# HYPOTHESES ON LANGUAGE EMERGENCE AND DEVELOPMENT

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**Abstract.** Intensive research of language has yielded numerous astounding revelations, yet we are not quite certain as to why humans, of all other living species, have this rather remarkable ability to speak. The fact language developed in only one species is suggestive of the existence of a profound obstacle, "the Great Filter". Ethological studies, Machiavellian intelligence, Theory of mind and Ape language experiment taken in conjunction indicate that increased group size intensified social interactions and made them more complex, which led to the co-development of the neocortex, social structure and protolanguage. Reciprocal altruism and more diversified foraging led to improved cognitive capabilities in terms of foraging-related information donation. This paper will try to follow the intricacies pertaining to the emergence of language down the yellow brick road of evolution from first screaming, grunting and wailing primates to humans who are able to express the subtleties of everyday social experiences. We will try to show that, even though there are numerous theories pertaining to language emergence, none of them should ignore different interwoven social aspects in terms of language emergence. Apart from that, our paper should clarify that language emergence and evolution cannot be viewed through a single prism and that such approach is destined to fail. This is where we see the main novelty of this paper; any language emergence and development theory must encompass multiple sub theories and lines of evidence. Language, as a fascinating human faculty, must be viewed through numerous intricacies and angles in order to be better (maybe never fully) understood.

**Keywords:** social intelligence, collaborative exploration, social interactions, evolutionary development, intersubjectivity.

## 1. INTRODUCTION

The story of how language began has often been neglected which is surprising since this is the story which ultimately tries to understand who we are and the telling of this story has proven to be exceedingly difficulty, or as Christiansen and Kirby (2003) put it "this is the hardest problem in science". There is much we do not know about language, which is perplexing given the fact we use it every or almost every day in one form or another. Specifically, the origin of language is still somewhat shrouded in mystery and we may

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never be able to properly disentangle and solve this puzzle, because we only have circumstantial evidence that can usually be interpreted in more than one way. How intricate the situation in terms of the origin of language was can be understood if we mention the decision of the then newly established Paris Linguistic Society not to include the topic of the origin of language in its agenda in 1866. Seven years later, the Philological Society adopted the same decision because the topic seemed too speculative. More than a century later Noam Chomsky (1968: 61) wrote "it seems rather pointless . . . to speculate about the evolution of human language from simpler systems—perhaps as absurd as it would be to speculate about the "evolution" of atoms from clouds of elementary particles".

This is where we would like to introduce two counterarguments to what Chomsky wrote more than fifty years ago. The first counterargument is related to language creolisation where a stable language is created through mixing of different (more or less pidgin-like) languages. A creole thus becomes the main means of communication within a community with more complex structure and lexicon than the pidgin from which it was derived, meaning a language can evolve. The second counterargument is related to a linguistic process whereby a grammatically simplified means of communication develops between linguistically diverse groups. This process, called pidginisation, indicates that languages can devolve into their simpler parts, so it is not too much of intellectual stretch to imagine the opposite scenario (cf. creolisation) (Hazaël-Massieux 2009). The term "pidginisation" is used to describe the tendency of a language structure to be reduced to its bare minimum, disposing of everything that can be disposed of, except for linguistic common denominators. Pidginisation is usually set in motion when speakers of different languages frequently come into contact and when a superstrate language becomes embedded into a substrate language. In pidginisation, the original contacting languages simplify their respective structures which leads to a simplified and unified temporal distinction indication system, syntactic ordering or style. In terms of our topic and paper, this is very relevant and may shed some light on early language development, since "pidginised" language may possess features most likely to have been present in earlier phases of language development. Pidginisation is evidence that languages may devolve over time, into simpler systems that may be more similar to earlier versions of human language. Pidginisation is characterised by several devolutionary events (Bickerton 1998):

1. Serious reduction of lexicon when compared to its source language;
2. Almost no distinction between morphemes and words;
3. Disappearance or severe reduction of derivational and inflectional morphology in terms of gradual loss of case marking, gender, number, clause embedding, etc.;

