



Generative versus Cognitive Approaches to Grammar

Yosra Sellami-Sellami

Faculty of Letters and Humanities of Sfax, Tunisia.

ABSTRACT

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Despite the differences they hold, the generative and the cognitive approaches to grammar aim to describe “speaker knowledge” (Hamawand, 2020, p. 51). Indeed, the cognitive view, where studying semantics (i.e. meaning) and cognitive approaches to grammar (i.e. grammar) are “complementary” and not independent areas of research (Evans & Green, 2006, p. 49); is contrary to the formal (generative) view where the study of the aspects of the grammatical structure of a language is independent of meaning. In fact, “the cognitive approach to grammar originally grew out of a reaction against the generative approach and defined itself explicitly against that tradition” (2006: 742). Building on that premise, this article is devoted to explaining the main differences between generative/ formal and cognitive approaches to grammar.

Keywords:

Innateness Hypothesis,
Language Acquisition
Device, generative
approaches to grammar,
cognitive approaches to
grammar.

INTRODUCTION

Cognitive linguistics is a modern school of linguistics that emerged in the 1970s as a reaction to the formal approaches to language (Evans & Green, 2006, p. 3). Such a school rejects Chomsky’s claim that language exists as “a language-specific module separate from other cognitive processes (e. g. Langacker 1987)”. It holds the view that “the cognitive processes discovered for perception and cognition, in general, should underlie those mental processes which are responsible for language comprehension and production”(Winters, Tissari, & Allan, 2010, p. 262).

Chomsky’s Innateness Hypothesis claims that all humans are supposed to have Universal Grammar in their minds from birth on (Grenkowski, 2012, p. 3). Universal Grammar (UG) constitutes a device in the minds of human beings, which is predisposed to acquire language, and it is otherwise known as the Language Acquisition Device (LAD). LAD is an innate component of the human mind that produces a particular language via interaction with experience; it is a device that “converts experience into a system of knowledge “activated to acquire the first language or the second language” (Chomsky, 1986, p. 3).

Chomsky’s UG leads directly to what he refers to as “Transformational Grammar” often referred to as “Generative Grammar” (Grenkowski, 2012, p. 3). Generative Grammar is a “system of rules that can iterate to generate an indefinitely large number of structures” (Chomsky, 2015, p. 14). Chomsky (2015) states that this system can be analyzed in terms of syntactic, phonological, and semantic components (p. 14). The first component of Chomsky’s Generative Grammar (i.e., the syntactic component) specifies a deep structure and a surface structure for each sentence (, p. 15). The deep structure of a sentence “determines its semantic interpretation” and a surface structure of a sentence “determines its phonetic interpretation”. This division of labor explains why the second and the third components of grammar are “purely interpretive”. The phonological component of a grammar “relates a structure generated by the syntactic component to a phonetically represented signal”. On the other hand, the semantic component “relates a structure generated by the syntactic component to a certain semantic representation”.

Chomsky’s UG represents the working hypothesis for the generative theories of grammar (Evans & Green, 2006, p. 746). Generative theories cover Chomsky’s Transformational Grammar model and other non-transformational models, including Kay and Fillmore’s Construction Grammar, Head-driven Phrase Structure Grammar (HPSG), and Lexical Functional Grammar (LFG) (p. 743). These generative theories “differ in terms of how they model the system” (p. 746). Transformational grammar models “place the burden of explanation on the syntax”. They also assume a multistratal

Corresponding Author: Yosra Sellami-Sellami

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system “with generalized derivational processes linking underlying and surface structures”. By contrast, non-transformational models “place the burden of explanation on information stored in the lexicon; they assume only a single monostratal level of syntactic representation”. (For further details about these generative models, see Evans & Green, 2006).

Formal syntacticians place great value on Chomsky’s UG. For them, UG provides a system that is capable of producing careful, orderly, and parsimonious descriptions of the world’s languages. This system is powerful because it enables comparisons between languages that may or may not be related (Evans & Green, 2006); cognitive linguists disagree with this premise. They argue that such a formal view of language is narrow because it analyzes language in terms of word and sentence structure (i.e. morphosyntax) and has “little to say about linguistic meaning or the communicative functions of language”.

