
Background and theoretical assumptions

Lexical Functional Grammar (LFG) is a nontransformational theory of linguistic structure which assumes that language is best described and modeled by parallel structures representing different facets of linguistic organization and information, related to one another by means of functional constraints.

1.1 Historical roots

The theory had its beginnings in the 1970s, at a time of some upheaval in the theory of generative grammar. Early transformational grammar proposed the existence of “kernel sentences” (Chomsky 1957), basic simple declarative clauses generated by a simple phrase structure grammar. More complex sentences were derived from these simple sentences by various transformations: for example, passive sentences were derived from their active counterparts by means of a passive transformation, described in terms of properties of the phrase structures of the input and output sentences. The influence of the transformational view persists to the present day in the process-oriented terminology commonly used for various grammatical phenomena: *wh*-movement, passivization, dative shift, and so on.

In time, however, the lack of generality of the early transformational approach began to be seen as problematic. It was not easy to see how the very specific transformations that had been proposed could capture crosslinguistic generalizations. For example, as discussed by Perlmutter and Postal (1977), there seemed to be no way to give a uniform statement of transformational rules across languages with different phrase structural descriptions for obviously similar transformations such as Passive. It became increasingly clear that the generalizations underlying many transformational rules depend not on phrase structure configuration, but on traditional abstract syntactic concepts such as subject, object, and complement. If rules could be stated in terms of these abstract concepts, a crosslinguistically uniform statement of generalizations about such rules would emerge.

At the same time, it was noted that a large class of transformations were “structure-preserving” (Emonds 1976: 3):

A transformational operation is structure-preserving if it moves, copies, or inserts a node C into some position where C can be otherwise generated by the grammar.

The existing transformational framework would not have led to the prediction that transformations would operate in this way. Since transformations were not constrained as to the output structure they produced, it was surprising that they would produce structures like those that the basic grammar could otherwise generate. This important finding had wide-reaching implications: the basic phrase structure of languages is invariant, and the application of particular transformations does not alter this basic phrase structure.

Why should so many transformations have been structure-preserving in this sense? Bresnan (1978) made the key observation: all structure-preserving transformations can be reformulated as *lexical redundancy rules*. According to this view, operations on the abstract syntactic argument structure of a lexical item produce a new syntactic argument structure, with a surface form that is realized in an expected way by a basic phrase structure grammar. This allowed an abstract and uniform crosslinguistic characterization of argument alternations like the active-passive relation, while also allowing for a theory of crosslinguistic similarities and differences in the phrasal expression of the different alternations.

With this, the need emerged for a theory allowing simultaneous expression of both the phrasal constituency of a sentence and its more abstract functional syntactic organization. The formal insights leading to the development of Lexical Functional Grammar arose originally from the work of Woods (1970), who explored methods for representing the surface constituent structure of a sentence together with more abstract syntactic information. Building on this work, Kaplan (1975a,b, 1976) realized that placing certain constraints on the representation of abstract syntactic structure and its relation to surface phrasal structure would lead to a simple, formally coherent, and linguistically well-motivated grammatical architecture. Based on these formal underpinnings, the relation of the abstract functional syntactic structure of a sentence to its phrase structure could be fully explored. More information about the historical development of the theory is provided by Dalrymple et al. (1995a) and Bresnan et al. (2016).

1.2 “Lexical” and “Functional”

The name of the theory, “Lexical Functional Grammar,” encodes two important dimensions along which LFG differs from other theories. First, the theory is *lexical* and not transformational: it states relations among different verbal diatheses in the lexicon rather than by means of syntactic transformations. In 1978, when the theory was first proposed, this was a fairly radical idea, but in the intervening years it has come to be much more widely accepted; it is a fundamental assumption of Categorical Grammar (Moortgat 1988; Morrill 1994; Steedman 2001) as well as of Head-Driven Phrase Structure Grammar (Pollard and Sag 1994; Sag et al. 2003; Levine 2017), Construction Grammar (Kay 2002; Boas and Sag 2012), Simpler Syntax (Culicover and Jackendoff 2005), and some works in the transformational tradition (Grimshaw 1990).

Unlike some other theories of syntax, then, the lexicon is not merely a repository for exceptions, a place in which syntactically or semantically exceptional

information is recorded. Since LFG is a lexical theory, regularities across classes of lexical items are part of the organization of a richly structured lexicon, and an articulated theory of complex lexical structure is assumed. Work on lexical issues has been an important focus of LFG from the beginning, and this research continues with work to be described in the following pages.

The second dimension that distinguishes Lexical Functional Grammar is that it is *functional* and not configurational: abstract grammatical functions like subject and object are not defined in terms of phrase structure configurations or of semantic or argument structure relations, but are primitives of the theory. LFG shares this view with Relational Grammar (Perlmutter and Postal 1977) and Arc Pair Grammar (Johnson and Postal 1980), as well as with Construction Grammar (Kay 2002; Boas and Sag 2012) and Simpler Syntax (Culicover and Jackendoff 2005).

