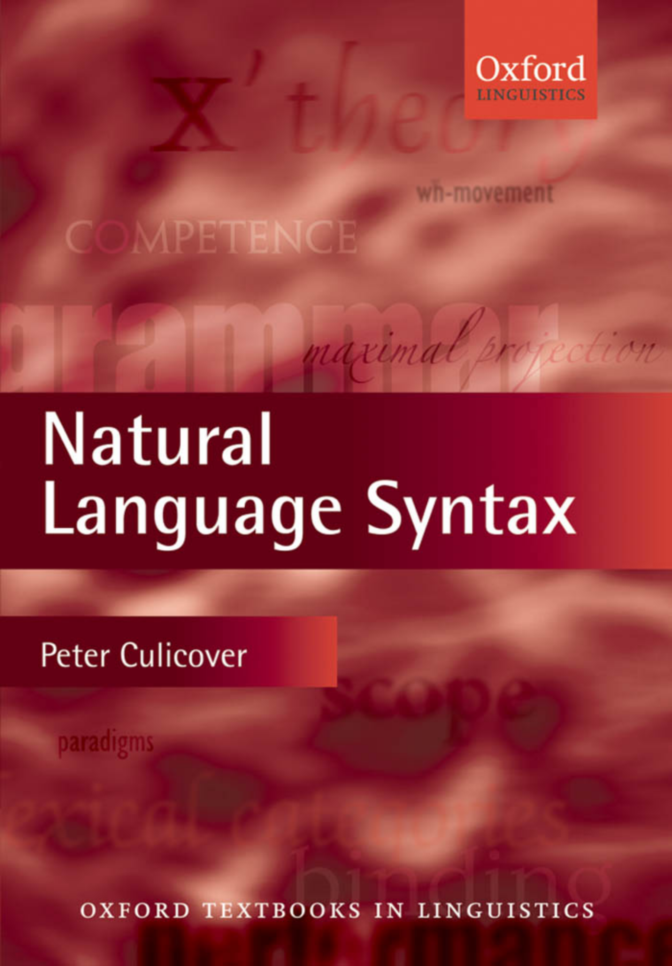
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Preface

The aim of this book is to provide an introduction to the study of natural language syntax. Syntax is concerned primarily with how languages configure strings of words and morphemes into sentences in order to express meanings. Consequently there are two major foci that are developed hand in hand in this book: (i) the syntactic and morphosyntactic devices that languages use, and (ii) the conceptual structures that correspond to particular aspects of linguistic form. Not only are the forms emphasized but their correspondences with meanings are.

The book is mainly about "how language works", and what a syntactic theory has to do in order to be able to account for how language works. But, realistically, an introduction to syntax that focuses on how language works has to take account of the profound influence of mainstream generative grammar (MGG), that is, the Chomskyan tradition leading from *Syntactic Structures* all the way to the Minimalist Program. So I have organized the chapters accordingly. The beginning sections of each chapter work through a range of descriptive issues, using a fairly neutral non-derivational approach to isolate key syntactic and morphosyntactic properties and specify how they contribute to interpretation. The theoretical underpinnings of this approach are spelled out in *Simpler Syntax*, which Ray Jackendoff and I published in 2005. The later sections of each chapter, those starred with an asterisk (*), explore various theoretical issues, with a focus on evaluating how MGG, using such devices as movement, deletion, and functional heads, seeks to captures the correspondences between form and meaning that we find in natural languages and that any syntactic theory has to account for.

I have organized the book so that it can be used for an undergraduate or a graduate introduction to syntax. For an undergraduate introduction, it is possible to work through just the unstarred sections, with perhaps an occasional foray into a more technical starred section if student interest warrants it. For students at this level, who may have no prior familiarity with doing syntax, I have provided a number of Exercises and Problems at the end of each chapter. The Exercises are for the most part intended to help the student become comfortable with the technical aspects of describing the structure of sentences of a natural language and their basic meanings. The Problems are somewhat more challenging. Most of these are data-oriented, requiring that the student identify some pattern in data, use data to support or falsify a claim, or develop original data to support or falsify a claim.

For the graduate introduction, it is reasonable to presuppose that most students have familiarity with much of the material in the unstarred sections. But the backgrounds of students can often be uneven. Thus, it can be useful to ask students to read the unstarred sections either as a review or to fill in whatever gaps there might be. The starred sections presuppose the descriptive material and go into theoretical questions. There are two main objectives of these starred sections: (i) to sketch out the essential concepts and methods of mainstream syntactic theory, and (ii) to evaluate the adequacy of this approach. Some of the Problems and Research questions at the end of the chapters are designed to get more advanced students thinking critically about these issues, and working out possible solutions. In addition, many of the Research questions point the student to phenomena that are not addressed in the text; these are for the most part open-ended questions that may stimulate a student's interest in research on syntactic issues beyond the introductory course.

Many of the examples that are used in this book to illustrate various technical points are drawn from English. At the same time, I have aimed at a broad comparative perspective where that is practical, using data and analyses from languages other than English. In presenting such data I sought to maintain as consistent and transparent a glossing approach as possible, based on the Leipzig Glossing Rules. In many cases, therefore, I have re-glossed examples cited from the literature, where the Leipzig Glossing Rules have not been followed.

Acknowledgments

I am deeply indebted to many people who have contributed to the design, organization, and content of this book. There is no question that much of what is good and useful in the book as it currently appears is due to their influence.

My first and most profound debt is to Ray Jackendoff. Ray and I have worked for many years together on research that culminated in *Simpler Syntax*, and it is because of *Simpler Syntax* that I decided to write another introductory syntax text. *Simpler Syntax* reflects our feeling that it is time to go beyond mainstream approaches to syntactic analysis. The current text reflects our view that it is important to teach students to view syntactic phenomena from a *Simpler Syntax* perspective, too, and to contrast it with other ways of capturing the relationship between form and meaning that are found in the literature. But it was a considerable challenge to see how to convey the *Simpler Syntax* perspective while at the same time providing the student with the bigger picture, in which *Simpler Syntax* is part of an inquiry into the proper form of a syntactic theory. Ray read every page of the manuscript and made literally hundreds of suggestions about wording, presentation, organization, and notation that have helped me get a lot closer to these goals.

I am also deeply grateful to the Alexander von Humboldt Foundation for a Research Award that made it possible for me to spend a year at the University of Tübingen during 2006–2007, during which time I completed and made initial revisions of the manuscript. I owe a debt of gratitude to Erhard Hinrichs and Marga Reis for nominating me for the Humboldt Award and for being my hosts while I was in Tübingen. And my deepest thanks go to Dean John Roberts of the College of Humanities at Ohio State for making it possible for me to take fullest advantage of the Humboldt Award.

While I was in Tübingen a wonderful group led by Susanne Winkler offered to work through a draft of the text with me and provide me with comments and criticisms. I thank Susanne for her extensive and enormously

helpful comments on all of the chapters, and Melanie Henschke, Nora Kaltenbach, Andreas Konietzko, Katharina Schmeh, and Andreas Wurtz for their incisive questions, suggestions, and observations. These have led to numerous substantial improvements.

After returning to Ohio State I was fortunate to be able to use an earlier draft of this text in both an undergraduate course and a graduate course during the same academic quarter. I want to thank the students in these courses for their limitless patience with the challenges posed by the draft, for their suggestions on how to improve it, for their ingenuity and good nature in trying to make sense of often obscure formulations, and for their questions, which were always useful and insightful.