This argument explains the reason behind claiming that, in cognitive linguistics, “meaning and grammar” are “two sides of the same coin” (p. 49). Indeed, the cognitive model adopts the idea of the symbol put forward by De Saussure (p. 476). De Saussure contends that the sign/word system comprises two inseparable elements: the signifier and the signified. The signifier refers to the “sound-image”, which is the mental imprint of a linguistic sound (Tyson, 2006, p. 213). The signified is the concept to which the signifier refers. Accordingly, a word is not only a signifier (a sound-image), nor is it merely a signified (a concept). A signifier becomes a word only when it is related to a signified.

Following the cognitive model, the ‘signified’ corresponds to “the semantic pole” and the ‘signifier’ to “the phonological pole” (Evans & Green, 2006, p. 476). Cognitive linguistics studies “language in a way that is compatible with what is known about the human mind, treating language as reflecting and revealing the mind”). Cognitive linguistics is divided into cognitive semantics and cognitive approaches to grammar (p. 50). Cognitive semantics studies “the relationship between experience, embodied cognition and language”, while cognitive approaches to grammar study “the symbolic linguistic units that comprise language”. Cognitive grammar is considered an alternative to the generative grammar model (Wilcox & Shaffer, 2005, p. 40). The latter is also labeled as traditional and structural grammar (Broccias, 2006, p. 83). Generative grammar seeks to generate the grammatical rules that underlie human languages regardless of meaning (Meyer, 2005; Lakoff, 1987).

The main differences between generative/formal and cognitive approaches to grammar are explained in the next section.

DIFFERENCES BETWEEN GENERATIVE AND COGNITIVE APPROACHES TO GRAMMAR

Generative and cognitive theories of grammar differ in three aspects, namely assumptions, objectives and methodologies. The first aspect deals with “the philosophical orientation of that theory in terms of how it sees the nature of the relationship between language, thought and world” (Evans & Green, 2006, p. 742). The second aspect is concerned with “what that theory seeks to establish, describe or explain”. The third aspect revolves around the ways to set the objectives of the grammatical theory. (For further information, see appendices A and B, which contain two tables where the first table lists the characteristics of a generative approach to grammar and the second table lists the characteristics of a cognitive approach to grammar in terms of the above-explained three aspects).

Delving deeper into the substantial differences between the two approaches to grammar that this paper is concerned with, generative and cognitive approaches to grammar differ in the following ten areas (explained in the next ten sub-sections, respectively).

