REVIEW ARTICLE

Symptomatic imperfections[1]

Ash Asudeh & Ida Toivonen

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David Adger, *Core syntax: a Minimalist approach*. Oxford: Oxford University Press, 2003. Pp. xiii+424.
Andrew Radford, *Minimalist syntax: exploring the structure of English*. Cambridge: Cambridge University Press, 2004. Pp. xiii+512.

1 INTRODUCTION

Minimalist syntax and *Core syntax* are reasonably good textbooks. They should be very helpful indeed in teaching a syntax course on current Principles and Parameters Theory (P&P; Chomsky 1981) that focuses on the Minimalist Program (MP; Chomsky 1995, 2000, 2001, 2004, 2005). The books present a range of syntactic phenomena, which are for the most part discussed lucidly and illustrated by considerable relevant data. Nevertheless, the books are not pedagogically faultless and the pedagogical faults are often due to underlying theoretical problems.

Although the Minimalist Program has opened up new research avenues for Principles and Parameters Theory, it has left the analytical part of the theory in poor condition. The theoretical flaws in these textbooks are symptomatic of problems in the Minimalist Program at large and, in the bulk of this review article, we use the books to explore underlying problems with the programmatic Minimalist approach to P&P theory.[2] Consideration of these issues reveals Minimalism to be, at heart, a kind of unification-based,

[2]It may seem unfair to take textbooks to task over theoretical problems. However, textbooks serve as a test of a framework's coherence and consistency, since they offer a venue in which a large body of theoretical or programmatic proposals are presented together. Furthermore, *Core syntax*, in particular, seeks to present a coherent theoretical framework based on Minimalism (xi–xii) and is in this sense more than just a textbook.

lexicalist framework, but one which eschews formalisation or even just explicitness (contra Chomsky 1957) — with attendant deleterious consequences — and which refuses to give up the unnecessary mechanism of movement, even though it has arguably outgrown it.

2 SUMMARIES OF THE BOOKS

The first chapter of *Minimalist syntax* introduces the leading ideas behind P&P and the MP, including Universal Grammar, innateness, competence and performance, I-language, perfection and optimal design, articulatory and conceptual interfaces, and the central notions of principles and parameters. The usual sorts of points are made, although Radford commendably refers to dissenting views, such as Lappin et al. (2000a,b, 2001), Pullum & Scholz (2002), and Scholz & Pullum (2002). The next two chapters introduce 'words' and 'structure', but in a fairly atheoretical fashion. The chapters largely read like generatively-informed traditional grammar, although some P&P legacy concepts are introduced, such as the Extended Projection Principle. Not until chapter 4 does the focus shift to specifics of the theory built up in the book. This first theoretical chapter is dedicated to 'null constituents', such as null subjects, null complementisers and null auxiliaries. Movement has not yet been proposed, and chapter 4 therefore does not discuss traces or copies. Chapters 5–7 introduce movement in the following order: head movement, *wh*-movement and A-movement. Features are mentioned throughout the book, but they receive particular attention in chapter 8, which is mainly devoted to case and agreement. Chapter 9 concerns split projections, especially VP-shells. Finally, chapter 10 is devoted to phases, where these are said to include CPs, transitive *v*Ps, and possibly PPs and definite DPs.

Core syntax begins, somewhat surprisingly for a syntax textbook, with a discussion of propositions, but this is actually quite effective. Building on this discussion, the first chapter (*Core Concepts*) goes on to introduce the foundational concepts of much of modern theoretical syntax. The chapter is both succinct and uniformly excellent; it would make a fine class reading on its own. Chapter 2 introduces morphosyntactic features and the feature system. Chapters 3 and 4 introduce constituency, theta roles, heads, Merge, phrase structure representation (including VP-shells), and c-command. Chapter 4 is the first occurrence of the Hierarchy of Projections, a novel theoretical construct which imposes an ordering on maximal projections and which is augmented and refined throughout the book. Chapter 5, on the Tense Phrase, is the first of three chapters on functional categories (continued in chapters 7 and 8). It concerns tense marking on verbs and auxiliaries, auxiliary ordering (based on the Hierarchy of Projections), head movement to T, and a novel analysis of *do*-support based on a notion of 'tense chain.' Chapter 6 is about subjects and objects and introduces subject movement to SpecTP, case-checking, the EPP feature, unaccusative subjects, and how strong and weak features on T and *v* derive different word orders. The chapter also features a novel analysis of passive, based on a functional Passive projection (PassP) and the Hierarchy of Projections. The next two chapters pick up the theme of functional categories again. Chapter 7 is about the DP and presents arguments for Ds as heads and introduces the nominal shell, *n*P. Chapter 8 is about CPs and introduces complementisers and clause-type (declarative and interrogative) features. Much of the chapter is devoted to nonfinite CP complementation, in particular raising, control, and ECM clauses. Chapters 9 and 10 concern *wh*-movement and locality, where the latter

concept is analysed in terms of phases.

It is evident that *Core syntax* and *Minimalist syntax* are organised quite differently. The argumentation in *Core syntax* builds on the twin concepts of morphosyntactic features and argument structure, in particular the Uniformity of Theta Assignment Hypothesis (Baker 1988). Subsequent material in the book is grounded in these relatively accessible concepts. *Minimalist syntax*, on the other hand, begins its theoretical discussion with empty categories, which are quite abstract and inaccessible to the uninitiated. The book thus early on asks the reader to accept the highly abstract style of argumentation that is typical of modern P&P. Another major difference between the books is that Adger focuses on cross-linguistic variation and parameter setting, whereas Radford investigates English in greater detail. Lastly, the books construct two strikingly different formal theories, as will be further discussed below.

3   PEDAGOGICAL ISSUES

This section assesses *Minimalist syntax* and *Core syntax* as pedagogical tools. The section is organized as follows. First, the data presented in the two textbooks is discussed. Second, their respective suitability as introductory textbooks is addressed. We particularly focus on how much background knowledge the books require and how closely they correspond to the original literature. Third, the exercise materials in the books are briefly discussed. Lastly, we comment on the general presentation of the books.

We consider both texts in this section, but focus on *Minimalist syntax*. *Core syntax* receives more attention in section 4 ('Theoretical issues'), as it attempts to present an internally consistent Minimalist theory and, in particular, presents a more detailed theory of features, which are crucial to the enterprise, than *Minimalist syntax* does.

