

THE LANGUAGE FACULTY REVISITED

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ABSTRACT

The current understanding of the Language Faculty in modern linguistics in two mutually exclusive alternatives, reflecting two competing visions of language, i.e. either as a bioprogram fully specified for complex grammar, or emergent from a combination of a number of non-specific cognitive properties is too simplistic. From usage-based perspective the language system, is shaped by the linguistic experiences of the normal adult human. These are reflections of the internal complexity of the individual's social life social interactions which are of three major types: at professional level with colleagues and co-workers, at a personal level with family members, e.g. friends, neighbours, and community members, and occasional interactions with strangers, i.e. fellow humans. The article argues that these 3 types of communicative interactions form three types of sub-systems in language use which co-exist, labeled here as code-like system, inferential system and protolanguage-like or primitive/rudimentary language systems. Acknowledging the fact that the linguistic output of the normal adult language user is structured in reflection of one's communicative experiences, and not a heterogeneous structureless sum of utterances, as the current dominant orthodoxy presumes, sheds a new light on our understanding of the language system, as it is shaped by language use. Most importantly, starting from these well founded premisses, the article argues that the innate propensity for learning and processing of the very essentials of language, i.e. the most primitive language systems, is more likely to reflect the content of the innate Language Faculty, while the other two subsystems reflect significant participation of a broad range of cognitive resources implicated in some ways in language learning and use. Such understanding of the Language Faculty makes the study of language evolution less of a mystery.

Keywords : Language Faculty, protolanguage, language evolution, language instinct, biolinguistics, FOXP2,

1. INTRODUCTION: the Language Faculty, the current status quo

How is language represented in the human organism? The answer by modern linguistics is a tail of two mutually exclusive alternatives. The two dominant perspectives offer two diametrically opposed explanations. The generative perspective argues for direct representation of grammar in the form of an algorithm implemented in neuronal tissue, encapsulated in a cognitive module termed Language Faculty. The grammar algorithm is said to contain highly abstract grammatical concepts and principles of organization, usable exclusively in language processing. And although the majority of generativists adopt Chomsky's models, various other models are known, some of which differ significantly from the classical proposal, e.g. Lexical-functional grammar (J. Bresnan, 2001), Parallel architecture (R. Jackendoff 2002 and elsewhere), to name a few. Moreover, although the foundational tenets of the generative approach of language as grammar and grammar as a mental organ remain unchanged, various versions of the language organ/Language Faculty have been proposed over the years (Chomsky, 1981, 1986, 1995 and elsewhere). Currently there is no universal agreement among generative linguists on the features, functions and location of the

Language Faculty.

Naturally, this theoretical plurality injects confusion and presents a challenge for the experts in human biology and cognition as there is no clarity on what should be the goal of their inquiries, what are they supposed to be looking for in the human brain .

The generative paradigm is a formalism, a system of concepts and principles which, although highly influential thanks to its logical consistency, is, after all, an opinion of linguists on what the human brain is, how it is organized, how it functions and what makes it different from other brains. Empirical confirmation or refutation of this opinion is beyond the expertise of linguists as it is the province of life scientists for whom the postulation of innate features of great specificity and abstraction, highly unusual for any cognitive entity, presents additional challenges . So, there is tension between a formal postulation of an algorithm encapsulating extremely complex algorithm of highly abstract concepts and rules and highly specific functions in the tissues of the human brain, on the part of linguists (biolinguists), and the so far futile efforts of biologists to confirm with empirical findings the factual existence of a cognitive entity with such properties , which further complicates inquiries into its evolutionary history.

Yet others deny any cognitive specialization for language whatsoever, that is, that nothing in the cognitive organization of the brain is a priori specialized for language and specialization in neuronal connectivity emerges during language learning as a developmental process. In short, nothing in human biology is specifically linguistic. The unique linguistic abilities of humans are explained with the unique flexibility of the young human brain which makes possible the learning of a variety of behaviours, language being one among many others . Thus, the debate on the issue of biological foundations of language is between two extremes: complete innate specialization vs. complete absence of specialization for grammar.

The present article argues that neither alternative is sustainable. Instead I will try to convince the readership that, to use the worn out expression “the truth is in the middle” or that each of the rival perspectives makes significant but limited contributions to the full picture, i.e. that there are innate predispositions for language but these are limited to supporting the most rudimentary forms of language, while the semantic and grammatical complexity and diversity of modern languages result from emergent specialization in brain organization under the influence of experience during language attainment.

The following segment briefly outlines the defining features of the two major opposing perspectives in this debate, the biolinguistic and the functionalist approaches, as a starting point in my argument for a new and revised understanding of the bio-cognitive representation of language.

1.1. The Language faculty in classical generativism : Universal grammar

The generative paradigm is based on the foundational assumption that the human infant is born equipped with cognitive resources or body of knowledge, specified for learning and use of language, termed “language organ” (N. Chomsky 1981 and elsewhere), “language instinct” (S. Pinker 1984), or “language bioprogram” (D. Bickerton 1984), although the term used by

most scholars is Language Faculty, or Universal Grammar. The argument for Universal Grammar states that the human organism is innately equipped with innate body of knowledge of language in the form of a universal set of grammatical categories, uniquely specified for service in language processing, which underly all human languages, despite the apparent diversity in observable language systems. This innate body of knowledge of language contained in the Language Faculty is said to be an algorithm instantiated in the tissue of the human brain. This bio-computational approach to understanding language lead to the recent establishment of a new branch of linguistics, biolinguistics, whose research goals are to uncover the location and internal organization of the Language faculty. Its content and functions as proposed by N.Chomsky, S.Pinker, D. Bickerton and other prominent generativists can be summarized as follows:

- a. It is a hierarchically organized structure of categories and rules, that is, categories are defined by their position in a hierarchically organized abstract structures
- b. The hierarchical structure of a sentence contains substructures, phrase structures which combine and form sentences according to phrase structure rules.
- c. The rules are structure-dependent, that is, rules apply not to externalized material manifestations of the structure, individual words, which are sequentially arranged either temporally (in speech) or spatially (in writing), but to underlying structures within the hierarchy.
- d. Nouns, verbs and other lexical categories are abstract entities composed of abstract features with binary values which combine to form phrasal categories, Noun Phrase, Verb phrase etc.
- e. Verbs are divided in three categories depending on the number of obligatory arguments they take to form a well-formed sentence : some take one argument, for example sleep (Paul) , others take two arguments, for example , read (Mary, book), yet others take three, for example give (Mary, book, Paul).
- f. The language faculty also specifies grammatical devices for relating abstract grammatical structures to language use by relating grammatical structures to truth conditions, tense, aspect, modality and illocution.
- g. The language faculty also specifies the rules for combining propositions via subordination and coordination.
- h. The language faculty also encodes pronouns of which there exist different types as well as specifications for licensing the use of each type .
- i. The language faculty contains rules for interpreting elements which are omitted at the surface , or " empty categories " , that is, elements whose phonological realization is omitted but their meaning and structural position can be recovered at underlining invisible levels of structure. One example of empty categories are traces of moved elements , another is the subject of a non-finite clause embedded in a finite clause.