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List of Abbreviations

A	argument
A′	non-argument
ABS	absolutive (case)
ACC	accusative (case)
ADJ	adjective
ADV	adverb
AP	adjective phrase
arb	arbitrary (reference)
ART	article (e.g. *the*)
AUX	auxiliary
AVM	attribute value matrix
C	complementizer
CAT	category
Comp	complement
CONJ	conjunction (e.g. *and*)
CP	complementizer phrase
CS	conceptual structure
DAT	dative (case)
Deg	degree (e.g. *very*)
DEM	demonstrative (e.g. *this*)
DET	determiner
DIR	direction
DP	determiner phrase
DU	dual
e	empty category
EPP	extended projection principle
ERG	ergative (case)
GB	government binding (theory)
GEN	genitive (case)
GF	grammatical function
HPSG	head-driven phrase structure grammar
IND	indefinite

INSTR	instrumental (case)
INTR	intransitive
IO	indirect object
IP	inflection phrase
IS	information structure
LF	logical form
LFG	lexical-functional grammar
LOC	location
M	modal (e.g. *could*)
MASC	masculine
MDP	minimum distance principle
N	noun
NOM	nominative (case)
NP	noun phrase
NPI	negative polarity item (e.g. *any*)
O	object
OBL	oblique (case)
OP	empty operator (in syntax)
P	preposition
PART	participle
PASS	passive
PF	phonetic form
PL	plural (number)
POSS	possessive
PP	prepositional phrase
PREP	prepositional (case)
PRES	present tense
PROG	progressive
PSR	phrase structure rule
Q	interrogative operator (in CS)
Q	quantifier (e.g. *every*)
REL	relative (feature)
S	sentence
SG	singular (number)
Spec	specifier
SU	subject
t	trace

TOP	topic (feature)
TR	transitive
UG	Universal Grammar
UTAH	Uniform thematic assignment hypothesis
V	verb
V_{AUX}	auxiliary verb
VP	verb phrase
VPISH	VP internal subject hypothesis
WH	interrogative (feature)
X'	X-bar
θ	theta

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1

Overview

1.1. What is syntax?

The conventional answer to the question "What is syntax?" in theoretical linguistics is something along the lines of, "It is the system that governs the relationship between form and meaning in a language". What this actually means in practice is something that you will appreciate in some depth as you work through this book, but at this point it is likely to be rather obscure. So let us start with a concrete example.

Consider the notion of **form**. An expression in a language can be described in a number of ways, all of which are valid. For example, the expression *biting dogs* can be described as a string of sounds, which is its "form" in the most concrete sense.

(1) [baytiŋdɔgz]

This form is often called **phonetic form**, or **PF**.

More abstractly, this expression can be described as a string of morphemes –

(2) bite + -ing + dog + -s

– or as a string of words –

(3) biting dogs

– or as a phrase of the category noun phrase (NP) consisting of a sequence of categories –

(4) [$_{\text{NP}}$ [$_{\text{V}}$ biting] [$_{\text{N}}$ dogs]].

For any given language, the particular way in which the categories may or must be sequenced determines how the words will be ordered, which in turn determines how the morphemes will be ordered, which in turn determines its phonetic form, that is, how the sounds will be ordered sequentially in time. The information given in (4), consisting of the categories of the words and phrases and the ordering of words and phrases, falls within the domain of syntax. So we see how syntax bears on the form. If one word or phrase X precedes another word or phrase Y, then the sounds of X will precede the sounds of Y.

Now consider the **meaning**. The string *biting dogs* has two meanings, one in which the dogs bite (*Biting dogs also bark a lot*), and the other in which they are bitten (*Biting dogs is not much fun*). So we have to provide two **semantic descriptions** for this string of words. In doing so, we relate the same concrete form to different meanings.

Part of the job of syntax is to provide enough information so that, given a string and a syntactic description, it is possible to explain all of the meanings of the string. This information, which has to do with categories and phrasing, is abstract. By “abstract” we mean that it is invisible, in the sense that we cannot see it or hear it. It does not correspond to anything concrete in the string of sounds, or even in the string of morphemes and words. The syntactic description of an expression concerns the categories of the words, how the words are grouped into phrases, the categories of the phrases, how they are grouped together, and perhaps invisible elements that contribute to the meaning but not to the form. This description is a **syntactic structure**.

So a phrase of a language, even a very simple phrase consisting of a single word, has a phonetic form, a meaning, and a syntactic structure that mediates between them. We will call this triple of a form, a meaning, and a syntactic description a **correspondence**. The sum total of all of the syntactic structures of a language comprises the syntax of the language. It is part of what we know when we know a language.

Here is a simplified example of such a triple for the word *bite*.

(5) *bites*

$$\begin{bmatrix} \text{FORM} & \text{[bayt]} \\ \text{SYNTAX} & \begin{bmatrix} \text{CATEGORY} & \text{V} \\ \text{NUMBER} & \text{SINGULAR} \\ \text{PERSON} & \text{3RD} \end{bmatrix} \\ \text{MEANING} & \textbf{BITE} \end{bmatrix}$$

We use the capitalized boldface **BITE** here to symbolize the meaning of the word *bite*.

Owing to the fact that the number of possible correspondences in a language is infinite, it is not possible to list all of them. Moreover, it would not be particularly insightful to do so, even if it was possible, since there are many regularities in a natural language that can and should be captured in our description. These regularities, and not the individual correspondences themselves, are what a native speaker of a language knows.

A **grammar** is a description of a language that makes explicit the knowledge that speakers of a language have about their language. Part of what speakers know is how to form phrases of each category, and how to form sentences. For example, English speakers know that the word *the* precedes the other words in a noun phrase, and does not follow them –

(6) a. the biting dogs (are vicious)
b. *biting dogs the (are vicious)

The symbol "*" before a string of words as in (6b) indicates that it is not a possible sentence or phrase in the language under discussion – it is **ungrammatical** in the language. The expression in (6a), on the other hand, is a possible phrase in the language – that is, it is **grammatical**.

The grammatical knowledge in this case is general. It is not specific to individual words, like *the*, *biting*, and *dogs*. It holds for all words of a category. For example, not only must the word *the* precede *dogs*, as shown in (6), but so must *a*, *all*, *these*, *some*, and *most*, all members of the category **determiner**. And these words must precede any word of the same category as *dogs*, such as *cats*, *pigs*, *ambulances*, *ideas*, etc., all members of the category **noun**. In describing the knowledge of an English speaker, we must say that the determiner precedes the noun.

1.2. The goals of linguistic theory[1]

In our study of syntax we are not simply interested in the description of a particular language, or even in the description of a collection of languages. Our overriding concern is to understand what the properties of human languages are, and why they are that way. We informally refer to this notion as **How language works and why**. Thus, our particular descriptions of particular phenomena are of fundamental importance, but are in service of the broader objective. This perspective, one that relates the description of particular languages to the theoretical question of how language works and why, is central to **generative grammar**, as distinguished from purely descriptive linguistics.

---

[1] Parts of this section are adapted from Culicover and Jackendoff 2005: Chapter 1.

Generative grammar takes as central the view that what we are studying is the instantiation of language in the human mind/brain, rather than an abstract phenomenon that exists "in the community", in a collection of texts, or in some sort of Platonic space. The fundamental linguistic phenomenon is a speaker who produces an utterance that is understood by a hearer; the fundamental question is **what knowledge is present in the speaker's and hearer's mind/brain that enables this interchange to take place?** A language exists "in the community" insofar as there is a community of speakers able to participate equivalently as speakers or hearers. In other words, generative grammar seeks a **mentalistic** account of language.

Unlike vocal communication systems in other primates, human language is not limited to a relatively small number of isolated signals. Rather, a speaker of a human language can create and understand an unlimited number of different utterances, concerning an unlimited number of different topics. This entails that a language user with a finite brain must have a productive system for constructing new utterances (in both production and perception) from finite knowledge. Crucially, this productive system is unconscious knowledge. It is like the principles by which the visual system constructs perception of the physical world, not like one's knowledge of the rules of a game or traffic laws.