These are the most obvious processes characterising pidginisation. However, the basic structure of pidginised languages remains in principle unaltered, which is an interesting indicator that hints to early human language. Based on this, we can assume that earlier languages are not that different from modern languages. There is no evidence that morphosyntax increased its complexity, but points 1-3 above can be used to conclude that voice markers, case inflections, gradually developed and became the part of the language later on. Before these grammatical forms, there might have existed only two "indispensable" linguistic elements. One linguistic element was used for time-stable concepts (i.e. nouns) and the other was used for non-time-stable concepts (i.e. verbs) (Givón 1984: 51). The main point expressed here is that protolanguages gradually developed into early languages whereby we disagree with Chomsky (1993) and Berwick

(1998) that there was no "intermediate syntax", i.e. that human language could have never been more primitive and that syntax remains "linguistically petrified", since, even today, modern languages are slowly transitioning from verb-final to verb-medial order (see Newmeyer 2000 and Dryer 2005), so languages cannot be understood as petrified or unchanging.

## 2. OVERVIEW OF EXISTING THEORIES

We cannot hope to cover every single theory about language emergence and evolution in this paper. Even though the author of this paper firmly believes that the answer to the question of language emergence lies within the scope of the theories most pertinent to the idea that protolanguage arose primarily through the interplay of social and cognitive changes, we will also mention other theories. Our partial or full exclusion of a theory from this paper does not necessarily mean we deem it to be a dead-end or that we disagree with it, but the sheer number (bipedalism, mirror neuron, ProtocadherinXY, Out-of-Africa, analytic protolanguage, holistic protolanguage, finished artefact fallacy, the Bow-Wow/Ding-Dong/Yo-He-Ho theory, etc.) of language emergence theories would make their enumeration in this paper more than lengthy and impractical. Even though it is very difficult to classify language emergence theories into one group or another, because almost every theory encompasses a multitude of different aspects, we will roughly classify them into two categories: discontinuity and continuity theories. Discontinuity or social-dominant theories place more emphasis on society and culture. Majority of those theories revolve around co-evolution of language and society based on cognitive substrate. This cognitive substrate can be expressed through brain plasticity, for example. Brain plasticity is receptive to genuinely new behavioural patterns which are encouraged or discouraged by the pertinent society. So, society is the defining factory behind language development. The other side of the theory spectrum is occupied by continuity or evolutionary or "Darwinian" theories which give more prominence to evolution, natural selection and reproduction. These theories generally revolve around the idea that language developed through the combination of gene development, mutation and human evolution in general. Majority of those theorise posit that genes and natural selection intervened at some point of language or protolanguage development, leading to its further evolution similar to the evolutionary theory of Charles Darwin.

### 1.1. Social side of the story

Language is usually perceived as a medium of exchange of practical information about physical world and, irrespective of the manner this information is delivered (oral, written, sign language), language is able to express more or less complex concepts. Numerous authors, (Schaller (1963), Strum (1987), Hurford (2012), etc.) have tried to give their perspective and offer several lines of evidence. The research of the abovementioned authors seems to point to the conclusion that language arose as a result of increased group size and more complex social interactions. This led to a quantitative and qualitative increase in social interactions, which quickly diversified and brought about the emergence of language. More complex social interactions led to more complex thoughts and ideas

which needed to be expressed and the "vessel" for such expression was language. However, it would be over-simplistic to claim that social interactions alone led to the emergence and development of language. Increased cognition, bipedalism, predator avoidance almost undeniably contributed to some form of early language. What makes the phenomenon of early language emergence more interesting and fascinating is that, social intelligence, which played a prominent role in the emergence of protolanguage, certainly developed in other species closely related to humans, belonging to the biological family Hominidae (William 2019: 1-2). However, only humans were able to develop their language to a high degree of complexity. This question is even more puzzling since same or almost the same conditions, factors and selective pressure influenced both humans and non-humans, yet only humans were able to develop this remarkable feature that Everett in the title of his book from 2017 calls "humanity's the greatest invention". Other authors are/were also intrigued by the question of language emergence and development, so we will briefly mention some of them who are more noteworthy.

According to Wittgenstein (1958), language is a social product and cannot properly develop if it is not exercised inside social groups and for the needs that those social groups deem to be of vital importance. This means language developed in order to foster communication and is our primary socialisation tool. Thus, the society was the "prime mover" of cognitive development which served as a prerequisite for language emergence. Moreover, the development of cognitive capacities is inextricably linked to a richer social context or social-cultural scaffolding to be precise. Therefore, we can safely assume that language has to serve at least some social purpose. The cooperative nature of language and communication between unrelated individuals fostered more complex social relations, which in turn fuelled more complex linguistic structures.