The most recent version of the biolinguistic perspective outlined by the Minimalist Program (Chomsky 1995), although seeks to simplify the bioprogram, by proposing a single operation of recursive Merge as the only feature of the language-exclusive linguistic computations, at the

same time maintains the view that the grammar of modern languages is pre-specified to great detail by innate factors .

The Language Faculty under the latest version of minimalism is hypothesized to produce grammars with the properties defined by the Principles and Parameters /Government and Binding approach, outlined in detail in N.Chomsky 2005, N.Hornstein 2018 among other publications as follows:

- *It produces hierarchically organized structures.
- *All operations are cyclical.
- *All operations are local.
- *Control operates on deficient clauses which contain elements in need of proper case assignment .
- *Rules are structure-dependent .
- * Movement is always local, upwards, structure-preserving and under C-command configuration.
- * Case and agreement apply at Xo and XP, but not at X' level.
- *Pronouns and reflexives are in complementary distribution and are subjected to binding principles.
- *Grammatical structures must be semantically interpretable.
- *The output of each cycle of linguistic computations are fed into two interfaces, the Logical form and the Phonological form, which produce meaningful and pronounceable pieces of usable language.

S.Pinker and R.Jackendoff (2005, 2009) argue for a different , much broader content of the language algorithm which encompasses capacities for : * speech perception and production, phonology, syllable structure, * human-specific concepts , including Theory of Mind, * the lexicon, word formation, learning, use and storage, stipulating that, as syntax is predicated on the lexicon, a capacity for syntax must incorporate the lexicon.

Despite divergent opinions on the details the generative linguists are unified on the presumption that the content of the Language Faculty is most accurately represented by the ideal speaker's innate potential for language, extrapolated from the I-language of highly educated, mostly English speaking linguistically trained professionals.

1.2. Language Faculty emergent from experience

Alternatively the biological foundations of language are argued by opponents of the biolinguistic approach to consist of a combination of cognitive resources with broad functions, recruited in a coordinated way to perform language-relevant tasks, by which a language faculty is emerging from experience with language. A defining feature of emergent systems is that they display characteristics not predictable by the individual interacting components in isolation. In

this context an emergent Language Faculty is explained with the coordination of a number of bio-cognitive aspects of the human organism individually involved in non-linguistic functions. i.e. language takes advantage of “ ... quite a heterogeneous cognitive subsystems, none of which is a language processor by design” (T.Deacon, 1997, p. 298), e.g. capacity for socialization (R. Dunbar, 2003) , joint attention (M. Tomasello, 2008, , 2003,) , symbolization (T.Deacon 1997), capacity for complex imitation, (M. Donald, 1993, 1999) etc.

The emergentist approach adopts the theoretical platform of the Chaos theory designed to understand the formation of novel levels of organization in inorganic matter which explains the use of concepts like synergistic effects, self-organization and emergence in reference to cognitive entities. Corning (1998) talks about language as synergistic effect where synergy refers to the effects of co-operative behaviours among various aspects of the organism. Here language as a behaviour presupposes coordination and cooperation among various cognitive capacities and , in addition, cooperation between cognitive and physiological capacities and activities. The emergence of a Language Faculty in the individual presupposes synergistic activities at multiple levels:

- *synergy among the articulatory organs for the purpose of speech production

- *synergy among cognitive capacities :

- # capacity for reference (to represent a class of objects through signs (as special case symbolic thought, symbolic representation)

- # capacity to form categories (things and actions are universal categories)

- # capacity for mind-reading, or theory of mind

- # capacity for self-monitoring, or metacognition, (M. Studard-Kennedy, Ch.Knight, J. Hurford, 1998).

- # consciousness (awareness that one's person and mind differ from others)

- # intentionality (stimulus-free initiation)

- # capacity to learn , extended memory

- # imagination, planning (or displacement: capacity to refer to distant referents, distant from here and now)

- # capacity for socialization (need for the company of conspecifics)

- * synergy between cognitive and physiological capacities for externalization of linguistic meaning and structure in speech

In addition, some scholars have argued for biological underpinnings of sign formation and learning , including linguistic signs. M.Arbib and G. Rizzolatti discovered mirror neurons as biological foundations of sign systems. Bouchard (2013) has argued for biological foundations of the Saussurean sign. Moreover, D. Sperber and D. Wilson offer the Relevance Theory (2006) which states that the human mind has innate cognitive capacity for relevance, that is, it is innately wired for participation in communicative exchanges.

Synergistic interactions are purely behavioural and temporary, although when repeated for long enough give rise to more stable relationships which solidify by a process of self-organization and ultimately result in the formation of stable integrated units, i.e. emergent systems with new properties.

Thus, the emergentist perspective defines the language faculty as emergent property of the human organism resulting from the recycling and repurposing of a collection of cognitive and

physiological capacities under the influence of experience with language during early language attainment by youngsters (B. Macwinney 1998).

In short, in this context any form of a Language Capacity, as emergent, by definition cannot be innate.

1.3. On behaviour and innateness

The generative paradigm from its inception is based on Chomsky's famous rejection of Skinner's behaviourism and his vision of human cognition as a "blank slate". Chomsky's criticism, though, leading to a complete rejection of the role of learning marks the other extreme in the misunderstanding of human mind by exaggerating the contribution of innate factors and disregarding the role of experience and learning. It also led to his denial of the role of behaviour as indication of innate properties.

This informs Chomsky's conception of the Language Faculty as spatially segregated and structurally distinct inward-looking system designed to function in isolation from the perceptual and cognitive experience of the biological body and its interaction with the external environment. In this context linguistic behaviour was deemed unreliable indication of the properties of the Language Faculty.

