Part I

Background

1

Introduction

Marcel den Dikken

1.1 The handbook of generative syntax: aims, structure, and scope

1.1.1 Aims

The Cambridge Handbook of Generative Syntax is designed to be a handbook in the truest sense of the term. To optimally meet this standard, the handbook provides (i) a historical context for what is happening in the field of generative syntax today, (ii) a survey of the variety of generative approaches to syntactic structure available in the literature, (iii) an overview of the major lexical and functional categories and their syntactic projections, (iv) a detailed presentation of the principal modules of generative syntactic theory, (v) an investigation of the interfaces between syntax and other domains of linguistic and psychological inquiry, and (vi) a discussion of linguistic variation. The handbook aims to provide the reader with a comprehensive survey of the field of generative syntactic research in all its variety, written from the perspective of the synchronic state of the art but also reviewing the historical roots of current generative syntax and providing a proper sense of the range of syntactic theories calling themselves generative.

The book is not intended as a *tabula rasa* introduction to generative syntax. Basic knowledge of generative linguistics is presupposed. The typical audience will include advanced undergraduate students and professional practitioners of linguistics as well as researchers in neighboring fields of academic inquiry. Though the book is centered exclusively on generative approaches, it does not concentrate uniquely on the Chomskyan mainstream but also includes discussion of other generative perspectives. Non-generative linguists should find at least some parts of the book of interest and accessible as well, although, inevitably, the discussion in the more specialized chapters is sometimes rather technical in nature. Though the individual chapters of the handbook have been written

separately, by specialists on the topics addressed, the often quite intimate connections between the various chapters have been brought out by the many cross-references to related sections of other chapters throughout the book. In conjunction with the detailed subject index, these cross-references should make it easy for readers to find more information on specific topics within the handbook itself.

While the handbook is rich in empirical detail covering a broad range of different phenomena from a wide variety of the world's languages, the book's primary focus is the *theory* of generative syntax. For readers interested in more in-depth discussion of some of the empirical phemonena addressed in the handbook (say, clitic placement, the dative alternation, extraposition, secondary predication, or specificational copular sentences), the five-volume *Blackwell Companion to Syntax* (Everaert and van Riemsdijk 2006) should serve as a helpful companion to this book. In addition, the many references (collected at the end of the handbook in the general bibliography) should enable readers who would like to gain a deeper understanding of the issues addressed to find their way to the relevant primary literature.

1.1.2 Structure

The book is divided into six major parts. In Part I, the necessary background to the generative enterprise is provided. Section 1.2 of this Introduction gets down to this right away, by highlighting many of the foci of generative syntactic research and their interconnections. Chapter 2 subsequently offers a historical overview of generative syntax, and Chapter 3 looks critically at the central goals and the research methods of the field.

Part II presents five different generative approaches to syntactic structure, starting in Chapter 4 with the mainstream Chomskyan approach (Principles and Parameters theory and its most recent development, the Minimalist Program). Chapter 5 looks at the contributions that Optimality Theory can make to our understanding of syntax, with particular emphasis on the prospects of a combination of derivational (minimalist) and representational (OT-theoretic) approaches. Chapters 6, 7, and 8 present three outlooks on syntactic analysis that share the general objectives of the generative enterprise but make rather different assumptions on many central issues, including the question of whether there are movement operations in syntax or not, and if so, whether these operations do or do not proceed via a succession of intermediate steps. The frameworks included here are Lexical-Functional Grammar, Phrase Structure Grammar (GPSG and HPSG), and Tree Adjoining Grammar. (On the rationale for not including certain other generative frameworks, see Section 1.1.3.)

The focus of Part III is on syntactic structures. It reviews the generative approaches to argument structure and argument-structure alternations (Chapter 9), predication (Chapter 10), the structure of lexical categories

(Chapter 11) and of the sentence (Chapter 12), and the way in which modification relations are structurally established (Chapter 13). The role of functional projections is a central theme throughout this portion of the handbook.

With the basic syntactic structures in place, Part IV proceeds to a discussion of syntactic processes. It begins, in Chapter 14, by looking at the role played by economy considerations in the construction of syntactic analyses, investigating in tandem the roles played by economy of derivation and economy of representation, and the areas of tension between the two. Chapter 15 then examines the way in which referential dependencies are established in syntax. Though the syntactic issues presented by anaphora are intimately related to those arising in connection with raising, control, and the typology of nominal empty categories, a separate chapter (Chapter 16) is devoted to the latter set of topics, because of the complexity of the empirical and theoretical questions raised in the two contexts. Chapter 17 subsequently proceeds to study the ways phi-feature agreement and case marking can be dealt with in generative syntax. And Chapter 18 concludes this part of the handbook by presenting a detailed overview of the generative accounts of locality restrictions on syntactic dependencies, one of the most densely studied topics in the field.