RATIONALIST VERSUS EMPIRICIST VIEW

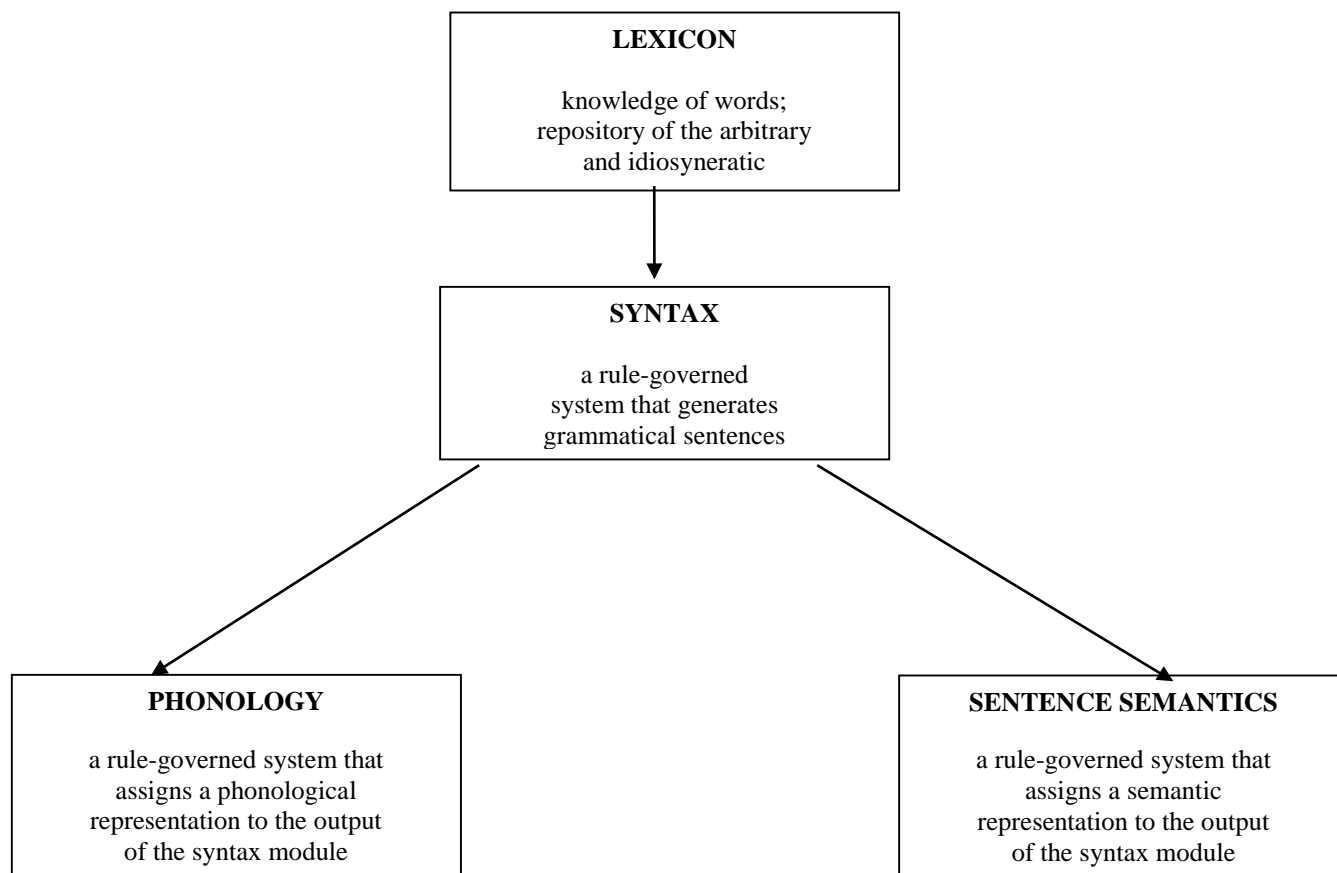
Chomsky’s rationalist assumption that the general form of a system of knowledge arises from “drawing out what is innate in the mind” (Chomsky 1965, p. 51) and that experience causes “this general schematic structure to be realized and more fully differentiated” (pp. 51-52) runs contrary to the empiricist standpoint, which holds that language is “relatively independent in its structure of any innate mental faculties” (p. 51).

In addition to the different views they hold concerning the construction of the linguistic knowledge, generative and cognitive approaches to grammar differ in their view of the syntactic structure. This difference is explained in the following sub-section.

AUTONOMOUS SYNTAX VERSUS LEXICON-GRAMMAR CONTINUUM

As stated above, in the introduction part, generative theories of grammar include Chomsky’s Transformational Grammar model and other generative non-transformational approaches, which are Kay and Fillmore’s Construction Grammar, Head-driven Phrase Structure Grammar (HPSG) and Lexical Functional Grammar (LFG). The generative model developed by Chomsky is well-illustrated in the following figure.

Figure 1: The generative model (Evans & Green, 2006, p. 450)



