Introduction

The goal of this *Handbook* is to provide an overview to researchers and students about the current state of research in syntax, a difficult but not impossible task because the field of syntax is not monolithic: there are schools of thought, and areas of disagreement, but there are also shared assumptions among many schools of thought which we shall try to bring out below.

We decided to follow the twin paths of ecumenicalism and comprehensiveness of empirical coverage by focussing on areas of grammar for our coverage, rather than particular frameworks, of which there are several (Government Binding, Minimalism, Categorial Grammar, Lexical Functional Grammar, Head Driven Phrase Grammar). We intended no slight to these approaches and indeed while most of the chapters in this volume are written with a Minimalist/GB orientation (but not all of them), we would hope that the observations and analyses could serve as a point of departure for investigators in other frameworks.

When we first agreed to edit the *Handbook of Contemporary Syntactic Theory* for Blackwell, we did so in order to convey to others, both in and out of the field of syntax, the fascination that we constantly feel on an almost daily basis about how restricted syntactic systems, the systems of natural language that are responsible for the construction of sentences, are in comparison to what they could be. This emphasis, and its proper characterization, have been at the foreground of syntactic research since the 1960s, when Chomsky, in 1962, noticed the following restriction on the formation of constituent questions (Chomsky 1962). Sentence (1) is ambiguous; under one interpretation, the man is in the room, and on the other, the prepositional phrase *in the room* is an adverbial modifier of the verb *see*:

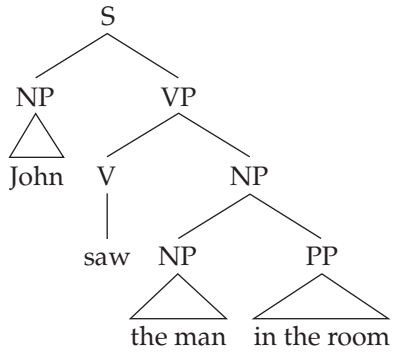
(1) John saw the man in the room.

Questioning the prepositional object of *in*, however, removes the ambiguity. Only the latter interpretation of the PP is possible:

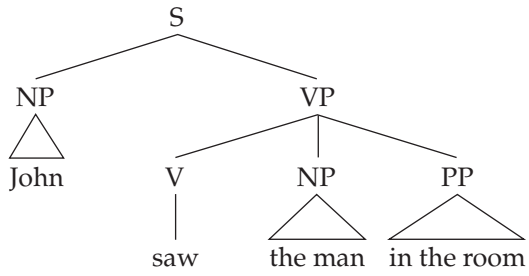
(2) Which room did John see the man in?

There is a great deal of evidence that sentences are structured into constituents, or groups, and the representations of such groupings are termed phrase-markers. Hence, (1) would have two distinct phrase-markers, roughly (very roughly), as in (3):

(3) a.



b.



In these structures, NP stands for noun phrase, VP for verb phrase, and PP for prepositional phrase. Chomsky's restriction was that processes such as the one for forming constituent questions cannot move elements out of larger elements of the same type, so that, e.g. an NP could not be moved out of an NP. This constraint was dubbed the A-over-A Constraint. Subsequently, Ross (Ross 1967a) demonstrated that the A-over-A Constraint was both too strong (ruling out movements that are perfectly fine) and too weak (allowing movements that result in unacceptability). Since that time, a large amount of research has unearthed even more such restrictions (for example, Perlmutter 1971, Postal 1971, Chomsky 1973, 1981, and many others).

In fact, on an extremely regular basis, syntacticians notice that an otherwise general process does not occur in a given instance. If one looks at traditional grammars, such as Curme (1931) or Jesperson (1946), one finds no mention of such restrictions. Much of the reason for this lack of emphasis, we suspect, lies with the primary method of gathering the data for syntactic analysis, which was essentially philological in nature, i.e., the examination of texts. If

one's method of collecting data is observation rather than experimentation, one's primary focus, although not inexorably, will be on what one actually encounters, and one would have to be somewhat cautious about the absence of certain expressions. The introduction of introspective data into the battery of techniques that linguists use to do syntactic analysis has allowed greater confidence in the judgment that certain expressions are absent because they are unacceptable, rather than fortuitously missing in a certain corpus of data.