It has been customary since Chomsky's *Aspects of the Theory of Syntax* (1965) to make a distinction between linguistic **competence** – the language user's knowledge of his or her language, and linguistic **performance** – the processing strategies by which this knowledge is put to use. The theory of competence is the linguist's idealization of what the speaker's knowledge consists of, what we referred to above as the **grammar**. The goal of linguistic description in generative grammar is to provide an account of the linguistic competence of the native speakers of a language under investigation that as accurately as possible accounts for the form/meaning correspondences of that language.

The term "grammar" is conventionally used to refer both to the linguist's description of competence and the actual competence that is in the native speaker's head. The reasonable presumption is that the linguistic description of native speaker competence corresponds in some interesting way to the knowledge that the native speaker has in his/her head.

To reiterate, generative grammar is a mentalistic theory. It is not concerned just with form and meaning; it is concerned with the knowledge that enables speakers to relate form and meaning in a productive and creative way. From this mentalistic view, the question arises of how speakers acquire their grammars. In particular, since grammar is unconscious, parents cannot impart the rules to their children by explicit instruction. Rather, the process of language acquisition must be understood in terms of the child unconsciously constructing the grammar on the basis of linguistic and contextual experience. However, this raises two further questions: What sorts of experience does the child make use of, and, most crucially, what are the internal resources that the child brings to bear on the construction of a grammar based on the experience? The complexity of the achieved grammar, as discovered by investigation in linguistic theory, demands that the child be provided in advance with some guidelines along which to pursue generalization. Such guidelines rule out logically possible but linguistically impossible analyses of the child's linguistic experience.

The generative tradition has taken as its most important goal the characterization of these guidelines, calling them **Universal Grammar** (**UG**), **the language capacity**, or **the language faculty**. The nature of UG has been investigated by examining large-scale patterns of similarity across the grammars of languages (spoken and signed), language acquisition by children and adults, patterns of language loss and impairment, and historical change due to drift and language contact, as well as through mathematical/computational modeling of all these phenomena.

To summarize to this point, the enterprise of describing the grammars of particular languages serves the broader goal of understanding the nature of Universal Grammar. It provides us with the means of exploring what knowledge of language must be built into the learner and what knowledge is acquired on the basis of experience. Some knowledge may well derive from the internal structure of the learner, and not from experience, if there is in fact no basis for it in experience. We would expect such knowledge to be universal, holding across all languages and all speakers. Other knowledge is demonstrably very specific to a given language and thus must be learned on the basis of experience with that language. And crucially the learner's internal resources for learning language must be innate, for they precede and enable learning.

One can further ask what aspects of these internal resources are specific to language learning, and what parts are shared with other components of other human – or primate – capacities. To the extent that some parts **are** specific to language, we are led to the claim that the capacity to acquire and use human language is a human cognitive specialization, a claim that has been central to generative grammar since its inception. We might distinguish the child's full internal resources for language acquisition, which include *inter alia* various social skills, pattern recognition, categorization, identification of correlations, and the capacity for imitation, from the language-specific resources, calling the latter **Narrow UG** and the rest **Broad UG**. Then an eventual goal of linguistic theory is to sort out Narrow UG from Broad UG. Doing so, of course, may require a comparable account of the other aspects of human cognition that make use of elements of Broad UG, an account at present far beyond the horizon but very much a concern of cognitive science.[2]

1.3. Where does syntactic theory fit in?

Syntactic theory sits squarely in the middle of this general perspective. A syntactic description of a given phenomenon in some language is situated within a network of theoretical questions. The most fundamental question is whether the syntactic description is something that could be (i) acquired by a learner on the basis of experience or (ii) plausibly assumed to be part of our innate knowledge of language. To get a feel for this question, let us consider two examples at either end of the spectrum and one in the middle.

First, consider the fact that the word *dog* is a noun and its plural is *dogs*. Clearly knowledge of these facts cannot be part of Universal Grammar *per se*. There would be no way to predict, strictly on the basis of universal principles, that the facts would be precisely these in any language. So they are part of the knowledge acquired by the learner on the basis of experience with the language, through exposure to examples of correspondences between form and meaning.

Second, consider a more complex fact about questions in English. As we will discuss in considerable detail in Chapter 9, in an English question the interrogative word or phrase appears in the initial position of the question and there is a "gap" in the position that corresponds to the function of this initial word or phrase. In the following examples the direct object of the verb is *what*, which appears in initial position, and there cannot also be a phrase following the verb.

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[2] Cf. Pinker and Jackendoff 2005.

(7) a. What did Sandy say ___ ?
b. What do you think Sandy said ___ ?
c. What do you think I thought Sandy said ___ ?

(8) a. *What did Sandy say something?
b. *What do you think Sandy said something?
c. *What do you think I thought Sandy said something?

A theory of syntax must tell us that it is possible to form a question as illustrated in (7). It must also tell us what other ways of making questions there are, and whether there are certain logical possibilities that do not exist. And ideally it should provide an explanation of why some logical possibilities exist and others do not.

Consider finally the fact that the verb precedes the direct object in English. Clearly this is not part of our innate knowledge of language, since in some languages the verb follows the direct object, or may appear on either side. We might take this to be a contingent fact about the language, acquired on the basis of experience. But there is a more general fact lurking here, which is that many languages appear to have verb phrases built around verbs. While the particular location of the verb in a given language clearly has to be learned, it could be plausibly argued that the possibility of having a phrase based on a verb and containing a direct object and other phrases is something that is not a contingent fact about language but something quite central to language in general. Precisely what the nature of this knowledge is, and how it is represented in the mind of the learner, is of course the key question.

1.4. Simpler Syntax

Interacting with the problem of how language is acquired is the question of what precisely is acquired when we acquire a language. The linguist's grammar is a theory of what a native speaker's knowledge consists of. Different syntactic theories make different claims about the nature of this knowledge. This book is organized around the perspective that a syntactic description should be the simplest one that is capable of accounting properly for the correspondence between form and meaning. This is the perspective of *Simpler Syntax* (Culicover and Jackendoff 2005), and many of the analyses in this book are based on those sketched out there and the general approach.

We illustrate the *Simpler Syntax* perspective by briefly comparing one of our analyses with an alternative. We go into more detail later. Consider the following pair of sentences.

(9) a. Mary expects that she will win.
b. Mary expects to win.

The phrase *that she will win* is called a "sentential complement" of the verb *expect*. In (9a), *she* can refer to *Mary*. Example (9b) can be paraphrased as *Mary expects that she (Mary) will win.* Hence the two sentences may have the same meaning.

Mainstream generative grammar (see, for example, Chomsky 1973) has traditionally used this synonymy, and related facts, to motivate assigning the same syntactic description to the two sentences. Since (9a) contains a sentential complement, *that she will win*, so does (9b), if we apply this methodology. The sentential complement of (9b) would then be *to win.* But *to win* lacks an apparent subject. So in order to maintain a uniform syntactic description of the two sentences, we must assume that there is an invisible subject of *to win* in (9b) that refers to *Mary*, just like *she* does in (9a).

The alternative pursued in *Simpler Syntax* is to account for the synonymy by positing rules of interpretation for (9b) **without an invisible syntactic subject**, which produce the same meaning as the rule of interpretation for (9a).[3]

Thus, the question of simplicity comes down to this: Is it possible to explain this form/meaning correspondence without assuming that there are invisible subjects, and associated invisible syntactic structure? More generally, is it possible to account for all of the form/meaning correspondences in natural languages without assuming invisible phrases and associated invisible structure? If it is not possible, then the argument for the more abstract structure is secure. But if it is possible, then *Simpler Syntax* argues that the simpler alternative should be adopted.

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[3] Such an approach is also taken in contemporary non-mainstream approaches such as Head-driven Phrase Structure Grammar (HPSG) – see Pollard and Sag 1994; and Lexical Functional Grammar (LFG) – see Kaplan and Bresnan 1982.

