or a wider populace.
- (h) The emergence of pidgins which will eventually lead to creolization.
- (i) The emergence of hybrid languages such as Hinglish.
- (j) Innovation leading to borrowing of new words, or rapid changes to language.

Limitations of the theory of Linguistic Osmosis

- (a) Linguistic attributes of languages: We have discussed various measures of linguistic complexity elsewhere in the paper, and it would be pointless to reiterate them here.

- (b) Linguistic distance between two or more languages: We have discussed various metrics to calculate linguistic distance elsewhere in the paper and it would be pointless to reiterate them here.
- (c) Cultural factors: Cultural factors would unquestionably impact the adoption of language. Popular surveys in India and other parts of the world have revealed that English is associated with Science, Technology, the Internet, modernization and social mobility. On the other hand it is also associated with Imperialism, materialism, Westernization, anti-nationalism and cultural alienation and rarely with national identity. Thus, cultural preferences vary from region to region, and need to be taken into account in any analysis.
- (d) Social factors: Social factors such as the quality of education, the caste system, the gender divide and any other social evils would undoubtedly hamper the spread of languages, and would need to be taken into consideration while carrying out any analysis.
- (e) Role of the language: If the use of the language is purely colloquial and informal, it may be immune to the forces of linguistic osmosis.
- (f) Bi-Polarity and the presence of two or more rival languages: To illustrate, the rivalry between English and French will logically diminish the ability of the English to rule the world in vital areas such as diplomacy and haute couture.
- (g) Absence of interactions between different regions of the world: A suitable example here would be the Cold War of the 1970's which led to the emergence of two political and economic blocs with wholly incompatible political and economic ideologies who refused to talk to each other, and were mutually antagonistic to and hostile to each other.
- (h) Economic autarchy and Cultural isolation: Economic autarchy and cultural isolation would hamper the spread of languages. As a result, English has been able to make very little headway in North Korea, and demand for English in Russia increased only after the fall of the Iron curtain.
- (i) Lack of technology: In spite of ambitious schemes like the Digital India which aim to eventually connect every village seamlessly with high-speed digital connectivity through broadband highways, digital literacy remains very poor in India, and bandwidth abysmal. Unless such missions meet their stated and avowed goals, the technical empowerment of Indian languages will remain a distant pipedream.
- (j) Presence or absence of education: Although most Indian states have claimed universal enrolment or near universal enrolment in schools, the dropout rate is very high, the school infrastructure poor, the teaching methods outdated, and the teachers badly trained. Among the major Indian states, Kerala has the highest literacy rate of 93.91% in 2011, while Bihar was at the bottom of the heap at 63.82%. Many African countries have fared much worse and countries like Burkina Faso and the Central African Republic have literacy rates of less than 40%.
- (k) Lack of infrastructure: Lack of infrastructure in India and elsewhere continues to be a sore point. An estimated 200 million to 300 million Indians lack electricity as on 2015, and even as per government estimates, the rural electrification program will not be completed till 2022. Even if this date is achieved the regularity of power supply is expected to remain a concern. The Pradhan Mantri Gram Sadak Yojana or the rural roads program was launched with great fanfare in 2000 but has been saddled with delays and cost overruns. Most African countries fare much worse than India. Even though there is a near universal enrolment in schools in India, poor infrastructure is likely to hamper Digital India and other programs.

Annexure A

Case studies

The following are some case studies for evaluation, and an analysis can be attempted from our approach. A complete list of direct and indirect factors involved must be listed out. List out and evaluate as many scenarios as possible. Assumptions if any, must be stated clearly:

How will Brexit impact the usage of English in the EU? How will this impact the status of the English language worldwide?

How will France's attempts to push English out of the European Union after Brexit affect the future of French in the EU? How will it affect the status of French globally?

To what extent will a hypothetical shift from French to English in Francophonie Africa affect the status of French globally? To what extent will it bolster the use of English?

To what extent will high birth rates in Francophonie Africa affect the status of French globally?

How will an increase in literacy in Francophonie West Africa affect the status of French worldwide? Will the medium of instruction (French versus indigenous languages wherever applicable, make a difference?)

What are the differences between India's attempt to thrust Hindi on Non-Hindi speaking states and France's attempt to block the use of English in the EU? Will both of them work? What are the differences between both these situations?

How will enforced multi-linguicism policy of the Canadian government affect the future of French both positively and adversely in Canada? How will this in turn affect the future of the French language worldwide?