From a different but related perspective, Chomsky and other generative linguists position their ideas of language in the field of philosophy, not science, and espouse the philosophy of Descartes and his vision of the human mind populated with innate ideas. That said, Philosophical convictions are belief systems assumed to be true without argument. This status of unquestioned veracity is established by scientific findings and change with new scientific discoveries, unlike religious beliefs which are fact-free, irrefutable and eternal. Philosophy relies on science. Philosophical convictions of Language Faculty must be based on scientific findings and change with new discoveries. Philosophy of language must follow the science of language.

Returning to the topic of innateness and behaviour, it must be underscored that behaviour is the totality of observable, or detectable in some way, actions and/or reactions of a life form in a given environment, some of which are innate, others are result of interaction of innate and learned components to various degrees in various species. Thus, the relation of biology and behaviour is complex and indirect and defining this complex relationship in terms of the dichotomy innate vs. learned is oversimplification.

Moreover, biologists find that in all species biology and behaviour are closely interconnected and interdependent as in all species the purpose of innate traits is to guide behaviour and in this way facilitate survival. That is, the only way to detect biological and cognitive capacities is by monitoring and/or provoking their use in behaviour. From the muscles to the nervous system to the brain cells, one can detect their innate properties and internal organization by illuminating their function by triggering a behavioural response and from this infer their evolutionary *raison d'être*. Thus, behaviour is the clearest indication of innate properties, biological and cognitive, in any biological form.

It is logical to deduce that the same principle applies to the role of human behaviour in understanding the innate aspects of the human organism. Following these indisputable facts of biology, I will assume without argument that language use, that is, linguistic behaviour, is the

most reliable indication of the innate language-relevant propensities of the human organism. Not unexpectedly, experimental studies into the bio-cognitive representation of language confirm this general principle. Words are stored in memory as rich descriptions of individual examples of perceptual experiences, including phonetic properties of words, where linguistic properties are combined with extralinguistic details. R. Port, (2007). The ingredients of such representations are very concrete: the idiosyncrasies of the speaker's voice and other sensory representations. The vocal representation of a word in memory is articulation-based, not abstract feature-based. That is, words are stored in memory in the form of specific events with idiosyncratic details, not as structured combinations of abstract prototypical categories. This process is subconscious and universal. The way language is processed by the human mind is not different from the way any other perceptual experiences (visual, tactile, etc.) are processed. And although the Language Faculty, as per the Minimalist program, is said to include only highly regular patterns, while excluding the lexicon, i.e. lexical words, irregular forms, set phrases, etc. residing in the memory, the linguistic computations are designed to rely on the existence of the lexicon as a storage of detailed descriptions of real linguistic experiences, which makes it an essential component of the computation procedure. If this is so, the argument for spatial and structural isolation of the Language Faculty cannot stand as the memory storage does incorporate sensory representations reflecting material reality. Thus, interaction with reality is inherent to the very functioning of the language algorithm. In sum, the putative abstract linguistic computations in UG cannot be isolated from behaviour.

From a different perspective, the generative perspective does take into account linguistic behaviour, only it is biased towards the linguistic behaviour of highly educated professionals mainly from industrialized societies, where the level of literacy is very high, prompting the use of very sophisticated grammatical forms with high frequency. This is because linguistic professionals are thought to be the closest approximation to the ideal speaker and a reflection of the Language Faculty in its purest form. That is, the innate propensities for language attributed to humans as species are inferred from the highly atypical behaviour of selected human individuals.

On the other hand, in any scientific inquiry the representational individual examples of the object of study are typical examples, not exceptions. A typical example of a species is a normal adult specimen, not an anomaly. A representational example of a human liver is the liver of an adult human of what is considered average health, not a deformed, underdeveloped, or deviating from the normal in some other way. That is, one must not take an exception as a representation of the norm. In all fields of scientific inquiry the object of study must be a typical example as instantiation of its most distinct properties. An exception cannot be taken as a type and the factual foundation for the design of formalisms.

The object of study of linguistics is natural language. Given that for the most part of human history linguistic behaviour has been exemplified by the spontaneous communicative interactions, usually in dialogues, of average normal adult humans, one must conclude that this is the typical example of natural language in use.

Given that behaviour is the best indication of cognitive abilities I argue that the spontaneous linguistic behaviour of the average adult, normal human is the best indication of the Language faculty.

2. THE STRUCTURE OF LINGUISTIC BEHAVIOUR OF THE NORMAL HUMAN ADULT

The language system is shaped by language use in communicative interactions. These are determined by the social life of the individual speaker and his/her interactions based on membership in a professional network, neighbourhood, family or the human species. One's social interactions are of three major types: 1. with colleagues at a professional level, 2. with friends, family, neighbours or fellow members of a community, 3. occasional interactions with strangers i.e. other humans. These types of interactions determine one's linguistic behaviour. Although at first glance the linguistic behaviour (E-language in generative terminology) of the average human seems unsystematic, it is clustered around these 3 types of social interactions into three types of subsystems, each organized differently in reflection of their different communicative roles . I have labeled them as follows: code-like system, inferential system, rudimentary system. In what follows I will outline the properties of each.

2.1.Code-like system

- *As the label indicates, it closely resembles a code: words have one, literal meaning and the meaning of a sentence is the sum total of the meanings of the composing words.
- * It is organized around the sentence as a basic unit according to grammatical principles with clearly defined discrete grammatical categories.
- * The meaning of a sentence encodes a complete proposition. Explicit and complete mapping between semantic structure and grammar is the norm. All thematic roles in the theta grid of a verb are expressed in grammatical categories.
- * The sentence is organized according to strict rules of grammaticality which assures that the message emitted by the sender is identical to the message received.
- *The meanings conveyed by code-like systems are discrete, fixed and context-free.
- * The code-like system is self-contained, stands alone , independent of context.
- * Lexical items are one-to-one stable mappings of a discrete form and a discrete meaning, homonymy, synonymy are avoided,
- * The sentence structure is highly detailed , contains multiple embedding of phrases and sentences and highly abstract grammatical forms.
- * The meaning of a sentence is the sum total of the meanings of the composing words and their place in the architecture of the sentence.

The code language system has a very constrained and highly specific sphere of use. Not coincidentally it is often materialized by writing systems. Although these types of communication display obvious differences as they reflect the diversity of the languages and the writings systems which has given rise to it, such communication systems also display

inevitably universal properties as they share the same functions: to inform by articulating with precision and detail complex ideas, to defend or rebuke arguments in various spheres of public discourse, e.g. government documents, lectures, research papers. This is why the majority of utterances are statements, externalized in speech as monologues. Code systems are used for dissemination of timeless ideas among communicators separated by space and time and therefore, removed from social and cultural idiosyncrasies of the context in both vocabulary and grammar.