3.1   *Data*

As its full title reveals, *Minimalist syntax: exploring the syntax of English* focuses on English. It should be noted that 'English' is understood in a broad sense and examples are drawn from different time periods, especially Early Modern English, and a variety of dialects, e.g. Belfast English. Radford is careful to point out that the topic of investigation is I-language (the mental state of an individual speaker; 7–8), and the inclusion of different varieties of English is thus equivalent to cross-linguistic comparison. The variety of Englishes included is, however, not likely to satisfy more typologically oriented readers. Such readers will probably prefer *Core syntax*, which includes data from a larger variety of languages, including Arabic, Chinook, Dutch, French, Hopi, Russian, Scottish Gaelic, and Welsh. However, as expected (and, perhaps, desired in a textbook written in English), English also dominates in Adger's book.

Radford's decision to focus almost exclusively on English is questionable, since the primary purpose of *Minimalist syntax* seems to be to introduce P&P and MP, rather than to give grammatical analyses of a large fragment of English. First, presenting data from historically and geographically disparate 'Englishes' has the unintended effect of reifying 'the English language', which is at odds with the I-language hypothesis. Although this is unlikely to confuse the book's more experienced readership, it risks accidentally bolstering the non-generative folk view of English as 'the language of Shakespeare, now

spoken all over the world', which is, in our experience, still quite common in introductory syntax classes, not having been shaken loose by first year introductory linguistics. Second, Radford does find it necessary to present data from other languages, such as data from Romance languages on cliticisation and data from Chamorro on *wh*-agreement, to name just two examples. We were left wondering why Radford did not, for example, use standard data from Romance and Germanic to motivate head movement, rather than Early Modern English. Not only would it be very useful to students to be exposed to this canonical data, it would avoid the potential reification of English.

Prospective users outside the UK should be aware that many of the examples cited in Radford as standard English are unacceptable (or at least decidedly odd) in many varieties of English. Examples include the following: *I have never known students have problems with syntax* (5), *Who dare blame anyone?* (102), *There are thought likely to be awarded several prizes* (281), *What decided you to take syntax?* (56), etc. Conversely, there are also examples that are claimed to be ungrammatical, which are, in fact, grammatical in many varieties of English (for example, *want* is claimed not to take a *that*-clause in English; 109). Several of the examples mentioned here are discussed at length and form the core evidence for some principle or structure. This is problematic, as it is cumbersome to teach a phenomenon when the data needs to be prefaced with a caveat.

The English focus of *Minimalist syntax* might suggest that it is an appropriate textbook for an applied curriculum, for example a program that trains teachers of English as a second language. However, the analyses of specific structures proposed are too abstract and convoluted to be useful as tools in applied linguistics. The hypothesis that unergative verbs are underlyingly transitive (349) and the analysis of the verb *load* as an affix (344) are just two particular examples. *Minimalist syntax* might, however, be appropriate for an introductory theoretical syntax course in an English department or in a Linguistics department with a very strong English focus.

Although both textbooks contain a lot of examples, *Minimalist syntax*, more reliably than *Core syntax*, provides a long list of new and standard empirical arguments regarding just about any syntactic phenomenon that has received considerable attention in the transformational literature. This is of course immensely valuable. However, the data are not always accompanied with enough discussion. *Wanna*-contraction is an example. Radford uses *wanna*-contraction to argue for a copy theory of movement (except this particular argument does not differentiate between copies and traces). The example **Who don't you wanna win the game?* is said to be ungrammatical because *who* has left an unpronounced copy in SpecTP (191). This argument has been shown to be deeply flawed (Pullum 1997) and using it at all is highly questionable. Perhaps even more importantly, though, we see in the same section that unpronounced complementisers do not block *wanna*-contraction, and neither does PRO. This is later explained by positing that only overt material can block cliticisation of *to* onto C, and the unpronounced copy of *who* is overt at the relevant stage of derivation (191–192, 310). This leads to questions of what it means to be 'overt', as it is now not enough to say that overt constituents are simply pronounced constituents. Radford never clarifies this further, and students will have a difficult time judging when *wanna*-contraction can appropriately be used as an argument for the presence of an empty category.

Another line of empirical argumentation for the copy theory of movement concerns discontinuous spellout, as in *What hope* ~~of finding survivors~~ *could there be* ~~what hope~~

of finding survivors. Radford takes the fact that *of finding survivors* can be found at the end of the sentence as evidence that movement leaves behind a copy of the moved phrase. He states: 'a PP or CP which is the complement of a particular type of moved constituent can be spelled out in one position (in the position where it originated), and the remainder of the constituent spelled out in another (in the position where it ends up)' (194). He also indicates that discontinuous spellout is only possible in certain structures. He does not reveal what structures these may be, but he gives a long list of references to the relevant literature. One would think that with such an impressive literature, it should be possible to say something more specific. Without further explication, it is a mystery why the following examples are ungrammatical: **No mother was found of twins* and **That kind we cannot tolerate of behaviour in a civilised society* (the latter example is based on example (95) on page 329). To be fair, Radford never claims to provide a full analysis of *wanna*-contraction or discontinuous spellout; however, the discussion is not useful without clarification of precisely how these empirical diagnostics are constrained.

In sum, although both textbooks are rich in data, *Minimalist syntax* presents almost exclusively English data, whereas *Core syntax* draws upon examples from a variety of languages. Adger's choice to use cross-linguistic data allows him to freely pick whatever example set most clearly illustrates each phenomenon he introduces. His empirical argumentation for that reason often flows more naturally and convincingly than Radford's, which sometimes (but by no means always) seems convoluted and far-fetched. However, a teacher who wants to get into the nooks and crannies of English and avoid other languages will nevertheless prefer *Minimalist syntax*.