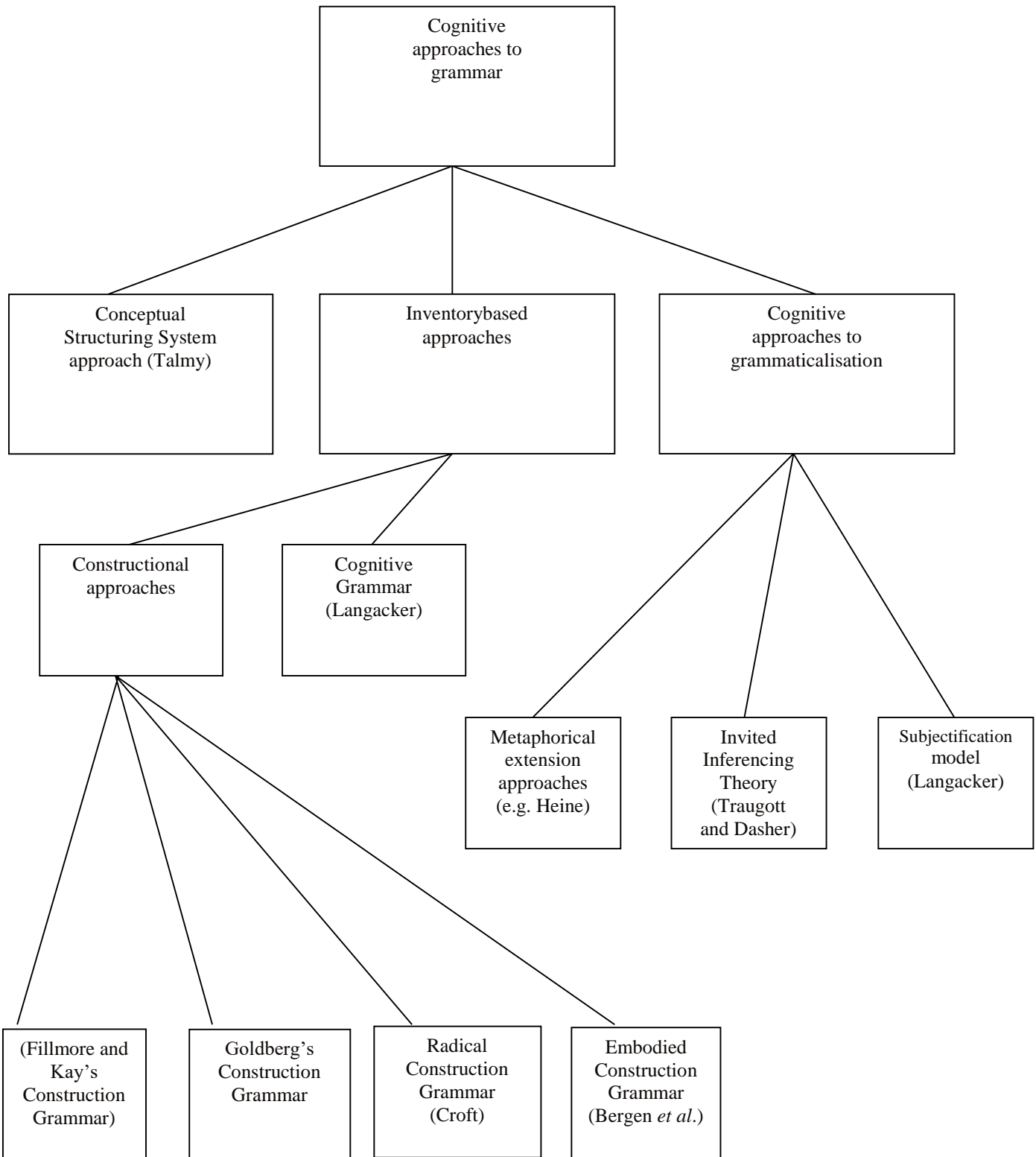
The above-illustrated figure reveals that, according to the generative model of grammar, the syntax, semantics and phonology subsystems are “encapsulated subsystems” and interact only “with one another via linking rules” (Evans & Green, 2006, p. 642), that is why language is viewed as a modular system (p. 449). In other words, “the linguistic subsystems such as syntax, semantics and phonology are seen as independent sub-modules within the language system” (p. 745).

On the contrary, cognitive linguists reject “the modularity thesis” of the formal approach as well as “the autonomy of syntax thesis” because they contend that “language is not an encapsulated system but a system embedded within and inextricable from generalised cognitive processes” (p. 752). Chomsky’s definition of language as “a set (finite or infinite) of sentences, each finite in length and constructed out of a finite set of elements” (1957, p. 13) was rejected by Langacker (1991a, p. 533) who contradicts the premise of reducing grammar into “symbolic relationships”.