A clear example is the following excerpt from Maynard Smith and Szathmary's book *The Origins of Life*.

“The relevance of ribozymes for the origin of life is enormous. As first argued by Walter Gilbert, instead of existing division of labour between nucleic acids as carriers of information and protein enzymes, we can imagine a world in which RNA molecules performed both functions.” (Maynard Smith, Szathmary, 1999, p. 39)

2. The inferential system

The overwhelming majority of instances of language use of the normal human adult speaker, both educated and illiterate, are conducted by using the inferential system. It is systematic in its own way with the defining characteristics as follows:

- * It is meaning-based, not structure-based and exists mainly in spoken form, where intonation assumes some grammatical functions, e.g. the formation of questions without the use of question words, negation expressed in affirmative sentences.
 - * Most utterances are not full sentences but fragments, phrases are also fragmented.
 - * Elliptical and abbreviated forms abound.
 - * Expletives and formulaic expressions are frequently used.
 - * Omission of grammatical markers which do not contribute to meaning and have only structural values, e.g. definite and indefinite articles in English, is one of the most notable characteristics.
 - * Inferential systems use some elements of grammatical idiosyncrasies, e.g. markers of plurality, modality, tense, aspect, case markers in languages with detailed case systems (German, Russian, etc), although significantly reduced and simplified.
 - * Although the generative perspective considers such less than full applications of Universal Grammar as deficiencies, these do not result in communication disturbances, as despite these apparent structural gaps the complete meaning of the utterance is successfully recovered from the context.
 - * Grammatically defective elements of unclear syntactic features, unclear morphological class and irregular phonology, or in Jackendoff's terms 'defective items' (R. Jackendoff 2002), 'mm', 'wow', 'shh' also abound.
 - * Semantically vague words and phrases e.g. 'that fellow', 'that thing', 'people' are often used.
 - * Small clauses, almost complete lack of embedding of phrases and sentences is the norm.
 - * When the utterance is a full sentence the order of elements is flexible to signal the speaker's attitude. ex. “That I can do “
-

A clear example is the following dialogue, borrowed from Jackendoff, Culicover's 2005 although everybody can provide unlimited examples similar to this one .

A. I hear Harriet's been drinking again.

B. Yeah, probably scotch.

C. Yeah, scotch, I think.

D. Yeah, scotch this time. (ibid. p. 240)

Such system exists mainly in the form of dialogues, which presupposes shared beliefs, world view among people with close social ties. It is situation-dependent, which implies that non-linguistic communication by facial expression, body posture, gesticulations, etc. has major contribution to the interpretation of the message. To note, although the inferential language system usually exists in spoken form, lately through social media platforms it has adopted written form.

To remind, the defining features outlined above describe the inferential systems of languages with long traditions of writing. That said, very similar structural properties are detected in languages of pre-literate societies, which, by definition, are unaffected by writing. As an example, A. Pawley (in T.Givon, M.Shabatani, 2009) describes Kalam, a language spoken in Papua New Guinea as follows : major parts of speech are nouns, verbs, verb adjuncts, adverbs, adjectives , locatives. Verbs are the only part of speech to carry grammatical morphemes as inflection suffixes for marking tense, aspect, mood, person and number of the subject. The most common clause type is SOV. A complex predicate is encoded by a verb construction derived by attaching verb adjuncts to a single verb root. Arguments known or recoverable from the context or already mentioned in previous context are omitted. Serial verb constructions are formed as a number of verb roots united in sequence precedes an inflected verb which carries all grammatical inflections for tense, aspect, mood and subject marking. The serial verb construction forms a single clause. The most commonly used verb roots are short, composed of a single syllable or even a single consonant. Serial verb constructions are used in narrative where the goal of efficient packaging of information is achieved by the use of semantically and syntactically compressed forms.

A number of languages spoken by small hunter-gatherer tribes in Australia display the defining structural features of inferential system listed above (Cysouw M.and Comrie B.(2013) demonstrating their universality.

Predictably, such significant deviations from Universal Grammar suggest that such poorly organized systems would present a pervasive ambiguity problem. That said, the lack of stable grammatical structure is compensated by reliance on contextual clues, linguistic and extralinguistic, for the disambiguation of the message.

Thus, the average speakers in all human communities, from the highly sophisticated civilizations with writing traditions extended by thousands of years, as well as illiterate hunter-gatherers, conduct the majority of their daily linguistic interactions using language systems with the same structural properties, i.e. which display the trademarks of the inferential system. Importantly, the inferential system is influenced by the constraints of spontaneous speech as a

channel. For example the sentence is organized to fit in a single prosodic contour. The boundary between a main clause and a compliment clause is marked by a pause. M. Mithun (in T.Givon ,M. Shibatani, 2009) writes:

“ ...spontaneous speech is typically not produced in a continuous stream. Speakers regulate the flow of information such that,, in essence , they introduce just one new idea at a time per intonation unit or prosodic phrase. This new idea might be introduction of a new participant, action, time , place, or other new or significant item of information”(Mithun, ibid. p. 67)

Further, citing Chafe (1994) she writes: ...an intonation unit can express no more than one new idea. In other words thought, or at least, language, proceeds in terms of one such activation at a time, and each activation applies to a single referent , event, state, but not to more than one”

(M. Mithun, 2009, p. 67). The same observation is made by Mithun (2009) who write about a “ ...fundamental limit on cognitive processing which concerns the number of units of new information that can be manipulated in a single focus of consciousness...” (M. Mithun, 2009, p. 68)

In sum, the inferential system is universally used by all speakers, regardless of education , social status or profession. It presupposes reliance on close community ties, shared world view and communicative context as a component of a communicative ecosystem which includes non-linguistic communication. Although usually regarded as unsystematic and unruly, and as such, unworthy of serious study, it demonstrates unique internal organization, systematic and universal.

2.3.Rudimentary language systems

“ Rudimentary” here is a label which, in my mind, is a fair description of a number of language systems united by common properties of a small lexicon of predominantly content words and minimal use of basic grammatical categories for marking objects, actions, properties, etc. These are known in the literature as “ lexical protolanguage ” and described as lexicon without grammar as they are said to resemble the earliest forms of language (Bickerton 1984 and elsewhere).

