

# Grammar and Semantics:

*Where Structure Meets Meaning*

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**Abstract:** The grammar of a language is the system of rules and semantic is the study of meaning. Rules specified by grammar help create various sentences, while semantics helps in interpreting their meanings. These fields' interrelation raises important questions about how structure affects meaning and vice versa, and emptiness' meaning. The paper which discusses major theories and also debates deals with the relationship of grammar and semantics.

An important area of research is compositional semantics which holds that a sentence's meaning comes from both the meaning of the parts and their arrangement in the sentence. Exceptions such as idioms and contextual use ambiguity undermine compositionality because they refer to complex interactions between linguistic form and meaning. Syntactic ambiguities occur when a single sentence can have different interpretations based on how we join the words together.

This study sees how meanings are encoded in different ways in terms of grammars of different languages. The article also mentions how cognitive factors and pragmatics show that meaning is not only a function of syntax.

This paper shows how the relationship of grammar and semantics are making an integrated approach mandated. Understanding how structure interacts with meaning further enhances our understanding of natural language processing, language acquisition, and even artificial intelligence. This adds to a better insight of discourse.

## INTRODUCTION

When reading a newspaper article or simply listening to an entire conversation, it can naturally be understood without needing to smooth over the grammatical and semantic structures of each sentence (1, 2). However, in either case, a comprehensive account need would also outline the rules of grammar and changes in sentence structure so as to create the complete picture of the underlying meaning (3, 4). There is an interrelation in the grammatical and semantic aspects of certain verbs in English, wherein a change

to a verb's argument structure leads to a subsequent change in its meaning as well (5, 6). While this change in meaning is less the case from semantics to grammar, it is arguably still true that the two are interwoven so that, for instance, an account of the meaning of prepositional phrases is insufficient without their grammatical extension (7). Throughout contemporary linguistic study, the topics of grammar and semantics have flourished, though in rather independent growths (8). Curiously, the cyclicity of some phenomena of grammar, yet the monofunctional goal of grammar theory, has led semantics from considering topics of cognitive significance to instead ones that cannot be thoroughly analysed if severed from an account of their patterns in grammar (9, 10).

#### Background and Significance

The words grammar and semantics are often used interchangeably to describe language structure and meaning; however, these concepts originate from different theoretical frameworks, contributing to diverse academic traditions (11). On the one hand, grammar refers to structure at the level of sounds and words; it is this structure that allows us to produce a virtually infinite number of utterances from a finite number of building blocks (12). Semantics, on the other hand, refers to meaning, a more topical and cultural aspect of language (13). The aim of this study is to provide motivated reasons for the segmentation of a unified text into grammar and semantics (14). Linguistic analysis is based on formal inquiry of word order and lexical co-occurrences in text (15). The need for a formal representation of text is thereby suggested, with examples given of a textual analysis based morphologically. The use of module transcriptions for future text analysis is also discussed (16, 17).

An approach to language relies on the concept of grammar, a study of the structure, categorization, inflection, and word order of the constituents of sentences (18). Another examination of language is concomitant to the concepts of semantics, a study of the relation in words and sentences to objects, people, events, and so on they stand for in the extra-linguistic world or in the minds of speakers (19, 20). Words and sentences that appear to be similar are those that have the same structure and some elements (21). The literary text represents a powerful means to discover this empirical regularity (22). Statistical analysis of text of different lengths and levels of relevance to the concepts of grammar and semantics is presented, and the importance of such studies in the development of a text grammar and a text theory of semantic interpretation is argued (23-25).

#### Purpose of the Study

This study is an attempt to explore the ways in which a sentence undergoes a transformation process from words to grammatical constituents, and to the final product—its semantic interpretation. The central research objectives are to investigate the interplay between the grammatical structure of a sentence, and the possible interpretation it can receive. The primary focus is on the English language, although it is anticipated that the findings will also apply to

other languages. The database is, however, limited to standard American English as spoken in the UK and the US.