The topic of Part V is the relationship between syntax and the internal interfaces: Phonological Form (articulation and perception) and Logical Form (meaning). The discussion is opened and closed by chapters addressing the sound side, with Chapter 19 concentrating on silence (in particular, the conditions under which parts of a syntactic structure get no phonological matrix assigned to them) and Chapter 23 addressing the relationship between syntax and prosody. Chapter 23 also looks at the links between syntactic structure and discourse or information structure. Other aspects of the interface between syntax and meaning are addressed in the chapters on tense, aspect, and modality (Chapter 20), negation and polarity (Chapter 21), and scope and related matters (Chapter 22).

The last part of the handbook (Part VI) brings together three chapters that look at linguistic variation, language development, and language production and processing, respectively. These chapters are placed in a separate part at the end of the book because their scope transcends the individual areas of syntactic investigation addressed in Parts III–V, and because they raise general questions about generative linguistic theory. A central topic in this part of the book is formed by questions relating to parameters, including their nature and the basis on which they are set. Chapter 24 sheds light on the important contributions that generative syntax makes to dialectology, and the last two chapters of the handbook concentrate on generative approaches to issues in psycholinguistics, with Chapter 25 addressing language acquisition and development, and Chapter 26 providing an introduction to experimental studies of sentence processing and production.

1.1.3 Scope: what is and is not included in this handbook

Though this handbook aims to provide a comprehensive survey of research in the field of generative syntax, there are, of course, limitations to what a project of this magnitude can successfully achieve. Some readers may not find their favorite generative framework covered in the book; others may be surprised to find no separate chapters dedicated, for instance, to computational linguistics, or the relationship between hierarchical syntactic structure and linear order, or the syntax–morphology interface, or diachronic syntax (i.e., studies of the syntactic development of adult languages over time, as distinct from syntactic development in children). But most readers will find discussion relevant to their favorite framework or research topic somewhere in the handbook, even if that framework or topic is not featured prominently in a designated chapter or section of the book.

The handbook is squarely and unapologetically focused on the Principles and Parameters approach to generative syntax – a focus that is entirely justified in view of the fact that the Principles and Parameters approach is the dominant paradigm in the field, and has generated the most in-depth discussion of virtually all of the issues covered in Parts III–VI. Part II reviews some of the major alternatives to the Chomskyan mainstream, but cannot aspire to exhaustiveness in this regard. Thus, although Relational Grammar (see Perlmutter 1980) played a significant role in the development of a clear perspective on argument structure and argument-structure alternations and helped unearth a wealth of data from a wide variety of languages, this handbook contains no chapter dedicated to it, nor to its offshoot Arc Pair Grammar (see Johnson and Postal 1980). Readers will find occasional references to Relational Grammar in the book, particularly in Chapter 9. Some attention is paid to Construction Grammar (see Goldberg 1995) in Chapters 3 and 7. The latter chapter and also Chapter 8 (and, in passing, Section 1.2.4 of this Introduction) mention Categorial Grammar (see Wood 1993). Chapter-length exposés of these frameworks were not pursued, not just because of space restrictions but also in light of the fact that these theories are not being practiced by a critical mass of linguists in the field today, and have not established themselves (yet) as 'mainstream.' The same rationale has led the handbook to remain silent on Dependency Grammar (an approach emanating from work done in the first half of the twentieth century by the French linguist Lucien Tesnière; various versions of this approach are around today; see Fraser 1994 for a brief overview) and the related theory of Word Grammar (see Hudson 1984, and Sugayama and Hudson 2005 for a recent collection of papers), which both represent sentence structure entirely in terms of dependencies between words and forgo phrase structure representations. These kinds of frameworks are chiefly popular among computational linguists – a constituency not served by a dedicated chapter in this book, for reasons of space; but readers interested in computational issues should

find the discussion in Section 8.7 of significant interest. This book also contains no discussion of Dynamic Syntax (see Kempson *et al.* 2001, Cann *et al.* 2005), a theory primarily concerned with time-linear processing, and Mirror Theory (developed in Brody 2001), an approach to the syntax–morphology interface which Adger *et al.* (2009) show provides an interesting perspective on ordering restrictions in so-called 'free-word-order languages.'