According to Aiello & Dunbar (1993), the answer (however incomplete) to the puzzle pertaining to language emergence is the increase in group size. Once the group developed beyond critical size, grooming became too time-consuming and language developed as a substitute, so physical grooming turned into social and vocal grooming. Through vocal grooming of their parents, infants start with smiling and gurgling, which transitions to babbling and imaginative play and culminates in syntactically and semantically developed speech.

The research of Tomasello et al. (2005) is focused on shared intentionality/ prosociality. According to his point of view, collective intentionality implies engaging others in collaborative activities with common intentions and goals. This intentionality is realised through four important sets of social-cognitive skills: gaze following and joint attention, social manipulation and cooperative communication, group activity and collaboration, and social learning and instructed learning. The main conclusion behind Tomasello's research is that apes are chiefly concerned with their own goals. They fail to understand all the benefits of collaboration and sharing psychological states with others. However, humans have managed to harness the power of joint attentional interactions which gave us the upper hand in terms of language evolution and acquisition.

In a similar vein, the research of Boesch & Boesch (2000), Hermann et al. (2006) seems to point towards the conclusion that interest in joint commitments and joint attentional frame, or shared common ground, is higher in humans than in other primates. In order to achieve this, humans needed to acquire necessary cognitive infrastructure. This infrastructure, coupled with a joint attentional fame, led to more complex social

communities that were more fertile ground for protolanguage to develop. As opposed to other apes, humans are very much involved in sharing psychological states, which allow us to inform other people, but also to socially bond with them. This is why collaborative communication is one of the corner stones of our social lives.

Hrdy's (2009) alloparenting proposal is focused on the observation that highly cooperative social patterns are visible within non-human groups. However, cooperative breeding is unique to humans and may be influenced by the combination of complex social behavioural patterns and elevated cognitive capabilities. Our evolutionary legacy of alloparenting has been hypothesized to explain several fundamental aspects of the human condition. Perhaps most notably, alloparenting has been proposed as having promoted or permitted the emergence of language among early human ancestors, since there is a positive correlation between the degree of encephalisation and alloparenting by non-mothers (Hrdy 2009).

### 1.2. Darwinian side of the story

The research of Okanoya (2017) focused on the connexion between human language and birdsongs through sexual selection. Based on his research, we may safely conclude that sexual display was a preadaptation that evolved into a finite-state syntax that was, later on, interwoven with semantic tokens. This line of evidence may be used to explain how protolanguage acquired syntax, since both birdsong and human language can express different sound elements using variable tonal or vocal values. Here we can see the rudiments of human syntax based on which human language evolved beyond finite-state syntax into a context-free grammar allowing self-embedding structures. These authors found additional similarities between birdsongs and human language. Both are lateralised, i.e. perception and production, as cognitive functions, are always located on the same side of the brain. Both require complex patterns of behaviour such as breath control and proper non-random articulation and both are mediated through two learning stages: firstly, young animals have to hear and acquire the necessary range of sounds, secondly, they need to train their vocal apparatus in order to be able to reproduce what they have heard. However, an interesting observation is that generally the number of songs is much lower than the number of notes incorporated in those songs. For human language the opposite is true, the number of words is significantly lower than the number of utterances that can be generated from those words.

According to Deacon (1997) and his social contract theory, language is heavily dependent on males being forced to cooperate with females. This cooperation gradually shifted to a symbolic communication mode that created novel linguistic tokens with an arbitrary relation to their meanings. Thus, human language evolved as a means for establishing social-sexual relationships accomplished by indexical communication. Therefore, more complex social relations exerted additional pressure on human society to develop language. However, ape society has always been more interested into its immediate surroundings, which effectively eliminated this "linguistic" pressure.

According to gene-culture coevolution theories, language emerged as a product of a reinforced and repeated interplay between cultural and genetic evolution, similar in fashion to our lactose tolerance that developed as an adaptive mechanism related to cattle farming. Thus, Kirby et al. (2007) claim that language properties led to the selection of cognitive abilities that were better suited for language learning and production and, according to

Lieberman & McCarthy (2014) this selection of more specialised cognitive abilities resulted in the development of more sophisticated neural control of early human vocal abilities.