Chomsky proves the autonomy of meaning and grammar through his well-known sentence “Colorless green ideas sleep furiously”, which is grammatically correct, however, meaningless (1957, p. 15). Grammar and meaning are unrelated. However, Langacker states that language fulfills two to functions, “a semiological function allowing thoughts to be symbolized by means of sounds, gestures, or writing, as well as an interactive function, embracing communication, expressiveness, manipulation, and social communion” (1998, p. 1). Accordingly, grammar and meaning are interrelated. Language is “neither self-contained nor describable without essential reference to cognitive processing” (Langacker 1991b, p. 1).

Cognitive approaches to grammar are divided into three main types, namely the Conceptual Structuring System approach (Talmy), the Inventory-based approaches and the Cognitive approaches to grammaticalisation. Each type is divided into sub-types as illustrated in the following figure.

Figure 2: Cognitive approaches to grammar (Evans & Green, 2006, p. 483)



Syntax, according to the different cognitive approaches to grammar illustrated above in Figure 2, “is not autonomous” as in the generative models. Indeed, the syntactic component in the generative/formal model, “mediates between form and meaning, whereas in the cognitive model, grammatical structures are just another kind of meaningful symbolic unit, albeit of a schematic nature” (p. 753). In this respect, Wilcox and Shaffer (2005, pp. 40-41) state that, following the cognitive model; grammar is not regarded as independent of

meaning. All of language – the lexicon, morphology, and syntax – is seen as inherently symbolic, having both form and meaning. Even the most abstract grammatical functions in language are regarded as pairings of form and meaning in cognitive linguistics”.

The second point of difference between the two models is concerned with the nature of their architectures, which will be explained in the next sub-section.

DERIVATIONAL VERSUS INVENTORY SYSTEM

Before delving deeper into the differences between the generative and cognitive approaches to grammar, it is important to mention that both approaches share the “objective of modelling speaker knowledge” and the assumption of “a dynamic model (that is, not a static body of knowledge)” (Evans & Green, 2006, p. 753).

However, while the formal model to grammar emphasizes the importance of positing “a computational system that generates (builds or derives) well-formed grammatical structures without recourse to meaning”, the cognitive model to grammar emphasizes the importance of positing “an inventory of symbolic units containing ‘schematic templates’”. These templates are formed as a consequence of regular use and are thus entrenched”. In this respect, Langacker states that cognitive grammar views language as a “structured inventory of conventional linguistic units” (1987, p. 3). Consequently, the formal model focuses on “generalizations” and “well-formedness (or conventionality)” (pp. 753-754); whereas the cognitive model focuses on “problem-solving” in the sense that, when forming or interpreting new structures, a speaker is supposed to compare “the new structure with existing templates”, and to take into consideration “the goals of the communicative exchange, the context and so on” (p. 753).

In addition to the above-explained two areas of differences between generative and cognitive approaches, they differ in their use of the term of construction, which will be explained in the following sub-section.

THE STATUS OF CONSTRUCTIONS

The term construction is defined differently by generative and cognitive models of grammar. In fact, in the former approach, it “is epiphenomenal, because it emerges as the output of more fundamental primitives and processes (the ‘words and rules’ model)”(p. 754); whereas, in the latter approach, the term construction “is primitive, in the sense that it does not represent the output of any more fundamental linguistic unit or process”.

At this point, it is worth mentioning to Kay and Fillmore’s Construction Grammar, which is classified under the category of generative theories to grammar; however, it “shares more in common with the cognitive model than with other generative models” in its view of constructions because it considers constructions “stored whole” instead of being viewed as “built from syntactic rules” as in the other generative theories of grammar.

Another point of difference between generative and cognitive approaches to grammar concerns their distinction between rules and schemas. This concern will be explained in the next sub-section.