A related difference between *Simpler Syntax* (and a number of other syntactic theories) and mainstream generative grammar is that mainstream generative grammar is **derivational**, while *Simpler Syntax* is not. A derivational theory is one that assumes that the observed position of syntactic units may be different from their position in a more abstract representation. For example, in mainstream approaches, the subject of the passive sentence *The students were arrested* is the direct object of the verb in a more abstract representation. Again, much of the motivation for this abstract structure is uniformity of meaning. In this case, *the students* functions as the "logical object" of *arrested*, just as it does in *[The cops] arrested the students*.

The derivational approach captures this sameness of meaning directly; a non-derivational approach must capture it in other ways. In *Simpler Syntax*, the position of words and phrases with respect to one another, and their precise form, is dependent on the rules of a language that specify the relationship between position and meaning directly. For example, for the two sentences in (10) –

(10) a. The cops arrested the students.
b. The students were arrested.

there are two rules for positioning the phrase *the students* (and similar phrases). One rule makes *the students* the direct object of *arrested* in a position following *arrested*, as in (10a). The other rule puts *the students* in subject position, as in (10b). On the derivational approach, there is one rule that makes *the students* the direct object of *arrested* in a position following *arrested* for both sentences. Then (10b) is derived by a "movement" that removes it from its position following *arrested*, and puts it in subject position. The two approaches are equivalent in that they produce the same structures, but they differ in the way in which they do it.

The approach taken in this book is to lay out the basic relationships that a grammar must account for, and sketch out the *Simpler Syntax* analyses that express these relationships in a more or less schematic way. We also summarize the mainstream approach to the same phenomena, since much of the terminology and the specifics of mainstream analyses are the *lingua franca* in contemporary discourse about syntactic phenomena.

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2

Syntactic Categories

This chapter is concerned with syntactic categories. Section 2.1 introduces the traditional lexical categories, such as noun and verb, as well as the minor categories, such as article, quantifier, and conjunction. An important idea introduced in this section is that words of the same category may substitute for one another in a given syntactic context. Section 2.2 looks at the grammatical properties of words, such as number, case, and gender, and introduces the notion of a morphological paradigm. Section 2.3 looks at how a sequence of words forms a phrase of a given category, and highlights the relationship between the category of the phrase and the category of the head of the phrase. Section 2.4 explores some methodological issues in the general theory of linguistic categories.

2.1. Traditional categories

The traditional **lexical categories** found in English are noun (1a), verb (1b), preposition (1c), adjective (1d), and adverb (1e).

(1) a. dog, unicorn, truth, Mary, encouragement, plumber, . . . [noun]
b. reads, would, smile, crying, represented, . . . [verb]
c. in, on, over, under, against, . . . [preposition]
d. tall, big, prepared, amusing, . . . [adjective]
e. today, fast, quickly, upwards, often, . . . [adverb]

The conventional basis for deciding that a group of words are members of a particular category is that these words can be substituted for one another in all linguistic contexts without affecting grammaticality. The general principle is this:

Substitution: The result of substituting a word of a category C for another word of the same category does not change the grammaticality of the phrase or sentence in which it appears, although it may render it odd in meaning or even nonsensical.

We develop the general idea of substitution and its relation to grammaticality in section 2.1.1 where we discuss nouns, and then apply it to the other traditional categories in sections 2.1.2–2.1.6. While substitution is often useful for identifying or validating categories, it has limitations, as we see in section 2.4.

2.1.1. Nouns

In general, if a sentence contains the word *cat*, it is possible to replace *cat* with *dog*. In the following examples and throughout, the braces notation {} signifies that the listed elements are alternatives that may appear in a given position in a phrase. So (2a) is an abbreviation for *the cat*, *this cat*, *that cat*, *every cat*.

(2) a. $\left\{\begin{array}{l}\text{the}\\ \text{this}\\ \text{that}\\ \text{every}\end{array}\right\}$ cat

b. $\left\{\begin{array}{l}\text{the}\\ \text{this}\\ \text{that}\\ \text{every}\end{array}\right\}$ dog

And we can have

(3) a. The cat is sitting on the mat.
b. The dog is sitting on the mat.

(4) a. I was petting the cat.
b. I was petting the dog.

and

(5) a. one very fat furry cat
two very fat furry cats
b. one very fat furry dog
two very fat furry dogs

Intuitively, then, *cat* and *dog* are members of the same category; it is hard to imagine any grammatical context that can have one but not the other, although there are certain combinations of words that we would not expect to find, such as *The dog meowed*. We call the category containing *cat* and *dog* **noun**, typically abbreviated as **N**.

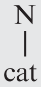
Notation: Representing categories

The category of a noun is conventionally represented in several ways in a description of the syntactic properties and structure of a string of words and morphemes. One way is to bracket the word and label the bracket with the category. This is called a **labeled bracketing**.

[$_{\mathrm{N}}$ cat]

Naturally, in a complete description of a string of words, all of the words would be labeled with their categories, as would the phrases that they are part of.

Another way is to draw a diagram (which is part of a **tree**) in which the label is shown above the word.



We will give more complex examples of labeled bracketings and tree diagrams as we consider more complex phrases.

Yet another way is to consider the category to be an attribute or feature of the word. We then represent the word *cat* with a notation that says "the category of this word is N". This style of representation is called an **attribute value matrix (AVM)**.

$$\begin{bmatrix} \textit{cat} \\ \text{CATEGORY N} \end{bmatrix}$$

All of these notational conventions are used in syntax, and we use all of them in this book.

The phrases in (2) show that there are certain contexts in which both *cat* and *dog* may appear. This is to be expected if *cat* and *dog* are of the same category. The sentences in (3)–(4) suggest that a phrase that contains *dog* can appear wherever the same kind of phrase that contains *cat* appears. Of course, in order to test this hypothesis fully we would have to look at a lot more contexts. Finally, the phrases in (5) show that both *cat* and *dog* may appear with the marker for the plural, -*s*.

It should be apparent even from these simple examples that there is an implicit appeal to meaning in the application of substitution tests. For example, in the case of (5), we are assuming that the -*s* that appears with *cat* and *dog* is the same **plural marker**, which means “more than one”, and not the possessive -*s* (written ’*s*) or the third person singular present verbal inflection (as in *speaks*). We informally use the English spelling -*s* to refer to this morpheme; its more technical name would be PLURAL, abbreviated as PL. And we are assuming that this -*s* (or PL) is the same grammatical morpheme whether it is realized phonetically as /z/ when it is attached to *dog* or as /s/ when it is attached to *cat*. Another form of plural -*s* is /əz/, as in *beaches*. This phenomenon, where a morpheme takes various phonetic forms, is called **allomorphy**. The various forms that a morpheme takes are called its **allomorphs**. When an allomorph of a morpheme has no phonetic form, that allomorph is called a **zero-allomorph**.

If we are describing a word in terms of its morphological structure and how that determines how it combines with other words to form a phrase, what is important are the morphemes that make it up, and not their allomorphs. The contrast between the morphological structure and the allomorphy is illustrated in (6). The allomorphs that are easily distinguished are marked in boldface.

(6)

word	morphological structure	phonetic form
dog	dog-SG	/dɔg/
dogs	dog-PL	/dɔg**z**/
cat	cat-SG	/kæt/
cats	cat-PL	/kæt**s**/
bush	bush-SG	/bʌʃ/
bushes	bush-PL	/bʌʃ**əz**/
sheep	sheep-SG	/ʃip/
sheep	sheep-PL	/ʃip/
ox	ox-SG	/ɑks/
oxen	ox-PL	/ɑks**ṇ**/
woman	woman-SG	/wʌmṇ/
women	woman-PL	/wɪmṇ/

We expect that words that mean more or less the same thing, or that refer to things of more or less the same type, or more generally have the same type of meaning, will have the same grammatical category. *Cat* and *dog* are the same type of thing, and so it is not surprising that we can use them both with *the*, that we can count them and use them in the singular and plural, and so on. Similarly, because we can use *the*, *this*, *that*, and *every* with *dog* and *cat* in more or less the same way, we might suppose that they are members of the same category. So, to a certain extent, we are using semantic intuitions to judge that two words are of the same category.