## FOUNDATIONS OF GRAMMAR

### 1. Overview

Grammar invokes the essential linguistic, intellectual, and communicative competence to appreciate how language functions (21). For structural politicians, the emphasis is predominantly on grammatical construction as reflected in well-known sentence diagrams (26). Fundamental concepts in syntax are introduced intended as a limited form of grammar (27). Among other things, grammar divides into modules constricted on sentence structures and morphological mechanisms creating and signaling qualificatory affixes (28). The first is expected to alert the relationship between sentence structures and the interpretability of sentences (29). The second intertwines morphology with syntax. Discussing these aspects presuppose other things to understand syntax, e.g. the composition of phrase structures, grammatical categories, and the functions or roles elements may play in a sentence (30). When people discuss a comprehensive grammar encompassing a full understanding of language, they involve investigations in phonology, the lexicon, and how meaning, be it on a more phrasal or sentential level, is compositionalized (30). Broadly speaking, one distinguishes morphology, syntax and semantics, the respective foundations of grammar and of the meaning only language in terms of its form and interpretation (31, 32). Starting with a discussion of basic, but perhaps necessary, understanding of grammar, is deemed vital and providing a basis to appreciate more intricate interconnections of grammar and semantics in subsequent sections (33, 34).

### Syntax

Syntactic rules regulate the way words can be arranged in sentences to create meaningful structures (35). Although there are multiple theories of syntax, each having different mechanisms to explain how sentences are generated, syntax plays a significant role in the study of grammar across the variability of language use (36). Unquestionably, the order in which words are placed and their morphological regularity affect how messages are perceived and understood; this can result in alteration of the meaning of sentences (1). Although speakers may not be aware of these rules they intuitively know how to string words together (37). Limitations of the memory theory were demonstrated in a sentence repetition task producing “I’ll show you” and “bring a ball jump” to demonstrate a distinction of grammaticality and acceptability on a poetically acceptable phrase “put-out your flame of expression” (38). While sentence “I’ll show you” is accepted as ‘good’ by all subjects, “bring a ball jump” is rejected as poorly formed by all, the rest of example sentences show ‘goodness’ range and some disagreement across subjects (39). Every language is regulated by a unique set of syntactic rules. For instance, “dogs bark loudly” is an acceptable English sentence that clearly

manifests subject-verb-object word order customary in English sentences, but other word orders, such as “bark loudly dogs,” are less conventional (40). Similarly, in languages like Turkish, “learn=I=not” (I am not learning) is a grammatical sentence that shows object-subject-verb word order in Turkish sentences. Some orders such as =not=I=learn= are also grammatical but less conventional in Turkish (41). Although rules of syntax may not be explicitly taught in acquaintance with a language, familiarity with such rules is acquired in the first few years of life. Furthermore, proficiency in the production and comprehension of sentences of any language is determined by the ability to identify whether or not sentences are accurately formed in accordance with syntactic guidelines (42). Therefore, a strong understanding of syntactic rules is fundamental to having a firm command of the grammatical basis of a language. Since an understanding of the relationship between grammar and semantics hinges, in part, on a comprehension of syntax, an examination of the basic rules of syntax is essential (43). Thus, syntax is considered here in providing the foundation to explore the symbiotic interaction between form and meaning in any language communication (44).

#### Morphology

One fundamental aspect of both the structure and meaning of words concerns the building blocks of complex expression—base words (36). Every language has its own sets of rules that describe regularities among the smallest units of words, referred to as morphemes (45). Some morphemes are free that words themselves can be, but most are bound because they are employed as affixes (46). The existence of morphological rules thus means that at least some aspects of a representation of meaning are transferred into form by following the relevant building rules of base words ending with -ity and -ness (47). Morphological rules are those that describe the aspects of encoding meaning as they are realized in the formal structure of complex expressions (48). It is also important to note that morphological rules apply to words that are already formed in a syntactic structure, whether derived from lexical items in the lexicon or already previously generated by morphological or syntactic processes, the underlying structures that these rules apply to being already full-fledged morphological units represented (49). Even between two of the most closely studied, intertwining questions from generative linguistics and psycholinguistics, the actual interaction between morphological rules and syntactic structures has been a long-standing issue (50). On the one hand, the introduction of morphological principles was motivated by the dependency-based approaches to syntax, even though much remains to be done to characterize in detail the post-syntactic matches that take place (51). A more open question is just how far syntactic constituency is held to feed morphological computations (52). It is conceivable that morphological principles that have been worked out can in principle apply to post-syntactic representations; on the other hand, many purported morphological phenomena appear not to exist in form of syntactic interface, at least in a clear fashion (53).