However, according to our opinion, the main stumbling block to gene-culture coevolution theories is that these theories usually insist on gene-related adaptations at the level of individual populations, but the currently available evidence simply does not support the idea that genes are the main language emergence drivers. This is why Christiansen and Chater (2016) insist that "culture and society" are the main drivers behind language emergence, diversification and evolution. This will be our theoretical starting point.

## 3. OUR TAKE ON LANGUAGE EMERGENCE AND LINES OF EVIDENCE

According to our opinion social factors and the society itself were the cohesive factor that linked all the other factors influencing language development. Some of the aforementioned factors were environment, diet and predator avoidance that may have also prompted early humans to develop some sort of rudimentary communication. Early humans mostly inhabited savannahs, so the abundance of food was out of question. This limitation of food sources, which were widely scattered, led the groups of early humans to devise strategies how to provide sufficient amount of nutrients. Hunting and scavenging, coupled with tactical deception in order to avoid predators and environmental intelligence, made humans fit better into their environment and gradually take control of that very environment (Bickerton 2000). However, the logical question is why, for example, chimpanzees did not go along the same linguistic path? They also needed to hunt, scavenge and avoid predators. They also exercise Machiavellian intelligence in order to achieve their goals. They also have rudimentary justice system and social hierarchy. How come only humans developed language? Does this mean humans had some additional factors that contributed to language development, but these factors were non-existent or severely limited with other primates? It turns out apes have a rudimentary theory of mind and understand each other's intentions and can even use lexigrams and referential gestures, which could qualify as having protolanguage capacities. Therefore, we need to find what is unique to humans and elaborate on that unique point and use it as a springboard for the theory of language evolution.

One of the first striking features the researchers, who spent considerable amount of time with apes and their communities, notice is the rudimentary understanding of signals, but almost non-existent understanding of symbols (Levinson 2013). On the one hand, symbol is to be understood as a conventionalised token representing a particular referential class found within a common universe of reference. On the other hand, signal may be defined as an act altering the behaviour of other organisms, which evolved and is effective because the required response of a receiver also evolved. From the abovementioned definitions it is possible to see why signals have to be sufficiently accurate in order to finely-tune the receiver's response. Humans managed to master this shift from signal to symbol that led to symbolic communication, which established social contract that enabled a higher level of social engineering, which manifested itself through more stable and complex family or group structures. This social contract existed as an idea shared among the group members who wanted to honour this contract. In order to honour this social contract, it was necessary to convey information about it and, lacking any physical correlate, the group needed to establish a symbol. Additionally, ritually cemented

contractual obligations and group-level social cooperation necessitated the emergence of language in order to fulfil those contractual and rather abstract (in terms of indices or physical correlates) obligations. This may have prompted the invention of arbitrary words and consequently language. After several iterations and conventionalisation symbols, through the collaborative efforts of the society, slowly turned into words.

This is, at least, part of the answer why other primates have never been able to develop proper language. Their societies do not have the structure that would support collaborative construction of actual language. The reason for that could be hidden in the fact that the use of violence is the intrinsic principle of the social organisation between apes and monkeys. This principle is not conducive to the development of speech communities since violence destroys mutual trust and diminishes any need for verbal communication. Even today, an enraged human is quite impaired in terms of his/her more elegant verbal expression of different ideas, and such expression usually devolves into shouting, swearing, repeating oneself and even into physical violence (Bickerton 2000).

Thus, we subscribe to the general theory about language emergence that is based on the assumption that early human societies were able to collectively achieve a number of pre-linguistic social innovations alien to animal societies. These innovations were exceptionally conductive to the development of language since the societies developed in the manner that supported collaboration and language served as a "social glue". Such social glue enabled our early human societies to intellectually thrive and to be able to express intersubjective understanding. These pre-linguistic social innovations probably included collaborative big game hunting, pretend play, dancing, rituals, music which all enabled deeper and more profound emotional bonding, which, in turn, facilitated the development of language because of the need of such deeply bonded society to share thoughts, desires, ideas and notions to each other. These innovations, coupled with cognitive and cultural plasticity, are what separated early humans from other primates. As Dor and Jablonka (2012) put it, our social capacity for collective exploration is the major feature separating us from the apes. However, it is of vital importance to mention this was not a uniform and clear-cut development. There were many linguistic dead-ends, proto-words and proto-systems that should have or could have developed, but never did. Most probably, we can think of even the whole groups of early humans who failed to develop any idiosyncratic protolanguage or to acquire it from a neighbouring group that was more linguistically developed. Language emergence was an arduously difficult task for early humans that was prone to failure and an occasional successful development. Over time, coupled with the development of human cognitive capabilities, language developed and became more sophisticated. This means language is a biosocial adaptation that is an intrinsic part of a wide adaptation continuum. This wide adaptation continuum includes innovation, stabilisation, propagation and acceptance and all of these steps that transcend the level of the individual. That is why language is considered a collective invention brought about through communicative exploration, stabilised and accepted through social negotiation, which enabled early language users to normatively accept early language elements (Sandler 2017, Meir *et al.* 2017). Additionally, we argue that the development of social structures prompted the development of higher cognitive functions, which in turn fuelled language development necessary to reflect new social and cognitive "realities". This led to a slow transition of our ancestors' gestures and cries (most probably holistic in their nature) to formulaic expressions used to express manipulative messages in a phonetic form.