That said, in my understanding the lexicon, as a list of linguistic forms, is a continuum of content words and grammatical markers. A language system, even the most basic one, contains some grammatical forms which makes the concept of “lexical protolanguage “ vacuous. Moreover, it reveals an understanding of language as dichotomy of lexical and grammatical forms which is , in my mind, ill- conceived . This is why I prefer the term “ rudimentary language systems” to signal my understanding that the concept of language , as I understand it, implies a continuum of lexicon and grammar, meaning and structure.

A number of communication systems fall under the label of rudimentary system :

1.the communication of small children during the initial stages of language learning /acquisition, who learn language under normal circumstances. 2. the communication of feral children who learn language under abnormal circumstances after a long period of isolation which impairs learning from conspecifics . 3. the early stages of newly emerged sign languages , 4. Basic Variety , 5. pidgins, 6 .the linguistic communication of agrammatic

aphasics. 7. The linguistic achievements of trained apes.

Despite the vastly different underlying reasons for their existence these communication systems show remarkable similarities both in form and in function. They all exhibit the following common structural characteristics:

The rudimentary systems display the following common structural features:

1. a small vocabulary of lexical words with concrete meanings, organized in grammatical categories of object words (nouns) and action words (verbs), 2 extensive use of compounding 3. serial verb constructions instead of sentence embedding . 4. hierarchical structure based on semantic relations, 5. a very limited number of grammatical words with more or less abstract meanings, no morphology, absence of abstract grammatical categories of subject, direct and indirect object, case, tense, aspect, complementizer, characteristic of grammars of modern languages, 6. no linguistic means to express negation and questions, replaced by intonation, 7. no signs of grammaticalization process, 8. no fixed phrase structure and phrasal embedding , 9. one-place predicates 10. isolationist, morphologically simple forms, 11. extensive use of stress and intonation as a replacement of grammatical devices 12. Rudimentary systems display essential vocabulary and minimum grammar. Lexical words are juxtaposed in their basic forms.

The following examples are illustrations .

* pidgin : A. What say? Me no understand. (Bickerton ,D. Language and Species, 1990, p. 121)

* Genie: Applesauce buy store. (Bickerton,D. ibid. p. 116)

* child: Walk street. Go store. (Bickerton, D. ibid. p. 114)

* Basic Variety: Steel girl bread.(Bickerton ibid.)

* Nicaraguan Sign Language: MAN CRY

* agrammatic aphasics: She speak. (O'Conner, B. et al.2005)

* primate sign communication: GIVE ORANGE

The use of rudimentary systems in communication is usually complemented by non-linguistic forms of communication: gesticulations, facial expressions, non-linguistic vocalizations, etc.

The above identified features are universal explicable with similarity of functions: to cover the most basic communicative needs. The semantic and structural limitations of these are explicable with the limited communicative demands of the speakers in the narrow circumstances of use listed above.

3. THE THREE LANGUAGE SUBSYSTEMS AND THE LANGUAGE FACULTY

Linguistic theory is foundational for the study of the biological foundations of language . That said, linguistic theory must be constrained by the findings of biological sciences of the language-relevant properties in the human organism. So, the influence is a two-way street.

So far two extreme alternatives have been argued : one , by the biolinguistic perspective which states that language is grammar and its biological representation is in the form of an innate cognitive module which contains a grammar-producing algorithm i.e. Universal grammar , a crucial component of a complex cognitive entity, a Language Faculty. The alternative defines language as a cognitive technology supported by in the human organism as a conglomerate of multiple cognitive and physiological traits coordinated into an emergent Language Capacity during language learning and activated by language use . In this context language has no innately pre-specified representation in the organism as it uses a number of pre-existing cognitive resources interconnected and repurposed for use in language-relevant tasks.

Neither of these extremes is a viable alternative. On the one hand, linguistic communication lacking some and even most of the grammatical details, postulated by the generative paradigm and made available by the innate Universal Grammar, is not only possible but empirically demonstrated, suggesting that more often than not, some, and in many cases, most of the cognitive resources of the Language Faculty have been bypassed and unused. On the other, like all species-specific behaviours and one of the defining features of the human species, language must have some innate foundations.

In disagreement with either of them , in the following segments I will argue that humans are born with innate propensities to learn the simplest language systems.

3.1.The rudimentary systems and the language instinct

To remind, instincts are patterns of complex behaviour which an organism follows subconsciously in response to environmental triggers . Instincts appear very early in life. They are innate, i.e., fixed in the genes and so unalterable by experience. Examples of instincts is nest building in birds and courtship during mating season in many species. They are typically stereotypical behaviours, i.e., display little variation among the individual members of the species, although in many species instinctive behaviours involve learning to various degrees, e.g. song birds and young vervets must learn to use their vocalizations in the appropriate context (A.Hilliard, S.White, 2009). etc. resulting in slight variation among populations. That is, instincts are behavioural universals with genetic bases .

3.1.1. The original argument for a language instinct

Pinker (1984) attributes instinct properties to the Language faculty which allow the child to identify, understand and construct grammatically correct and complex sentences despite the lack of explicit instruction . He bases his argument on the assumption of universality of language attainment , which, in his estimation, is accomplished in the first 12 years with apparently little exposure to the local language system. The argument for an instinct for UG suggests a direct connection between genes and components of grammar, which prompted researchers to search for confirmation of the hypothesis in the genome. FOXP2 gene was focused on and labeled as a grammar gene by a study of a unique case of a British multigenerational family , the KE family, in which about half of the members carry a deleterious mutation of the gene, expressed phenotypically in the so called “specific language

impairments". (M. Gopnik et al. 1988) More detailed studies (F. Vargha-Khadem and colleagues 2005) dispelled the myth of FOXP2 and its implication in a language instinct.