## FOUNDATIONS OF SEMANTICS

Semantics is about the meaning of words and sentences (54). It asks how meaning is constructed and understood in natural language (54). It is how language conveys meaning. There is a good reason to think about semantics as part of being versed in the world (55). Just think about the difference between the claim of Joe broke the plate and it was breaking the plate (56). The main difference is that we describe the same situation but the first description implies that Joe was the one causing the plate to break and in the second one, it would be about something else (57). This is an example of how the meaning of an utterance is entailed by its location relative to the real world (58). Truth-conditional semantics provides an account of how the meaning of the sentential L, a linguistic entity, is related to its temporally indexed truth value (58). It is a way to think about the nature of sentence meaning - what it is for a sentence in a language to be true of the world (59). Modern theories of meaning in linguistics offer an account of how meanings of words and sentences are used to establish reference (60). Componential theories of meaning are based on the principle of compositionality (60). This principle states that the meaning of a whole is a function of the meaning of its parts and of the way they are combined to form the whole (61). A common interpretation of this notion in the philosophy of language is from Frege (61). Words have a denotation and a sense. Importantly, the sense of the sentence is determined by the mode of presenting the sense of the subsentential components of the sentence (62). Thus there must be three things to say about Joe broke the plate: first, the sentence has a denotation, second, the sentence has a sense, and third, the sense of the sentence is recovered from the senses of Joe, broke, and the plate and from the way that they are syntactically combined in the sentence (62). These three points are commonly held to be the foundation of modern theories of lexical semantics (60). They are also the basis for an account of grammatical meaning or at least for how meaning interacts with grammar in the construction of what grammatical theory calls interpretation (62).

### Word Meaning

Word Meaning Lexical semantics is an area that analyzes the meanings of individual words and the relationships between them. The analysis of what words mean is referred to as meaning in linguistics (63). It is quite challenging to explain what is actually meant by meaning, because meaning can be static and dynamic, explicit and implicit, and indistinct (63). Polysemy refers to words with multiple related meanings, while homonymy refers to words that have several unrelated meanings (64). All these definitions themselves cannot avoid the problem of defining meaning in the context of English. In the sentence "Will you take tea without them?" tea refers to a meal in one of its meanings, while in a common context it usually means the drink (65). The abrupt death of a person might be expressed by the sentence "His death was so sudden." The randomness of meaning is dynamically related to the context (66). The meaning of the word can be clarified if we know the words it collocates. For example, in the sentence "She was pleased to receive several

honors last week.”, as the honors were clearly stated before, the last week part will help in understanding the meaning of several, if it is not actually known what it is about (66). The context of language flow is strictly changing. Not only lexical items but phrases, clauses, sentences, paragraphs, or even whole texts affect the meaning of a linguistically approved structure. Lexical items create semantic fields by sharing meanings (67). Words are attached to each other as part of a composition; they are not composed of separate layers of meanings in an utterance if they historically mean the complete meaning by themselves. From this point of view, the concept of compositionality is quite limited (68). Because the meaning is not only connected to the composed word itself by combining the word meanings but also other external factors such as contexts of use, co-reference, co-hyponymy, negations, discourse procedural concepts play a role in determining the meaning of the composed word (69). Understanding should not only focus on word meanings as they stand on their own but also on their lemmas in human language that convey more than the lexeme or the word form and the form and meaning correspondence types (67). Translation is already not the meaning transfer process of SL words into TL words, because words do not mean, only human beings mean with respect to their interests, needs, suggestions, appraisals, etc (68). Conversations also do not have a meaning from a referential point of view in relation to the words used or the composed IR tree (65). Discussions are rich, not amount to mere explanations, in various directions, and in different levels of information (66). What is present in communication is discourse that lacks the so-hard sought object of meaning, which is both underdetermined and overdetermined for human minds to full fill the task (67). The mental representation of form and meaning types and token structures of languages evolves differently in the minds of speakers/viewers as they use them (69).

#### Sentence Meaning

The focus so far has been on sentence structure—how the sentence is constructed from words (70). This section shifts to the meaning of the sentence, or “sentence meaning.” There are many theories explaining how sentence meaning is construed from the meaning of words and their combinations with syntactic structure (71). Nonetheless, sentence meaning is crucial in linguistic theory (72).