3.2 *Suitability as introductory texts*

Minimalist syntax claims to be suitable for students with no previous knowledge of syntax. In many respects, it delivers on this account. Basic grammatical concepts are introduced with detailed explanations and informative examples. However, despite the obvious pedagogical merits of thoroughness, *Minimalist syntax* does not entirely successfully balance careful exposition and allowable assumption. On the one hand, the book often errs on the side of overexplanation. For example, is it really necessary, having noted that T′ is 'pronounced "tee-bar" ' (72), and having almost immediately written it as 'T-bar', to note that S′ is pronounced 'ess-bar' (74) and that (yes, you guessed it) P′ is pronounced 'pee-bar' (77)? On the other hand, some thornier concepts are never explicitly introduced, but rather presupposed. For example, *Minimalist syntax* makes the standard P&P assumption that all NPs (not only pronouns, in English) bear case (45, 134–140). It is also implicitly assumed that all NPs *must* bear case; in other words, the Case Filter of Government and Binding Theory (Chomsky 1981) is presupposed. In addition, it is assumed that in order to bear case, an NP must be *assigned* case. Furthermore, case assignment is presupposed several chapters before the crucial uninterpretable case features are introduced (281ff.). The argumentation does not make sense without these hidden assumptions: The early discussion would be much improved by making these claims explicit.

Another implicit assumption in *Minimalist syntax* is that transitivity is specifically linked to assignment of accusative case, not simply to the existence of a complement NP (cf. Radford 1988: 340). The link to accusative case is crucial for understanding Radford's reference to intransitive and transitive complementisers (Radford 2004:137ff.). This is in

turn necessary in order to be able to follow Radford's treatment of control: PRO gets null case and null case is assigned by a null *intransitive* complementiser (138; another account is given on page 311). The reason why this complementiser is intransitive is because it does not assign accusative case, but this will likely not be obvious to students. *Minimalist syntax* contains a few more basic concepts that are never explained in pre-theoretical terms, for example *agreement*, but in general the book introduces terminology clearly and thoroughly.

Minimalist syntax is not internally consistent — unlike *Core syntax*, which builds up a largely coherent theory. In fact, the discussion in *Minimalist syntax* is often flagged as being inconsistent. Several arguments are sometimes listed for a specific analysis or definition, but a different definition is assumed later in order to analyse something else. For example, 'closeness' receives different definitions on page 201 and on page 407. This is clearly potentially confusing for students; however, *Minimalist syntax* is generally specific about which definition is assumed in different sections, and the reader is referred to the relevant literature for each analysis. This is good for students and researchers who wish to get an insight into the extent of theoretical variation in the literature.

Core syntax shields the reader from much of the complexity of the literature, which is pedagogically advantageous, although perhaps occasionally misleading. However, Adger specifically mentions that he sometimes strays from the primary literature for consistency's sake (xii). Also, each chapter contains an excellent 'Further readings' section, where it is clear that Adger has tried to consider what literature will actually be accessible to students.[3] Radford chooses instead to include references in the text. This is more disruptive for students, and we also found that many of the references are probably too advanced to be useful. For example, on page 70, Radford argues on purely conceptual grounds that structures are binary branching and cites Kayne (1984) for a 'considerable body of empirical evidence'. It is heart-breaking to imagine a keen undergraduate student rushing to the library in the hope that a quick flip through Kayne (1984) will reveal clear empirical evidence that structure must be binary-branching. Radford does go on to say: 'Much of this work is highly technical and it would therefore not be appropriate to consider it here.' However, binarity is crucial for the argumentation and a good textbook should explain crucial concepts in accessible terms. Although many of the references in *Minimalist syntax* are not very likely to be useful to students, they will be helpful to teachers and to non-Minimalist syntacticians who may be reading the book in order to get a feel for MP. The bibliography is impressively comprehensive and includes many more references than the bibliography in *Core syntax*.

3.3 *Exercises*

Core syntax and *Minimalist syntax* both include a set of exercises at the end of every chapter. Each book contains many very useful exercises, but we generally preferred the exercises in *Core Syntax* (many of which, Adger notes on page xiii, are adapted from Napoli 1993), which are terrific: they complement the text very well, they are clearly presented, and the instructions are transparent. The exercises do tend to focus on English, however. This is a pity, as the book is otherwise quite typologically oriented. Exercises

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[3]Although some of the references are probably inappropriate. For example, Chomsky (1973) will be too difficult for a student of introductory syntax.

with non-English data would be helpful in teaching the students to juggle cross-linguistic data, a skill that is necessary in order to follow the text. The exercises in *Minimalist syntax* are often quite repetitive and they require a lot of prose in their answers. Hints and sample solutions are given, which would be helpful if it were not for the fact that the sample solutions are needlessly long and wordy. For example, exercise 1.3 (98) asks the students to discuss the derivation of eight sentences. Radford provides a three-page model answer for the first sentence alone (*He has become very fond of Mary*). These three pages include some tree structures, but mostly prose. If students indeed model their answers on this answer, this will generate unnecessarily long answers and a lot of marking. If the exercises are not assigned for assessment but merely for discussion in class, this may not be a problem.

3.4 *Presentation*

Minimalist syntax features a long and detailed glossary (which may be appropriate for class use even if *Minimalist syntax* is not adopted as the text) and an excellent index. The end-of-chapter summaries are also quite good. The summaries in *Core syntax* are even better, particularly the table in each summary that lists each of the key phenomena encountered in the chapter and its proposed explanation. *Core syntax* also has a good index, but it is not quite as thorough as the one in *Minimalist syntax*, although we never failed to find a necessary entry in either. The standard of production in both books is quite good, but the page layout in *Minimalist syntax* is somewhat austere and a little forbidding. There is a lot more text on a page of *Minimalist syntax* than on a page of *Core syntax* and the fact that the main body of *Minimalist syntax* is only 24 pages longer than that of *Core syntax* is misleading: the former book takes considerably longer to read. This is not aided by CUP's dubious decision to set the exercises in grey boxes. While this handily offsets the exercises, its net effect is to suggest boredom ahead, which does not do justice to Radford's generally engaging prose style. On the whole, *Core syntax* has a cleaner and less crowded page layout. Together with Adger's admirably simple and flowing prose, this renders *Core syntax* somewhat more readable than *Minimalist syntax*. The standard of copy-editing is higher in *Minimalist syntax* than in *Core syntax*, though. The mistakes in the latter are largely harmless, but may be distracting to some students. One serious mistake that we spotted in *Core syntax* was a checked uninterpretable present tense feature on little *v* (221). This conflicts with the rest of the derivation (the feature has no checker) and with Adger's analysis of the English present tense (171). Adger maintains a website for *Core syntax* (http://alpha.qmul.ac.uk/~mlw011/EGS/core-syntax.htm [checked 30/09/2005]) with useful support materials, including an errata section.