3.1.2. Language instinct reconsidered

As a counterargument I submit that, although there is no instinct for grammar, there is an instinct for language : the human organism has instinct-like potential supporting the attainment and processing of the most primitive language systems. This innate predisposition for language, a language faculty of sorts, supports the simplest, yet, highly useful, forms of language, labelled as protolanguage, which potentially includes at least speech capacities, innate predispositions for formation of lexical items as outlined by P. Bloom (2000), capacities for mind reading and participation in dialogue by following the Gricean maxims of communicative cooperation. Moreover, some semantic categories e.g. animate vs. inanimate, action vs. state etc. universally reflected in grammars of all languages suggest innate underpinnings of basic grammar. (D. Dor, E. Jablonka, 2001). This innate potential is further built upon, elaborated to reflect the preferences of the communities in the formation of local languages, i.e. sociolects, which explains the linguistic diversity we witness today. At the level of the individual the innate potential is further elaborated to various degrees of mastery by exposure to the local sociolect in the formation of idiolects. Thus, we are born with the bare minimum although specific linguistic potential. This is not a new idea : Bickerton (1984 and elsewhere) has argued for innate foundations of protolanguage, attributed to pre-human species and inherited by humans. As mentioned above, I disagree with his concept of protolanguage and claim that the only instinct for language supports primitive or rudimentary systems.

3. 2. Rudimentary systems display characteristics of instincts.

a. Rudimentary systems emerge early in life.

The normal development of normal human children includes the attainment of a rudimentary language system with the universal characteristics outlined above with no explicit help from adults and, arguably, from minimal exposure to linguistic experience and with little apparent effort by the learners. So, early child language displays similarities to instinctive behaviours in other species.

b. Rudimentary systems are a default response to communicative emergencies

Pidgins emerge in highly unusual circumstances where normal adult speakers of modern languages find themselves in a communicative emergency situation where speakers of mutually unintelligible languages are forced to interact. Using their intuitions and ingenuity, they cobble together a simple, yet very useful for its purpose, system, a mixture of the language systems of their native languages, i.e. a pidgin. That is, the formation of a pidgin is a default solution to a communicative emergency. This makes it similar, although not identical, to instincts : we all instinctively run for cover upon hearing a loud noise. In a similar fashion the simplest linguistic systems act as a default on which people fall back in emergency situations when they normally react by retreating to default behaviours. If the formation of a

pidgin is reminiscent of instinctive behaviour, it is suggestive of some innate predispositions and a role of phylogenesis. There is a difference, though : language, unlike instincts proper, requires learning. This is why it is pertinent to talk about instinct-like linguistic behaviour. Basic Variety (W. Klein, C. Perdue 1997) is similar to pidgins in that adult native speakers of modern languages find themselves in unusual situation in which they have a reaction similar to pidginization in similar circumstances, i.e. they find themselves in a situation where their most frequent communicative interactions are mainly in their native language with the immediate family and the closed social circle of fellow speakers of the same native language which is not the dominant language in the community. For their interaction outside their inner circle with speakers of the local language they compose a distinct language system with universal properties, structurally similar to pidgins and sufficient to cover their communicative needs limited in scope and duration outside this immediate circle, i.e. Basic Variety, applying the same type of defensive strategy. An example are Chinese immigrant neighbourhoods in some North American cities where older Chinese immigrants conduct their normal life and business with minimal proficiency in English, mainly because they rarely need it.

An interesting case of language formation present the sign languages, where biologically and cognitively normal humans whose speech capacities are partially or completely unusable, find ways to invent a new set of communicative conventions by using manual gestures and body movements to form a communication system which in its initial stages bears remarkable resemblance with the above-mentioned rudimentary spoken systems. This confirms the preliminary assumption articulated above that the formation of a rudimentary system is a natural reaction similar to instinctive behaviours.

c. The formation and use of primitive language systems is uniquely human behaviour.

Although recent experiments with modern primates have demonstrated some isolated cases of individuals capable of learning and using some form of primitive language-like communication, this is achieved only as a result of intense efforts both from human teachers and primate learners, which is hardly instinct-like. Moreover, although in their natural habitats primate species have rich social lives and complex social relations, none of them have invented anything resembling a pidgin or any other form of language. And although lately arguments are made that non-human homo species, Neanderthals and Denisovans, had propensities for language similar to human's (D. Dediu, V. Levinson 2013), although well founded by multiple lines of evidence from genetics, physiology, cognition, etc. these are for now isolated and in need of further empirical confirmation. Thus, given the current state of knowledge, humans remain the only species with instinct-like propensity for language.

On a different but related note, language is only one of a number of uniquely human traits. In the following segment I will offer a plausible speculation that the biological foundations of language are similar to those of the rest of the uniquely human traits and displays similar patterns of development.

4. UNIQUE HUMAN BEHAVIOURS AND INNATENESS, A PLAUSIBLE SPECULATION

Language is a unique human trait, although one among various others such as dance, tool use, music, abstract thought, art, etc. Given that, it is logical to speculate that they all may rely on some form of instinct-like innate intuitions, spontaneously demonstrated very early in life and triggered by very limited exposure to environment. To take an example, all humans are capable of some ability to participate in cultural activities, e.g. singing, dancing, etc. and demonstrate some innate potential for these abilities very early in life. Infants display sensitivity to rhythm, which indicates some rudimentary predisposition for music and dance. Similarly to language, with this minimum innate support any child can presumably learn any song or dance reflective of any cultural tradition. A comprehensive discussion on the topic of innate capacities for music can be found in Steven Mithen's book *The singing Neanderthals*.

Infants also display basic ability to manipulate tools suggesting some biological foundations of tool manipulation in everyday manual tasks. On these essential biological foundations after persistence, dedication, and specialized training, some individuals achieve professional skills of a master craftsman.

In addition, infants demonstrate sensitivity to visual symmetry which indicates innate potential for appreciation of beauty and visual arts and any person can learn to draw at some elementary level. These are innate ingredients which, after extensive training produce a Michelangelo.

Moreover, pre-linguistic infants are known to form abstract categories, e.g. animate/inanimate, singular/plural, and make inferences, which is the beginning of abstract thought, later developed as argumentation in everyday decision-making and further mastered as a professional tool in scientific argumentation, mathematics, law, philosophy, etc. The average human achieves a minimum proficiency in these activities with little instruction very early in life and with little effort, indicating some innate, instinct-like potential.

I am not aware of any detailed studies of the biological foundations of singing or dance, or other uniquely human behaviours with the exception of Ph. Liebermann (2016) who has argued for innate potential for language and culture as a network of neuronal pathways and brain areas including the basal ganglia and the cerebellum which in concert make possible dance, language and other structured behaviours.

Thus, humans have demonstrated some rudimentary, instinct-like propensities for unique behaviours, language being one of them, suggesting some role of nature. On these rudimentary biological foundations the average human builds upon to reach an average level of proficiency with minimum training. Further a small number of individuals achieve the highest levels of mastery only after extensive, conscious and rigorous training and education which the innate flexibility of the human mind and body makes possible.