Semantic intuitions of this sort are also at the basis for the notion that the same categories hold across languages. It is of course impossible to substitute a word of one language into a sentence of another language while maintaining grammaticality. But the fact that words of two languages mean the same thing suggests that the categories that they belong to are the same. So English *cat*, German *Katze*, French *chat*, and Spanish *gato* are all said to be members of the category noun, even without any possibility of substitution for one another in any of the languages (e.g. *I love my* $\left\{\begin{array}{l} {}^{*}\textit{Katze} \\ {}^{*}\textit{chat} \\ {}^{*}\textit{gato} \end{array}\right\}$).

It is important to note that semantic properties do not always correlate with syntactic and especially morphosyntactic properties. For example, the nouns *scissors* and *pants* are morphologically plural, but semantically singular. Agreement with the verb is sensitive to the morphology, so we get *My pants are too short* and not **My pants is too short*. On the other hand, we may say that *furniture* is morphologically singular, but semantically plural: *My furniture is expensive*, **My furniture are expensive*.

The examples of singular and plural nouns raise another important point. We conventionally say that singular and plural nouns are all nouns, but singular and plural nouns cannot freely substitute for one another; in fact, there are only certain contexts in English (like after *the* and possessives) where substitution is freely possible.

(7) a. the $\left\{\begin{array}{l} \text{cat} \\ \text{cats} \end{array}\right\}$

b. my $\left\{\begin{array}{l} \text{cat} \\ \text{cats} \end{array}\right\}$

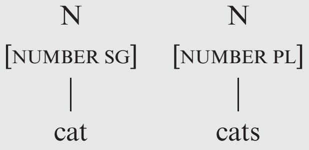
c. a $\left\{\begin{array}{l} \text{cat} \\ {}^{*}\text{cats} \end{array}\right\}$

d. two $\left\{\begin{array}{l} {}^{*}\text{cat} \\ \text{cats} \end{array}\right\}$

What these examples show is that where there is a morphological marking, say for singular and plural **number**, members of the same category are marked for the same property, and not substitutable for one another without appropriate marking. Typically this state of affairs is called a morphological **paradigm**. Where there is a paradigm, a single word has a number of alternate forms whose distribution is governed by meaning differences (in the case of singular and plural) and grammatical restrictions. The paradigm is one way of verifying that two words are in the same category: if they are in the same category, they should have alternating forms in the paradigm for that category.

Notation: Representing paradigm properties

A common convention for representing the fact that two words are actually different paradigmatic forms of the same word is that of **attributes** or **features**, which we introduced above, taking the category of a word to be a feature of the word. Another example of a feature is NUMBER. For a word like *cat*, the value of the feature NUMBER is SINGULAR (SG), while for *cats* it is PLURAL (PL). Both words are members of the category N. We can represent this information as follows:



Alternatively, we may use an attribute value matrix (AVM) to show all of the attributes in a uniform fashion. (So far we have NUMBER and CATEGORY, but there are many more.)

$$\begin{bmatrix} \textit{cat} & \\ \text{CATEGORY} & \text{N} \\ \text{NUMBER} & \text{SG} \end{bmatrix} \quad \begin{bmatrix} \textit{cats} & \\ \text{CATEGORY} & \text{N} \\ \text{NUMBER} & \text{PL} \end{bmatrix}$$

In an AVM we list each feature and its corresponding value. A non-linguistic case of an AVM would be a listing of personal information on a driver's license application, for example.

$$\begin{bmatrix} \text{NAME} & \text{Sandy Student} \\ \text{DATE OF BIRTH} & \text{Feb. 29, 1985} \\ \text{SEX} & \text{Female} \\ \text{HEIGHT} & \text{160 cm} \\ \text{WEIGHT} & \text{53 kg} \\ \text{HAIR COLOR} & \text{brown} \\ \text{EYE COLOR} & \text{brown} \end{bmatrix}$$

The features that appear in the AVM are the essential properties of what is being described.

This discussion of categories thus far shows three things:

- Elements of the same category may substitute for one another.
- Paradigms play a role in defining what category a word is a member of.
- If two words cannot be substituted freely for one another, this does not mean that they are not in the same category. They might simply be alternate forms of a paradigm with different distributional properties. The intuition that this is the case again depends on meaning, because we must know independently that the two forms are actually variants of the same word.

There are other cases where "same category" does not mean "completely free substitutability". Intuitions about substitution immediately run up against the fact that there are actually many contexts in which substituting one word for another of the same apparent category results in some kind of unacceptability. For instances, *Cats meow* is very natural but *Dogs meow* sounds a little strange. In such a case we can say that there is nothing linguistically wrong with *Dogs meow*, it's just that dogs do not meow, so the sentence is false, but it is not ungrammatical. By way of comparison, the sentence *Dogs don't meow* is completely normal, both syntactically and semantically.

It is possible to construct more and more extreme violations of the normal relationship between a noun and a verb, but in each case we would not want to say that the violation is due to the words not being of the proper category. Here are some examples. In (8a), we attribute meowing to something that does not exist. In (8b), we attribute meowing to a class of human beings, which is odd. In (8c), we attribute meowing to inanimate objects, which is arguably impossible (but imaginable in some alternate universe in which rocks behave like animate objects). And in (8d) we attribute meowing to an abstraction, truth, which is impossible.

(8) a. Unicorns meow.
b. Plumbers meow.
c. Rocks meow.
d. Truth meows.

In each case, we say that the sentence is false because the property expressed by the verb does not (and in some cases cannot) hold of the thing referred to by the noun. The oddness of the examples in (8) is typically called **semantic anomaly**.

Semantic anomaly must be distinguished from ungrammaticality. **Ungrammaticality** occurs when there is something wrong with the arrangement of the words and phrases of a sentence according to their category and their morphological form. Semantic anomaly occurs when there is something peculiar about the **meaning**. The **meaning** is determined by the grammatical properties of a sentence, but it is not equivalent to it. A sentence can be perfectly grammatical yet completely nonsensical. And it can be ungrammatical but perfectly coherent in meaning.

If we substitute a word for *cat* that is not a noun, then we have a problem of grammaticality.

(9) a. The cat is sitting on the mat.
b. *The $\underline{\text{furry}}$ is sitting on the mat.
c. *The $\underline{\text{on}}$ is sitting on the mat.
d. *The $\underline{\text{the}}$ is sitting on the mat.
e. *The $\underline{\text{is}}$ is sitting on the mat.

(10) $\text{two furry} \left\{\begin{array}{l}\text{cats}\\ {}^{*}\text{on's}\\ {}^{*}\text{the's}\\ {}^{*}\text{is's}\end{array}\right\}$

There is a close connection here between the syntactic facts and the semantic facts. These expressions are also semantically anomalous because the words that substitute for *cat* are incapable of referring to a definite object.

To summarize, the defining characteristics of nouns in English are the following:

- they can appear immediately after *the/this/every*, etc.
- they can appear immediately after adjectives.
- they may participate in the singular/plural (number) paradigm (if they denote things that can be counted, like dogs and cats).

Beyond this, nouns tend to have certain semantic properties. Our immediate intuition might be that nouns refer to things, but such an intuition is too simple; we know that nouns can refer to places (*New Orleans*), times (*tomorrow*), actions (*swimming*), and events (*the recent football match*), emotions, ideas, intuitions, sentences, memories, and much else. What does seem to be true of almost every noun if not all nouns is that what it refers to is in principle quantifiable or is a set made up of quantifiable members. A noun can refer to something that is countable (like dogs and cats), something that is measurable but not countable (such as water or sincerity), or something that is unique (like Albert Einstein or the US government). A noun can refer to a particular collection (like humankind or furniture) or a particular species (like the platypus).