3.5 *Summary*

Anyone preparing a course in modern transformational grammar will find these textbooks valuable tools. Adger's *Core syntax* is appropriate for a teacher who wishes to teach a particular version of modern P&P and at the same time familiarise the students with cross-linguistic phenomena. Radford's *Minimalist syntax* will be useful for a teacher that wishes to teach a different version of modern P&P without the extra complication of non-English examples. *Core syntax* constructs a coherent, internally consistent theory of grammar. *Minimalist syntax* presents a less coherent theory with many inconsistencies.

However, *Minimalist syntax* gives a more accurate portrayal of the original literature than *Core syntax* does.

4 THEORETICAL ISSUES

Core syntax and *Minimalist syntax* both make the point that Minimalism is not a theory but a research program dedicated to theoretical simplicity and minimalism, where the latter is intended in the specific sense of adopting only assumptions and constructs that are deemed conceptually necessary for interfacing the language faculty with general articulatory and conceptual systems (Chomsky 1995). The specific theoretical proposals of the two books do not share much in common, a fact that can presumably be traced to a difference in opinion as to what is conceptually necessary. The theoretical differences are seen at all levels: specific analyses differ (see, e.g., the analyses of passives and of *do*-support), the treatments of formal features differ (see section 4.3 below), and some foundational assumptions differ (for example, Adger assumes that all parametric variation is lexical, Radford does not).

The remainder of this section is organised as follows. First, we look at how each book presents the general Minimalist framework. In general. *Core syntax* presents a more coherent version of the framework and is much clearer about its assumptions, but *Minimalist syntax* presents a version of the framework that more faithfully follows the original literature, although this leads to (often frustrating) inconsistencies. Second, we briefly consider phases and locality, which both books address, and point out that the books fail to properly distinguish arguments for movement transformations from arguments for successive-cyclicity. Lastly, in section 4.3, we consider in detail the books' feature theories, which are quite important, given the central role of features in Minimalism. We focus on the feature theory in *Core syntax*, because it is more explicit and generally superior to that in *Minimalist syntax*. However, we argue that Adger's feature theory nevertheless suffers from several problems.

4.1 *The general framework and its central assumptions*

The core operations in Minimalism are Merge, Move, and Agree, which interact with the fundamental relation of c-command, lexically-contributed feature specifications, the interpretable–uninterpretable feature distinction (and, in some versions, the strong–weak feature distinction), distinctions between lexical and functional categories, where the latter include 'shell' categories such as *v* and *n*, and the concept of phases.

Adger and Radford both explicitly stipulate that the output of Merge is a binary branching tree. Binarity is treated as a separate principle by Radford (the Binarity Principle, 70), and as a 'working hypothesis' by Adger (also 70). This is in line with the latest work in the Minimalist literature, which indicates that binarity needs to be ensured separately and is not a necessary consequence of Merge. For example, Chomsky (2005: 16) notes that, 'Without further stipulation, external Merge yields n-ary constituents.' The term 'external Merge' reflects Chomsky's proposal that Merge can be recast as external Merge and internal Merge, with the latter effectively 'eliminating' Move (Chomsky 2005: 12):[4]

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[4]It is lamentable that *Internal Merge!* lacks the ring of *Move!* (Hornstein 2000).

> Unless some stipulation is added, there are two subcases of the operation Merge. Given A, we can merge B to it from outside A or from within A; these are external and internal Merge, the latter the operation called "Move," which therefore also "comes free," yielding the familiar displacement property of language.

Let us assume for the time being that this is true, since it has immediate consequences for the claim that Merge is more economical than Move, which Adger and Radford both make and which can readily be found in primary Minimalist literature (Chomsky 2000, McCloskey 2002).

Adger and Radford both invoke the 'simplicity' (*MS*, 320) or 'economy' (*CS*, 323) of Merge over Move to explain the contrast between the following sorts of expletive sentences:

(1)   There seemed to be three men in the garden.

(2)   *There seemed three men to be in the garden.

At the stage of the derivation where either *three men* could be Moved or the expletive could be Merged, the latter must occur, because Merge is preferred over Move. This ultimately leads to (1) being admitted to the exclusion of (2). The simplicity of Merge over Move is partly predicated on the assumption that Move includes Merge as a sub-operation (*MS*, 320): In other words, Move is Merge + something else. However, this assumption is no longer valid. If Merge comes in two varieties — external Merge and internal Merge (Chomsky 2004, 2005) — and the latter replaces Move, which now ' "comes free" ', then the required property of Merge (now external Merge) being a sub-operation of Move (now internal Merge) no longer holds. Internal Merge and external Merge are independent, alternative operations that differ only with regard to where the element to be Merged originates.[5] This is a welcome theoretical result, because it removes the final vestige of problematic economy conditions (Johnson & Lappin 1997, 1999), which were rampant in earlier Minimalism (Chomsky 1991, Collins 1997). However, it means that an alternative analysis has to be given for the expletive facts given above and for the other phenomena that have been explained by appealing to the economy of Merge over Move.

Adger discusses the three central operations of Merge, Move and Agree clearly and explicitly; for example, he gives definitions of Merge (90) and Agree (168). He provides an admirably simple and intuitive definition of c-command (117; Adger writes on page 153 that the definition follows a suggestion by Jason Merchant):

(3)   A node A **c-commands** a node B if and only if A's sister either:

    a.   is B, or

    b.   contains B.

This definition contrasts with Radford's, which, although similar, is formulated less simply (for example, its formulation involves passivisation, quantification, and relativisation).

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[5]If anything, one could now easily concoct a story on which the tables have turned and internal Merge (né Move) is now simpler than external Merge, because the former involves Merge of an element that is already in the syntax, whereas the latter must first take the element from elsewhere (the Numeration) and then Merge it into the syntax.

Radford also uses a rather unsatisfactory train metaphor that involves catching a northbound train from X to Y, transferring to a southbound train on a different line, etc. While this may help the odd anorak, it's generally about as easy to use as post-privatisation British Rail.