RULES VERSUS SCHEMAS

As explained above, generative and cognitive approaches to grammar share the objective of modelling the same characteristic of speaker knowledge. However, they differ in the following two aspects: (1) “the directionality of the relationship between the schema or rule” and (2) “the specific expressions that correspond to it” (Evans & Green, 2006, p. 754). In fact, while “In the generative model, the rule precedes and thus determines the specific expressions that instantiate it”; “In the cognitive model, the schema does not give rise to the instance but follows from it: the schema represents a pattern that emerges from entrenched units as a consequence of usage”. Formal theorists are unable to explain the changes in patterns that occur due to systematicity of “errors” (Barlow & Kemmer, 1994, p. 37).

A further point of contrast between the two theories concerns redundancy versus economy, which will be explained in the next sub-section.

REDUNDANCY VERSUS ECONOMY

It transpires from the above explained sub-section concerning rules and schemas that the latter reflect use and redundancy is, thus, natural in the cognitive model because “both schemas (the cognitive counterpart of rules) and instances of those schemas (lists of specific constructions) coexist in the grammar”, and “the schema is therefore an expression of the generalisation that emerges from patterns of usage” in the cognitive model (p. 755).

Such a view contradicts the generative view, which emphasizes the fact that language should avoid redundancy and be an “economy-driven approach” so as to be learned quickly. If, for instance, adding the “s” to a singular noun leads to getting the plural form of the noun, then there is no need either to list such instances in the grammar or “their singular counterparts, because the singular nouns plus the generalised rule can straightforwardly derive the plural forms..

The seventh point of difference between generative and approaches to grammar “concerns the nature of the phenomena each model attempts to account for”: conventionality versus regularity, which will be clarified below.

CONVENTIONALITY VERSUS REGULARITY

Formal/generative approaches to grammar consider “conventional or idiomatic expressions” such as “by and large or kick the bucket” “peripheral and uninteresting because they do not reveal general and productive patterns” (p. 755). In fact, because formal approaches aim to come up with generalizations (explained earlier.); they focus on “word order, major clause types, case and agreement patterns” and other “core phenomena”.

On the contrary, cognitive approaches do not consider conventional and idiomatic expressions “unusual or problematic”; instead, “regular” and “irregular” expressions are viewed as “part of a speaker’s inventory of linguistic knowledge and must be accounted for” (pp. 755-756).

Another point of contrast between the two approaches concerns the status of their compositional structure, which will be explained in the next sub-composition.

BUILDING BLOCKS VERSUS SCAFFOLDING

The generative/formal model “assumes that rules give rise to constructions, which Langacker (1987) describes as the building block metaphor” (p. 765). Such building blocks are “epiphenomenal. In other words, they are a ‘symptom’ of the status of that linguistic expression within a complex network of meanings and forms, but are not themselves the foundations of either meaning or structure within linguistic expressions”.

On the contrary, Langacker proposes through his Cognitive Grammar model “the scaffolding metaphor” through which “component structures are described as immanent in the complex grammatical construction, regardless of whether the compositionality is recognised by the speaker”. In other words, constructions are recognized as having meaning (p. 744). This explains why the cognitive approach to grammar adopts “the usage-based thesis” where “there is no principled distinction between knowledge of language and use of language (competence and performance in generative terms), since knowledge emerges from use” (p. 478). Consequently, “knowledge of language is knowledge of how language is used”. Cognitive grammarians conceive of competence as “a useful preliminary/methodological heuristic in approaching complex data-base” (Givón, 1984, p. 10).

A further point of difference between cognitive and generative approaches concerns the constraints of each model, which will be explained in the next sub-section.

CONSTRAINTS ON THE MODEL

Both approaches to grammar hold some limitations. As a matter of fact, because of its focus on “economy and generalization” (explained above); the formal model leads to “a proliferation of ‘invisible’ and ‘dummy’ elements” (p. 757). Take for example, the following two sentences:

- a) George wanted [Lily to see the world].
- b) George wanted [___ to see the world].

Example (a) “contains an embedded clause”, and the NP (Noun Phrase) “Lily is the subject of the embedded clause (she is doing the seeing)”. According to the transformational

model, example (b) also includes an embedded subject (interpreted as co-referential with George) that has no phonetic realisation. This invisible embedded subject is represented by the underscore. This assumption preserves the view that both examples share a parallel structure. Semantically ‘empty’ elements include so-called ‘dummy’ elements. For example, the ‘dummy’ subject in it surprised her that he turned up at all has no referential content.

