The structure of E-language and modern linguistic thought

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Abstract

Modern linguistics defines language in terms of the dichotomy of competence and performance, or I-language and E-language. The linguistic output of the average normal adult speaker, i.e. E-language is usually envisioned as unsystematic, unruly mix of utterances of various types. The present article argues against this conventional understanding and shows that linguistic performance has internal structure composed of 3 subsystems in reflection of the types of social relations of the individual speaker reflected in one's linguistic behaviour.
The social interactions of a normal adult human are of 3 major types : a. interactions at the professional level with colleagues and co-workers, b. interactions at the personal level with family members, friends, neighbours etc., c. occasional interactions with strangers, i.e. fellow humans. These 3 types of communicative engagements determine the internal structure of the linguistic output, or E-language, which is organized into 3 subsystems : a code-like subsystem, an inferential subsystem and a rudimentary subsystem. These exist and function in parallel in the human mind. From a usage-based perspective the language system is a reflection of the linguistic communication of the normal adult human. This suggests that an adequate description of the language system as a pre-requisite to the design of linguistic theories, must recognize and incorporate all three subsystems. Each of the three reveal different aspects of the bio-cognitive foundations of language in the human organism and attributes to a better understanding of the Language Faculty.

Introduction

In the context of the generative paradigm, the most influential perspective in modern linguistics, language is defined in terms of dichotomies : langue vs. parole, competence vs. performance, I-language vs. E-language in short, language system vs. its use in communication (Chomsky 1986 and elsewhere). It understands the language system as organized by the principles of computation , while its application in individual communicative interactions , as organized by the principles of communication. The former has the sentence as a basic unit , the later is organized around the utterance. Usually the linguistic output of the average speaker is regarded as unregulated, unstructured , heterogeneous compilation of utterances composed of mostly incomplete sentences in partial use or even misuse of the language system. And although it is true that the linguistic behaviour of the normal human adult is very diverse, a closer look reveals that it is by no means unstructured.

An alternative view is offered by the usage-based/functionalist approach which is based on the foundational assumption that language system is shaped by human experience in communication, i.e. language form is shaped by language function. The functionalist approach to language studies how language forms emerges from language use in discourse. The

philosophy of linguistic functionalism is most clearly articulated by Du Bois:
" Grammars provide the most economical coding mechanism…for those speech functions which speakers most often need to perform. More succinctly: Grammars code best what speakers do most. " (Du Bois 1985 referenced in Newmeyer,F. 2003, p. 693)
Humans use language in our social lives as the most potent vehicle for interaction with fellow humans. Moreover, we tailor our linguistic behaviour , i.e. E-language, to our social interactions as different types of social engagements demand corresponding types of linguistic engagement. The way we use language in court proceedings , in debates with fellow scholars while defending or refuting arguments, is very different from the way we use language at the dinner table, for small talk with the cashier at the local deli or with the neighbour at the dog park or when asking for directions while visiting a foreign country demonstrating basic knowledge of the local language. Linguistic performance is tailored to reflect the nature of our interpersonal contacts.
The life of the adult human individual is structured along his/her roles in 3 major types of social interactions, i.e. as a professional in interactions with colleagues , as a member of a family, neighbourhood, social circle, or as occasional interactions with strangers, i.e., fellow humans . These 3 types of communicative interactions determine the ways one organizes one's linguistic behaviour, i.e. one's E-language. One uses language in 3 different ways : 1.at a professional level as a professional tool, 2.at a personal level as a vehicle for social contacts and 3 as a tool of last resort for occasional interactions with fellow humans in rare cases of unusual communicative circumstances.
In the following paper I will argue that E- language of the adult normal human is internally organized into three subsystems which exist and function in parallel . One is composed of highly abstract grammatical concepts packed into various interconnected structural hierarchies made explicit by long sentences and implemented in the explicit and detailed exposition of complex ideas. Another contains loosely connected sentence fragments and phrases where complex grammatical forms and structures avoided and substituted by context details. Yet another component of linguistic performance contains highly restricted and maximally simplified linguistic forms where bare word stems are juxtaposed to express the bare minimum of linguistic engagement. Each of the three , although differently organized, clearly fall into the boundaries of language , in stark contrast with both non-linguistic communication and non-human vocalizations. Each speaker is capable of using all three systems depending on the communicative circumstances and alternate freely among the three.

E-language /linguistic performance is a reliable indicator of I-language /linguistic competence. Only by examining linguistic behaviour in all its diversity one can understand the language system and design theories of language as well as make inferences about the bio-cognitive representation of the language system in the human mind. I will attempt to illustrate each of them . Further I will reflect on the role of these systems in linguistic theorizing and in more deep and complete understanding of the bio-cognitive foundations of language.

1.Three sub-systems

A theory, any theory, starts with the collection and systematization of a range of facts, as wide as possible, as the most complete representation of the object of study. For linguistics the most detailed and complete representation of language is the linguistic output of the average normal adult speaker which is a diverse mix of utterances of various types. That said, a closer look reveals that it is far from unsystematic, i.e. there is an order in the seemingly chaotic and unruly mix. I argue that the linguistic communication of the average adult speaker , or E-language is internally diverse system organized into three differently structured subsystems , which co-existing in parallel . I have chosen to label them as " code systems," , " inferential systems" and "rudimentary"systems. Categorizing these as systems suggests that each of the three displays consistently internal organization which has shown to be universal. Different theoretical paradigms focus on one of these types in defining the language system. For classical generativism the code-like system is emblematic of language. The relevance theory focusses on the inferential system (Wilson , D. 1998 and elsewhere)

Each of the three types are systems in their own right as they display distinct internal organization around different sets of principles.

1.1.Code system

The code system is formed by the demands of modern sophisticated civilization for detailed and eloquent exposition of complex ideas in large multiethnic and multicultural societies which is reflected in their structural properties.