However, we suspect that an equally compelling reason for the current emphasis in syntactic analysis on constraints lies in a shift in the view of how to do research. The view of philosophy of science that guided pre-Chomskyan structuralist linguistics was that scientific theories were formulated inductively, and hence, abstract linguistic principles emphasized the formulation of procedures of data analysis, with no pre-judgment of what the results of those procedures would be (Wells 1947, Harris 1951). In short, the theory of grammar, Universal Grammar, was just those procedures. Under such a view, one would not view certain results as being expected or unexpected. It is only when one has certain expectations about the system itself, the end result of analysis, that one views divergences from this system as being noteworthy and requiring explanation.

So, to return to the missing interpretation of the question in (2), it is surprising for the following reason: we assume that grammatical rules operate in the simplest, least-specified manner possible. Some initial evidence for the correctness of this assumption is the acceptability of fronting a *wh*-phrase from a position that is apparently indefinitely far away from the position in which it ends up, as in (4):

(4) Who did John think that Bill claimed that Mary suspected that everybody liked__?

The fronted *wh*-phrase, interpreted as the object of *liked*, starts out within a clause that is embedded within a clause that is three clauses down from the root of the sentence. If we assume, on the basis of data such as (4), that *wh*-fronting occurs from any position relative to the one in which it ends up, the missing interpretation in (2), which corresponds to the impossibility of *wh*-fronting a noun phrase from within a noun phrase, becomes paradoxical. The point that we would emphasize, however, is that the noteworthiness of this restriction, and indeed all such restrictions, is made in the context of the theoretical assumption that grammatical rules operate in the simplest, least-specified manner possible. Without this assumption about what grammatical processes should be, everything is equally expected.

We could go on and on with such examples. To take just one more case, consider the interpretation of the negative following the modal *could*:

(5) John could not visit Sally.

Sentence (5) could mean either that (a) it is not the case that John is able to visit Sally; or (b) John could refrain from visiting Sally. Notice that (6) could only mean (b) and could not mean (a):

(6) What John could do is not visit Sally.

Negatives can contract in English casual speech, and when we contract the negative in (5), the result is (7):

(7) John couldn't visit Sally.

We note, again, that (7) is more restricted in its interpretation than (5) is (we say "again" to note the parallelism with (2), the case of constituent questions); in this case, (7) can only mean (a), and not (b).

How do we make sense of these facts? Many linguists, following Klima (Klima 1964) and Jackendoff (Jackendoff 1969), distinguish two kinds of negation (see Zanuttini's chapter in this volume), which are termed sentential negation and constituent negation. The scope of sentential negation, as the term implies, is the entire clause, while the scope of constituent negation is the phrase in which the negative occurs. The (a) interpretation of (5) is one in which the negative element is an instance of sentential negation, while the (b) interpretation is one in which the negative is an instance of constituent negation, in this case modifying the verb phrase. The standard analysis of sentential negation, following Pollock (Pollock 1989), has the negative occurring outside the verb phrase. Examples such as (6), in which the negative must be constituent negation, are most naturally analyzed as instances in which the negative is a modifier of the verb phrase, occurring within the verb phrase. We would then have to say there is some restriction on contracting a negative that occurs as a modifier within the verb phrase, and Baltin (Baltin in preparation) relates this restriction to a restriction on the occurrence of inflected prepositions in Modern Irish (McCloskey 1984).

These are but two examples of restrictions on grammatical processes, and the introduction to a handbook is not the place to simply catalogue such restrictions. However, we would note that the examples indicate that grammatical processes such as *wh*-fronting and negative contraction must refer to constituent structure, rather than simply linear order. Given that constituent structure is not directly present in the sentences to which we are exposed, it is difficult if not impossible to see how constituent structure could be learned. Therefore, the structure-dependence of such rules is, as Chomsky (1975) observed, an argument for innate principles of language.