Another instance of a dummy element is “the auxiliary verb do”, which is “described as a ‘dummy’ auxiliary since it is conditioned by certain grammatical requirements but does not bring its own contribution to the clause in terms of aspect or voice”.

On the contrary, the cognitive model does not permit “invisible’ or ‘semantically empty’ elements due to its focus on “Content Requirement” (pp. 757-758). Instead, it permits the proliferation of related and unrelated constructions. However, it is worth noting that even class schemas can be implicit (p. 758). Therefore, “implicit symbolic units are meaningful, albeit schematic”.

The last final point of contrast between the generative and cognitive approaches concerns their degree of emphasis on formalism as explained below.

EMPHASIS ON FORMALISM

Before explaining the difference between the two approaches in terms of their emphasis on formalism; it is necessary to define the term formalism. In the field of linguistics, it refers to “the practice of adopting a metalanguage for the description of natural language phenomena, and often involves the manipulation of abstract symbols and rules” (p. 758).

In formal models, formalism (defined above) represents the corner stone upon which “the model of speaker of knowledge” is based). Formal models of grammar adopt “an abstract metalanguage and a computational or algorithmic system of rules”; however, cognitive models of grammar consider that the use of abstraction “obscures or misrepresents the reality of human language”, that is why; they reject “the use of abstract symbols and rules on the whole”.

CONCLUSION

The present article clarifies the main differences between generative and cognitive approaches to grammar, namely rationalist versus empiricist view, autonomous syntax versus lexicon-grammar continuum, derivational versus inventory system, the status of constructions, rules versus schemas, redundancy versus economy, conventionality versus regularity, building blocks versus scaffolding, constraints on the model and emphasis on formalism. However, despite the

differences they hold; both approaches share some points of commonality. First, they are “cognitive in the sense that they seek to model the psychological representation of language” (p. 752) Second, both approaches share “the phenomena they set out to explain” (p. 741). Third, they have “a certain amount in common in terms of how they explain those phenomena”.

Though the explanations given in this article, what we are as learners, teachers, and individuals is the outcome of the application of these two approaches among many others, and therefore, there is still room for looking into practical tips and recommendations for teachers to apply in their classes and for wider pedagogic implications and contributions particularly for each educational context.

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APPENDICES

Appendix A: Characteristics of a generative approach to grammar

Assumptions	Objectives	Methodology
<ul style="list-style-type: none"> •Rationalist view • Universal Grammar • Modularity thesis •Autonomy of syntax thesis ('words and rules') • Computational system: rules build structure •Constructions are epiphenomenal: building-block metaphor • Economy prohibits redundancy • Competence determines performance 	<ul style="list-style-type: none"> •To describe Universal Grammar •To account for grammaticality •To uncover and explain generalisations •To develop a formal model 	<ul style="list-style-type: none"> •Native speaker intuition •Small-scale cross-linguistic comparison •Focus on 'core' phenomena •Often rely upon 'underlying' representations in accounting for grammatical phenomena

(Evans & Green, 2006, p.747)

Appendix B: Characteristics of a cognitive approach to grammar

Assumptions	Objectives	Methodology
<ul style="list-style-type: none"> •Empiricist view •Cognitive Commitment •Generalisation •Commitment •Embodied cognition thesis •Symbolic thesis •Usage-based thesis: schemas reflect use •Grammar is a structured inventory •Lexicon-grammar continuum •Constructions have meaning: scaffolding metaphor •Redundancy is natural 	<ul style="list-style-type: none"> •To demonstrate that grammar is meaningful •To account for both regular and irregular phenomena •To develop a model of language that reflects cognition 	<ul style="list-style-type: none"> •Search for converging evidence •Take account of diachronic evidence •Examine both regular and irregular patterns •Avoid extreme formalism •Prohibit 'underlying' representations in accounting for grammatical phenomena

(Evans & Green, 2006, p. 744)