1.1.1.Structural properties

Through simple observation one identifies the following structural characteristics:

 * It is composed of linguistic forms, members of a lexicon, as one-to-one stable associations of a meaning and a form, i.e. synonymy and homonymy is non-existent. *These are defined by their membership in discrete and well defined grammatical categories, * Members of the lexicon are organized into sentences according to strict rules or principles of grammaticality, * 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. * A sentence is the encoding of a complete thought. 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 agent consistently occupies the subject position in the sentence structure. *. It is self-contained, stands alone , independent of context of use. This facilitates the uniform decoding of the meaning by people with vastly different experiences and views at any place and time . * The sentence structure is highly detailed , contains multiple embedding of phrases and sentences and highly abstract grammatical forms. * The message for the sender and the receiver are identical. * The function of code systems is mainly to inform, ergo, sentences are mostly statements.

Here is an illustration of a code system.

" The dispersal for Mount Ararat appeared credible when only the faunas of Europe and the adjacent part of Africa and Asia were known. The discovery of the entirely new continent of America and the realization by the end of the sixteenth century that it had a rich fauna that was

drastically different from anything known in the Old World caused great consternation. The further discovery of the fauna of central and southern Africa and the East Indies, and finally the even more unique Australian fauna , raised even more formidable questions for the pious biogeographer. A dispersal of an immutable animal life from a single centre of creation over the entire world became more and more a logical impossibility" (E. Mayr, 1982, The Growth of Biological Thought, Diversity, Evolution and Inheritance,The Belknal Press of Harvard University Press, p. 440).

1.1.2.Spheres of use

The code system is exemplified by the linguistic output of highly educated language-trained professionals for whom language is a working tool and is most often materialized in writing. It is , in addition, organized by the spelling and punctuation conventions of the respective writing systems.

Although code systems display obvious differences in reflection of the diversity of the languages and the writings systems which has given rise to these , such communication systems also display inevitably universal properties as they share the same functions, i.e. to articulate in a clear and concise manner complex ideas to a selected audience of fellow professionals who may not share one's views, to defend or rebuke arguments in various spheres of public discourse, mostly as monologues, e.g. in speeches, court arguments, government documents, etc. Moreover, code systems are used for dissemination of timeless ideas among communicators separated by space and time and as such are removed from social and cultural idiosyncrasies in both vocabulary and grammar . The code system is formed in response to the demands of complex civilizations defined by social institutions and government and the proliferation of literacy, suggesting the influence of the channel of externalization in the organization of the language system.

1. 2. Inferential system

The inferential system is used by both highly educated and illiterate speakers of modern languages in informal, unplanned linguistic interactions with individuals united by personal relations and common life style, e.g. family members, neighbours, villagers . Although generally ignored by standard theories as unsystematic and , therefore unworthy of serious scientific study, the inferential language systems are systematic in their own way and display their own unique characteristics which are universal.

1.2.1.Inferential systems and languages with long writing traditions

Simple empirical observation one identifies the following defining characteristics:
 * The inferential system has information-based, not structure-based internal organization, that is, organized around information structure (topic vs. focus).
* The building blocks of the system are flexible associations of form and meaning as standard meanings are interpreted with context-dependent flexibility.

* These form utterances, used as parts of a conversation, i.e. a chain of utterances unified by a common topic, interacting participants and extralinguistic context.

* Grammatically defective elements of unclear grammatical status, or in Jackendoff's terms 'defective items' (Jackendoff R.2002) , 'mm', 'wow', 'sht' also abound. Expletives are frequently used.

* Elliptical and abbreviated forms abound. Formulaic phrases are often used. Semantically vague words and phrases, e.g.'that fellow', 'that thing', 'people' are often used.

* Most utterances contain the most frugal use of constructions, absolutely necessary for making the message understandable, which in the context of Universal Grammar would be described as fragments of phrases and sentences. Most verbs have incomplete argument structure with only a single argument.

* The utterances are organized as to reflect the biological demands of the modality, i.e. speech and manual signs, both ephemeral signs, which demand detailed and at the same time efficient exposition and interpretation under the pressure of time limitations.

* When an utterance is a full sentence the order of the elements is flexible to signal speaker's attitude.

* The inferential language system uses grammatical forms with clear contribution to meaning, e.g. markers of plurality , modality, tense , aspect markers, case markers in languages with detailed case systems (German , Russian, etc) as required by the context. That said, 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.

* Although in the context of the generative formalism such less than full applications of Universal Grammar are considered structural 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.

* Small clauses, almost complete lack of embedding of phrases and sentences is the norm. Sentence coordination is preferred, subordination is rare.

* The meaning of a sentence is different from the meaning of the utterance and the difference between the two cannot be stipulated in advance by a code-like rules. The meaning of an utterance is calculated as the meaning of a sentence and the speaker's communicative intentions, or illocutionary force. Utterances communicate the intended meaning in addition to the speaker's attitudes.

* The meaning intended by the sender is most often different from the meaning understood by the receiver. An inferential system is based on the assumption that participants are individualities with different minds and different life experiences in different communicative circumstances, which creates the potential for different interpretations of the same linguistic forms.

The following dialogues are examples of spontaneous linguistic interactions of normal English speaking adults . They are borrowed from Jackendoff, Culicover's 2005 although everybody can provide unlimited examples similar to these as spontaneous linguistic communication is part of everyday life of every human.

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)

A. I hear Harriet's been drinking again.
B. Scotch?
C. Not scotch , I hope.
D. Yeah, every morning. (ibid. p. 239)

1.2.2 . Languages of preliterate societies

In the contemporary pre-literate societies known to science the entirety of linguistic communication is informal, spontaneous and unplanned. Cysouw M.and Comrie B.(2013) outline some structural typological similarities among a number of languages spoken by small hunter-gatherer communities in Australia which are summarized as follows:

* lack of dominant order of sentence constituents, word order is notoriously flexible and where there is such, it is non-SVO *lack of adpositions, a few postpositions, *no dominant order of noun-genitive, preference for genitive-noun, *interrogatives in initial position, *subject clitics, *small phonological inventory.

The outlined structural features are only statistical preferences , not obligatory, suggesting pervasive ambiguity problem. The lack of stable grammatical structure is compensated by reliance on contextual clues for the disambiguation of the message.

 A. Pawley describes Kalam, (in Givon, T. Shabatani, M. 2009) 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 singe 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.