Adger augments Merge, Move, Agree, c-command and the feature system with a relatively small stock of mostly simple (but informal) auxiliary operations and principles:

1. The Unique Θ Generalization (81)

2. Full Interpretation (85)

3. C-selection vs. s-selection (83–90)

4. The Checking Requirement (85)

5. Checking under Sisterhood (85; later subsumed as a subtype of Agree)

6. The Extension Condition (95)

7. Adjoin (112–114)

8. Uniformity of θ-Assignment Hypothesis (UTAH; 138)

9. Hierarchy of Projections (the initial occurrence is 135, but it is revisited throughout the book)

10. Tense chains (192)

11. Pronouncing Tense Rule (PTR; 192)

12. The EPP feature (215)

13. Locality of Matching and Intervention (218)

14. Phases and the Phase Impenetrability Constraint (PIC; 386)

15. Improper Movement Restriction (388)

This is an accurate reflection of current transformational theory and compares favourably in size (if not precision) to the typical set of auxiliary postulates in similar works in other theories. It is a testament to the clarity and relative explicitness of *Core syntax* that we were able to fairly easily extract this list. It is unfortunate, though, that Adger did not collect the crucial aspects of his theory in an appendix (see, e.g., Pollard & Sag 1994, Sag et al. 2003, Falk 2001) and we hope that he will take the opportunity to do so if there is another edition.

Minimalist syntax is, by contrast, vague about what types of formal mechanisms are permitted. The wish to minimise the use of theoretical constructs to what is conceptually necessary is repeated throughout the book (see, e.g., page 139), but the theory that is developed actually contains a large formal apparatus. There is *merge*, which is never formally defined. Then there is also *move*, which is suggested to be a form of *merge* (199), as per the internal/external Merge distinction discussed above. There is also a lexicon, which must contain a lot of information, as lexical features are important to the

theory. No theory of the lexicon is proposed, and readers are left to piece together their own theory of features from suggestions that are given at various places in the book. The lack of a lexical theory accurately reflects the status of the primary Minimalist literature, where none seems to be on offer. This is a pernicious problem for Minimalism: the research program relies heavily on lexical specification and features, but the work is not grounded in any kind of formal or explicit theory of lexical specification and features (see section 4.3 below).[6] The theory in *Minimalist syntax* also contains a mechanism of lexical selection whereby a lexical array is chosen. This mechanism is quite complex, as the syntax can refer to different subarrays at various points of the derivation (408). Furthermore, the book contains many additional rules and constraints.

There is also a large number of 'generalisations' listed throughout the book, and it is often unclear whether these are intended as formal rules or constraints, or merely descriptive statements awaiting formalisation. All that is clear is that they are needed in order to account for the data given in the text. Consider, for example, the 'EPP generalisation' (302):

(4)   **EPP generalisation**
         When T carries an [EPP] feature, this can be deleted
         (i) by merging expletive *there* in spec-TP if T c-commands a matching indefinite goal (i.e. an indefinite noun or pronoun expression which matches T in person/number)
         or (ii) by merging expletive *it* in spec-TP if T c-commands no matching goal
         or (iii) by moving the closest matching active goal c-commanded by T into spec-TP

The status of this generalisation is particularly unclear. Radford concedes that it 'is little more than a descriptive stipulation' (303), but then crucially appeals to the third clause to derive *They were arrested* (308). Taken together, the many theoretical constructs do not seem so minimal, but they may, of course, be conceptually necessary.

When a principle, condition, constraint or generalisation is introduced in *Minimalist syntax*, it is typically accompanied with a comment saying that this is only an informal statement (e.g., EPP, 73; Strict Cyclicity Principle, 173; Nominative Case Assignment, 286; Phase Impenetrability Condition, 382). This is presumably to spare the students from difficult formalisation. However, good formal statements of theoretical constructs can be easier to come to grips with than vague, informal prose. Given the importance of the principles to the theory, they should be included in their exact form in a textbook.

A problem with the informality of *Minimalist syntax* is that the discussion often seems contradictory. For example, we are told that 'the only kind of syntactic relations which UG permits us to make use of are those created by the operation Merge' (139) and that 'relations like subjecthood and objecthood are not relations which can be used within the Minimalist framework' (139). However, on the previous page (138), it is noted that some verbs in Icelandic require dative subjects. The note about Icelandic is particularly puzzling, since it is embedded in a more general discussion on case assignment, where the main point is that an NP is assigned case by the closest case-assigner which c-commands

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[6]Newmeyer (in press: chapter 3, footnote 9) notes '... in no framework ever proposed by Chomsky has the lexicon ever been as important as it is in the MP. Yet in no framework proposed by Chomsky have the properties of the lexicon been as poorly investigated.'

it. We have been told that subjects get assigned case by complementisers. (This hypothesis is revised later, in chapter 8, where it is claimed that nominative subjects get their case from the element carrying finite tense). The formalisation of case assignment would render it impossible for a verb to have any say in the case marking of its subject, both because it does not c-command its subject and because subjecthood is not a valid relation in Minimalism. The statement that the verb in Icelandic can determine the case of its subject thus flatly contradicts not only the informal theory of case-assignment, but also the discussion of 'conceptually necessary' apparatus on the very next page.

Despite all this machinery, it is still not clear exactly how some of the analyses presented in *Minimalist syntax* work. For example, following familiar arguments, V-bar expressions are said to assign a theta-role to the external argument indirectly 'as a compositional function of the semantic properties of the overall V-bar' (253). This is the only place in the book where a relation holds between a bar-level category and a specifier. Yet we receive no explanation of how the relation works, beyond the vague passage just quoted. Informality and vagueness of this kind are a general trend in *Minimalist syntax* — an unwelcome side effect of Minimalism's status as a program rather than a theory.

4.2   *Phases and locality*

Phases have been a central topic of enquiry in recent Minimalism (Chomsky 2001, 2004) and both Adger and Radford devote the final chapters of their books to this concept. Adger begins by presenting evidence for local, successive-cyclic movement from floating quantifiers in West Ulster English, complementiser agreement in Scottish Gaelic, and subject inversion in Spanish. He appeals to the Phase Impenetrability Condition (PIC; 386) as the determiner of local movement and finishes off the chapter with an exploration of various island phenomena and how these are analysed using the notion of phase. The chapter is rounded off nicely with a series of exercises that introduce students to further A-bar movement and island phenomena. Radford's chapter is structured along similar lines, but makes more of a concerted attempt to stay true to the primary literature. This is a mixed blessing, since it makes the chapter much harder to follow than Adger's.