To what extent will Hindi be able to replace English in India in the long term? How long might such a process take?

Will Gambia's attempts to push out English succeed?

Will Burundi's attempts to replace French with English succeed? What are the differences between Rwanda and Burundi in this regard?

Will changes to Vietnam's language policy cause a ripple effect or a domino effect in the region? Will the situation be different if the change first occurred in Laos instead of Vietnam?

To what extent are the prospects of the French language worldwide dependant on the economic success of France?

To what extent are the prospects of the English language worldwide dependant on the economic success of the USA?

Telugu has more dialects and geographical and social variation than Tamil. To what extent will this impact its spread and power outside the state than Tamil? Will it cause its speakers to abandon the language earlier as they spread to other states? What other factors must this be studied in conjunction with?

Did India's language policy encourage the use of English in India? If so, why? To what extent will it affect the prospects of English worldwide?

What are the prospects of the English language in the Twenty-first century? What assumptions do you need to make in this regard?

What are the prospects of the French language in the Twenty-first century? What assumptions do you need to make in this regard?

What are the prospects of the Spanish language in the Twenty-first century? What assumptions do you need to make in this regard?

How will China influence the dynamics of language spread in the Twenty-first century? Will Chinese weaken the stranglehold of English?

How will India influence the dynamics of language spread in the Twenty-first century? How will India influence the spread of English worldwide?

Annexure B

Role encroachment

Role encroachment may be studied as follows: A formal survey may be carried out in different geographical regions from time to time to understand the roles played by different languages in society. For example, though the use of English is rapidly increasing in India, it has already ceded some of its soft power to Hindi and other Indian languages. This survey must cover all languages in use in a region and must analyse all the roles played by each language. This will be followed by a Root Cause Analysis which will further be used to analyse patterns and underlying causes that will be applicable across regions.

Name of the Language: Language A Geographical location: XXX, Say, Bangalore, India						
S.No	Role played by the language	Period of Evaluation A	Usage (Dominant/High/Medium/Low/Non-existent)	Period of Evaluation B	Usage (Dominant/High/Medium/Low/Non-existent)	Root Cause Analysis
1	Business or commercial usage					
2	Administrative usage					
3	Quotidian or daily usage					
4	Literary usage					
5	Lingual franca within the region					
6	External communication					
7	Language as a symbol of cultural power: Soft power enjoyed by the language					
8	Liturgical, sacerdotal or religious usage					
9	Peripheral or secondary usage					
Name of the Language: Language B Geographical location: XXX, Say, Bangalore, India						
S.No	Role played by the language	Period of Evaluation A	Usage (Dominant/High/Medium/Low/Non-existent)	Period of Evaluation B	Usage (Dominant/High/Medium/Low/Non-existent)	Root Cause Analysis for change
1	Business or commercial usage					
2	Administrative usage					
3	Quotidian or daily usage					
4	Literary usage					
5	Lingual franca within the region					
6	External communication					
7	Language as a symbol of cultural power: Soft power enjoyed by the language					
8	Liturgical, sacerdotal or religious usage					
8	Peripheral or secondary usage					

