

CSLI
Lecture Notes
No. 67

PRACTICAL GUIDE TO SYNTACTIC ANALYSIS

Georgia M. Green
&
Jerry L. Morgan

1 WHAT A GRAMMAR IS, AND ISN'T

Why is linguistic theory so widely misunderstood that in a 1989 collection of essays called *Reflections on Chomsky* (George 1989), a chapter could be titled "How not to become confused about linguistics"? Generative linguistic theory as it has grown out of the work of Noam Chomsky (1955, 1957, 1965, 1975, 1981, 1986a) has profound implications not only for linguistics, but also, insofar as it has important things to say about the human mind and human nature, for other domains of inquiry, including psychology and philosophy. So it is no surprise that it has provoked impassioned reactions, both pro and con, not only in linguistics but in several neighboring fields. But the critiques are often wide of the mark, since they are based on a thorough misunderstanding of the foundations of generative theory (see George 1989). These same misunderstandings are often found among beginning students of linguistics.

It may be that part of the problem is the difficult writing style of Chomsky and some of his followers. But we suspect that a greater part of the blame is due to critics' failure to consider carefully the whole picture of the generative approach, in particular the view of mind that it is based on. And we have no doubt that many misconceptions are due to an unfortunate choice of metaphorical terminology on the part of linguists who use generative theory. The purpose of this chapter is to bring these problems into the light, in order to reduce the likelihood that the student will be distracted by these misconceptions.

We begin by discussing the goals of linguistic theory, and how the concept of a grammar fits into the framework of those goals. We then discuss some common metaphors that may mislead the unwary student, and some criticisms of generative grammar that have a certain superficial appeal, but turn out to be misguided when they are examined closely.

1.1 Goals of Linguistic Theory

To properly understand generative grammar, and what counts as valid criticism of work in that framework, it is essential to understand the theoretical goals that are being pursued. Chomsky's position on the goals of linguistic theory is by far the dominant one in the field. The most important point of his position is this: the goals of linguistic theory are psychological. Language is a mental phenomenon, to be studied as such, and theories of language are to be considered as psychological theories. So the object of study is the human mind, and it is the nature of the human mind as reflected in the acquisition and use of language that provides the central questions of the field. This approach to the scientific study of language is by now so common-place that it is hard to imagine things being otherwise. But Chomsky's immediate predecessors in American linguistics had a quite different position, one in which language was (at least in theory) studied as a kind of natural object, and questions of mind were to be avoided at all costs. Even now there are theories with quite different goals. For some varieties of Montague grammar (Montague 1970, 1973; Dowty, Wall, and Peters 1981), for example, questions of psychology are largely irrelevant. Katz (1981) proposes a Platonic approach to the study of language, which rejects Chomsky's psychological goals. But most syntacticians, at least if pressed, would admit to being Chomskyan in their theoretical goals, though perhaps differing with Chomsky (and each other) on other points.

For such an approach to linguistics, it is not language (whatever is meant by that slippery term) but **knowledge of language** that is the central phenomenon to be studied and explained. The term generally used to refer to that knowledge is **grammar**. But to fully appreciate the details of the Chomskyan program, it is necessary always to keep in mind Chomsky's goals and assumptions about the mind, including especially these:

(1) **THE MIND IS INNATELY STRUCTURED.** For Chomsky, the mind is not a blank slate, but a highly structured organ whose structure is determined in large part by genetically governed (though poorly understood) properties of the brain. This position differs sharply from the widely held position that the brain and mind have little innate structure, but are shaped almost entirely by experience. More specifically, it is Chomsky's view that:

(2) **THE MIND IS MODULAR.** According to this Modularity Hypothesis, the human mind does not consist of a single all-purpose structure, but has sub-parts that are specialized in function for particular cognitive and perceptual domains. This structure is presumed to reflect (perhaps indirectly) physical properties of the brain. It is an open question—to be settled by scientific

means, not a priori philosophical ones—whether the modularity hypothesis is correct, and if it is correct, what substructures the mind contains. The modularity position does not imply (this is an important point) complete modular autonomy in operation: since most cognitive tasks humans face are not purely of one kind or another, most things we do presumably involve the interaction of several faculties. The existence of such interaction is not in itself a threat to the modularity hypothesis.