The anthropologist Christopher Hallpike (2018)describes the language of Konso, a small tribe in Ethiopia as follows: no comparatives and superlatives, no linguistic markers for indirect speech, very little use of adjectives and adverbs, preference for use of short phrases which nevertheless successfully convey the intended meaning. Conceptual recursion, e.g. in story telling, is verbalized in the absence of grammatical recursion.

Hallpike (2018) also describes Tauade, language spoken by about 7,000 in Papua New Guinea as follows: occasional use of recursion, usually avoided with preference to concatenation of short sentences, as in Korso. The standard word order is SOV, little use of adjectives and adverbs, no comparatives and superlatives. Stories are told by sequences of individual phrases and short sentences.

Thus, the properties of inferential systems in societies with and without literary traditions display structural similarities stemming from the similarities of their functions.

Importantly, as per Evans, Levinson (2009) 82% of languages attested today are spoken by communities of under 100,00 members and 39% by communities of under 10,000(ibid. p.432), suggesting that the inferential system constitutes the bulk of linguistic communication both in space and in time.

Importantly, the grammar of the inferential language systems is influenced to a significant extent by the features of the vocal 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. In addition, the flow of information is limited by the physiological properties of the vocal organs.

 " ...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"(M. Mithun in Givon ,T. Shibatani, M. 2009 p. 67).

Moreover, the vocal channel influences the flow of thought in the process of its verbalization.

" ...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" (ibid.p. 67)

Thus, there is 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..."
(Mithun, M.2009, p. 68)

The code system and the inferential system are abstract types and do not exist in their pure forms in linguistic communication. Any individual communicative act contains elements of both code and inference although to various degrees.
The role of code and inference changes according the different communicative circumstances , e.g. government documents, research, discussions on profession-related topics are predominantly, although not exclusively, conducted in code, while inferential aspect playing a contributing and clarifying role. Spontaneous dialogues, on the other hand, are predominantly inferential with elements of code playing a secondary role.
And although linguistic communication in code is considered the most effective in terms of efficiency and precision of encoding and publicizing eternal and universal ideas, it is always open to interpretation, e.g. laws are interpreted differently by different jurists, works of literature, philosophy and science are interpreted differently by different readers according to

their cultural, educational, age, etc. backgrounds. It is an everyday occurrence that public statements in politics, media etc. are interpreted differently by different receivers and some deviate significantly from the originally intended, often prompting additional clarifications.

The inferential system and the code both interact as components as the standard meanings of constructions are creatively interpreted in spontaneous dialogues. In this sense understanding natural language includes understanding both the linguistic code and its application in communication, by anchoring it to the respective context.

1. 2. 3 Spheres of use

Such system exists mainly in the form of dialogues, during relaxed, casual conversations among people with close social ties which presupposes shared knowledge, cultural values and life style , it is situation-dependent, routinely accompanied by non-linguistic communication as major contribution to the understanding of the message. It is universally used by all human communicators, regardless of education , social status or profession.

1 .3. Rudimentary system

The label " rudimentary " is a fair description of a number of language systems with similar structural properties and communicative functions usually termed as " protolanguage " (Bickerton, D. 1990) united by the predominant use of lexical words with minimal use of basic grammatical categories for marking objects, actions, properties etc.. From the standpoint of modern languages one can talk of highly simplified grammar . Nevertheless, it must be underscored that , although this type of linguistic communication, characterized by Bickerton as grammarless, as it indeed displays minimal use of abstract grammatical forms, it is by no means structureless. Its internal organization bares the hallmarks of a human language, i.e. based on conceptual structures encoded in linguistic forms, mediated by theta roles and semantic structures. Given that the lexicon under the definition by Construction grammar includes all types of linguistic forms, from content words to morphemes, to phrases, the preferential use of one type over another does not justify the label protolanguage or pre-language, but, in fact, eliminates the need for the theoretical distinction of protolanguage and language proper.

1.3.1. Structural features

The rudimentary system displays the following common structural features: 1. 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. morphologically simple lexical forms as bare stems are juxtaposed 6. a very limited number of grammatical words with more or less abstract meanings, little or no morphology, 7. absence of abstract grammatical categories of subject, direct and indirect object, case, tense, aspect, complementizer, characteristic of grammars of modern languages,

8 . no linguistic means to express negation and questions, 9 . no signs of grammaticalization process, 10. no fixed phrase structure and phrase embedding , 11. one-place predicates 12. extensive use of stress and intonation instead of grammatical devices.

A number of communication systems share these characteristics. 1.the linguistic output of small children during the initial stages of language learning /acquisition, who learn language under normal circumstances. 2. the linguistic output of feral children who learn language under abnormal circumstances 3. newly emerged sign language of Al-Sayyid, which is language formation in early stages of the process , 4. Basic Variety, 5. trade pidgins, 6.the linguistic production of agrammatic aphasics. 7. the linguistic production of trained apes. Naturally, the amount and scope of information communicated by the rudimentary systems is highly restricted, which justifies the liberal use of non-linguistic forms of communication : gesticulations, facial expressions, non-linguistic vocalizations, etc. which accompany and complement their use.

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 all.2005)

* primate sign communication: GIVE ORANGE

1.3. 2.Spheres of use

The structural properties of the rudimentary systems are tailored to their function as they all cover the most essential and primitive communicative needs of humans in highly unusual communicative circumstances , e.g. in spurious short linguistic interactions among speakers of different mutually unintelligible languages, as in conversations with foreign tourists , in communication of cognitively impaired and/or developmentally challenged individuals, in initial stages of language development by children, in initial stages of the formation of new languages, in some isolated examples of linguistic communication by non-human species.

In short, the linguistic output of the average normal human adult is organized in three sub-systems the internal organization of which reflects the diverse demands of communicators. Each of the three types of language systems display universal properties which justify the formation of a type.

2 . The place of the three sub-systems in linguistic theorizing

The fact that language as a human behaviour, demonstrated by the linguistic output of the average, normal human adult is a structurally diverse and multifunctional system makes it

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difficult to define and formalize which is why different linguistic paradigms focus on different aspects of it while ignoring the rest.