According to Wray (2002) these formulaic expressions are used to manipulate others into emotional and physical reactions, but such expressions, within the very early stages of protolanguage development, most probably suffered from generic denotation. This made it very difficult for our ancestors to disambiguate. As a consequence of this, the degree of vagueness of such language prevented meticulous planning and more importantly limited creativity. This state of affairs is corroborated by Mithen's (1996) research that led to the conclusion that there was a dry spell in terms of innovation for more than one million years since the invention of a hand-axe. Based on this, we can conclude that cognitive restrictions, coupled with social limitations (routine, ritualistic and habitual behaviour sufficient for the survival of the group, but far from being conducive to the introduction of novel linguistic expressions) contributed to the aforementioned dry spell in terms of limited language development. Mithen's research showed that, in terms of language emergence and initial development, undoubtedly there was at least some intervening prosocial, society-based evolutionary step that facilitated the full-blown emergence of language. Language emergence would not have been possible without accompanying development of mental faculties, thus we must not forget about the co-evolution of society and the brain. This is likely one of the reasons apes did not progress very far in terms of developing a semblance of language.

In terms of society and its development it is of vital importance for warning calls they use must be fairly honest and reliable in order for the group to have better chances of surviving and avoiding predators. This is obvious if we take into consideration that in order for a communication system to develop, the creators of such system have to be at least to some degree "socially dishonest" in the sense of "signal reliability" and to be able to potentially convey false propositional content. Almost all animals, when threatened, produce sounds under limbic control and these sounds have no meaning outside their immediate environment. Limbic control means these sounds are produces as reflexes that are not under voluntary control. This lack of voluntary control over vocalisation is one of the reasons apes' vocal system remained ill-suited for the development of a fully-fledged language system. The evidence of this can be found in Mithen's (1996) research where he concludes "the production of sounds in the absence of the appropriate emotional state seems to be an almost impossible task for a chimpanzee". However, humans managed to separate signals from their immediate environment and in order to use them for other purposes (e.g. evoke emotions), we need to exercise some level of cognitive control. This cognitive or voluntary control means we can shape those signals to serve both honest and dishonest purposes and the "truth value" of the communication arises only on a higher combinatorial level. This dishonesty can be used to deceive a predator or a member of one's group in order to gain more food, healthier partners or some other advantage. Through this line of reasoning we can see how social factors may have "inspired" our brain and provided sufficient incentive for it to generate voluntary strings of semantic tokens by scarifying some level of honesty (Wacewicz and Żywiczyński 2012).

Another piece of evidence that may be used to exemplify the role of society in terms of language development can be found as the conclusion of different studies (Savage-Rumbaugh and McDonald 1988, Kobayashi and Hashiya 2011) of apes that found that their societies are finely tuned to promote Machiavellian primate politics and that in majority of cases individual primates do not understand the point of divulging food-related information. Within their society, all apes actively promote the notion that primate social