This leads me naturally to a brief discussion of one of the central issues in current generative syntax that this handbook has not singled out as the topic for a chapter of its own: linearization. The primary reason for not including a separate chapter on this topic is the fact that it has connections with so many of the ingredients of the other chapters, hence pops up in different places throughout the book. The placement of a complement relative to its selecting head ('VO' vs.'OV,' or more generally, 'head–complement' vs. 'complement–head') used to be encoded directly in the form of a linearization instruction inherent in the phrase-structure rules (PS-rules) of the earliest generative syntax (Chapters 2, 11) or, later, in the subcategorization frames of heads (Chapters 9, 11). With the introduction of the X-bar Theory of phrase structure (Chapters 2, 11), linear order was no longer automatically built into the phrase-structure component. The question of variation among languages (and, within languages, among constituents of different categories) with respect to linear order came to be addressed at that time with reference to word-order parameters ('head parameters') of various sorts (Chapters 3, 11, 25), some couched in terms of the directionality of thematic role assignment, others in terms of the directionality of case assignment, and yet others in terms of the directionality of government. The so-called 'Borer–Chomsky conjecture' (Chapter 25), which restricted parametric variation to the properties of functional categories, made it impossible to postulate a parameter regulating the direction in which thematic roles are assigned: theta-roles are assigned by lexical categories, not by functional ones. The Hale and Keyser (1993) program aimed at providing universal configurational definitions for thematic roles (see Section 9.6.2) further dampened the prospects of a parameterization of theta-role assignment. The introduction, in early Minimalism, of the checking theory of features rendered it impossible, furthermore, to parameterize the directionality of case assignment: case was no longer considered to be a 'mark' that was 'assigned' by some head to a nominal constituent in its c-command domain (with the directionality of case assignment potentially parameterizable), but was instead conceived of as a feature that needed to be checked against a matching feature of a nominal constituent in a particular structural configuration, either a Specifier–Head relation or Agree (see Chapter 17 for details); neither of these structural relations lends itself to parametric variation. And government, which played such a pivotal role in generative syntactic theory for some time that it even

lent its name to the title by which the theory was widely known in the 1980s ('Government and Binding Theory,' after Chomsky 1981), became entirely defunct at the dawn of the Minimalist Program (Chomsky 1995c; see also Section 17.3.2.1), closing the door on the possibility of a government-based directionality parameter.

An influential hypothesis that has informed the discussion about the relationship between hierarchical structure and linear order in recent times is Kayne's (1994) Linear Correspondence Axiom (LCA), which requires that hierarchical structures be translatable *in toto* and unambiguously into linear strings of terminals on the basis of the asymmetric c-command relationships holding between the non-terminals in the structure. Sections 2.4.2 and 11.4.2 present a brief introduction to this hypothesis, and Section 4.2.1 looks at the level at which it applies; see also Moro (2000) for an approach (dubbed 'Dynamic Antisymmetry') that exploits movement to convert underlying symmetry into surface asymmetry (recently recast in terms of the need to get unambiguously labeled structures; Moro 2009). No matter whether one accepts the particular way in which Kayne's LCA codifies the translation from hierarchical structure into linear order (this approach depends heavily on specific assumptions about X-bar structure which are rejected, for instance, in Chomsky's [1995c: Chapter 4] Bare Phrase Structure; see Sections 2.4.3 and 4.2.4.2), it is clear that current assumptions in generative syntax leave no basis on which to formulate a directionality parameter with reference to the base component, as was shown in the previous paragraph. All cross-linguistic and intra-linguistic variation in linear order must therefore be taken care of in a different way. Movement plays a central role in this. One approach would be to say that a particular movement operation that takes place in overt syntax in one language or construction fails to take place (overtly) in some other language or construction; an alternative that exploits the so-called copy theory of movement (see Section 4.2.4.1) would have it that the movement operation in question takes place systematically but in some languages or constructions it is the highest copy in the movement chain that is phonologically spelled out whereas in other languages or constructions a lower copy is realized, giving the surface impression of lack of movement or partial movement (on partial *wh*-movement, see Chapter 22). The fine-tuning of an approach to linearization in terms of the locus of copy spell-out depends in non-trivial ways on the timing of the linearization instructions given to the phonological component: Are such instructions given once only, at the end of the complete syntactic derivation, or in a piecemeal fashion, upon the completion of discrete subportions of the structure (the 'cyclic nodes' of early generative syntax, now called 'phases')? Some beneficial consequences of the cyclic approach to linearization are presented in Fox and Pesetsky (2005) and Ko (2005b), but work along these lines is still in its early stages, so no clear stand in this matter can be taken at this time.