(3) **THERE IS A DISTINCT MODULE FOR LANGUAGE.** Among the faculties hypothesized to make up the mind, Chomsky argues, is one specific to language. There are two important points to keep in mind here. First, the modularity hypothesis does not depend on the existence of a language faculty; the mind could be modular without there being a language faculty, though of course if there is a language faculty the mind is *ipso facto* modular. Second, it should be clear that something like Chomsky's position has always been implicit in the study of language (though perhaps not consciously in the minds of the investigators) in that grammarians have generally approached language as something that can reasonably be isolated for study apart from other human activities or artifacts. If what we call language is really inherently inseparable from other mental abilities, then the study of language makes no more sense as a coherent science than the study of knowledge of things made in Michigan. Chomsky's position on the modularity of language provides a coherent rationale for this traditional isolation of language for study.

(4) **LANGUAGE ACQUISITION IS THE CENTRAL PUZZLE FOR LINGUISTIC THEORY.** Just what functions the hypothesized language faculty has is an open question; for Chomsky, the primary purpose of the language faculty is for learning language. It might serve this function either by being a learning mechanism itself, or by somehow interacting with a learning mechanism to determine the course of language learning. For Chomsky, the language faculty and its function are the central concern of linguistic theory, and understandably so. To the linguist who has looked in depth at the awesome complexity of the grammar of any language, it seems a miracle that a small child could master such a system in such a short time. Explaining this apparent miracle is the problem of **explanatory adequacy**, which is for Chomsky the central goal of linguistic theory. The explanation is to be given by investigating the language faculty, to determine its structure and contents, and how it makes it possible for a child to learn a human language. Chomsky's position is that the language faculty is structured in such a way that the child, when faced with the **primary data** of language presented by the senses, has a very limited set of options available for constructing a grammar consistent with those primary data. So the child's choices in the language learning task are narrowly constrained by

physical properties of the brain, which are in turn determined by the child's genes. (These brain structures are not fully formed at birth, but it is genetically predetermined that they will develop eventually if the physical development of the child follows its normal course, just as with many other genetically determined properties.)

Given this picture of things, it follows that two children faced with roughly similar linguistic experience are bound to come up with similar grammars, insofar as their language faculties are similar. And insofar as the language faculty is a reflection of genetically determined properties of the brain, two normal children should have roughly similar language faculties, if we assume no more genetic variation there than in other genetically determined properties.

This general position is known as the Innateness Hypothesis. Its essence is that every human is genetically endowed with the potential to develop certain brain structures which influence the course and outcome of language acquisition, by in effect setting limits on what kind of grammar a child can construct when faced with the data of linguistic experience. A theory that provides an account of this innate structure, and thus an explanation of how language can be learned, achieves the Chomskyan goal of explanatory adequacy. And it is the Innateness Hypothesis that makes the study of **universal grammar** relevant for linguistic theory. Given that the inherited biology of the brain strongly guides language acquisition in certain directions, we should expect to find consequences of such biological facts in terms of properties all languages share, or strongly tend to share. And certain properties should be rare or nonexistent because the inherited language faculty makes it very difficult or impossible for a human to learn a language with those properties. So detailed analysis and comparison of the grammars of a significant variety of languages is a crucial source of potential data on the structure of the language faculty.

That is not to say, though, that all universal properties are of equal importance for this view of language. There may well be properties all languages share that have no relevance to the goal of explanatory adequacy (that is, the goal of discovering the workings of the innate language faculty). For example, it is very likely that every language has a word meaning what the English word *mother* means. This fact is most likely to be explained in terms of human needs: mothers are biologically and psychologically very important in all human cultures, and languages tend to have words for referring to things that are important to language users. Although this putative universal tells us something profound about human nature, it tells us nothing about the language faculty, so it is not a significant fact in the approach to universal grammar that pursues the goal of explanatory adequacy.