The evidence that Adger and Radford present for successive-cyclic movement is not evidence for movement per se, but rather is evidence that material between the top of the unbounded dependency and the bottom can be sensitive to the fact that it lies in an unbounded dependency path.[7] Effects such as these can be analysed by what could pretheoretically be called successive-cyclic availability of information — originating at the bottom of the dependency and terminating at the top — without actually moving anything. Analyses of this sort have been proposed in non-transformational theories, such as Generalized Phrase Structure Grammar (Sells 1984), Head-Driven Phrase Structure Grammar (Bouma et al. 2001), and Lexical Functional Grammar (Zaenen 1983, Berman 2003, Asudeh 2004), and explain precisely the sorts of empirical phenomena that Adger and Radford argue motivates movement. The fact that these analyses do not postulate

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[7]It is a common conception that all syntactic frameworks adopt some mechanism which is essentially like movement, although called something else, such as 'structure-sharing.' This is, however, a misconception and valid at only the grossest and least useful level of pretheoretical analogy: There are important formal, theoretical, and empirical differences between transformational movement operations and operations like structure-sharing which model some of the same phenomena.

movement transformations indicates that the question of successive-cyclicity needs to be separated from the question of movement.

4.3   *Use of features*

Despite the central role of features in MP, there is no widely-adopted formalisation of feature theory and, even short of formalisation, not very much explicit discussion of what features are and how they work.[8] Minimalist analyses instead adopt putatively intuitive understandings of features and feature checking. This no doubt has to do with a built-in tension between explicitness and both general minimalism (Ockham's razor) and programmatic Minimalism (elimination of language-specific postulations in favour of 'general considerations of computational efficiency', Chomsky 2005: 1): explicit analyses tend not to seem as minimal or elegant as analyses that leave out the details. It also no doubt has to do with the fact that 'the Minimalist Program is a research agenda rather than a particular theory' (*CS*, xii): why formalise an agenda?

As one of our reviewers points out, though, any particular theory that is meant to answer an agenda should be formalized, and the feature theory in Minimalism is, in many respects, the central item on the agenda. Therefore, how features are handled is crucial in any theory that attempts to build on Minimalism, such as the one that Adger offers in *Core syntax*. Unfortunately, Adger's feature theory has three central problems which we discuss in section 4.3.2: noncompositionality, complexity, and unconstrainedness. First, though, we briefly consider Radford's use of features.

4.3.1   *Features in* Minimalist syntax

Radford is content to adopt, with respect to features, the level of rigour and explicitness common in the primary literature. He adopts the usual Minimalist distinction between interpretable and uninterpretable features, but does not say very much about what it means for a feature to be interpretable, except that 'they play a role in semantic interpretation' (287). Throughout the book, he simply asserts that certain features are interpretable. This is disadvantageous for the textbook's audience of beginning syntax students, because they will not yet have developed the 'feel' for semantic interpretation that would allow them to readily make judgements of interpretability on their own. Indeed, it is furthermore doubtful if even seasoned researchers can truly have intuitions about interpretability in the absence of an explicit theory. Radford also uses the notion of feature strength, whereby some features are strong and others are weak and strong features essentially trigger Move. However, he is noncommittal about what strength is and whether it is really part of his theory or not. This agnosticism pretty much accurately reflects the current status of feature strength in the primary Minimalist literature, where it is somewhat in disfavour, but it is inappropriate for an introductory textbook. Feature strength is referred to as a 'metaphor' (e.g., 153 and 163), but it is unclear what it is a metaphor for.[9] One interpretation of the

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[8]This is not to say that no formalisation of MP's feature theory has been offered — on the contrary. See, for example, Stabler (1998) and several of the papers in the recent issue of *Research on Language and Computation* on 'Resource Logics and Minimalist Grammars', in particular Cornell (2004), Lecomte (2004), Retoré & Stabler (2004), and Vermaat (2004). The point is that this research has not found its way into Minimalism at large, as evidenced by the informal and inexplicit feature theories in these textbooks.

[9]Bender (2000: 434) offers an incisive criticism of the role of metaphor in the Minimalist Program:

text leads to the conclusion that strong features are associated with affixes (153, following Chomsky 1995). As affixes cannot stand alone, they must move to a host, or the host must move to them. In this sense, 'strength' triggers movement. However, the connection between affixal status and strength is never explicitly stated or explored in detail; it is left as a suggestive analogy. Furthermore, we assume that an affixal notion of strength is considered appropriate only for head movement, since other kinds of movement target XPs and these are not plausibly affixes.

Radford does not use the term feature *checking*, but instead feature *copying* and *matching*. Copying and matching for Radford are essentially what Adger calls *valuation*. Radford's discussion of the details of his feature theory comes quite late in the book (285ff.), about three quarters of the way through (not counting the glossary and other end material). This is surprising, as feature matching is the engine of the framework he is presenting. Despite (or, perhaps, because of) the informal language used to state the feature theory, it is both opaque and unconstrained. For example, students will have to understand the interaction of several separate definitions and principles, including 'Feature-Copying' (285), the 'Feature Value Correlation' (288), the 'Feature Visibility Convention' (289), 'Feature-Deletion' (289), and the definition of *match* (289), which follows:

(5) α and β *match* in respect of some feature [F] either if both have the same value for [F], or if one is valued for [F] and the other unvalued for [F] — but not if they have different values for [F].

There are obvious connections between (5) and the operation of feature unification, which plays an important formal role in other lexicalist frameworks,[10] a fact that Radford never mentions. (Adger does mention the connection between his 'feature valuation' and unification (*CS*, 202).) Radford invokes a separate principle of Feature-Copying to actually transmit the value from a valued feature to an unvalued feature (providing that necessary structural relations hold between the features, etc.) If unification were adopted instead, not only would the feature theory be on solid ground formally, it would eliminate the need for separate operations of matching and copying.

The complexity of Radford's feature theory is further exemplified by the baroque definition of *Feature-Deletion* (289):

Metaphors are certainly useful as heuristics in generating new hypotheses to explore. However, in order for a community of researchers to collaborate in building a large theory, the metaphors need to be grounded in some descriptive system whose properties are more readily agreed upon and less open to interpretation. This is particularly important in enterprises like the MP, where the nature of the computational system is the main focus of inquiry. When most of the technical proposals are stated in terms of metaphors, researchers don't necessarily interpret the properties of the operations, constraints and formal entities proposed in the same way. Without an agreed-upon set of properties, the discourse about the proposals becomes disjointed, and researchers seeking to construct an argument about some aspect of FL [the faculty of language – AA & IT] have little to base their argument on but the properties of the objects to which the theoretical constructs are metaphorically related.