It is difficult, in present-day generative syntax, to talk in terms of the syntax–morphology interface. The primary reason why no separate chapter of this handbook is dedicated to this interface is that, on most generative syntacticians' assumptions today, there really is no such interface: by and large, morphology *is* syntax. The Minimalist Program attributed a central role to morphological features as the driving force (or 'trigger') of syntactic operations. And the framework of Distributed Morphology (Halle and Marantz 1993) assembles morphologically complex structures in the course of the syntactic derivation (see Baker 1988 and related work for important ancestors of this approach). There currently remain some morphological puzzles that the syntax seems ill-equipped to take full responsibility for, which is why Distributed Morphology recognizes a number of morphological operations in the Phonological Form (PF) wing of the grammar (in its Morphological Structure component), including morphological merger, fission, and impoverishment of the feature structures delivered by the syntactic derivation. Readers interested in these morphological operations should consult the literature on Distributed Morphology (Harley and Noyer 2003 and Embick and Noyer 2006 are very accessible introductions to the framework). But for the most part, issues relating to the syntax–morphology interface are subsumed under the individual chapters in Parts III–V of this book, including discussions of the Mirror Principle (Chapter 12) and the morphosyntax of case and agreement (Chapter 17). For pointers to discussion of individual morphology-related matters, the index at the back of the book should prove useful.

Finally, let me say a few words about the absence of a chapter on diachronic variation alongside the chapter on dialectal variation. In the earliest days of linguistics as an academic discipline (see especially the work of the *Junggrammatiker* in late nineteenth-century Germany), the historical approach was very much at center-stage. The diachronic development of languages still plays an important role in generative syntax today, but the questions arising in the context of diachronic variation, from a generative point of view, are very much the same kinds of questions about variation that also arise in a synchronic context. A central issue in both domains is how best to deal with inter- and intra-speaker variation, and the optionality that it often comes in tandem with. Chapter 24 addresses these and other questions primarily from a synchronic point of view. But the answers it presents to them should prove relevant to those interested in diachronic variation as well.

I now proceed to presenting a continuous narrative that introduces the central themes and research foci of the generative-syntactic enterprise, establishes connections (or seams) between them, and highlights some of the issues for future research (the dreams). I hope this will frame the discussions in the individual chapters to follow, will give the reader a sense of how things hang together in this multifarious field.

1.2 The theory of generative syntax: themes, seams, and dreams

1.2.1 The beginnings of generative syntax, and its central goal

Though the European structuralist movement known as the Prague School had studied the pragmatic functions of sentence constituents in discourse in its Functional Sentence Perspective, in its early days the newly born academic discipline of linguistics generally paid little detailed attention to syntax. American Structuralism introduced rigorous scientific standards to the young field, but concentrated almost exclusively on morphophonemics; and Saussure had famously placed the sentence in his *parole*, hence altogether outside the formal linguistic system, the *langue*. But Harris (1951, 1957) recognized the need, in a structuralist theory of syntax, for three ingredients that would come to figure, in some form, in early generative syntax as well: *(i)* "statements which enable anyone to synthesize or predict utterances in the language," statements which "form a deductive system with axiomatically defined initial elements and with theorems concerning the relations among them"; *(ii)* "statements" which "transform certain sentences of the text into grammaticality equivalent sentences" (such as nominalization, particle placement, VP-ellipsis, question formation, addressed in some detail in Harris 1957); and *(iii)* the idea that sentences "consist of a sequence of one or more *underlying* sentences" (Harris 1951:372–73). In early generative grammar, statements of type *(i)* resurfaced as the phrase-structure rules ('PS rules') that codified the well-formed underlying syntactic representations, and those of type *(ii)* transparently foreshadowed its transformations (though in Harris's profoundly non-derivational approach, the word 'transform' in the quotation under *(ii)* should not be read in the way that transformational generative grammar later applied it). And generalized transformations could combine two sentence-level phrase markers ('kernel sentences') into one complex sentence, as in Chomsky's (1955/1975) analysis of clausal subordination – very much along the lines of *(iii)* (which itself closely reflects the Port Royal grammarians' approach to the complex sentence *Dieu invisible a créé le monde visible* 'invisible God created the visible world,' assembled out of the three simple sentences *Dieu est invisible* 'God is invisible,' *Dieu a créé le monde* 'God created the world,' and *le monde est visible* 'the world is visible').

In these formal respects, therefore, early generative grammar (with 'generative' meaning 'explicit') is a continuation of its predecessors. But it breaks radically with its structuralist antecedents in identifying the central explanandum as what Chomsky has called 'Plato's problem,' the fact that children all over the world acquire their native languages effortlessly within a short period of time, notwithstanding the poverty of the stimulus (see Chapters 2, 3, 25). What children hear in their environment is both quantitatively and qualitatively a very poor reflection of what their