LFG assumes that functional syntactic concepts like subject and object are relevant for the analysis of every language: that the same notions of abstract grammatical functions are at play in the structure of all languages, no matter how dissimilar they seem on the surface. Of course, this does not imply that there are no syntactic differences among languages, or among sentences in different languages that have similar meanings; indeed, the study of abstract syntactic structure in different languages is and has always been a major focus of the theory. Just as the phrase structure of different languages obeys the same general principles (for example, in adherence to *X-bar theory*; see §3.3.2), in the same way the abstract syntactic structure of languages obeys universal principles of functional organization and draws from a universally available set of possibilities, but may vary from language to language. In this sense, the functional structure of language is said to be “universal.”

In work on the theory of linking between semantic arguments and syntactic functions, similarities and differences among grammatical functions have been closely analyzed, and natural classes of grammatical functions have been proposed. To analyze these similarities, grammatical functions like subject and object are decomposed into more basic features such as \pm RESTRICTED, as described in §9.4.1. On this view, grammatical functions are no longer thought of as atomic. Even given these decompositions, however, the grammatical functions of LFG remain theoretical primitives, in that they are not derived or defined in terms of other linguistic notions such as agenthood or phrasal configuration.

1.3 Structure of the book

The book consists of three parts. In the first part, Chapter 2 (Functional structure), Chapter 3 (Constituent structure), and Chapter 4 (Syntactic correspondences) examine the two syntactic structures of LFG, the *constituent structure* and the *functional structure*, discussing the nature of the linguistic information they represent, the formal structures used to represent them, and the relation between the two structures. Chapter 5 (Describing syntactic structures) and Chapter 6 (Syntactic relations and syntactic constraints) outline the *formal architecture* of LFG and explain how to describe and constrain the constituent structure, the

functional structure, and the relation between them. A clear understanding of the concepts presented in Chapter 5 is essential for the discussion in the rest of the book. Chapter 6 is best thought of as a compendium of relatively more advanced formal tools and relations, and may be most profitably used as a reference in understanding the analyses presented in the rest of the book.

The second part of the book explores nonsyntactic levels of linguistic structure and the modular architecture of LFG. Chapter 7 (Beyond c-structure and f-structure: Linguistic representations and relations) sets the scene for our exploration of other linguistic levels and their relation to constituent structure and functional structure, presenting LFG's *projection architecture* and outlining how different grammatical levels are related to one another. Chapter 8 (Meaning and semantic composition) introduces the LFG view of the syntax-semantics interface and semantic representation, according to which the meaning of an utterance is determined via logical deduction from a set of premises associated with the subparts of the utterance. Chapter 9 (Argument structure and mapping theory) discusses the content and representation of *argument structure*, its relation to syntax, and its role in determining the syntactic functions of the arguments of a predicate. Chapter 10 (Information structure) introduces the level of *information structure*, the structuring of an utterance in context, and explores the relation of information structure to other linguistic levels. Chapter 11 (Prosodic structure) introduces the level of *prosodic structure*, which analyzes the string in parallel with constituent structure, but with respect to prosodic units rather than phrasal units. Chapter 12 (The interface to morphology) discusses the place of morphology in the architecture of LFG, showing how a realizational theory of morphology can be integrated in an LFG setting.

The third part of the book illustrates the concepts of the theory more explicitly by presenting a series of sketches of the syntax and semantics of a range of representative linguistic phenomena. We present the syntactic aspects of the analyses separately from the semantic aspects, so readers who are not interested in formal semantic analysis should still be able to profit from the syntactic discussion in these chapters. In this part, we often leave aside analysis of the information structure, prosody, and morphology of these phenomena, though we sometimes include an analysis of these other aspects as well, in line with the increasing awareness of the importance of adopting a holistic approach and taking account of the interplay of linguistic modules in a full account of the data. Chapter 13 (Modification) discusses the syntax and semantics of modifiers, particularly concentrating on modification of nouns by adjectives. Chapter 14 (Anaphora) presents a theory of the syntax and semantics of anaphoric binding, including both intrasentential and intersentential anaphora. Chapter 15 (Functional and anaphoric control) discusses constructions involving control, where the referent of the subject of a subordinate clause is determined by lexical or constructional factors. Chapter 16 (Coordination) presents an analysis of aspects of the syntax and semantics of coordination, and Chapter 17 (Long-distance dependencies) discusses long-distance dependencies in topicalization, relative clause formation, and question formation.