(5) **SYNTAX IS FORMAL.** Another crucial aspect of Chomsky's view is that language is represented in the mind, and to be studied by the linguist, as a formal system. There is a potential source of confusion here in the use of the term *formal*. This is a position on the NATURE of LANGUAGE, and it is important not to confuse it with the methodological principle that THEORIES of language should be framed in some interpreted formal system. The latter sense of the expression *formal syntax* has to do with what counts as a useful theory, and is entirely independent of the nature of language. In principle, one could have a fully formalized theory of language that described language in terms of communicative function (there is no such theory at present, but that is beside the point—there could be such a theory). The essence of the former sense of *formal syntax* (sometimes referred to as *the autonomy of syntax*) is that principles of syntax have to do just with matters of linguistic form, and are independent (in the mind, hence also in the correct theory) of matters of meaning or communicative function. This is not a methodological point, it is a position (possibly incorrect) on the facts. Obviously the primary function of language is for communication. At some level of description, at least in a theory of linguistic performance, there must be principles of language use framed in terms of notions like purpose, intention, belief, communicative act, presupposition, and so on. Nonetheless, the standard position on syntax is that its description can be given purely as a matter of linguistic form, with no use of communicative/functional terms like those just mentioned. If it should turn out that our mental representation of syntax is in terms of properties of meaning and communicative function, then the formal view of language is wrong, and over the years a number of linguists have argued for exactly this conclusion. So far, though, their arguments have not been persuasive enough to win many converts.

(6) **KNOWLEDGE OF LANGUAGE ITSELF IS MODULAR.** Consistent with the modular view of mind, the standard position on grammar (i.e., the mental representation of language) is that it too is subdivided into components (which, of course, may interact in complex ways in performance). To a certain extent these components correspond to the traditional division of grammatical study into phonology, lexicon, morphology, syntax and semantics. The syntactic component itself is divided into various subcomponents consisting of different sorts of rules or principles. But there is disagreement on where the boundaries are; is the passive construction, for example, best described in the lexicon, or in the syntax? If in the syntax, by base rules or transformation? Theoretical controversies of this sort are common, and can be of crucial importance, since they often relate directly to hypotheses of universal grammar.

In this view of language, then, it is the human mental representation of language—a grammar—that is the object of study. Part of the linguist's task is to infer what the form and content of this mental representation are—to construct a model of the mental representation, the linguist's grammar—and by various means to construct a theory to explain why the grammar has the properties it has, and how it could be learned, by forming a theory of the innate language faculty. But, consistent with the modular view of mind, it is assumed that the grammar does not give a complete account of linguistic behavior. Such a complete account requires understanding other parts and functions of the mind, and how they interact with knowledge of language.

1.2 Pernicious Metaphors

From its earliest days, the exposition of generative grammar has been permeated with metaphors that represent it in terms of procedures. These have misled generations of students into believing it is something it is not, nor was ever intended to be.

The granddaddy of them all is the central term **generate**. Borrowed from a metaphorical use in mathematics, this term means no more (and no less) than 'describe', 'define', 'give an explicit account of' or 'analyze'. Thus the formula for the graph of a circle:

$$(x-a)^2 + (y-b)^2 = c^2$$

generates (i.e., describes) a set of circles in a plane defined by the x and y axes, a potentially infinite set, depending on the values assigned to a and b . Construing the formula this way, it says that certain objects, ones fitting the formula, are circles, and (implicitly) everything else is not. The formula is not a circle-producing machine; it doesn't produce circles, it only defines them.

Likewise, a grammar is just a set of statements that define a set, possibly infinite, of sentences of some language.¹ We say that the grammar generates that set of sentences, but by that we don't mean that it is a device for producing sentences. Nonetheless, many novices in the field labor for some time, consciously or unconsciously, under the false impression that a generative grammar is a model of a sentence-producing device, and are often dismayed at the idea of surface filters, which they understand as jettisoning a derivation on the basis of some property of the final form in the derivation. Their dismay is based on the feeling that it is somehow inefficient to go to all the work of building up a derivation according to the rules of the grammar, only to have the

¹Syntactic theories that are of any interest at all also assign structural descriptions to the sentences they generate; that does not affect the point we are making here.

whole business discarded due to some surface filter. But this feeling comes from confusing *grammar* and *algorithm*, and on a thorough misunderstanding of what a classical phrase-structure derivation in a transformational grammar is: it is not a set of processes, but a set of abstract relations, more like the definition of a circle. There is no work involved, and no implication that anyone or anything actually builds up derivations and then throws them out; the only claim is that the derivation is not one that characterizes the structural description of a well-formed sentence of the language.