We would observe that innateness has its critics (Elman et al. 1995), but we would argue nevertheless that any theory of, e.g., language acquisition or language processing – indeed, any account that requires an account of what language is – must now take into account the huge amount of research since the mid-1960s or so into the nature of the structure of language, and the

picture that emerges is of a system that is quite restricted in its nature. A great deal of research was initially devoted to the simple observation of these restrictions, given their lack of note in previous syntactic research, but since the late 1970s or so there has also been a more theoretical emphasis on the proper characterization and the nature of such restrictions. How are they encoded into Universal Grammar? Ross's dissertation (Ross 1967a) was a monumental achievement in the observation of syntactic islands, such as the Complex Noun Phrase Constraint, the Coordinate Structure Constraint, the Left-Branch Constraint, etc. However, it is extremely implausible to believe that the theory of grammar has, in addition to phrase-structure rules, phonological rules, transformations, etc., which operate in the grammar in its constructive sense, a set of diverse stipulations as to where the "normal rules" cannot operate, and indeed, following the appearance of this work, much research was devoted to attempting to unify these constraints (Chomsky 1973, 1986b, Cattell 1976).

Indeed, Gazdar, Klein, Pullum, and Sag proposed a model of grammar (Gazdar et al. 1985) whose account of unbounded dependencies such as those in (4) would account for the fact that such dependencies cannot occur out of adjuncts, as noted by Cattell (1976) and Huang (Huang 1982), but in a way that does not need to stipulate this fact, and has it follow from the basic mechanisms of their grammar. An example of this restriction is given in (8):

(8) *Who does John visit Sally because he likes__?

While their account is ultimately untenable because it blocks extraction of adjuncts, as in (9), as well as extraction from adjuncts, it is noteworthy as an attempt to eliminate separate stipulations in the form of constraints, and to have the restrictions be theorems of the basic mechanisms of grammar; exactly the right move in our opinion:

(9) Why did John leave?

We have tried to provide an overview, in this introduction, of what syntax looks like today. It is fitting, we feel, to quote from the scholar who, more than anyone else, has made syntax what it is, in the work that revolutionized this field:

> The search for rigorous formulation in linguistics has a much more serious motivation than mere concern for logical niceties or the desire to purify well-established methods of linguistic analysis. By pushing a precise but inadequate formulation to an unacceptable conclusion, we can often expose the exact source of this inadequacy, and, consequently, gain a deeper understanding of the linguistic data. (Preface to Chomsky 1957)

In short, by taking seriously the idea that a grammar is a formal theory, with mentalistic embodiment, we can ask precise, testable questions about the nature of some very interesting things, such as the human mind, in a way that would have been meaningless even in the late 1930s.

Given this background, we will now summarize the chapters contained in this *Handbook*. All syntactic theories recognize that syntax makes infinite use of finite means, but there is a fundamental distinction between theories as to how this is done. Some theories postulate a derivational approach, where structures are built incrementally by various operations (such as Merge and Move in the Minimalist Program). In other theories, structures are taken as given, and they are evaluated with respect to various conditions. The issue of derivation versus representation has proved to be one of the most elusive and difficult to settle in syntactic theory. Even researchers who otherwise adopt very similar sets of assumptions will differ as to whether they consider syntax to be derivational or representational.

In part I, Howard Lasnik shows that even within the assumptions of the Minimalist Program, it is often a subtle matter to determine if some condition should be stated derivationally or representationally. Chris Collins assumes a derivational theory and shows how many syntactic constraints can be viewed as economy conditions which guarantee that operations, derivations, and representations are minimal. Joan Bresnan assumes the representational framework of Optimality Theory syntax, and shows how various morphosyntactic facts can be given a natural treatment. Lastly, Luigi Rizzi's paper largely assumes a representational treatment of Relativized Minimality (as a condition on Logical Form), but makes some comparison to the derivational treatment of similar facts by Chomsky (Chomsky 1995b).