The field of linguistics is populated by many theories which represent the wide diversity of approaches to language. They are clustered around two major alternative views which define it as either an algorithm implemented in human brain cells, of which different versions are hypothesized by different theories, or a communicative technology in the form of a list of constructions of various shapes and sizes (Heine,B. , Narrog, 2009). The former is represented by generative perspective which defines language as a tightly structured system of a permanently set abstract concepts and rules, an algorithm . The later is represented by the functionalist approach which defines language as rule-governed linguistic behaviour demonstrated in spontaneous linguistic interactions of the average adult , cognitively and physiologically normal, language speaker as the factual foundations of linguistic analysis. Both alternative perspectives exclude the rudimentary systems from language proper and thus, from their perimeter of interest. The rudimentary systems are studied as precursor to proper language either in ontogenetic or phylogenetic context and labeled as protolanguage. (Bickerton, D.1984, 1990).

In the following segment I argue that a detailed and complete understanding of language and its successful formalization in theories must incorporate all three subsystems as each contributes to the detailed understanding of language by illuminating different aspects of it.

2 .1. Code system and language as algorithm

2.1.1.The language algorithm in classical generativism

The code system has been taken by the generative perspective as the most adequate representation of natural language in all its diversity of forms and functions and has been the empirical foundation of the generative paradigm in all its versions . In this context the language system is understood in terms of computation , justifying the adoption of concepts from artificial languages and the theory of computation. It is defined as an algorithm which automatically produces hierarchically arranged structures of unlimited length and internal complexity , following predetermined abstract rules . In this context linguistic forms are assumed to be discrete , static units spatially arranged in hierarchies reminiscent of written words on a page. The phonological system is defined in terms of phonemes as discrete and stable units, reminiscent of letters of the alphabet. The language system is defined in terms of dichotomy of lexicon vs. grammar, as two clearly distinct although interacting components. The code systems are perfectly suited for the function of organizing and communicating logically connected ideas in a clear , unambiguous and precise way through discussion and argumentation in order to make these understandable by people who share little common ground and communicate at a distance of space and/or time . Thus, they reflect the needs of complex civilization. From this biased viewpoint, examples of language use which display less of a rigid internal organization and tolerate certain flexibility and adaptability to the context of use are placed outside language proper and deemed unworthy of serious analysis.

In classical generativism the language faculty is a code processor.

2.1.2. Varieties of generativism: the parallel architecture

A less known version of generativism is encapsulated in a paradigm known as Parallel Architecture (Jackendoff, 2002 and Cullicover and Jackendoff , 2005). It marks a significant departure from traditional generativism in acknowledging the role of performance and incorporating it in the formalization of language.
The language system is hypothesized as a complex structure composed of various differently organized subsystems, each composed of interconnected and interacting tiers: phonological, semantic and syntactic, each independently organized in accordance with the characteristics of their basic units, connected to one another by interface rules, which map the components of each pair of structures and constrain the possible outcomes by licensing the well formed ones.
The paradigm envisions that a strict one-to-one mapping between the three structures is rather the exception than the rule and shows that it is a correspondence of one-to-many, leading to homonymy, synonymy, etc. as explanation for the richness and diversity of linguistic communication.
Significantly, the parallel architecture paradigm also incorporates formalization of performance.
" The competence grammar encodes the knowledge involved in the correspondences between phonology, syntax and semantics, and it is the establishment of these correspondences in real time that constitutes the computations that speakers and hearers perform in the course of using language". (Cullicover, Jackendoff, 2005 p.163).
The Parallel Architecture incorporates fundamental theoretical innovations to the generative tradition, i.e. the model allows constant interaction between competence and performance at every level of the architecture of language. The sharp division of lexicon vs. grammar, as a distinction between learned and innate, or core/periphery and irregular vs. regular grammatical forms is avoided here and is shown to be a matter of degree, as numerous grammatical forms and structures are viewed as derived through violations of grammatical rules and thus are mastered through learning.

2 .2. Language as communication

Alternatively language is defined by the usage-based perspective as a system of signs of various types and sized, formed and periodically reinvented to match speakers' communicative demands . As such it is grounded in the speakers' concrete experience with the world and with language . Thus, language is a set of social conventions emergent from overlapping commonalities of individual acts of language use . The usage-based perspective describes language as a continuum of lexicon and grammar and continuity of past and present forms . The theoretical platform of the usage-based perspective is Construction grammar (Goldberg, A. 2003 and elsewhere) which presents a unified the study of linguistic entities , from lexical words to abstract schemas. The language system is viewed as generalization from the communicative experience of the average speaker. Language is understood as represented in

the human brain as a distributed network of neurons formed during childhood as a result of direct experience with language.

The inferential system has the code as a component as the standard meanings of constructions are creatively interpreted in spontaneous dialogues where the ability for linguistic innovation as creative interpretation of standard use of linguistic entities is amplified .This, in my mind, makes casual conversations the most adequate representation of language and as such the most adequate object for study by linguistics.

2 .2.1.Inferential system and the laws of conversation : pragmatics, the theorizing of conversation

The usage-based perspective underscores that the language system, i.e. the language code, is an abstract model, a general framework with the role of guiding , not determining, its use in real communicative acts. Its activation and communicative utility is determined by the context. Thus, language as a system designed for communication as an inferential system, underdetermined by the abstract model of a code, which becomes reinvented in each conversation.

The unique characteristics of the inferential system are the topic of pragmatics which explore the formalization of linguistic aspects of context. It seeks to understand the universal principles of language use/ performance as the interface of code and context and the role of the human interpreter in the decoding of the message. It distinguishes between sentence and utterance, i.e. the linguistic code and its use in individual acts of communication. The concept of "conversational implicature" is introduced in recognition that the message cannot be reduced to the code or what is explicitly said. Pragmatics is quite a heterogeneous branch of linguistics and includes a broad range of topics of research including the formalization of referential aspects of grammatical forms .e.g. definiteness , deixis etc. as well as the use of language as verbalized action detailed by the theory of speech acts (J. Austin 1975). Inferential systems are organized around information structure based on the opposition new vs. old information or Topic and Focus. As these normally are materialized in conversation, they incorporate another layer of structure organized around the rules and principles of conversation. Paul Grice (1989) has articulated the foundational principles of conversation as a joint activity and states that all participants voluntarily make cooperative contributions to the conversation by inferring each other's intentions and responding to these linguistically. Failure to recognize the role of context and the speaker's beliefs and reflect these in linguistic theorizing can potentially hamper our understanding of language in multiple ways. First as a failure to recognize that language is primarily a communication system and all communication happens in context.