Substitutability typically fails when a noun is in a context that requires that it refer to something countable, and the noun to be substituted does not, and vice versa. For example,

(11) a. every dog
b. *every sincerity
(12) a. much sincerity
b. *much dog

Again, we do not want to say that *dog* and *sincerity* do not belong to the same category; the problem here is a semantic one, not a syntactic one.

2.1.2. Verbs

Verbs are words like *talk*, *eat*, *run*, and *sing*. We abbreviate this category as **V**. Verbs typically express actions, relations, and properties. But we cannot use this semantic property to define what a verb is, because there are words of other categories that also express relations and properties. For example, *brother* expresses a kinship relation, while *on* expresses a spatial relation. But *brother* and *on* are not verbs in English. And *tall* expresses a property, but it is not a verb.

In English and many other languages a verb is distinguished by the morphological paradigm that it participates in. The English verbal paradigm is summarized in (13).

(13)

BARE FORM	3RD PERSON SING. PRESENT	PAST	-*ING* FORM[1]	-*EN* FORM[2]
talk	talks	talked	talking	talked
eat	eats	ate	eating	eaten
run	runs	ran	running	run
sing	sings	sang	singing	sung

The only verb that deviates from this pattern is *be*, which has three forms in the present and two in the past.

---

[1] In grammatical terminology, this form is called the **progressive** or the **present participle**.

[2] In grammatical terminology, this form is called the **past participle**.

(14)

BARE FORM	PRESENT	PAST	-*ING* FORM	-*EN* FORM
be	am, are, is	was, were	being	been

We will look more closely at the verbal paradigm in our discussion of morphosyntax in section 2.2.

As expected, it is often possible to substitute one verb for another. Sometimes the meaning becomes strange: *I ate my dinner* is quite natural but *I welded my dinner* is not. But, as we have already seen, these failures of substitution do not bear on whether the words are of the same grammatical category – they are semantically anomalous.

Matters become more complex when we consider verbs that take different numbers of **arguments**. An argument of a verb is a phrase that refers to some thing, person, place, etc. that participates in the relation expressed by the verb. As discussed in more detail in Chapter 5, there are

- verbs that take one argument (intransitive), such as *die*;
- those that take two arguments (transitive), such as *eat*;
- those that take three arguments (ditransitive), such as *give*;
- and those that take zero arguments, such as *rain*.

While it is often possible to leave out an argument of a verb, it is very difficult if not impossible to use a verb with more arguments than it permits.[3] So, if we substitute a one-argument verb for a two-argument verb, or a two-argument verb for a three-argument verb, or a zero-argument verb for a one- or two-argument verb, the result is decidedly ill-formed, because there is at least one argument too many. In the following examples, we have underlined the superfluous arguments.

(15) a. I ate my dinner.
b. I fell.
c. *I fell my dinner.

(16) a. Mary gave John the magazine.
b. Mary shredded the magazine.
c. *Mary shredded John the magazine.

(17) a. It rained.
b. *I rained.

---

[3] The exception to this is called "coercion", where a verb is forced into a particular syntactic context. An example is *They looted me a television*, meaning that while they were looting they took a television to give to me. See Chapter 5 for more discussion of coercion.

c. *It rained my dinner.
d. *I rained my dinner.
e. *It rained John my dinner.
f. *I rained John my dinner.

The fact that different verbs take different numbers of arguments is often held to constitute evidence for syntactic **subcategories**. On this view, the number of arguments that a verb takes is a syntactic property of the verb. All verbs that take this number of categories fall into the same subcategory, and all verbs taken together constitute the larger category **verb** (V).

To a considerable extent the grouping of verbs into subcategories is a consequence of the semantic properties of the verb. If the meaning of a verb is a relation involving at most two participants, then there is simply no meaning that can be assigned to the extra argument in the starred examples in (15)–(17). In such cases, we may say that the number of syntactic arguments exceeds the number of semantic arguments.

A second type of verbal subcategory concerns the **auxiliary verbs**, that is, *have* and *be* and the modals *will*, *can*, etc. We call this category V_{AUX}. The auxiliary verbs contrast with main verbs such as *eat*, *run*, and *advise* in their distribution. As the following examples illustrate, the form of a sequence of verbs in English is restricted.

(18) a. I have visited NY many times.
b. I am visiting NY.
c. *I have visiting NY many times.
d. *I am visited NY.

The auxiliary verb *have* must be followed by a verb with the -*ed* form (the “past participle”), and the auxiliary verb *be* must be followed by a verb with the -*ing* form (the “progressive participle”). We return to a fuller analysis of the restrictions on the English verbal sequence in Chapter 3.

A third subcategory consists of verbs that select infinitival or finite complements.

(19) a. I expect that you will win.
I believe that you will win.
*I want that you will win.
b. I believe you to have won.
I expect you to win.
I want you to win.

c. *I believe to have won.
I expect to win.
I want to win.
d. I persuaded Mary to leave.
I persuaded Mary that she should leave.
*I persuaded to leave.
*I persuaded that Mary should leave.

The verbs that take infinitival or finite complements fall into a number of subcategories. Some take only finite complements, others only nonfinite complements. Some allow a noun phrase before the infinitival or finite complement, others require it, while others disallow it. In general it does not appear to be possible to predict all of the properties of such verbs on semantic grounds; those that cannot be must be part of the lexical specification. We return to verbs of this type in Chapter 7.

2.1.3. Adjectives

Another lexical category in English is **adjective** (ADJ). Some examples are *tall*, *angry*, *old*, *irritating*. Substitution tests for adjectives are revealing. Adjectives typically precede the noun that they modify. This is called the **attributive** use of adjectives –

(20) $$\text{a(n)} \left\{\begin{array}{l}\text{tall}\\ \text{angry}\\ \text{old}\\ \text{irritating}\end{array}\right\} \text{bear}$$

– and they can also appear as the complement of a form of the verb *be.* This is called the **predicational** use of adjectives.

(21) $$\text{The bear is} \left\{\begin{array}{l}\text{tall}\\ \text{angry}\\ \text{old}\\ \text{irritating}\end{array}\right\}.$$

Typically, when a combination of adjective and noun fails, it is because of a semantic anomaly or incompatibility. We use “#” in the following examples to indicate such an anomaly.

(22) # the sincere tree
# the rational rock
# the blue truth
# the three-sided square
# the present(day) King of France

But there are some adjectives that cannot be used predicatively.

(23) a. the present(day) King of France
*The King of France is present(day).
*I consider the King of France present(day).
b. the alleged assassin
*The assassin was alleged.
*I consider the assassin alleged.
c. a perfect idiot
*The idiot was perfect.
*I consider the idiot perfect.[4]

Since these appear to be adjectives in other respects, we may hypothesize that the failures here are due to meaning.

Finally, an adjective that denotes an attribute that has quantity appears in the paradigm exemplified in (24).

(24)

Base	Comparative	Superlative
tall	taller	tallest
old	older	oldest
angry	angrier	angriest
irritating	more irritating	most irritating

These adjectives may also be modified by intensifiers like *very* and *so*.

(25)
$$\left\{\begin{array}{l}\text{very}\\ \text{so}\end{array}\right\}\left\{\begin{array}{l}\text{tall}\\ \text{angry}\\ \text{old}\\ \text{irritating}\end{array}\right\}$$

The adjectives that cannot be used predicatively do not participate in the comparative paradigm.

(26) *the more present King of France
*the more alleged assassin
*the more perfect idiot

The explanation appears to be a semantic one: these adjectives do not denote a measurable property.

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[4] This sentence is acceptable under another interpretation of *perfect*.

2.1.4. Prepositions

Using substitution tests, we find that there is another class of words in English that are not nouns, verbs, or adjectives. This class, called **preposition** (P), is a closed class of words that are used to express place, time, manner, and other aspects of events and actions.