[10]Examples include Categorial Grammar (Steedman 1996), Generalized Phrase Structure Grammar (Gazdar et al. 1985), Head-Driven Phrase Structure Grammar (Pollard & Sag 1987, 1994), and Lexical Functional Grammar (Kaplan & Bresnan 1982, Bresnan 2001, Dalrymple 2001). Shieber (1986) is a standard work on the formal properties of unification and its linguistic applications.

(6) α deletes an uninterpretable (person/number/case) feature(s) carried by β if α is φ-complete and if the value(s) of any φ-feature(s) carried by β match those of the corresponding φ-feature(s) of α

Not only is this definition quite complicated, it is very unconstrained. There is a lot of wiggle room for features not to get deleted (e.g., if α is not φ-complete).

The equivalent principle in Adger's book is worded much more simply:

(7)   **The Checking Requirement**
             Uninterpretable features must be checked, and once checked, they can delete.

The formulation given above is the final occurrence in *Core syntax* (167). However, like Radford, Adger vacillates on the question of deletion. The Checking Requirement is presented on four occasions in *Core syntax* (85, 91, 96, 167). On the second occasion, it is formulated without the modal: '. . . once checked they delete.' On every other occasion, the principle states that the features 'can delete', as in (7). Do the features delete upon checking/matching or don't they? The feature theory would obviously be simpler if either all features delete as soon as they are checked (as in the formulation on page 91) or if features never delete on checking. Otherwise, a sub-theory needs to be provided about which features can 'survive' checking and which cannot.

4.3.2   *Features in* Core syntax

Despite the general tendency of MP to eschew formalisation or explicit discussion of its feature theory, Adger — to his credit — realises that in writing a coherent textbook he must offer not just a program but a theory and a Minimalist THEORY requires some kind of explicit feature theory. Adger gamely offers a feature theory based on Minimalist argumentation, with the hope that the theory is somewhat explicit but nevertheless largely true to the intuitive understanding of features and checking in the MP literature (xii). However, as mentioned above, the resulting feature theory has three serious general problems:

(8)   a.   It is noncompositional.

        b.   It is overly complex.

        c.   It is unconstrained.

We devote the bulk of this section to discussion of Adger's feature theory and these problems, but we first consider some general aspects.

The distinction between interpretable and uninterpretable features and between strong and weak features are crucial in *Core syntax*. Adger straightforwardly adopts strength as part of his theory (179) and it is used steadily through the book to build up a parameterised typology, with strength as the locus of parameterisation. The parametric typology begins with a consideration of strong versus weak tense features on Aux and *v*, grounded in the classic contrast between English and French verb position relative to negation (Pollock 1989). By the end of the book, Adger has built up the following typology (368):

(9)

	Tense on Aux	Tense on *v*	EPP on T	Decl on T	[top] on C	wh on C
English	strong	weak	strong	weak	optional	strong
French	strong	strong	strong	weak	?	optional
Swedish	weak	weak	strong	strong	strong	strong
Scottish Gaelic	strong	strong	weak	weak	weak	strong
German	strong	strong	strong	strong	strong	strong
Japanese	strong	strong	strong	weak	weak	weak

Adger is honest about the question of unconfirmed predictions of the growing typology and about the lack of consensus in the P&P literature on the exact nature of these parameters. The net effect of this typological investigation, though, is quite positive. It demonstrates a strength of the P&P approach in making typological predictions that require testing empirically and thus communicates to students the exciting capacity of theoretical linguistics to simultaneously provide linguistic explanations and to raise new questions that need to be investigated.

Adger adopts a generally clear notation for the interpretable–uninterpretable and strong–weak distinctions. An uninterpretable feature is prefixed with *u* and an interpretable feature has no prefix; for example, [past] is an interpretable tense feature and [*u*past] is its uninterpretable counterpart. A strong feature is suffixed with a * and a weak feature has no *. For example, [*u*wh*] is a strong, uninterpretable *wh*-feature.[11] However, on a couple of occasions (e.g., chapter 6 and chapter 8), Adger undermines the clarity of his notation with an ill-advised abbreviatory convention. He abbreviates both a valued interpretable feature [f:G] as [G] (e.g., abbreviating [clause-type:Q] as [Q]; 297) and an unvalued uninterpretable feature [*u*f:] as [f] (e.g., abbreviating [*u*case:] as [case]). This is confusing on two counts: 1) given that Adger has a mixed feature system of privative and attribute-value features (see below), there is no way to know that [G] is not a privative feature; 2) given that both uninterpretable and interpretable features are equally abbreviated as [G], there is no quick way to know whether [G] is an abbreviation for an unvalued uninterpretable feature or a valued interpretable feature. These ambiguities make the derivations harder to follow than they need to be and have the potential to really confuse students. We encourage Adger not to adopt this abbreviatory convention in future editions.

4.3.2.1 *Noncompositionality*

Let us now turn to the three problems we identified in (8) above, beginning with the problem of noncompositionality. Adger argues that number should be expressed using the privative features [singular] and [plural]. The argument for the use of these privative features as opposed to attribute-value features (e.g., [number:singular]) centres on the expression of the dual. Adger argues that dual number is most simply analysed as [singular, plural]. He writes (28):

> Words which are specified just as [singular] are singular morphologically and
> are interpreted semantically as single entities. Words which are syntactically

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[11]It was not clear to us if interpretable features could be strong, although nothing in the theory would seem to preclude this. Our uncertainty stems from a statement on page 295 (and similarly on page 359) that 'When C[Q] is Merged with this TP, it values the clause-type feature of T as strong Q.' This statement could be simplified if Q on C is strong to begin with (Q*), so we infer that there is some reason why it cannot be.

> [plural] have a plural morphological form and are interpreted as referring to a group of entities. Words which have the feature specification [singular, plural] are dual in form and are interpreted as referring to pairs of entities.

It is clear from this quote that [singular, plural] is not to be interpreted such that its interpretation is made up of the interpretations of its parts, [singular] and [plural]. Notice that this is quite separate from the issue of semantic interpretation (although, since these are interpretable features, this issue is surely relevant). Adger argues based on agreement facts that these features are properly morphosyntactic features, not semantic features (39). However, even the morphosyntactic interpretation of [singular, plural] is noncompositional, because [singular] is 'singular morphologically' and [plural] words 'have a plural morphological form.'