 These are :

1. Maxim of quantity, i.e. the information volunteered by the communicator is determined by the needs of the conversation, not less or more.

2. Maxim of quality, i.e. the assumption that the information given is truthful and not deceiving.

3. Maxim of relevance , i.e. the participation of all communicators must be relevant to the topic

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discussed.

4. Maxim of manner, i.e. communicators are bound by the demand of clarity to avoid ambiguity.

The theoretical perspective discussed here defines general patterns of conversation and the cooperative contribution of participants, highlighting the fact that human speakers are inherently social beings and their communicative behaviour is intentional and rational and their choices of linguistic forms are determined by their communicative situation and their goals. Moreover, the human communicator is cognizant that fellow communicators are also rational beings with explicit communicative goals, thereby defining language use as deliberate choice, unlike the instinctive vocalizations of non-humans.

The inferential system is often defined in traditional grammars as reduced version of a code, given the marginal use of embedding, i.e. repeated recursion, viewed as a corner stone of language, e.g. as per Evans & Levinson (2009) many languages hardly ever use embedding structures , other use only one cycle. Even English rarely uses centre embedding and tail embedding is restricted to two cycles in face-to-face dialogues (Heine, Kuteva 2007, p. 297-).

In the Relevance theory ((Sperber, D. Wilson D. 2004 and elsewhere; Scott-Philipps, T. 2017) every utterance implies its own relevance which makes it worthy of processing effort as it has the highest degree of relevance among competing alternatives. Thus, the very fact of communicator's producing an utterance implies his/her desire to be understood.

Here every utterance implies its own relevance which makes it worthy of processing effort as it has the highest degree of relevance among competing alternatives. The very fact of communicator's producing an utterance implies his/her desire to be understood.

The information encoded in a sentence is the input which , under the automatic assumption of relevance, The sender encodes the information in a construction and conveys his/her intensions by suggesting its best interpretation in the given context. The receiver, under the automatic assumption of relevance entertains hypotheses about the intended meaning given the current communicative context.

Thus, any instance of language use incorporates code and inference.

2.2.2 Towards a formal grammar of conversation: linguistic competence= language system +language use in interaction

As a matter of observation, the bulk of linguistic communication both in space and in time is conducted in informal dialogues as a demonstration of authentic language in use by both educated and illiterate speakers. Given that language use is predominantly in spontaneous dialogues, the principles of inferential communication on which dialogues are based, should have a role in linguistic theorizing. In this context the code systems and their materialization by written texts could be regarded as its derivative where the deficit of contextual support in written texts is substituted by elaborate descriptions in linguistic forms as compensation for what is implied.

The work of J. Ginsburg (2008 and elsewhere) on formalization of the dialogue builds on theoretical paradigms within the generative spectrum. He proposes a theoretical extension of the generative approach based on constraint-based generative paradigm.

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In Ginsburg's work identifies the dialogue as a unit of language and outlines the universal traits of language as demonstrated by the universal structure of the dialogue with distinct internal organization. Importantly, the dialogue is understood as meaning-based unit.

A dialogue is described as similar to a game , i.e. alternation of move and counter move, where the former triggers the later.

ex. A. We have a flat.

B. Uh. I see. (pause) Nice? (Pause). A flat. It's quite established, than, your..uh.... affair?

A. Yes.

B. How long?

A. Some time.

B. But how long exactly?

A. Five years.

B. Five years? (Ginsburg J. 2001)

Every conversation has a distinct organization, beginning with a greeting word or a phrase. e.g. Hi. Hello.

Some languages have also phrases used exclusively as a response to greeting.

ex. A. God dive you health. B. God helthify you. (Ginsburg, Poesio, 2016)

Moreover, languages contain forms interpretable only in the context of conversation, e.g. indexicals e.g. I, you, there, now, tense ordering exemplifies reference of a described event, e.g. in the past or future, to the time of conversation(Ginsburg, Poesio, 2016, p.18)

Thus, knowledge of pragmatics is part of knowledge of the language system.

Three most common types of communicative interactions are identified.

* query/reply, e.g. A. Who left? B. Bill.

* command/acceptance, e.g. A. Open the window, please. B. Sure.

* greeting/counter greeting, e.g. A. (May) God give you health. B. God healthify you.

(Ginsburg, Poesio, 2016 , p. 5)

The relationship between the utterances in a conversation has varying degrees of relevance, e.g. answers to questions can be direct yes/no, partial answers, or clarifications.

e.g. A. Did Merle leave? B. Yes./Probably/Not likely/No.

A. Who shall we invite to the party? B. Who is available?

These display structural parallelism of various degrees between the initiator of the conversation and the participant's response. The initiator of the conversation sets up the semantic and grammatical frame, i.e. cross-turn dependencies, which the participants follow.

e.g. A. Max is leaving. B. Leaving? (Ginsburg , Poesio, 2016)

The conversation starts from a common ground, i.e. information shared by all participants which is constantly updated as new facts are shared which alters the semantic and structural contributions of the subsequent communicative interactions.

Individual utterances rarely consist of full propositions expressed in conventional sentences. Most are sentential fragments, predicateless utterances as well as interjections, ad hog coinage and other utterances with uncertain linguistic status and/or deviating from the rules of standard well-formedness.

e.g. A. and besides (sentential fragment)

A. Huh. (interjection)

A. this piece of gum, that's you know erm (disfluency)

A. and they took a bit of my bone away, and also in the process, cos it was like so *crck crck* (ad hoc coinage)

A. laughter (non-linguistic vocalization)

Thus, utterances which would be identified as defective, i.e. in violation of language rules, or non-linguistic signs, vocal and gestural, have a place in the language system as components of a dialogue.