It is no wonder that such misinterpretations are common, because there is a whole host of metaphors that syntacticians have used that reinforce this kind of mistaken interpretation. They have talked about a transformation (itself a pernicious metaphor) "applying" to a phrase-marker, to "change" it into another, of a rule "operating" on some structure as "input", "to yield" some other structure as "output". They have used action nominalizations to speak of the transformational "operations" of deletion, insertion, and substitution as processes. They talked about the way a transformational rule relates one phrase-marker to another as a "structural change". All of these metaphors imply that the objects being related are concrete objects that exist in time, and have a spatial orientation to boot. Talking about "leftward movement" and the "right-hand" side of a rule is only an abbreviatory convention that takes advantage of our (arbitrary) Western convention of writing from left to right, but it reinforces the mistaken notion that syntactic derivations, like phrase-markers, are spatially oriented objects, built up by a grammar, when in actuality they are merely statements of relation and category membership of syntactic structures.

In addition, the term *derivation* has been used in a way that implies that strings or phrase-markers are derived from strings or other phrase-markers (or in unforgivably sloppy expositions, that sentences are derived from other sentences), and that there is an orientation (usually from deep to surface structure) to transformational derivations. But nothing could be farther from the intended meaning of *derivation*, as stressed by both Chomsky (1971) and Lakoff (1971). A transformational derivation is simply an ordered² set of phrase markers

$$\langle P_0, \dots, P_n \rangle$$

such that P_0 is the structure generated by the base rules and P_n is the surface structure, and for every pair $\langle P_i, P_{i+1} \rangle$ in the derivation, there is a transformational rule saying exactly how P_i and P_{i+1} correspond; for a derivation to

²Ordered only in a logical sense, e.g., the non-spatial, non-temporal sense invoked in set theory; these metaphors are ubiquitous.

be well-formed, all such pairs must be well-formed. For example, the topicalization rule needed to describe sentences like *Beans, he won't eat* can be seen as a rule that says that if a derivation contains two adjacent structures that are identical except that some NP with certain characteristics is embedded within P_i , while in P_{i+1} the corresponding NP is Chomsky-adjoined to the left of some S it is embedded in, then the pair P_i, P_{i+1} is well formed. Thus, transformations define classes of well-formed pairs of phrase-markers in derivations, and have a **filtering** function in excluding from the set of derivations describing the sentences of the language, all possible derivations with ordered pairs of phrase-markers which do not meet the conditions of some licensing rule or rules.

Derivations do not exist in time or space, so such notions as the beginning or end of a derivation, and the direction of a derivation (from deep to surface, or vice versa) are simply meaningless, except as metaphors for more correct (and less intuitive) mathematical notions. A derivation is a logically ordered set of relations $\langle \langle x_i, x_j \rangle, \langle x_j, x_k \rangle, \dots \langle x_m, x_n \rangle \rangle$, not a process. As a consequence, claims to the effect that properties of surface structure play a distinctive role in determining the semantic representation (where semantic representation is a stage in a derivation) are entirely equivalent to claims that properties of semantic representation play a distinctive role in determining properties of surface structure. Both say only that there is a significant relationship between semantic representation and surface structure—hardly a novel idea. Neither says anything about how speakers produce sentences; it remains an entirely open question how grammars are utilized in the production and comprehension of language.

Given the correct understanding of what a derivation is, the following dictum, commonly invoked in the 1960s and 1970s, is meaningless:

“Transformations cannot/do not/should not change meaning.”

The idea of a meaning *changing* within a derivation is completely incoherent. A single derivation relates one surface structure to one meaning (strictly: to one semantic representation). The intended sense of the injunction is just this: if two sentences have the same deep structure, then they must have the same semantic representation.³ If the meaning that informants impute to a surface structure does not match the meaning assigned to it by the grammar, it means that the grammar has incorrectly assigned the meaning (or the surface structure), not that it has changed the meaning.

³Not all linguists held this position; Chomsky (1971) and Jackendoff (1972), for example, did not. The converse, that if two surface structures have the same meaning, they must have the same deep structure, does not hold, by the way: they might have non-identical, but semantically equivalent semantic representations.