All theories assume that syntactic theory must account for dependencies of the kind in (2), where a constituent seems to be displaced from the position where it is interpreted. In part II, Ian Roberts takes up the issue of head movement of elements such as nouns and verbs. Akira Watanabe's chapter shows that the phenomenon of "*wh*-in-situ" is not a unitary phenomenon, with certain languages showing movement characteristics of question words that superficially remain in place, while other languages do not. This issue raises interesting learnability problems (for which see Janet Dean Fodor's chapter in part VI). Mark Baltin compares a wide variety of theories which differ in their analysis of what, in Government Binding Theory/Minimalism, is treated as movement to argument positions (A-positions). Höskuldur Thráinsson gives an overview of object shift and scrambling, and discusses how these movement types fit into the A/A' distinction.

In recent years, there has been an increased emphasis on reducing the role of a heavily specified primitive phrase-structure component. In part III, Jeffrey S. Gruber's chapter considers the nature of thematic relations, their expression in lexical representations, and the correct account of their linking with syntactic positions. John Bowers examines various theories of the syntactic expression of the predication relation and presents additional evidence for the existence of a Pred Phrase. Hiroyuki Ura's chapter discusses a universal theory of Case and the structural conditions for the realization of Case, arguing, within a principles and parameters approach, that Agr projections are not necessary for Case-checking (but see Adriana Belletti's chapter in part IV for a different

point of view). Naoki Fukui's chapter shows what is meant by the idea that phrase structure rules – the rules that generate initial syntactic structures – can be eliminated, and how the work that is done by phrase structure rules can be accommodated with other devices. Mark C. Baker argues that the source of apparent non-configurationality can differ in different languages. In Japanese, movement is the source of non-configurationality, while in Warlpiri, it is claimed that the apparent arguments are really adjuncts. Kyle Johnson's chapter considers the twin problems of VP-ellipsis: the characterization of the licensing environments and the nature of the elided VP. He argues that null VPs are not silent pro-forms.

An important thread in current formal syntactic research is the existence of non-lexical, or functional, categories. In part IV, Raffaella Zanuttini considers the cross-linguistic generalizations that can be made about the categorial status and syntactic position of negation. Adriana Belletti reviews the evidence for AGR projections, and concludes with some comments on the attempts by Chomsky (Chomsky 1995b: ch. 4) to dispense with Agr projections in favor of multiple specifiers of a v ("light verb") node. Two of the chapters in this part, Judy B. Bernstein's and Guiseppe Longobardi's, consider the evidence that nominals are in fact determiner phrases, as proposed by Abney (Abney 1987) and Brame (Brame 1982). Adopting complementary evidence, they argue for additional structure within nominal phrases. Judy Bernstein explores the parallels between nominal structure and clausal structure with respect to head movement. Giuseppe Longobardi argues for the existence of PRO within noun phrases, a position also argued for in Baltin (1995).

The next part deals with the interplay between syntactic structures and semantic phenomena, principally anaphora and the scope of logical operators. Anna Szabolcsi considers the role of syntactic structure in establishing the relative scope of logical operators, comparing various treatments of "inverse scope," in which a superficially less prominent logical operator takes scope over a more prominent one. Martin Everaert and Eric Reuland discuss the role of syntactic structure in the determination of coreference, and the question of whether coreference is fully determined by the grammar. Andrew Barss's chapter deals with the optimal treatment of reconstruction, the phenomenon by which moved elements are interpreted as though they were in their pre-movement positions. He considers various analyses of the well-known asymmetry between moved predicative phrases and non-predicative phrases.

An important piece of the evidence in the evaluation of a grammar is its fit with domains which require the formulation of a grammar. In part VI, Anthony S. Kroch examines the way in which synchronic syntactic theory can inform and be informed by an account of possible syntactic change. Janet Fodor's paper explores the mechanisms by which children would have to be said to set the parameters of grammar variation that are posited by many linguistic theories.

This should give a flavor of this volume. We have undoubtedly offended many who would have chosen a different set of topics, but we would hope that the volume is comprehensive enough to serve a wide community.