In short, the conversation is rule guided and the grammar-pragmatics boundary with focus on grammar, dominant in current linguistic thought offers an incomplete understanding of language as a phenomenon.

That said, Ginsburg's work, sketched here, at least at the moment, has had little influence since, given the author's long career and extensive work, I did not find any mention by prominent generativists. This could probably be because classical generativism explicitly stipulates that performance is irrelevant to the shape of the language system.

In sum, given that language use in spontaneous dialogues is the rule, rather than the exception, if linguistic theorizing is founded on extracting general patterns from facts of experience, a theory of language must reflect the structural properties of spontaneous dialogues.

2 .3. The rudimentary system in linguistic theorizing

The rudimentary systems are greatly simplified versions of modern languages. The defining characteristic of the rudimentary system is the extended use of lexical words in their basic form and the bare minimum of grammar.

Modern conceptualization of language, dominated by the generative approach is based on the premiss of a dichotomy of meaning and structure with a focus on grammar as the defining trait of language(Tallermann M.et all, 2009). In this context rudimentary systems are termed as either "protolanguage" (Bickerton, D.1990) or " pre-language"(Givon,T., Malle, B. 2002) and attributed to pre-human homo species. This is why they are excluded from consideration in the design of theories of language.

That said, corpus-based linguistic theories reveal that the language system itself provides evidence for the inseparability of lexicon and grammar. Comrie B., Kuteva T. (2005) , have demonstrated that concepts usually encoded in grammatical forms in modern languages almost always can alternatively be expressed in lexical words , pointing at synonymy between lexical and grammatical forms. Corpus analysis reveals continuity in the semantics of linguistic items around the continuum from content nouns to forms with increasingly more abstract meanings, i.e. prepositions, tense/aspect/mode markers, definite/indefinite articles, etc. Thus, language is organized along a continuum of meanings. Moreover, forms of some level of abstraction , e.g. prepositions, depend for their existence on content words, tense/modality/aspect morphology are conditioned upon the existence of lexical verbs suggesting the internal integration of the system as a whole. This strongly suggests that language is an integrated system where the elements exist and function in a continuum and the formalization of language in terms of discrete boundaries is artificial and does not reflect empirical facts.

In addition, typologists have determined that universal grammatical categories are difficult, if not impossible to find (Haspelmath,M. 2007; Evans,V., Levinson, 2009). Thus, grammar is idiosyncratic to individual languages and many fully functional languages display minimum grammar, e.g. Piraha (Everett, D. 2005) , Riau,(Gil D. ,2009) etc. Thus, minimum grammar is not a disqualifying feature . Jackendoff among others,(Cullicover, P., Jackendoff R. 2005; Jackendoff, R.,Wittenberg,E., 2014) have stated that there is no clear line of demarkation dividing protolanguage and language.

Compare aforementioned examples of rudimentary systems with examples from Riau and Piraha.
Riau: chicken eat
Piraha: foreigner many exist jungle other (There are many foreigners in another jungle.)
(glossed and translated into English by Everett D. ,2005)

Although rudimentary systems rely predominantly on lexical words, despite scarcity of grammatical devices, they are not structureless as the words are arranged according to semantic principles, e.g. combining semantically compatible lexical words in short utterances. To remind, semantic compatibility is foundational for all three types of subsystems.Thus, primitive utterances are not word salad.
To note, the primary function of language is dissemination of information, universally accomplished predominantly by the use of lexical words. The role of grammar is to facilitate the efficiency of information sharing. Thus, the mere existence of a lexicon, even a primitive one, implies language, although Mufwene S.(2007) has argued that pidgin-type linguistic systems represent the lowest boundaries of language as a marker between language and non-language.
Importantly, primitive language systems , although regarded as simplified versions of most modern languages known to science, display most of the defining properties of language and its most defining function, i.e. to articulate infinite thoughts with finite linguistic forms.
In sum, the linguistic repertoire of linguistically competent normal human adults is composed of three types of language systems each organized by different communicative principles and with different communicative roles. The three exist in parallel in the human mind and speakers automatically alternate from one system to another depending on the nature and circumstances of their linguistic interactions. The adequate description of language must recognize this fact and incorporate all three as a firm foundation for further generalizations and theory building.

3. What the three sub-systems tell about the bio-cognitive representation of language?

Language is one of the defining traits of the human species, comparable to the flight of birds and the swimming of fish. This means that the human organism must be innately prepared in some ways for the use of language, although, like many innately based behaviours in other species, requires learning (in the case of language much more extensive learning.) In modern linguistics language is defined as innate property of the human cognition and labeled as Language Capacity. Although the specific meaning of this term is debatable and there is a

diversity of views , many scholars in the field regard the Language faculty is a syntax-forming cognitive entity .

It is clear that some aspects of language require specific representation in the human organism , while others take advantage of some more general properties of human cognition. Each of the three language systems contribute different aspects to the bio-cognitive representation of language. Linguists of different theoretical affiliations focus on one type of language system while disregarding the others, a deficiency which hampers the overall understanding of what language is and its relation with the human individual.

3 .1. The Language Faculty : innateness of complex grammar

The generative perspective defines language as grammar and argues that the grammatical complexities as manifested by formal grammars are represented in human cognition as highly specified body of knowledge of grammatical concepts and rules concentrated in a specific spatially and functionally isolated cognitive module termed "language organ" (in Chomsky) , " language instinct" (in Pinker S.1994), or " language bioprogram" (in Bickerton D.,1984). Subsequent conceptual reformulation as per Chomsky,N., Hauser,M., Fitch T. (2002) defined it as a two-component cognitive entity containing a cognitive module with language-exclusive computations (FLN) and a component with language-relevant functions shared with other behaviours (FLB) e.g. memory, socialization, general learning, etc.

That said, the hypothetical language faculty articulated in the Minimalist program is by definition only a guideline for future exploration and not a statement of knowledge based on empirical testing.

A theoretical alternative within the generative spectrum (Jackendoff R. 2002 ; Cullicover, P.,Jackendoff R.,2005)) has articulated a new version known as parallel architecture , a multifaceted complex with multiple layers which integrate capacities of general cognition with cognitive specifications for grammar, a " toolkit" of cognitive potential for language building which communities activate only partially as they form their languages.