We have mentioned some of the metaphors that (misleadingly) imply that a derivation is a process. Many of them further (and perhaps more misleadingly) imply that the process is a controlled and manipulated one. Inferences along these lines arise from the mistaken notion that a grammar generates sentences in more or less the same way that General Motors manufactures automobiles. Not only do we find linguists saying that some rule operates or applies, we find some saying things like “we [linguists? speakers? grammar-operators?] apply Rule X to derive Phrase-marker_n ...” or “we must apply Raising before Passive to get the correct result” and so on. This implies a model of the grammar as a sentence-producing machine, as if one dropped in a nickel and a sentence popped out below.

The notion of a rule of grammar under this interpretation of what a grammar is is equally distorted. The term *rule* gets misinterpreted as ‘injunction’:

“Move an NP from after V to subject position.”

“Move anything.”

or process:

“A post-verbal NP becomes the subject of that verb.”

“Anything moves anywhere.”

or (especially pernicious) as a tool:

“We can then use Passive to put the NP in subject position.”

“We can then use Move-Alpha to move the NP into a governed position.”

But it has always been the case that the intended sense of *rule of grammar* is simply ‘statement of regularity’: a transformational derivation was well-formed if the members of every pair of phrase-markers adjacent in the derivation were related by some rule of grammar, that is, if some specified relationship held between them. Thus, a so-called “NP-movement rule” merely says that two adjacent phrase-markers in a derivation are a well-formed pair if they are identical except that in one there is an NP in a certain position, and in the other there is no NP in that position, but there is a corresponding NP in some other (specified) position. Unfortunately, most linguists use the misleading metaphorical abbreviations without thinking about them. It is worth the effort not to use them.

The notion that transformational rules are “obligatory” or “optional” also reinforces the incorrect notion that rules are processes. When we say that a certain rule is obligatory, we don’t mean that some process must change some

phrase-marker in some way, but rather, that if a derivation contains a phrase-marker that meets the structural description of that rule, then the derivation will be well-formed ONLY IF some phrase-marker with that description is adjacent in the derivation to a phrase-marker corresponding in the way specified in the rule.

When we say that a certain rule is optional, we don't mean that a linguist or language-user can freely choose to exploit it or not, but rather that a pair of phrase-markers is well-formed IF the first meets the structural description of the rule, and the adjacent phrase-marker corresponds to it in the specified way. If every pair is well-formed, then the derivation is well-formed. But a derivation which is identical, *mutatis mutandis*, except that it does not contain any pair described by that rule will also be well-formed.

In fact, a speaker's choice of sentence form may be influenced by any of a number of matters, both syntactic and non-syntactic (see Chapter 2, Section 3 for some relevant discussion). For example, Extraposition has been described in terms of an optional transformation, which is to say that two derivations that differ only in whether Extraposition relates two adjacent phrase-markers in it are, all other things being equal, both well-formed derivations. But a derivation in which Extraposition relates two adjacent phrase-markers may nonetheless either entail or preclude violation of some other principle, for example a surface filter (see Ross 1967 for some examples).

Likewise, a transformation could be syntactically optional, yet make a difference in appropriateness. For example, Topicalization is commonly considered to be an optional transformation. But topicalized sentences are subtly different from their non-topicalized counterparts in discourse appropriateness. The difference has to do with poorly understood matters of topicality, focus, and contrast (cf. Ward 1985), as illustrated in examples like the following, where uttering (1) suggests that there are people the speaker is crazy about, while uttering (2) lacks this suggestion.

1. This man I'm not crazy about.
2. I'm not crazy about this man.

As a consequence, even though the transformation involved is optional, the speaker's choice between the two is not free,⁴ but depends on subtle matters of discourse context. This does not constitute evidence against the claim that Topicalization is optional, since optionality is a purely syntactic notion

⁴We don't mean to imply a stricture on free will, only that choosing to say one sentence instead of the other may lead to misunderstanding, like any other violation of the ground rules for rational discourse. Speakers are of course free to speak in knowing inconsistency with such rules, but at a cost. To know the rules is to know the cost.

having to do with syntactic well-formedness; it has no implications whatever concerning free choice in performance.

