

Layers in Generative Grammar: Chomskian infinite set of grammatical sentences as a discrete/fuzzy subtext of GG theory

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Abstract

The purpose of this article is showing how the infinite set of grammatical sentences in Chomskian theory, can be a discrete/fuzzy subtext of Generative Grammar theory. It was found Generative Grammar may be composed by two layers, the components we just mentioned.

Keywords: Discrete/fuzzy subtext, layers in Generative Grammar, GG theory, infinite set of grammatical sentences.

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I. INTRODUCTION

Linguistics went through a radical shift in the late 50s, with the revolutionary book by American linguist Noam Chomsky, called *Syntactic Structures*. From then on, many alternative and traditional paths following that breakthrough have been taken. In the case of this research, we follow the traditional Chomskian path but with some adjustments. As we have mentioned, the purpose of this article is showing how the infinite set of grammatical sentences in Chomskian grammar, can be a discrete/fuzzy subtext of Generative Grammar theory. We will go through the exploration of these matters in the following sections.

II. THEORETICAL FRAMEWORK

2.1 Generative Grammar

Generative Grammar is a system of rules that can iterate to generate an indefinitely large number of structures (Chomsky, 2015). The rules of a generative grammar generate or produce, all and only the correct combinations of elements in a language (Rooryck, 2006). For the purpose of this research, we will focus on the infinite set of sentences this system of generative rules yields (Chomsky, 1957, 2015; Rooryck, 2006). All these theoretical considerations have been restated in recent research (Alvarez, 2025).

2.2 Lexicon and fuzzy/discrete lexicon

Lexicon can be conceptualized as a multifaceted and dynamic system of word knowledge storage. It is constantly changing as new words are learned and existing knowledge refined (Tsouri Bentsouri & Larabi, 2025). Additionally, if lexicon is empirically discrete (Rothe et al, 2016; Haines, 2021), it may be conceptually fuzzy as well (Alvarez, 2019).

III. DISCUSSION

3.1 General considerations

Initially, we have two elements to be considered, namely the theoretical explanation of GG, and its deep information (or subtext) which is the infinite set of grammatical sentences. As this set may have sentences with words holding obscure meanings, the nature of the theoretical explanation text is fuzzy. However, as we have pointed out in recent research, it is discrete as well (Alvarez, 2025; Chomsky, 1957; Rothe et al, 2016; Haines, 2021). Therefore, the connection between the infinite set of sentences and Chomskian theoretical explanation, at least partially, is fuzzy. It has to be said that for the purpose of this research, we do not mean a mere exercise of logical combinations among sentences, but that we aim for a cognitive, biolinguistic explanation of linguistic/cognitive dynamics.

In earlier research, we explained the discrete/fuzzy dynamics in Generative Grammar, takes place from rules to sentences and from sentences to rules (Alvarez, 2025). Our task now, is figuring out the place of this discrete/fuzzy dynamics, within the bigger picture including both rule-sentence dynamics and the theoretical explanation of Generative Grammar. Additionally, we have to figure out whether there are words or phrases holding obscure meanings in Chomskian theoretical explanations. After a careful analysis including sources including the aforementioned *Syntactic Structures* (Chomsky, 1957, 1995, 2015), we have noticed no word holding obscure meanings is there in these sources. We can project this finding to the rest of Chomskian linguistic work as well.

Therefore, the answer to previous question is *no*, meaning there are no words or phrases holding obscure meanings within Chomskian theoretical explanations. The puzzle now is figuring out how Chomskian theoretical explanation and the infinite set of grammatical sentences relate, for the purpose of this research. Therefore we have to find a referential relation between the former and the latter, and see if the partially fuzzy state of the infinite set, does to any extent make Chomskian theoretical explanation fuzzy. Therefore we have two questions, a) Is there a referential relation between Chomskian theoretical explanation and the infinite set of grammatical sentences? and b) Do the obscure meanings we may find in the infinite set of grammatical sentences, make Chomskian theoretical explanation fuzzy to some extent?

After some thinking we realize, because of the internal logic of the statement, that the answer to both questions is affirmative. Therefore, next stage is establishing how the process of the infinite sentences set influencing Chomskian explanation, takes place. However, rather than solely focusing on the potential dynamics in which the influence mentioned happens, it is more productive to represent the whole Generative Grammar picture through a system of two layers: the infinite set of sentences and GG theory. We will go through the analysis of these aspects in the following section.

3.2 Layers in Generative Grammar: infinite set of sentences as discrete/fuzzy subtext of GG theory

Now we are in position of developing the ideas we were mentioning at the end of last section, in this case the two layers that may be there in Generative Grammar. First, we have deep information level or subtext, the set of infinite sentences that can be generated in the mind/brain. Second, we have surface information level, Generative Grammar theoretical and textual information.

As we will later verify, explaining these phenomena is not only a goal in itself, but that an explanation of this kind potentially describes or “explains” a real system in the mind/brain, namely, the system of two layers this article is about. At some point, we thought this system could be better understood if we showed how it works and may look like through a diagram, meaning the dynamics we tried to explain would have a visual nature. However, after some time of analysis, it was found no diagram, scheme or linguistic machine could show how the potential layered system under discussion, really works. All we can say at this point, is the Chomskian infinite set of grammatical sentences, potentially constitutes the discrete/fuzzy subtext of GG theory, thus forming a system of two layers, potentially in the mind-brain, at least partially. Future research may shed light on how this potential system within the mind/brain works.

IV. CONCLUSION

Through this article, we have explored the matter of the infinite set of grammatical sentences in Generative Grammar, as a potential discrete/fuzzy subtext of Generative Grammar theory. It was found that this issue in particular is highly complex and hard to deal with thus preventing us from providing with a clear representation of it. However, it was found the Chomskian infinite set of grammatical sentences, potentially constitutes the discrete/fuzzy subtext of GG theory, thus forming a system of two layers in the mind-brain. As mentioned, future research may shed light on how this potential system within the mind/brain works.

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