Grammar describes how words are put together to form something meaningful, a sentence. But the meaning of a sentence does not result from the mere combination of words (73). The contribution of context is also important to interpret such meaning or the so-called “sentence meaning” (74). The relationship between a sentence and a context is bidirectional: on the one hand, a sentence is understood against a specific setting, that is, a context; on the other hand, the understanding of a sentence can modify the context (75). Although meaning is one of the core constituents of a sentence, without the apprehension of grammar, the creation of a meaningful sentence will unsurprisingly fail (76). A combination of words with a certain order, i.e. syntactic structure, brings about well-formed sentences which are meaningful

(77). Nevertheless, successful communication is not merely about grammar, pronunciation or a good dictionary (78). The ability to grasp the intended meaning also depends on another aspect of language, namely, pragmatics (79). Using sentence meaning, pragmatic potentials change “read!” from an order or an advice, depending on the context (80). “Watch the red car,” sounds like a parent talking to a child when in the vicinity of a street, yet totally normal in the context of something entirely different, such as a race track (77). Sentence meaning is a broad topic and several aspects of it are worth examining: ambiguity, entailment, implicature, and presupposition (75). In the end, sentence meaning also has a significant place within wider discourses and narrations (78). After all, the valid linguistic research approach should concern how grammatical structures and semantics are related instead of concentrating exclusively on each of them independently (79). Thus, it is advisable to have a comprehensive approach when it comes to grammar-conscious and semantics-aware linguistic analysis (80).

## THE RELATIONSHIP BETWEEN GRAMMAR AND SEMANTICS

A precise boundary between the rules of a language (often described as grammar) and the meanings that such rules convey has remained difficult to delineate (81). Yet a priori, and in the absence of any prior linguistic experience, it seems clear that some sort of structure is required for meaning to be communicated; and that the complexity of what it is intended to convey, i.e., what it means (quite apart from any possible extraneous meanings derived from context), must call forth a correspondingly complex structure (82). Both the building of the linguist structure and the combination of meanings into the full structure are mutually dependent activities (11). This perspective will discuss a range of theoretical approaches that have considered how, within any given combination of words, grammatical structure may in some way encode or uniquely convey meaning; A range of applications and examples will then be discussed, illustrating how debates concerning the philosophy or linguistics of effort to determine a priori whether linguistic information as defined in one way or another can uniquely determine meaning or meaning unique grammar are resolved in real world cases of practical necessity; And suggested problems posed by investigating see relationship in a more principled or scientific manner will be discussed (83-86). Some suggestions will also be offered regarding the psychological reality of the grammar-semantics interface, advocating more of an emphasis on the psychological reality of grammar in response to papers or interpretations that emphasize grammar in isolation, but suggest that it is the combination of grammar and meaning that poses complex interactions for language processing (87-89).

## APPLICATIONS AND IMPLICATIONS

Advances in linguistic research and technology have highlighted the intricate connection—and tension—between grammar and semantics, the systems of rules and meanings in language. In the application, this relationship has always been palpable, as we navigate the two systems seamlessly for the events of life to be intelligible and communicable (63). Nonetheless, the advancements invite a more proactive, in-depth exploration of the interrelation of how structure meets meaning, a necessity that is repeatedly underscored in certain real-world contexts (90). The discussion on applying this proposed approach is preceded by a brief inquiry into the particular challenges and obstacles faced by learners and educators in juggling grammar and semantics (91). Recommended shifts and pedagogical practices are offered concerning these spheres. Finally, growing reliance on—critiques of and recommendations for—a range of technologies are discussed that increasingly mediate language use, potentially reducing individual correspondence with the principles of grammar and semantics (92-94). The analysis delves deeper into this intricate relationship as applied in practical settings, showcasing its rich tapestry as well as the challenges it faces (95).

## CONCLUSION

One of the main recommendations is that grammar should be integrated into the study of literature (96). This necessitates a level of grammatical understanding not frequently taught before high school or beyond (97). Especially as students begin to read more sophisticated and challenging literature, knowledge of concept and conventions of usage, sentence structure, and sentence parts become essential (98). Additionally, as emphasis is increasingly placed on writing skills as a means to clarify, reinforce, and direct learning, students need a more advanced understanding of grammar (99). However, before grammar can be taught in connection to literature and writing, a thorough grounding in the parts of speech, types of sentences (structures), and usage is essential (100). This grounding is commonly expected of students by the end of eighth grade (101).

One underlying assumption of conceptual semantics and cognitive grammar is that there is in principle no real difficulty in such a division being drawn (102). Moreover, the prevailing school of thought is that linguistic meaning is (or can be) fixed independently of setting, or context of use (103). This means that as long as a clear and definite division can be drawn between semantic and pragmatic parameters, there is no reason why linguistic meaning should not be subject to scientific investigation (104). The division of meaning along semantic and pragmatic lines is an issue that has long been vigorously disputed (105). A school of thought has persisted in regarding it as highly problematic in practice (106). Moreover, it is suggested that an overhasty commitment to such a view ends up denying much of what is central to language (107). This has inevitable



bearings on the task of descriptive linguistics, particularly as it is conceived in its more formal modes (108).