A more helpful model of a rule of grammar might be that of a filter or sieve: a grammar is a (complex) set of well-formedness conditions (on underlying structures, derivations, surface structures, or whatever). These conditions distinguish derivations or structures that describe sentences of the language, from potential (but ill-formed) ones that don't. Indeed, various components of the grammar have been spoken of as filters since at least 1965 (Chomsky 1965, McCawley 1968a, Perlmutter 1971, Chomsky and Lasnik 1977). The notion that the grammar as a whole should be considered a sort of filter has gained widespread acceptance, and is explicit in Generalized Phrase-Structure Grammar (GPSG) and Head-Driven Phrase-Structure Grammar (HPSG). But even as this conception becomes more commonplace, there will be those who will want to understand filters as culling machines, and we will again have to wrestle with metaphorical interpretations of *grammar* as a device which a speaker operates in order to talk.

In any case, all of the following expressions and constructions contribute to the misunderstandings fostered by describing relations in procedural terms, and it is a useful exercise to scrupulously avoid them.

- CONSTRUCTION METAPHORS: *produce, make, build, procedure, process, level*; purpose infinitive
- REWRITING METAPHORS: *rewrite to, go to, replace, derive*
- TRANSFORMATION METAPHORS: *change, transform, render, turn NP into, copy, delete, insert, add, move, put, invert, re-order, mark, "star"*
- OPERATION METAPHORS: *return, yield, give, input, output, operate, apply, use, assign*
- TEMPORAL METAPHORS: *then, next, later, after, before; beginning, end*; perfect aspect

It is actually surprisingly easy to reframe such descriptions in more declarative terms with such expressions as: *correspond, consist of, contain, instantiate, license, allow, describe* and *be*.

1.3 Some Common Criticisms of Generative Grammar

At the root of all of these natural misinterpretations of the metaphors of generative grammar is often the (mistaken) assumption that a grammar is

intended as a model of the native speaker's speech processes. This is a common interpretation of generative grammar, in spite of the pains taken by Chomsky and many others to make it clear that it is not a correct interpretation. A grammar represents (or models) what native speakers know about their language that allows them to correctly pair representations of sentences with meaning representations. It is not intended to account for how speakers actually produce sentences which they intend to convey particular notions than a theory of motion is intended as instructions for getting from Boston to Chicago. Thus, grammars are intended to represent the principles that the language learner learns, and the adult native speaker knows, which define the set of well-formed sentences of a language and associate with each sentence one or more structural descriptions. How these principles are employed in actual language use on particular occasions is not well understood, despite occasional claims to the contrary.

Critics of generative linguistics sometimes take this separation of **competence** (the principles of grammar) and **performance** (methods of employing competence in the use of language) as an argument against the generative approach. Such criticisms usually involve one of five common complaints:

- (1) that the identification of grammar with principles of performance is the most reasonable hypothesis *a priori*, and the burden of proof is on whoever proposes the separation of competence and performance
- (2) that a distinction between competence and performance is counter-intuitive
- (3) that any theory with such a separation is flawed in principle
- (4) that a theory with such a distinction is *a priori* inferior to a theory without it
- (5) that a theory with such a distinction necessarily fails to give a complete account of performance, therefore is incomplete, hence flawed.

Criticisms (1) through (4) are *a priori* arguments, not based on any kind of empirical consideration. We know of no reason to take any of them seriously. For the linguist, the nature of human language is a scientific question, not a philosophical one, so *a priori* arguments have little relevance. In regard to (2), even if one agrees with the judgement that the competence-performance distinction is counter-intuitive, the argument is not persuasive. Scientific theories often contain counter-intuitive hypotheses of great explanatory power. Physics is full of them. There is no reason why psychology should be free

of them. Besides, it is not obvious that the present case is all that counter-intuitive, if we consider other cognitive abilities, even regarding something as unlike language as chess. Nobody would deny that most chess players learn chess by first learning the rules of chess. But the rules of chess clearly do not constitute a set of computational steps to be applied in playing chess, or instructions to the fingers for moving a particular chess piece from one place to another, let alone a strategy for winning at chess. The rules merely define possible chess moves, possible chess games, what counts as a win, a stalemate, and so on. How human players employ their knowledge of the rules in picking up and putting down pieces, evaluating moves, planning winning strategy, and so forth, is a fascinating study. But it is clear that they don't employ the rules of chess as an algorithm, as defining steps in mental computation. There is a distinction to be made between the rules of chess that every player knows, and whatever mental structures players acquire that allow them to use the rules to do the playing.