(27) Mary was sitting $\left\{\begin{array}{l}\text{on}\\ \text{in}\\ \text{at}\\ \text{near}\\ \text{under}\\ \text{next to}\\ \text{on top of}\\ \text{in front of}\\ \text{behind}\end{array}\right\}$ the Ferrari.

All of the words or word sequences in (27) pick out some location in combination with the phrase *the Ferrari.* A similar set of words can be used with time expressions.

(28) We'll be gone $\left\{\begin{array}{l}\text{by}\\ \text{after}\\ \text{before}\\ \text{until}\\ \text{during}\end{array}\right\}$ tomorrow.

It is not possible to switch most of these prepositions with those in (27); a reasonable intuition is that the failure is due to semantic anomaly.

(29) # Mary was sitting $\left\{\begin{array}{l}\text{after}\\ \text{before}\\ \text{until}\\ \text{during}\end{array}\right\}$ the Ferrari.[5]

Mary was sitting by the Ferrari.

(30) # We'll be gone $\left\{\begin{array}{l}\text{in}\\ \text{at}\\ \text{near}\\ \text{under}\\ \text{next to}\\ \text{on top of}\\ \text{in front of}\\ \text{behind}\end{array}\right\}$ tomorrow.

The prepositions cannot be substituted for nouns, verbs, or adjectives, in general.

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[5] *Before* can be used as a preposition of location in other contexts, such as *I see a strange face before me* and *The Ferrari came to a complete stop right before the finish line.*

(31) a. the book / *the on
b. I am reading a book / *I am aftering a book
c. the interesting book / *the after book

However, some prepositions can be used predicatively, and perhaps idiomatically in some cases, as in

(32) a. She's really on.
b. One more step and you're in.
c. You're a little behind.
d. My horse is in front (*of).
e. The book you want is on top (*of)

But not all prepositions allow this use.

(33) She's really $\left\{\begin{array}{l} {}^{*}\text{by} \\ {}^{*}\text{after} \\ {}^{*}\text{before} \\ {}^{*}\text{until} \\ {}^{*}\text{during} \\ {}^{*}\text{at} \end{array}\right\}$.

2.1.5. Adverbs

The category **adverb** (ADV) is a problematic one, because it is not clear on the basis of distributional evidence whether there is a single generalized category or a number of more specialized ones. (See Ernst 2002 for an extensive treatment of adverbs and related constructions.) We will take adverbs here to be individual lexical items that are used to modify verb phrases or sentences. Many adjectives can be made into adverbs by adding -*ly*.

(34) a. quick → quickly
b. necessary → necessarily
c. optional → optionally
d. dark → darkly
e. stupid → stupidly
etc.

Other adverbs, like *fast* and *well*, do not have -*ly* but have the same function as the -*ly* adverbs.

Adverbs may express manner, direction, location, time, and other attributes of an action or state of affairs. These notions may also be expressed by using prepositional phrases.

(35) a. Sandy was walking at a steady pace.
b. Sandy jumped onto the table in a split second.

These prepositional phrases are not members of the syntactic category adverb, although they may have the same grammatical and semantic function as adverbs. We say that these prepositional phrases, and the adverbs, have **adverbial** functions. Later we will find it useful to refer to the class of "adverbials" that contains the prepositional phrases and the adverbs.

Adverbs in English have the interesting property that they may appear in a number of positions in a sentence, sometimes with subtle meaning differences. Consider the examples in (36) that illustrate the possible positions for *quickly*.

(36) a. Quickly, Sandy jumped onto the table.
b. Sandy quickly jumped onto the table.
c. Sandy jumped onto the table quickly.

The examples show that *quickly* may appear in initial position (36a), immediately before the verb (36b), or in final position (36c). But *merely*, which is also typically classified as an adverb, may appear only before the verb.

(37) a. *Merely, Sandy jumped onto the table.
b. Sandy merely jumped onto the table.
c. *Sandy jumped onto the table merely.

Regrettably may appear in initial position or before the verb; it may appear at the end only parenthetically.

(38) a. Regrettably, Sandy jumped onto the table.
b. Sandy regrettably jumped onto the table.
c. *Sandy jumped onto the table regrettably.
d. Sandy jumped onto the table, regrettably.

And when there is more than one verb in a sequence, the distribution of adverbs become somewhat more complex. Not only are not all positions allowed with all adverbs, but there are meaning differences. For example, in (39), the adverb *sadly* can be a judgment by the speaker about "Sandy should have confessed", or about Sandy, or about the manner of confession.

(39) a. Sadly, Sandy should have confessed.
b. Sandy sadly should have confessed.
c. Sandy should sadly have confessed.
d. Sandy should have sadly confessed.
e. Sandy should have confessed sadly.
f. Sandy should have confessed, sadly.

(40) a. ?Quickly, Sandy should have confessed.
b. Sandy quickly should have confessed.
c. ?Sandy should quickly have confessed.
d. Sandy should have quickly confessed.
e. Sandy should have confessed quickly.
f. *Sandy should have confessed, quickly.

Problems 3 asks you to look in more detail at the effect of adverb position on its interpretation with respect to the rest of the sentence.

2.1.6. Minor categories

Articles (ART) in English are the words *the* and *a*. The category **demonstrative** (DEM) consists of *this*, *that*, *these*, and *those*. **Quantifiers** (Q) are words such as *every*, *all*, *each*, and *both*. These categories are traditionally distinguished on semantic grounds, since they have very different functions. Substitution tests suggest that they are all of the same category, **determiner** (DET). The following examples show that while members of these categories can be substituted for one another, they can in general not be used together in the same phrase. As always, this latter fact may be the consequence of semantic incompatibility or redundancy, but in the absence of a suitable semantic account, we take this to be a syntactic fact.

(41) a. $\left\{\begin{array}{l}\text{the}\\ \text{every}\\ \text{this}\\ \text{that}\\ \text{each}\end{array}\right\}$ book

b. $\left\{\begin{array}{l}\text{these}\\ \text{those}\\ \text{all}\\ \text{both}\end{array}\right\}$ people

(42) a. *the a book
b. *the every book
c. *every the book
d. *every this book

Exceptions are that *all* and *both* can precede the articles and demonstratives:

(43) a. all $\left\{\begin{array}{l}\text{the}\\ \text{these}\end{array}\right\}$ books

b. both $\left\{\begin{array}{l}\text{the}\\ \text{these}\end{array}\right\}$ people

This fact is sometimes accounted for by treating these sequences as alternative forms of *all of the/these* and *both of the/those*, etc. Some adjectives, like *many*, express quantity and are therefore semantically related to quantifiers, but can appear with articles, e.g. *the many supportive friends of Sandy*.

Another minor category contains the **conjunctions** (CONJ). *And* and *or* are called **coordinating conjunctions**, because they are used with phrases of the same type, e.g. *Albert Einstein and Kurt Godel*, *to eat and drink*, *in and out*, *Speak now or forever hold your peace*. **Subordinating conjunctions** like *although*, *while*, *if*, and *because*, are used to introduce sentences.

(44) $\underline{\text{although}}$ it is raining
$\underline{\text{while}}$ we were there
$\underline{\text{if}}$ it doesn't rain
$\underline{\text{because}}$ we were angry

Some subordinating conjunctions also serve as prepositions.

(45) $$\left\{\begin{array}{l}\text{before}\\ \text{after}\end{array}\right\}\left\{\begin{array}{l}\text{the concert}\\ \text{the concert started}\end{array}\right\}$$

2.2. Morphosyntax

In this section we look at the relationship between the form of a word and its syntactic properties, called **morphosyntax**. **Morphology** has to do with the form of words; **morphosyntax** is concerned with the relationship between the form of a word and its function and distribution in a phrase or sentence.

2.2.1. Words and lexical items

In English the forms *he*, *she*, *they* can only be the subject of a finite sentence.