status is consistent with the successfully concealment of pertinent information. On the other side human society is built on the foundations of sharing. Let us be perfectly clear. We must not think of apes as promoting unscrupulous behaviours and human society as a perfect place for the development of the most beautiful personal traits and behavioural patterns. There seems to be a tendency that human society in general is pro-social and, on average, greater numbers of human groups will subscribe to the notion that collaboration (however (dis)honest) can bring more benefits, both individually and collectively. The outcome of this arms race between pro-individual selfish traits and pro-social altruistic traits was that, as far as early humans are concerned, the latter group of traits won, which was one of the tipping points leading humanity towards protolanguage. Dessalles (2006) also agrees that protolanguage arose as one of the consequences of early human speech communities who were actively competing for linguistic status that was assigned based on an individual's contribution. Interestingly, this was "competition to cooperate". One of the means of contribution was to be linguistically prominent and relevant, which further facilitated the development of more complex speech patterns among the group members. Some of the speech patterns, through repeated encounters, would inevitable become more dominant and ritualised which led to its adoption among wider population. From this, we can draw a conclusion that numerous speech patterns failed to gain prominence and sank into oblivion. But the sheer number of such more or less vocalised and ritualised patterns, coupled with increased cognitive power of early humans most probably led to the reduction of volitional gestures and the introduction of mutually intelligible "speech shorthand", which in turn laid foundations for protolanguage. Another benefit of ritualisation is that it allows the replacement of costly indexical display with more effective and efficient tokenistic signalling. Only signals, which are of minimal cost, i.e. whose reliability does not depend on the signal's resistance to be decoded by the observer, may evolve (Maynard Smith and Harper 2003: 37). For the sake of clarification, "ritualisation" means correspondingly specialised signalling function of protolanguage, which developed from non-communicative behaviour. Instead of ritualisation, Burling (2000) prefers the term "conventionalisation". Circumstantial evidence that conventionalisation occurred sometime during the emergence of protolanguage can be found within the "reinvented language system", i.e. sign language. As a spontaneously developed "brand" of language, sign languages possess all the ingredients found in a natural language and give us clues in terms of the development of protolanguage. Numerous signs bear some sort of resemblance to the original iconic components. However, quite commonly, sign language gestures quickly transform into their abbreviated versions or contracted gestures (comparable to shorthand) that, nevertheless, for somebody who uses a sign language contain the full meaning of the original (non-abbreviated) expression. Analogously, this conventionalisation also occurred within protolanguage as a natural transition from pointing, muttering and mumbling that were highly ambiguous, thus needing more energy to decode. These contracted gestures are invariably more arbitrary, more abstract and shorter than the iconic gestures, which often times facilitates communication in the sense that they make it more efficient and effective.

Based on the evidence found by numerous researchers studying indigenous sign language formation (Safar 2019, Zeshan and Palfreyman 2019, Green 2018) young sign languages offer proof that social marginalisation may lead to language inhibition, which led to context-dependent, grammar-less, static indigenous sign languages, such as sign languages from Noyha, Grand Cayman Island and Providence Island. Additionally, young

sign languages seem to indicate that language systematicity and the speed of its development seem to be the function of dynamic social exchange and willingness of new and young learners to enter the language pool. Dynamic social exchange, within cohesive human populations, coupled with competitive and co-operative behaviour, appear to be the sufficient and required precondition for language formation. Thus, we are of the opinion that cultural and social dynamics have to be placed centre-stage in any explanation for the emergence of language. What is often left out is the fact that language emergence accentuated cooperative cultural and interactive exploration, which contributed to further language development. This is one of the reasons why apes did not invent and further develop their own language. Their societies lack the social capacity of interactive and collective exploration and invention. Apes may have some cognitive capabilities to acquire rudimentary language and use it relatively effectively, as Kanzi showed us, (Savage-Rumbaugh and Lewin 1994), but are unable to develop their own language. Since apes can acquire rudimentary language prototype and use it efficiently, if such language prototype is invented by humans and transferred to the apes, the main problem seems to be that the apes themselves cannot invent even a limited protolanguage system. Another interesting point is that apes do invent within other spheres of their lives (Tomasello et al. 2005). They can creatively use different items for other (non-original or intended) purposes. The only logical conclusion is that apes are individually more than capable to innovate, but what they lack is collective innovation, which seems to be the required prerequisite for the emergence of protolanguage. What it means can be seen from the experiment conducted by Tomasello (2005). Apes and their societies seem to be compartmentalised and function linearly from point A to point B (e.g. hungry → find food, mating → find a mate), but early human society seemed to have promoted non-linear or at least more complex behaviour (e.g. hungry → try to find food → if usual game is nowhere to be found, explore alternatives → keep some food for yourself → bring the rest to the rest of the group). This society-sponsored altruism is what separated and separates human society from the society of primates.