In any case a language capacity is projected to be a highly sophisticated cognitive entity with presumably high energy demands from the brain.

That said, given the preliminary assumption of the generative approach defining the language faculty as a biological organ like any other, e.g. the heart, the lungs, the kidneys etc. biology knows of no example where a the genetic blueprint for growing a hearth, lungs or any other biological organ or a system develops phylogenetically only partially. Moreover, it is highly unlikely that evolution, which by nature tends to be frugal, would select for cognitive capacities, known to demand a lot of energy to develop and maintain, only to be partially used.

In addition, as the so hypothesized language capacity reflects the linguistic competence of the ideal human, fashioned by the literate human. And given that the majority of languages attested today are spoken by small populations with no literary traditions, it does not represent the competence of the typical human and is not likely to be confirmed by future experiments since

life sciences draw generalizations form typical examples, not exceptions. Moreover, the generative approach defines the language faculty in terms of artificial systems as an algorithm , i.e. a priori specified discrete and highly abstract primitives, combinable by pre-set ordered rules. The list of these discrete primitives is determined by the spontaneous intuitions of literate individuals, suggesting the innateness of these.

And although later versions of the generative paradigm, e.g. the minimalist approach, have incorporated examples have proposed theoretical machinery which accommodates a wider variety of examples of language use , the language speaker emblematic of the typical human is assumed to have the capability to learn and process highly abstract grammatical machinery demonstrated in codes and written form.

On the other hand, the formation of abstractions, a universal property of human cognition, is proven to be influenced by the individual's education as it is well known that "... the brains of literate persons are substantially rewired compared to that of their illiterate siblings" (Levinson, S. 2012, p. 397). The influence of literacy and education on perception is influenced by writing systems as technology for representing language in terms of strings of discrete spatially arranged characters , e.g. letters of the alphabet . For example, the perception of the sound stream as a string of phonemes and the understanding of the phoneme as an abstract concept is influenced by experience with writing (Port,R. 2007, p. 153). Dabrowska E. (1997) confirms an obvious fact of everyday experience that people with higher education, especially those for whom language is a professional tool, are able to comprehend and produce language of much higher complexity using highly abstract grammatical concepts and forms as compared to manual labourers. Thus, formal education, which comes with extensive access to written texts, is a crucial factor influencing significantly the linguistic behaviour of speakers and alters the relation of language and the mind.

The generative/biolinguistic argument for cognitive specifications for grammar is based on the assumption that grammar is a direct reflection of the uniquely human cognitive ability to entertain complex hierarchically organized thoughts, used in imagination, planning etc. which, indeed is innate and universal . Bickerton D. writes in 1990:

"...without a system of verbal auxiliaries or verbal inflections there is no automatic and unambiguous mode of expressing time reference. ...Thinking of the kind that humans do is at best extremely difficult in the absence of syntax..." (Bickerton B.1990, p.162-163).

Thus, complex thought is said to be only possible with complex grammar.

That said, studies in historical linguistics and typology show that complex syntax is not necessary for communicating complex ideas and that there is nothing particularly indispensable about the use of highly abstract grammatical forms for the verbalization of thought as hierarchically organized conceptual structures in many languages are materialized in alternative ways by minimal use of grammatical devices (see for example Comrie, Kuteva 2005). Thus, complex thought does not need complex grammar. As an example, terminology in sciences, philosophy, law, technology and other branches of knowledge representative of complex civilization are encoded mainly in nouns, verbs and adjectives and do not require phrasal and sentential embedding.

Moreover, as per typologists grammatical categories are idiosyncratic to each language (Haspelmath M. 2007) as universal grammatical categories are rarely found, ergo, they cannot

be innate.

In sum, at this point it is clear that a grammar algorithm of the kind proposed by the generative approach, even in its minimalist version, cannot be innate, although a language capacity of some form is certainly a plausible assumption. That said, given that the human brain is an integrated entity composed of semi-independent components which function in coordination as a processor, it is not clear if it can be clearly identified as a distinct cognitive entity.

3 .2 .The inferential system and human cognition

Universal grammar is not universal but language use is a universal human behaviour which suggests that it must have some biological underpinnings. Scholars who espouse a usage-based perspective point at a combination of cognitive capacities which participate to various degrees and interact in the process of language learning and use in communication. In this context language takes advantage of " ... quite a heterogeneous cognitive subsystems, none of which is a language processor by design" (Deacon, T.1997, p.298). Some of them are:
* capacity to form generalization, i.e. to discern patterns from individual examples
* capacity for symbolic reference (to represent a class of objects through signs, as special case symbolic thought, symbolic representation)
* socialization (the need of the company of con-specifics)
* capacity to form categories. (things and actions are universal categories)
* capacity to learn/ extended memory,
* capacity for mind reading or theory of mind ,
*capacity for self-monitoring or meta-cognition
In addition, Lieberman Ph. (2000) argues that the basal ganglia confers the integration and interaction of various neuronal circuits , the cerebellum, the prefrontal cortex, etc. , which connect cognition and motor control and plays a significant role in integrating meaning, structure and speech, the most essential aspects of language.
Importantly, the proper functioning of language as a communication system is impossible without a theory of mind, i.e. the intuitive ability to anticipate that others have beliefs, thoughts, goals, different from one's own and consider these in interactions with others, including communicative interactions. Theory of Mind as a cognitive entity is defined as " ...domain-specific conceptual framework that treats certain perceptual input as an agent, intentional action, belief, and so forth" (Givon,T., Malle, B. 2002, p. 267).
It is demonstrated by various behaviours : 1. intentional communication, 2. ability to repair failed communication, 3. ability to teach , 4. ability to persuade , 5. ability for intentional deception , 6. work on shared plans and goals, 7. share focus of attention, 8. to pretend.
Communication is always an interaction in which participants not only influence each other's minds, but also anticipate that all participants will make meaningful contributions, that is, humans have implicit expectation for relevance. The capacity to interpret any interaction with the environment as a potential act of communication is a general property of life forms (Fitch, 2010) of which linguistic communication takes advantage and builds upon by evolving capacity for pragmatic interpretation of utterances. This allows the participant in communication to entertain plausible assumptions about the intended meaning of the signal,

linguistic and otherwise, by considering the available context. That is, the human mind is naturally predisposed to anticipate the speaker 's intention to have a meaningful conversation and he/she cooperates with the listener by guiding him/her towards the correct interpretation of the message. These innate predispositions for participation in a dialogue are articulated in the maxims of conversation by Paul Grice (1989). The Relevance Theory builds on Grice's theory and argues for a unique aspect of theory of mind which argues that the act of pronouncing an utterance automatically creates expectation of its relevance in the context of a dialogue (Sperber, D. WilsonD. 2006; Scott-Philipps, T. 2017)