In this context, if one is to infer the human innate predispositions for unique human behaviours, one would extrapolate these from the behaviours of the average human individual and not confuse the innate potential to sing, draw or manipulate tools from the achievements of Pavarotti, Michelangelo, or some other master of the respective trade.

Returning to the topic of innateness of linguistic abilities, in my mind there is no reason why the same logic of anticipating innate predispositions limited at a very rudimentary level should

not be applied to the language abilities as well, although language is treated differently by the major linguistic paradigms as it is assigned a status of the most defining characteristic of the human species.

To remind, in generative context the innate predispositions for language are defined as Universal grammar, a highly complex algorithm. Its characteristics are inferred from the educated guesses of grammaticality /non-grammaticality, or well- formedness /ill - formedness of linguistic forms of highly educated language-trained professionals, as substitutes for the idealized human, deemed to be the purest representation of the human instinct for language.

At the same time the linguistic output of the average human has proven to be far from displaying the most abstract and complex linguistic structures professed to be universal and instinctive. In this sense, given that for any other unique behaviour the innate potential would be estimated by the abilities of the average human individual, estimating the role of nature in human linguistic abilities from results clearly achieved by nurture is highly questionable.

And although my views are clearly speculative as I cannot rely on studies of cognitive foundations of uniquely human behaviours other than language, I think that my speculations are plausible and are likely to be confirmed by future studies in human cognition and development.

In sum, a plausible argument can be made that 1. all uniquely human behaviours follow the same pattern of relying on some rudimentary form of innate bio-cognitive foundations on which epigenetic and developmental mechanisms build to reach an adult form by spontaneous learning. Further a professional level of mastery is reached by a few individuals after years of dedicated and supervised training. 2. the natural potential for language should be measured in the same way the rest of the unique properties of the human species are to be measured, by the production of the average, normal individual. I am specifying linguistic production, not comprehension, because in spontaneous conversations, which, in my understanding are the clearest representation of natural language, the correct decoding of the message is not limited to capturing the meaning of the utterance alone, as extralinguistic factors, e.g. facial expression, gesturing etc. aid the listener in the correct deciphering of the speaker's intended message.

5. INSTINCT FOR THE RUDIMENTARY SYSTEMS AND THE EVOLUTION OF LANGUAGE

Scholars diverge on the question of what the rudimentary systems reveal about the evolution of language along the dichotomy of phylogenesis and glossogenesis.

On the one hand, Bickerton (1984) offers a two-stage scenario in phylogenesis of the Language Faculty, where a pre-human stage represented by innate abilities for lexical protolanguage attributed to Erectus is followed by a genetic accident with the phenotypic consequence of a Language Capacity, a cognitive algorithm for Universal Grammar. The formation of pidgins by modern language speakers is regarded here as a demonstration of pre-human capacity for protolanguage. That is, grammarless pre-linguistic communication is said to be 1. prehuman stage of the phylogenesis of the Language Faculty and 2. a bio-cognitive

precursor to innate grammar.

Alternatively S. Mufwene, (2009) regards the emergence of pidgins as a case of internal restructuring within the language system or “system reorganization” triggered by language contact. The author explains pidginization with the attempt of anatomically modern and cognitively normal adult speakers of modern but mutually unintelligible sociolects , to converge on a maximally simplified and unstable, though useful, communication system, i.e. a pidgin. Or as per Mufwene pidgins are a temporary solution to a situation of sporadic and unstable communicative contacts where “ ...the grammars used by the individual speakers , which are otherwise internally systematic, have not converged in ways observable in language varieties of stable communities , where mutual accommodations have made the idiolects more similar to each other.” (Mufwene, *ibid.* 2009, p.7.)

Mufwene argues that the situation of pidgin speakers is markedly different from that of the first human language speakers in that they do not have to invent language *de novo* as they are already fluent speakers of a modern language, although highly unusual communicative circumstances prevent them from using their language skills to the fullest. In short, the difference between the first humans as language speakers and the speakers of pidgins is that the later have their work of creating a language greatly simplified by the availability of ready-made linguistic material to choose from, which the former did not have. Moreover, pidgins are viewed as representing the lowest boundary of language. Thus, pidgins are spoken by human speakers of modern languages and , despite being extremely simplified, are still forms of language as they demonstrate the hallmarks of a human language, i.e. consistent and convergent patterns of representing human concepts in linguistic forms, which mark the difference between language and non-language (S. Mufwene 2007). And given that various languages spoken by small isolated but established communities, e.g. Piraha, Riau Indonesian and others, bare close similarities to pidgins, the difference between rudimentary systems and full languages is a matter of degree, not of kind.

5 .1. A Language Faulty for Rudimentary language systems and Darwinian evolution

It is clear that innately specified predispositions for the formation , learning and processing of the rudimentary language systems have firm bio-cognitive foundations in the human organism as a Language Faculty. Bickerton argues plausibly that the biological foundations of pidgin-like rudimentary systems i.e., his protolanguage, result from regular Darwinian processes. It is also clear that the innate specifications for rudimentary language systems must be general enough to allow further learning of local languages during development. They also must be universal.

Darwinian evolution has the following fundamental principles: continuity, survival advantages and lack of foresight. The first means that a trait must have precursors in related species. The experiments with trained apes who have demonstrated impressive accomplishments in learning some elements of a primitive language system , essentially comparable to that of a human child, demonstrate continuity. The second means that a trait must be adaptive to some part of the environment , thus, deliver survival advantage to its bearers compared to alternatives in a certain context . We can assume with confidence that the communicative

needs of the first speakers must have been primitive, e.g. informing others about perceived treats, organizing a hunt, or settling a dispute among rivals, etc. The simplest, most primitive forms of linguistic communication are well suited for solving ecological problems in the wild as well as interpersonal and inter-tribal conflicts, circumstances typical for the daily life of our ancestors as members of small groups of individuals, usually united by family ties, or a “society of intimates” (T. Givón (2002, p. 301-331). Moreover, the close relations among communicators in a small isolated community implies that a significant portion of the knowledge in the community is shared by all members, i.e. there is information equality, and the need for its explicit communication by linguistic means never arises as it is either implied, or shared by non-linguistic means e.g. songs, rituals, gesticulations, etc. So, the information encoded in linguistic means is a small portion of the sum total of information available. Moreover, rudimentary linguistic forms must be easy to process, learn and pronounce, that is, they must be energy-efficient to be adaptive in a body for which life in the wild demands a great deal of energy, cognitive and physiological. Efficiency, precision and accuracy in communicating essential information, especially in situations of life and death, is essential especially if daily encounters with the uncertainty of brute nature are part of life. The primitive forms of language outlined above comply with these requirements. Biological and cognitive resources supporting such forms of communication will be highly adaptive in the natural and social environments the first human language users were functioning in.