Another line of evidence that language is a socially cohesive device can be found in the research of Jerome Lewis (2017) and his fieldwork that included the study of hunter-gatherers, the Aka Pygmies living in the Congo Basin. Their language does not have strict boundary between speaking and singing, which includes whistling and mimicking different animal sounds. Additionally, their language is in more pristine condition since the Aka Pygmies do not have much contact with other tribes and remain largely isolated. This may be rather important finding since it proves that language emergence is, at least, partially connected to mimicking the sounds coming from an immediate environment. Apart from that, their language is profoundly gendered, which means that men and women speak and sing in dramatically different ways. Men have developed their language and singing in the manner that attracts game, whereas women control the non-hunters and react if they notice any anti-social behaviour. Men know how to imitate animal calls, women know how to use the combination of singing, humming, yodelling in order to direct the behaviour of other into socially desirable direction. Another interesting fact is that language, body language, gesturing and mimicking animal sounds are different among the Aka Pygmies who perform different tasks within the tribe. The nganga (top healer), the kombeti (leader) and the tuma (elephant hunter) all have different speech and singing patterns that developed as a direct result of their social roles within the community. Thorough these expressive vessels, the Aka Pygmies are more than capable of subtly conveying numerous messages. Their

language is directly linked to their closely-knit social organisation and draws its inspiration from such organisation.

On a more technical and scientific point, another element, which is often overlooked, is that language origin studies must not rely on compartmentalised and fragmented lines of studies. What we need is an interdisciplinary, multifaceted approach especially given the fact that the Chomskian paradigm has gradually declined as to its unifying capability. In terms of its emergence, language needs a wide variety of entangled conditions pertaining to culture, consciousness, politics, society and thus we are unlikely to come across a "magic ingredient to the puzzle". This is why, in order to answer the question of language origins, we will need the combined effort of linguists, sociologists, biologists, psychologists, philosophers, anthropologists, neuroscientists and primatologists of all convictions since language is a co-evolutionary biosocial construct.

We will end this paper with an interesting observation made by Keith Sawyer who gave this account as a jazz musician:

> My years of playing piano in jazz ensembles convinced me that what happened in any one person's mind could never explain what made one night's performance shine and another dud. At any second during a performance, an almost invisible musical exchange could take the piece in a new direction; later, no one could remember who was responsible for what. In jazz, the group has the ideas, not the individual musicians. (Sawyer 2007).

## 4. CONCLUSION

The topic of the origin of human language had been neglected for a long time. Fortunately, things have changed and this topic gained momentum during the second part of the twentieth century. What has not changed is that any explanation of language emergence is destined to perpetual opposition. Human language developed through a fascinating evolutionary story that may never be fully understood and unravelled. Our theory is that first protolanguages developed in numerous different locations among different groups, but those that were able to become part of the human society as an organism supplementing and/or facilitating social exchange gradually developed into the fully-fledged languages we know today. Languages developed and evolved, adapted and survived thanks to their ability to adapt to human learning mechanism. This is why protolanguage has to be viewed as a dynamic system that actively responded to adaptive pressures, which favoured linguistic structures that can be easily learnt and transmitted at lower cost in terms of the listener's time, attention and ambiguity level. The cost will vary depending on the ratio between common and conflicting interest between different individuals. Utterances with a compositional syntax and "fitter" grammar were able to survive, but what made those utterances transition into language was their interplay. Language emergence required collaborative innovation, reciprocal altruism and exploration, which could only develop and occur within stable and trusting society. Thanks to all of these elements, human ancestors made this momentous transition from generic and ambiguous signals and body language to mutually agreed symbols through which they were able to interact intersubjectively. This led to the emergence of protolanguage, its eventual stabilisation and diversification. This means that early language is a collective and

collaborative invention build on previous experiences our early ancestors, driven by cultural accumulation, within which various individuals were able to give their contribution in terms of language development.

Language cannot be separated from our inner selves since it also functions as the representative voice of our thoughts and ideas so that other people can hear what we think. This means, language primarily serves social purposes, whether this means we socialise with other people or with ourselves. Language arose as a biological adaptation to the surrounding environment, though the interplay of social and cognitive factors. Both of them are very important for the development of language since chimpanzees, orangutans and gorillas have cognition developed to the level which would support rudimentary language, but their societies are unable to follow suit.

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