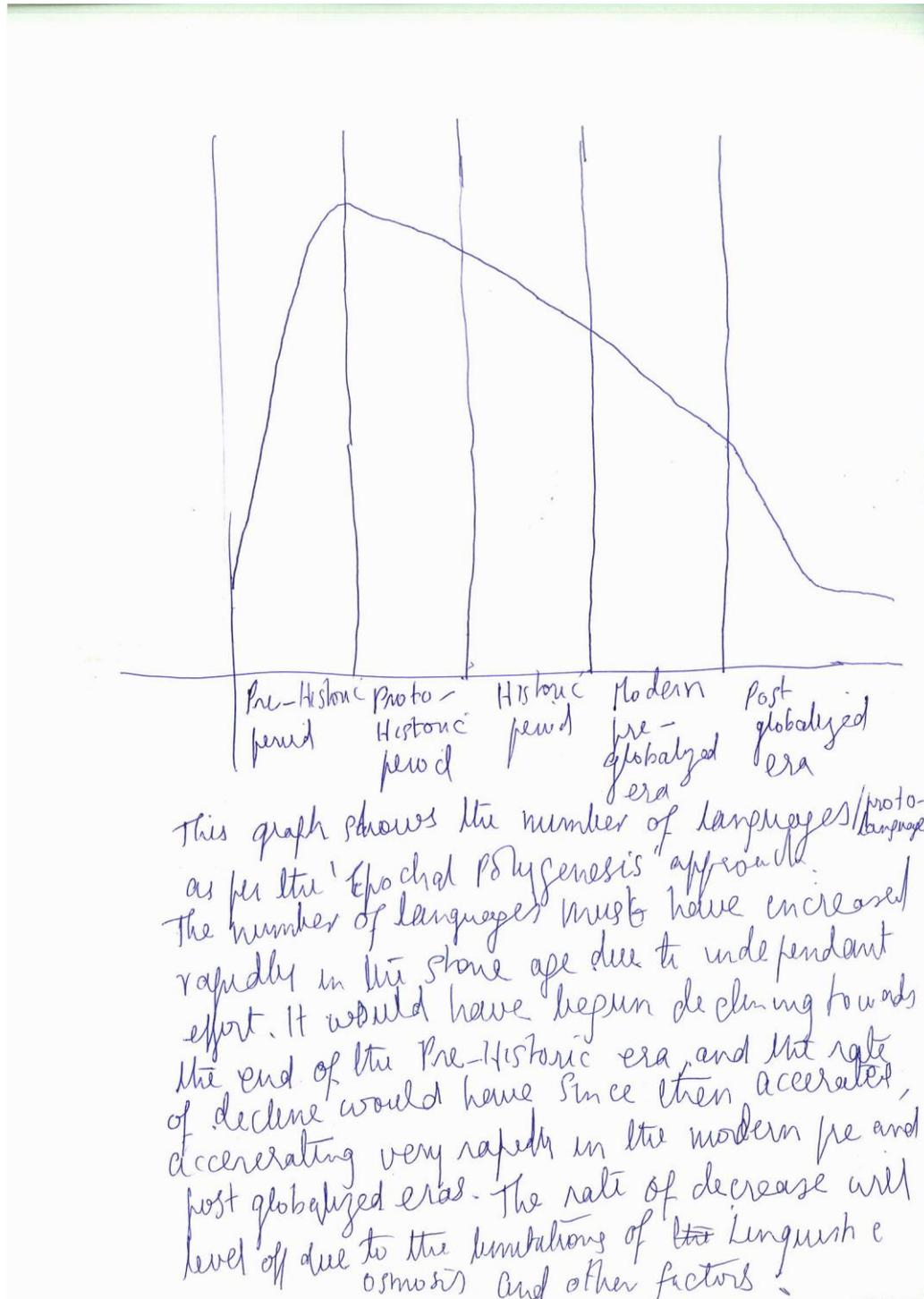
Annexure C

Speaker Profiling

	Name of the speaker: Additional details: Complete list of languages known:				
Name of the language	Spoken fluency	Written fluency	Role in which used	Geographical context in which used (Provide details)	Social and cultural context in which used (Provide details)

Annexure D

Fluctuation in the number of spoken languages as per the 'Epochal Polygenesis approach'



This graph shows the number of proto-languages and languages as per the 'Epochal Polygenesis' approach. The number of proto-language must have rapidly increased in the stoneage and the pre-historic period due to an independent effort in the development of proto-languages. The number of proto-languages or languages would have begun declining towards the end of the Pre-historic era, and the rate of decline would have accelerated, accelerating in the modern Pre-globalized era and accelerating even further in the modern Post-globalized era. The rate of decrease in the number of languages spoken will however level off due to the limitations of 'Linguistic Osmosis' and other factors.

Annexure E

Non contact-based drivers in different epochs

S.No	Name of the epoch	Prevalence of Non-contact driven scenarios	Contributory factors (New and additional technologies)
1	Pre-historic period	Non-existent	Boats (However, formal memory aids did not exist)
2	Proto-historic period	Extremely low, if at all as true literacy did not exist and the impact of new inventions on the dynamics of language spread was negligible	Proto-writing The invention of the wheel Horse riding Horse and cart Bullock cart
3	Historic period	Moderately low. True literacy existed but was limited to small sections of society. The impact of new inventions on the dynamics of language spread was negligible	True writing Trade contacts Cultural contacts Political contacts Chariot and Horse-carriage
4	Modern pre-globalized period	Moderate	Printing press from the Thirteenth Century Radio Television Steam locomotive Steam ships Automobile Aeroplane The age of exploration Colonialism Increase in literacy levels
5	Modern post-globalized scenarios	Very high	Internet Globalization (The role of non-contact based scenarios is likely to increase because the factors working in favour of globalization are expected to outweigh the factors working against it.) Near-universalization of literacy