In this sense evolutionary explanation for a Universal grammar delivering linguistic complexity far beyond the speakers' survival necessities is unconvincing as the grammatical complexities and intricacies of the modern languages have no adaptive value in their original natural habitats. Moreover, complex grammar has high energy demands for both human cognition and physiology as it takes longer to process and articulate, which a human body living in pre-civilization conditions cannot afford. All this suggests the conclusion that the rudimentary forms have the best chance of fulfilling the communicative needs of the first human speakers in pre-civilization environments.

5.2. The simplest linguistic forms fulfil all the functions complex languages do.

The most distinctive feature of language is the ability to express infinite thoughts with finite means. Chomsky defines it as creativity and attributes it to syntax. This is why syntax is said to be the *sine qua non* of language. Nevertheless, as Comrie and Kuteva (2005) have demonstrated, complex ideas are not necessarily encoded in complex linguistic forms. Various grammatical categories whose existence cannot be justified with adaptive function as the concepts they encode can easily be expressed in lexical words.

“...It is well known that even notions such as temporality do not necessarily need to be encoded by grammatical morphemes.” (B. Comrie, T. Kuteva, 2005, p.190).

In fact, these and other authors have shown that there are almost always alternative means for expressing the meanings of most grammatical categories through use of lexical items, intonation etc. The communicative function of sentential recursion, deemed to be one of the

hallmarks of language by the generative paradigm, is alternatively fulfilled by juxtaposition of single-clause sentences with no loss of semantic details or expressive power. Importantly, language systems of lesser grammatical detail than Universal Grammar are fully capable of verbalizing the same meanings with the same precision, which makes translation possible. In addition, processing of complex grammar has high energy demands from the brain and longer time and more efforts to attain.

And if language is to be understood as being represented in the human organism as a Language Faculty of some form, as one of the defining properties of the human species and as such as a product of evolution, the evolutionary principles dictate that such entity must support a communication system most adaptive for life in the circumstance in which this evolutionary process was taking place, i.e. as adaptation to pre-civilization habitats. So, it seems that the elaborate complexities of modern syntax have no adaptive advantage for the first sapient language speakers in their authentic environments.

On the other hand, the primitive systems discussed above offer adequate communicative precision, processing efficiency and ease of learning, highly beneficial for the survival of its users.

One could hypothetically assume that cognitive resources for UG may have appeared somehow at some point in human evolutionary history. Given the lack of usability for such part of the human body in the environment of its appearance, such a formation would have become eliminated by selection forces, especially given that the development and maintenance of the relevant brain tissues is the biggest energy expense in the human organism and their maintenance would be extremely detrimental for the organism's survival. We know that cave animals, e.g. bats, have lost their vision, i.e. sensitivity to light, as adaptation to cave living as the brain cells which evolved to become excited by light persistently become unused by the animal generation after generation. So, assuming that for the most part of the history of the species a hypothetical grammar algorithm has remained unused for the reasons outlined above, just like the vision in bats, it would have been eliminated by evolutionary forces.

The spontaneous dialogues of modern language speakers, even the least educated ones, contain linguistic forms more sophisticated than the primitive language systems. They are as diverse as languages, ergo, they cannot be innate in any way. On the other hand, pidgin-like primitive language systems composed of groupings of lexical words in their base form, i.e. the metaphorical atoms of language, have the same features across languages, which suggests some bio-cognitive support. Crucially, pidgin-like forms of language serve the needs in navigating the natural, material reality and aid the biological survival of its users. Because of these survival benefits the human organism has been slightly altered in specific ways to allow their fast and efficient learning and processing. From the perspective of evolutionary linguistics the goal of enquiry becomes to explain the phylogenesis of a language capacity for the rudimentary language system.

A language with complex grammar and extensive vocabulary, on the other hand, serves the needs of navigating the complexity in human relations in the context of the modern society,

which complements (and complicates) the physical reality with invented reality, (termed by J.Searle as Social reality). As such, grammatical categories and rules found in modern languages are better explained as emergent phenomena, and as such are unique to each linguistic community. Extended vocabulary and abstract grammatical categories become necessary for functions beyond essential survival as one of the markers of group identity deployed in story telling , myths of creation which brings about metaphors and other figures of speech in literature, songs etc. Importantly, the processioning of elaborate language forms is not limited by time restrictions and does not have to be maximally energy - efficient as it does not arise out of survival necessity . In short, simple language systems with pidgin-like characteristics are born out of survival necessity, complex languages are born out of the extensive communicative needs of complex civilizations where the preoccupation for physical survival is far removed. Civilizations, even primitive ones, develop linguistic complexity for expression of group identity.

SUMMARY AND CONCLUSIONS

The argument presented here is a different angle on the well known generative argument for minimally specific biological foundations of grammar advocated by Chomsky in the Minimalist program (1995 and elsewhere). Moreover, even Chomsky has acknowledged that language is largely learned as grammatical irregularities and the lexicon are idiosyncratic to each particular language. Typological studies have confirmed that most grammatical categories are language-particular confirming that languages are largely learned. (N. Evans, S.Levinson 2009). My slightly different take incorporates the following preliminary assumptions :

- a. Language is a communication system, thus, its *raison d'etre* is communication of meaning, which can be encoded in lexical words as well as grammatical forms.
- b. A language system of any form implies some form of structure, where lexical words and grammatical forms form a continuum, i.e. there is no such thing as structureless, or grammarless form of language.
- c. Language is one of many unique behaviours of the human species.

I have argued that evolution has prepared the human organism with innate intuitions essential for the formation and learning of rudimentary language systems , proven to be effective in the function of encoding the essentials of human semiosis. As such, these are highly adaptive in the pre-civilization habitats as the natural environment for our ancestors. On the basis of these bio-cognitive essentials communities build the diversity of sociolects both in space and time.

Crucially, natural language, as a human behaviour exemplified by the communicative interactions of the average adult normal individual, is a very specific way of informing through repeated interaction by participation in dialogues, reflected in the vision of the human Language Capacity articulated here.

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