

# Good term paper about syntax is only found in human communication

[Sociology](#), [Communication](#)



Syntax is the study of principles and rules for sentences' construction in natural languages. Syntax also studies the patterns of sentences and phrases' forming. It exists in human communication only. Many scientists study this phenomenon and are trying to understand why it is not a characteristic feature of other living beings.

Researches worked out several theories to explain the evolution of humans' syntactic language. Regarding the human's anatomy that contributed to syntactic language development, Joshua B. Plotkin and Martin A. Nowak state in their article that " everyone knows around 50, 000 words in his primary language. The words are kept in the mental lexicon with their one or several meanings, the information on their relation to other words, and their fitting into sentences. People learn around one word every 90 minutes during first 16 years of their life. A child of six years old knows around 13, 000 words. Words are built of phonemes and sentences are built of words. Language is using of two levels combinatorics. Linguists call it as the duality of patterning. Words have to be learned, every sentence that people utter is a novel combination. The brain has a program that can create an unlimited sentences number out of a finite quantity of words. This ability is called as mental grammar. Young children develop such a grammar quickly and without an instruction. Research shows that 3 year old child applies grammar correctly in 90% of cases.

The most difficult mechanical motion performed by human body is the activity of speaking. When generating the spoken language sounds, the different vocal tract parts make movements that should be accurate to millimeters and synchronized in a few 100th of a second.

Speech perception is one more biological miracle of the human language faculty. The auditory system is very well adapted that we can understand 10-15 sounds per second of casual speech and around 50 sounds per second during speed-up speech. This is surprising taking into consideration humans' auditory system's physical limitations: in case clicking sounds are repeated about 20 times per second, people can no longer hear it as a separate sounds sequence, they hear it as a continuous buzz. Consequently, humans do not perceive phonemes as bits of sound, but every moment of spoken sound should have some phonemes included into it, and the human brain knows the way to unzip them.

The above paragraphs show that human language is a very complex trait. The language performance is based on well coordinated interactions of different parts of anatomy, and people are very good at it. People can speak without thinking on it. In contrast, people often cannot make simple mathematical operations without thinking and concentration. It happens because the evolution designed several parts of human brain specifically for working with language.

Evolution is based on the information transfer from one generation to the other. During millions of years the process was limited to the genetic information transfer. Human language facilitates the non-genetic information transfer and therefore leads to a new stage of evolution.

Only words are not enough. The almost unlimited capacity of the language of humans derives from the fact that people use syntax to unite words into sentences. In the basic form, syntax is a communication system, in which messages are built of components that possess their own meaning. In

contrast, non-syntactic communication consists of the signals that refer to the whole situation.

Natural selection may only notice the advantages of humans' syntactic communication in case the size of the system is more than a critical value. Below the critical value non-syntactic communication is considered to be more efficient" (Plotkin & Nowak, 2001).

The evolution of syntax has been studied by W. Tecumseh Fitch: " The language evolution required elaboration of a certain number of independent hominin lineage mechanisms, including the systems involved in semantics, signaling and syntax. Two perspectives on the syntax evolution can be contrasted. The " continuist" one seeks the roots of human syntax in simpler systems used in animal systems of communication, such as sequencing and iteration. The " exaptationist" perspective includes evolutionary function change, so that today linguistic communication systems might earlier have served different functions in other earlier hominids.

When we look into the evolutionary changes of human language, the most significant reference point are always differences between brains of humans and other primates, whether in anatomy or function of brain. That means that we are looking for human autapomorphies (traits differentiating people from their closest relatives, and that were not available in the last shared ancestor).

Given the evident language absence in apes, the fundamental question is " what caused the derived characteristics underlying language arose in the lineage of humans after it separated from the last common ancestor (LCA)?"

This search for derived traits is a search for human autapomorphies. In

asking this question researchers should not ignore the large amount of neurobiology that people share with primates. Contemporary neuroscience contains a lot of neural synapomorphies (traits that we share with relatives). Whatever the neural characteristics underlying the capacity of humans for language are, they should always be considered in the context of a similarity ocean. From a biologist's point of view, there is nothing special in being special. All the living species have autapomorphies of some kind, and these specialties are understood within the context of a much bigger set of synapomorphies.

Thus it is important for the researchers to understand why humans are special in moral or ethical senses. The neurobiologists' task is just to identify different neural language underlying mechanisms and to state, which of them are synapomorphic and which are not. The goal of the author is to explore the human neural autapomorphies' evolution that is involved into language, with the focus on syntax.

According to the author, given the fact that organs may change their functions, and the significance of this fact for evolutionary theories, it is surprising that exaptation was dismissed (or ignored) by many scientists interested in cognitive evolution of humans.

A concomitant of a multi-component perspective on the evolution of language is a notion of intermediate phases in human evolution, in which some components of language were obvious, while others were lacking totally or just not integrated into a system of linguistics. For those language aspects that developed since the LCA, the word " protolanguage" is usually used to mark a precursor system, an evolutionary station on the way to

modern language. The word “ protolanguage” was used for the first time by anthropologist Gordon Hewes, who used it in the context of his gestural protolanguage hypothesis. It was later popularized by Derek Bickerton, who used this term to mark a protolanguage lexical model, in which words created the first phase of language evolution. One of the oldest protolanguage models belongs to Darwin, who considered that the earliest human language stages were musical, without a semantic content. The notion “ prosodic protolanguage” has more recently been followed by a certain number of scholars.

In the other article, the authors Martin A. Nowak, Joshua B. Plotkin & Vincent A. Jansen, state that “ communication of animals is non-syntactic that means that signals refer to situations. Language of human is syntactic, and signals consist of components and each of them has its own meaning. The large expressive capacity of human language would not be possible without syntax, and the change from non-syntactic to later syntactic communication was an important step in the human language’s evolution. The author’s goal is to understand the dynamics of this transition and to find out how natural selection could guide it. In this research the author presents a model for the language evolution population dynamics, state the basic words’ reproductive ratio and count the maximum lexicon size. Syntax makes possible to have larger repertoires and to form messages, which have not been learned earlier. According to the author’s model, natural selection may only contribute to the syntax emergence in case the quantity of required signals is higher than a threshold value.

This result should give an answer why syntactic communication and hence

complex language evolved only in humans. The authors' results say that the crucial step that led to the change from non-syntactic to syntactic language communication was an increase in the quantity of relevant events that might be referred to. As the quantity of such relevant communication topics increased, natural selection might begin to improve syntactic communication and lead to a language design, in which messages could be created that were not learned earlier.

Syntactic messages may encode new thoughts or refer to very rare but significant events. The authors' theory, however, does not say that syntactic communication is at an advantage in all cases. Many animals might have a syntactic understanding of the surrounding world, but natural selection did not create a syntactic communication system for them because the quantity of relevant signals is below the threshold. Presumably the increase in the quantity of relevant communication topics was provoked by alterations in the social structure and interaction of the human ancestors that evolved syntactic communication" (Nowak, Plotkin & Jansen, 2000).

There is no standard explanation of the phenomena that the syntax exists only in human communication now. Researchers continue working on it. However, we can see some similarities in the theories of different scientists. Thus, the phenomenon of human syntactic communication is a subject for further research that may lead the researchers to the single approach in the future.

## References

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Appendix A

- What were the databases, if any, that you used to find each article or book?

I used Google Scholar.

- What was the search strategy you used (i. e., the search words you used) in each database to find the articles?

Search words: syntax of human language, syntax evolution, human language and syntax.

3. Was each article that you cited an example of Primary or Secondary research?

The articles were the examples of Primary search.