(46) $$\left\{\begin{array}{l}\text{He}\\ \text{She}\\ \text{They}\end{array}\right\}\text{ called.}$$

(47) $$\text{We called }\left\{\begin{array}{l}{}^{*}\text{he}\\ {}^{*}\text{she}\\ {}^{*}\text{they}\end{array}\right\}.$$

The forms *him*, *her*, *them*, on the other hand, cannot be subjects of a finite sentence.

(48) $\left\{\begin{array}{l} {}^{*}\text{Him} \\ {}^{*}\text{Her} \\ {}^{*}\text{Them} \end{array}\right\}$ called.

(49) We called $\left\{\begin{array}{l} \text{him} \\ \text{her} \\ \text{them} \end{array}\right\}$.

We see that there is a strong connection between the form of the word and its syntactic function in the sentence – certain forms must be subjects, and certain forms cannot be. In English the correlation between the form and grammatical function of nouns is restricted to the pronouns, but in some languages it is much more general.

Another example of morphosyntax involves the marking of the verb in the third person in English. If the subject is singular, the verb is marked with -*s*; if it is plural, it is not marked.

(50) a. Leslie $\left\{\begin{array}{l} \text{sees} \\ {}^{*}\text{see} \end{array}\right\}$me.

b. Leslie and Lee $\left\{\begin{array}{l} \text{see} \\ {}^{*}\text{sees} \end{array}\right\}$ me.

Observations such as these show that we have to distinguish between a word as an individual element in a sentence, and the collection of words that form a single paradigm. Informally, we think of a word as a unit of a language defined by certain sounds. For example, there is the word pronounced /si/ (that is, "see"), and the word pronounced /siz/ (that is, "sees"). But, in some sense, these two forms are two variants of a single more abstract element which we call *see* (pronounced /si/).

In order to capture this distinction we define the notions of **lexical entry** (or **lexical item**) and **word** differently. A lexical entry is an abstract object that has a meaning and syntactic properties, such as CATEGORY. A word, on the other hand, is the form that a lexical entry takes when it appears in an actual syntactic context. The word inherits its category and other syntactic properties, as well as its sound, from the lexical entry that it represents. In the simplest cases, the word is the basic phonetic realization of the lexical entry, with no modifications. So the lexical entry *see* has the form of the word /si/. In terms of this distinction, *see* is a lexical entry, /si/ and /siz/ are words. Moreover, the sequence of sounds /sæf/ could be a word of English, since it sounds like an English word (it rhymes with "laugh"). It is not because it does not correspond to any lexical entry.

Not all lexical entries correspond to words. There is a special class of lexical entries that have grammatical functions associated with them, and cannot stand alone but must be attached to something to form words. These are **inflectional morphemes**. The set of inflectional morphemes for a syntactic category (like V) constitute a particular type of morphological paradigm which we call an **inflectional paradigm**.

One example of an inflectional morpheme is the marker of the third person singular present tense in English, which takes the form /z/ when it is attached to /si/, giving /siz/. The allomorph of this marker depends on the form of the word it attaches to. It is /z/ when the word ends in a vowel or a voiced stop (as in /siz/ for "sees" and /ridz/ for "reads"), /s/ when the word ends in a voiceless stop (as in /rayts/ for "writes"), and /əz/ when the word ends in a fricative (as in /rayzəz/ for "rises" or /bæʃəz/ for "bashes"). For convenience, we refer to this morpheme as 3.SG.PRES, indicating that it marks the third person singular present.

There is another type of morphology that does not involve inflectional paradigms but morphologically defined relationships between syntactic categories. It is customary to refer to this as **derivational morphology**. An example of this type of morphology is given by the word *derivational*, which is composed of *deriv(e)*, -*ation*, and -*al*. Notice that the morphological structure of *derivational* determines the syntactic category of the word:

- A word of the form V+-*ation* is a noun: *derive* ~ *derivation.*
- A word of the form N+-al is an adjective: *derivation* ~ *derivational.*

Derivational morphology contrasts with inflectional morphology, which links the precise form of a member of a particular category to its syntactic function.

2.2.2. The structure of the lexicon

The preceding discussion shows that what we see as a "word" in a phrase may have a rather abstract linguistic description in terms of lexical entries and a complex internal structure. For example, the word "sees" is the realization of the lexical entry *see* and the lexical entry 3.SG.PRES.

The **lexicon** is the sum total of all of the lexical entries. It is the repository of all of the information that we have about linguistic expressions that cannot be explained in terms of other expressions. To take a simple example, the word *pig* has a particular form (/pɪg/), particular syntactic properties (it is a noun), and a particular meaning (it refers to certain types of farm animals). On the other hand, *catch a pig* has a form that is made up of the form of the individual words, a syntactic structure that is determined by the rules of English grammar, and a meaning that is the product of combining these words with their meanings in this particular way. So we need to list *pig* in the lexicon but not *catch a pig*.

(51) Lexicon, first version:

lexical entries
☐ form
☐ syntactic properties
☐ meaning

It might appear from this simple example that the lexicon consists only of words, like *pig* and *catch.* But we have already seen that some words are comprised of paradigms, which specify which form of the word is to be used for a particular function. So the lexicon must include not only words but paradigms.

Moreover, we have seen that some words have complex structure and that in some cases this structure is regular – for example, *derivation* is related to *derive* in the same way that *infestation* is related to *infest.* Not only are the forms related systematically but the meanings are, too, in that a derivation is the result or act of deriving, while infestation is the result or act of infesting. But there are many cases where a word has a clear morphological relationship to another word, but the meaning is not totally predictable. For instance, one meaning of *animation* is only loosely related to *animate*: *She spoke with great animation.* And the morphological relationships between words are restricted, so that not all apparently similar words may have the same morphological structure. Contrast, for example, *derive* ~ *derivation (*derival)* and *arrive* ~ **arrivation (arrival).*

So it seems reasonable that we would include in the lexicon not only the actual words with their forms and meanings but their morphological structure.

(52) Lexicon, second version:

lexical entries
☐ form
☐ morphological structure
☐ syntactic properties
☐ meaning

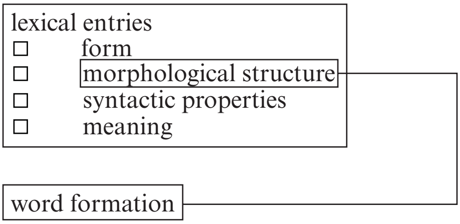
It turns out, now, that some morphological structure is productive, in the sense that it is possible to apply it to new instances, while other morphological structure is frozen. A productive morpheme in English is -*ness*; for any adjective, it is possible to make up a new noun by adding -*ness* to it. In (53), the made-up words in the left column are supposed to be adjectives and the words in the right column are the corresponding nouns.

(53)

Adjectives	**Nouns**
glarky	glarkiness
bigarre	bigarreness
halumph	halumphness
gleek	gleekness
floog	floogness

Since the capacity to make up new words by adding -*ness* is an aspect of our knowledge of English, we need to represent it somewhere in our description of the grammar of English. The lexicon already contains real words with -*ness*, of course: *happiness*, *quickness*, *restlessness*, etc. So there is very clearly a link between the actual structures of some words and this capacity to carry this structure over to the creation of new words. We include this capacity in the lexicon, as well, by linking the properties of morphological structure found in the lexical entries to word formation rules.

(54) Lexicon, third version:



The word formation rules define an unlimited number of “possible” new words, constrained only by what is phonologically possible in the language. We do not think of word formation as actually being in the lexicon but as a mechanism that determines what may be in the lexicon.

Having gone this far, we can now see that there are even more complex expressions whose meaning is not entirely predictable. One class of cases are those like *kick the bucket*, *have a cow*, *blow one’s stack*, *go postal*, *take advantage of*, *set store by*, and thousands of others. Like words with complex structure, the meanings of some of these expressions may be related to the meanings of the parts, but the relationship is not entirely systematic and the