The final chapter of the book, Chapter 18 (Related research threads and new directions), discusses LFG-based work in areas not covered elsewhere in the book, as well as new developments in the theory of LFG, including work in historical

linguistics and language acquisition, computational and algorithmic research in parsing and generation, LFG-based theories of language acquisition, and Optimality Theory-based work.

The book concludes with three indexes: an index of cited authors, a language index, and a subject index. The language index contains information about the linguistic family to which each cited language belongs, as well as a rough characterization of where the language is spoken.

This book concentrates primarily on the theory of LFG as it has developed since its inception in the late 1970s. The analyses we present are focused on syntactic and nonsyntactic relations and structures within the sentence; we will have far less to say about the structure of larger units of discourse or the relations between sentences.

1.4 How to use the book

Most of the book should be accessible to upper-level undergraduate or graduate students who have some background in syntax. Part I is concerned solely with syntax and its representation by LFG's constituent structure and functional structure. In Part II, we widen the discussion to other modules of grammar, including semantics, argument structure, information structure, prosodic structure, and the morphological component, and their grammatical interfaces. For those whose primary interest is in syntax, the chapters in any of these areas in Part II can be skipped. Part III provides syntactic and semantic analyses of a range of linguistic phenomena; it should be possible to follow the syntactic discussion with only the background provided in Part I, but for the semantic discussions in Part III, familiarity with the material covered in Chapter 8 of Part II will also be necessary. The introduction to Part II provides more information about dependencies among the chapters in Part II and Part III.

Some of the chapters in Part II and Part III will be easier to follow for readers with some background in the areas that are discussed.

- For the semantics chapter in Part II (Chapter 8) and the semantics sections of the chapters in Part III, Gamut (1991a,b) and Partee et al. (1993: Chapter 7) provide useful background.
- Chapter 10 discusses information structure, its representation, and its place in the overall LFG architecture. There is some discussion of information structure in Chapter 17, but it should be possible to follow almost all of the discussion in Chapter 17 even without familiarity with the material presented in Chapter 10. For an overview and introduction to information structure, see Lambrecht (1994) and Erteschik-Shir (2007: Chapters 1–3).
- The content and representation of prosodic structure is discussed in Chapter 11, but does not figure in the analyses presented in Part III. For an introduction to the concepts discussed in Chapter 11, see Selkirk (1984), Nespor and Vogel (2007), and Ladd (2008).
- The analyses presented in Part III also do not include morphological analysis, and so the morphology chapter in Part II (Chapter 12) can be skipped by

those who are not concerned with morphology and its interface with the rest of the grammar. Spencer (2004) and Haspelmath and Sims (2011) provide a solid introduction to morphology, and Stewart (2015) provides an overview of contemporary morphological theories. Stump (2001: Chapter 1) is an introduction to issues in morphological theory with a focus on the word-and-paradigm model, providing a theoretical underpinning for the family of realizational theories which that chapter adopts.

1.5 Other LFG overviews and introductions

Bresnan (2001c), Falk (2001b), and Kroeger (2004) continue to provide invaluable introductions to LFG from different perspectives and for different audiences. Bresnan (2001c) and Falk (2001b) both came out in the same year as Dalrymple (2001), on which much of this book is based, and each provides an excellent pedagogically-oriented introduction to the theory, including useful exercises. Kroeger (2004) is a lucid introduction to syntactic theory from an LFG perspective, suitable for an introductory syntax course. Bresnan et al. (2016) is a newly revised edition of Bresnan (2001c), updating the treatments presented in the first edition and providing detailed discussion and insights in many new areas.

Besides these book-length introductions, a number of shorter articles provide overviews of the theory from various perspectives. Recent works include Dalrymple (2006), Butt (2008), Lødrup (2011a), Börjars (2011), Nordlinger and Bresnan (2011), Carnie (2012a), Sells (2013), Broadwell (2014), Asudeh and Toivonen (2015), Butt and King (2015a), and Dalrymple and Findlay (2019). The on-line proceedings of the LFG conferences (Butt and King 1996–) are also valuable repositories of LFG research. Kuiper and Nokes (2013), Frank (2013), and Müller (2016) provide an overview and comparison of LFG to other grammatical frameworks, and Schwarze and de Alencar (2016) provide a computationally oriented introduction to LFG with a focus on French.

The foundational papers in the Bresnan (1982b) collection provide a snapshot of LFG at the earliest stages of the theory's development. Overviews and summaries at various subsequent stages include Sells (1985), Wescoat and Zaenen (1991), Neidle (1994), Kaplan (1995), Kiss (1995), Neidle (1996), Sadler (1996), Butt et al. (1999), and Austin (2001). The section introductions in Dalrymple et al. (1995b) provide a historical perspective (from the vantage point of the mid-1990s) in a number of areas: Formal Architecture, Nonlocal Dependencies, Word Order, Semantics and Translation, and Mathematical and Computational Issues.