Non-human species have demonstrated anticipation of relevance as a first reaction to a warning signal referring to an approaching predator as primates and even monkeys are seen to automatically look around expecting to spot the presence of the predator (Fitch, 2010) suggesting the deep evolutionary roots of this aspect of cognition. In addition, various primate species have demonstrated capacity for turn-taking in vocalizations , a clear suggestion of homology (Levinson, V. ,Holler J. ,2014).

That said, in humans the expectation for relevance includes the ability to understand metaphor , irony, double entendre , thus, points at much higher cognitive sophistication and clear specialization for use in linguistic communication .

To note, if one subscribes to the hypothesis of ontogeny as a recapitulation of phylogeny, the fact that an adult form of theory of mind demonstrated by the ability to understand the difference between fact and fiction develops late in childhood, by the age of 7-8 years, suggests that the human version of theory of mind is a late evolutionary achievement. The fact that some form of theory of mind is demonstrated by modern primates suggests evolutionary continuity (Fitch, T. 2010)

From a neurological perspective it was found that the human body displays integrated neurobiological mechanisms for processing the language system and its use in communicative interactions, reflected in the organization of the brain at the neuronal level. Neuronal networks processing linguistic symbols are associated and interact with networks processing symbolic referents, i.e. the symbol grounding in aspects of extralinguistic reality. In this context the semantic features of linguistic forms as prototypical examples of linguistic symbols are "only suggestions in need of further elaboration and modification"(Pulvermuller, 2018, segment 6)

Thus, the human organism is wired in specific ways for participation in dialogues by coordinating a number of cognitive functions, some shared with other cognitive functions, yet others are unique features tailored to the specific demands of linguistic communication, suggesting that these represent an evolutionary target during human speciation.

To sum up, the human individual is both a biological entity with biological and cognitive capacities, and an individual with psychological, social idiosyncrasies, cultural beliefs and viewpoints, all of which interact and influence both the language system and its pragmatic aspects in systematic ways. The acknowledgement of these by theoreticians can benefit linguistic theorizing by recognizing that the knowledge of language of the fluent speaker must include both knowledge of the language system and the universal principles of its application in conversation .

3 .3. Rudimentary system and human cognition

In usage-based approaches rudimentary systems are produced by initial stages of language learning and emergence of a Language faculty.

In biolinguistic context protolanguage like rudimentary systems are produced by FLB (language faculty in a broad sense) composed of cognitive abilities shared with a broad range of behaviours and shared with non-human primates.

That said, given that protolanguage-like communication systems are spontaneously invented by humans, but not by non-humans, e.g. the initial stages of newly formed sign languages and the communication of home signers, suggests uniquely human innate predispositions supporting such systems. The fact that such abilities are the first to develop with minimum experience as in early child language, and the last to disappear after injury and disease, suggesting robustness points at some instinct-like language forming propensities, separating the human species from the rest of life forms.

The fact that some non-human primates have succeeded in learning and using rudimentary communication after extensive experience and focused instruction, suggests that it is possible to achieve similar results by general learning in the absence of such specific instinctive predispositions.

And given that such systems are formed as responses to the human organism's basic needs of nutrition, reproduction and physical safety suggests that the cognitive abilities supporting them have evolved by Darwinian processes.

The rudimentary systems are composed of a small lexicon of predominantly content words as labels for actions, objects, persons, qualities, places, and categorical distinctions animate/inanimate, male/female, state vs. process, word order of sequence actor-action-action recipient, etc. well suited for encoding information pertinent to basic survival in pre-civilization conditions, suggesting a long evolutionary history.

Summary and conclusions

The design of a theory, any theory, begins with an accurate description of the object of theorizing. An accurate description is reliant on the collection and systematization of a wide range of diverse data as a representation of the most distinct features of the object at hand. That is, the theory/the formalism has to reflect faithfully the unique characteristics of the object of study which make it distinct from any other.

The linguistic production of the average adult human speaker is composed of three types of language systems, labeled here as rudimentary, inferential and code systems. The inferential systems constitute the bulk of linguistic communication both in space and in time. It is universally manifested in spontaneous dialogues which suggests that the most distinctive feature of language is a very specific form of information sharing by continuous participation and interaction. As such it would be the most appropriate source of data for a theory of language.

The rudimentary language systems, although considered too primitive to belong to language

proper , demonstrate most of the defining characteristics of language, are, at present time, used exclusively by humans , display unique internal organization, systematicity and universality, which earns them a place as part of language.

Importantly, although some non-human species raised among humans in circumstances highly dissimilar to their natural environment, have demonstrated abilities to learn and use primitive language forms, these are copied from humans as none of them have demonstrated natural human-like propensity to spontaneously create linguistic forms, which remains uniquely human ability.

The code-like and the rudimentary systems, although highly restricted in their spheres of use, nevertheless contribute to the overall picture of human experience with language. The recognition of the three subsystems is a reliable basis for linguistic theorizing, providing a broad factual foundation for further generalizations. Moreover, the recognition of the cognitive aspects of each of them adds clarity into the innate and the emergent language-relevant properties of human cognition and the understanding of language evolution as a combination of phylogenesis and glossogenesis.

A successful theory of language should reflect the most distinctive characteristics of language as one of the most unique human traits. The determination of these distinctive characteristics must be based on the generalization from the widest possible variety of data.

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