The third argument also has no force, since the question is not a matter of logic, but of fact, an important point that is often overlooked. The generative position is that the competence-performance distinction is a reflection of the structure and organization of the minds of members of a particular biological species. So it is a position on what the facts are, not a position on epistemology, logic, or other *a priori* matters. It is a position that may well be incorrect; but the only relevant objections are those that attack it as a scientific theory. There is certainly no *a priori* reason to believe that it is either more or less plausible than its opposite.

The fourth objection has no force for the same reason, since it too is an *a priori* objection, unless it is based on the proposal of a theory that is (a) as successful empirically as generative grammar but (b) does not incorporate the competence-performance distinction. So far no such theory has been proposed in any form more concrete than a wish list. There have been some vague proposals with property (b), but none that combine (a) and (b).

The fifth objection is really a restatement of the second. It too misses the point that the failure of generative grammar to give a complete account of performance is not an embarrassing oversight, but a conscious, considered position on the facts, a natural outgrowth of the modularity position, and the only relevant objection to it is one that is based on empirical evidence or on showing that there is a serious alternative theory that includes no competence-performance distinction. So far there is no such serious alternative.

Such objections may be based on the further misconception that the modularity position implies a corresponding processing order; that is, the hypothesis

that grammar can be subdivided into phonology, morphology, syntax and semantics is often taken to imply that processing necessarily proceeds in a similarly compartmentalized fashion. For example, the modularity hypothesis is often taken to imply that in understanding a sentence the mind first carries out a complete phonological analysis, which in turn provides input to morphological processing, that in turn to syntactic processing, and the complete syntactic analysis is performed before any semantic analysis begins. This **bottom-up** view of things is certainly counter-intuitive and implausible (though it could conceivably turn out to be correct), but that is irrelevant, since it is in fact not implied by the modular view of language. Just how the various modules interact in performance is an open empirical question, and in the absence of a theory of exactly how they interact, and how the mind works, questions of computational simplicity are irrelevant. And if it should turn out (as we suspect it will) that modules interact in very complex non-bottom-up ways in processing, it would not be a disconfirmation of the modularity hypothesis: modularity does not imply bottom-up processing.

In sum, the position embodied in the competence-performance distinction is not a matter of logic but of what the biological and psychological facts are, and *a priori* arguments are irrelevant. There is nothing illogical, incoherent, or even implausible about the distinction, though it is certainly possible that it will turn out to be wrong. But that has not yet been shown.

2 TOPICS AND HYPOTHESES

The purpose of this chapter is to draw out and make explicit what working syntacticians know but rarely discuss. The basic principles of the analytic enterprise that are explicated here, and the principles of assembling and presenting arguments for or against particular hypotheses (i.e., evidence) that are the subject of Chapter 3 should not vary from one framework to another; what varies and changes is 1) particular assumptions about various phenomena, 2) assumptions about the inventory of elements supposed to be universal, and 3) the importance attached to particular assumptions. The approach to analysis and argumentation presented here is appropriate to any syntactic theory, indeed to most rational inquiry.

2.1 The Problem of Grammatical Analysis

There are two sorts of activities that syntacticians engage in. One is the construction and evaluation of syntactic theories at a fairly abstract level, independent of detailed analyses of particular languages. There are a number of linguists who do this, some who do it exclusively. The second sort of activity that engages syntacticians is detailed grammatical analysis of data from one or more languages, sometimes for the purpose of testing predictions of some syntactic theory or hypothesis, but sometimes for purposes of description. In practice, the two sorts of activities are interdependent: it is impossible to articulate a description of a language without making some assumptions about what languages are like (that is, without adopting some syntactic theory), and it is impossible to test a theory of what languages are like without examining particular languages in detail. Likewise, it is impossible to argue for the correctness of an analysis without making some assumptions, which constitute a minimal theory.

The problem of learning to do syntactic analysis, then, is not so much a matter of learning a theory and techniques for describing new bodies of data in the terms it defines, as it is a matter of learning how to test and compare analyses, in order to be able to demonstrate reasons to accept one's own