#### Summary of Key Findings

An extensive and multifaceted body of research, exploration, and analysis has been conducted to address this challenging question, including reviews of theoretical and empirical work, exploratory theoretical discussion, quantitative corpus studies, and qualitative text analyses (109). All this investigation clearly indicates that grammar plays a crucial role in shaping the meaning of words and sentences (110). The form of words and sentences turns out to have a highly systematic relationship with the meanings expressed by these words and sentences (111). Grammatical structures - from morphological affixes to the schemata mapping parameters to thematic roles to basic word-order patterns - can be implicated in the composition of specific meanings (112). At the same time, the words that make up these structures are obviously necessary in order to convey any meaning at all and play a direct, powerful role in the contextuality and specificity of the meanings expressed (113). Speakers, for their part, can take advantage of the many options afforded by grammatical and lexical form to convey shades of meaning (114). Moreover, much of the grammatically determined meaning is over and above what can be deduced from the meanings of the individual words or morphemes in a sentence, as it is also shaped by the larger structures and relationships encoded in the grammar (115).

While the bulk of this study and most of the formal theoretical work done in the respective fields of grammar and semantics has typically addressed these domains in relative isolation from each other, many of the topics probed here cut across traditional disciplinary boundaries (116). The deep form-function interdependencies brought to light by this work - from ontologies of meaning and prototypicality, to the relationship between argument structure and quantifier scope, to the assignment of inherently determined meaning to elements interleaved in a formal structure - are ineluctably interdisciplinary in nature (117). Thus, an articulation and dialectic explanation of how such phenomena might be jointly accounted for could well push forward the frontiers of the research programs pursued by both grammarians and semanticists (118). Ultimately, such a collaborative enterprise is crucial to the proverbial Holy Grail of the field generative grammatical modeling: the development of an integrated architecture subsuming a coherent account of both structural form and meaning. In light of these ambitious objectives, it is advantageous to lay out more concisely all that has been pursued, the place of the respective inquiries among these broad horizons, and the immediate impact it has for future research (119).

#### Future Research Directions

The field of the representation of meaning is usually considered apart from the study of the structure of grammar (120). Each of the two fields is deeply divided among different theoretical controversies, seldom come to an agreement about final goals, and often rashly refute each other (121).

Similarly, if this kind of knowledge is used in computer systems, the distinction paid to knowledge, meaning and grammar "resources" may be very separate. Correspondingly, whereas a lot of computational work has been done on the grammar-semantics and semantics-knowledge interfaces, a cooperation of grammar and semantics modules have been ignored (120). This partition is unfortunate: between the grammar rules of a generation and the proposition structures of an understanding, common linguistic theory posits a deep-semantics representation that can be common (121). Collaboration at the grammar-semantics interface between researchers from the two fields may shed light on the genuine problem of the representation of meaning (122). In spite of great diversity in the objects under study - grammar rules, argument structures, event structures, case frames, proposition structure, lexical decompositions, etc. -, a number of lessons that can be extracted from an overview of linguistics literature that are relevant to contact points of grammar and semantic representations (123).

Many conventions are well established regarding how to translate between a given grammar formalism and a fixed representation of meaning, or conclusions about the possible contents, features like tense, definiteness, modality, quantifier scope, valency, voice or the like can be relatively easily formalized and exchanged between structural descriptions and semantic traces (124). Other kinds of semantic links, however, appear to resist general characterizations (125). For instance, a central issue in the representation of meaning concerns the way to account for affordances beyond grammar and verb valences (126). A major theme in the linguistic literature is precisely the search for models of the meaning of words, constituents, or sentences that would predict and explain a large number of phenomena that are the current concern of semantics, such as metaphor, idiomaticity, quantification, presupposition or discourse interpretation (126). Unfortunately, most of the proposals put forth in this direction are stated in terms of principles, operations or conditions that are quite not implementable in a figurable manner and, a fortiori, not in a computer system (127). In like manner most of the conceptual representations of natural languages items, regardless aspects dimensions or level of analysis, and has its own tools, idioms, and methodologies, that is not directly compatible with those of another discipline (128).

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