Adger argues that there is empirical evidence from Hopi that the dual is 'made up, at least morphologically, of the singular and the plural.' This evidence is crucial in rejecting an attribute-value analysis of number, which cannot express that [number:dual] is made up of [number:singular] and [number:plural]. The relevant data is the following:

(10)   Puma taʔtaq-t   wari   Hopi dual
         those man-[PL] ran-[SG]

         Those two men ran.

According to this data, a plural noun phrase agreeing with a singular verb leads to a dual interpretation. Adger writes (28): 'This suggests that dual interpretations are constructed by having both [singular] and [plural] features in the same structure.'

However, there are a number of problems with Adger's analysis of the Hopi data and hence the conclusions he draws from it. First, there is an empirical problem with the claim that dual arises when a structure contains [singular] and [plural]. Namely, if dual is [singular, plural] 'in the same structure', it is equally predicted that a singular subject and plural verb should give dual interpretation in Hopi:

(10′)   * Pam taaqa   yuʔti   Incorrectly predicted Hopi dual
           that man-[SG] ran-[PL]

The discussion of number on subjects and verbs in Kalectaca (1978: 49–51) does not include any examples of the type illustrated in (10′), which implies that they would be ungrammatical.[12] More importantly, though, a native speaker consultant judges (10′) to be ungrammatical.

Second, there is a problem internal to Adger's own theory with dual as [singular, plural]. According to Adger's theory of subject-verb agreement (220-221), there is no way for the subject to bear just the number feature [plural] and for the verb to bear just the number feature [singular]. The subject's interpretable number feature values the uninterpretable $[u\phi:]$ feature on T via Agree and T's $[u\phi:\text{Number}]$ feature in turn values the uninterpretable $[u\text{Infl}:]$ feature on the verb. We can conclude from this that if dual is [singular, plural], then this feature specification must be on the subject. This in turn entails

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[12]In fact, Kalectaca (1978: 49–51) explicitly states that the pattern shown in (10) is only possible with demonstratives and pronouns and so predicts (10) to be ungrammatical alongside (10′). For the sake of argument, we discuss (10) as given by Adger, but the alternative analysis we sketch should probably be restricted to only demonstratives and pronouns.

that, according to Adger's theory, Hopi *Puma taʔtaqt* ('those men') must be ambiguous between [plural] and [singular, plural]. Thus, contrary to what the Hopi facts superficially seem to indicate, it is not possible in Adger's theory to account for dual as [singular, plural] through the independent contribution of [singular] and [plural] features.

There is in fact a compositional semantic account of the Hopi facts that avoids these problems. Suppose that in Hopi the following interpretations hold:[13]

(11) a. Plural-marking on N means **more than 1**.

  b. Singular-marking on N means **exactly 1**.

  c. Plural-marking on V means the subject's number is **more than 1**.

  d. Singular-marking on V means the subject's number is **1 or 2**.

The Hopi facts then follow purely compositionally. In particular, (10) is predicted to have a dual interpretation, because the only way to satisfy the interpretation of the number-marking on the subject and the verb is with the interpretation **exactly 2**. Furthermore, the gap (10′) is predicted, because singular-marking on the subject and plural-marking on the verb yield a contradiction, according to (11). Notice that on this account the only exceptional aspect of Hopi is the interpretation of singular verbs.[14]

The problem of noncompositionality is not just about what the correct analysis of dual or the Hopi data is, but is rather the more general problem that the feature theory is underlyingly noncompositional, i.e. that it ALLOWS NONCOMPOSITIONAL FEATURE COMBINATION AT ALL. Adger argues against a purely attribute-value feature theory (31) precisely on the grounds that an attribute-value theory 'has the disadvantage that, as it stands, it cannot express the idea that dual number is actually composed out of singular and plural.' However, this is not a disadvantage: the attribute-value theory cannot express dual as being composed of singular and plural because the attribute-value theory is compositional. Most linguists would take it as a given that a compositional feature theory is to be preferred over a noncompositional one, particularly if dealing with features like [singular] and [plural] that are 'interpretable' (whether the interpretation is purely morphosyntactic, as discussed below the quote on page 17, or properly semantic and therefore meaningful). Compositionality seems to be a fundamental aspect of language. Furthermore, compositional systems are much better understood formally than noncompositional ones and it is far from clear how feature specifications in a noncompositional system could be acquired/learned.

4.3.2.2 *Complexity*

We next turn to the problem of complexity. The feature system that Adger adopts in the end mixes privative features and attribute-value features. He writes (30–31):

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[13]A reviewer points out that an alternative formalization of the semantic hypothesis in (11) is possible in a type hierarchy of the kind used in Head-Driven Phrase Structure Grammar (Pollard & Sag 1987, 1994). On this alternative, one could also address the complication in footnote 12, by lexically assigning the relevant subtypes of the type *number* only to demonstratives and pronouns.

[14]Note that (11) allows a plural subject and plural marking on the verb to also signify dual. We do not know what the facts of the matter are in this case, i.e. whether Hopi plural precludes a dual interpretation or can include one. If the two are exclusive, it could be due to blocking or it could be derived compositionally by interpreting plural-marking on the verb as meaning **more than 2**.

> [A]s far as number features go, the simplest system seems to be the one where a feature has no value, and may be present or not . . .
>
> On theoretical grounds, we should prefer the simplest system. However, there may be phenomena which force us to adopt a more complex approach . . . as we develop our theory of syntactic relations, we will have cause to treat some features privatively, but others as having values . . .

The passage reveals that Adger considers a system that maximises use of privative features 'simplest', but he does want to have attribute-value features where there is theoretical cause. However, a mixed system is arguably not as simple as a uniform system that uses only attribute-value features. In other words, the mixed privative/attribute-value system is actually quite complex. A mixed system could well be harder to acquire than a uniform system. Unless other assumptions are made, for each feature the child would not only have to identify the feature and to determine what its possible realisations are, but would also have to determine whether the feature is privative or an attribute-value feature. By contrast, in a uniform attribute-value system, the task is only to identify features and determine their possible values. Furthermore, a mixed system is not as theoretically elegant as a uniform system. Adger needs attribute-value features in addition to privative features and we have demonstrated that attribute-value features are indeed preferable even in the case of dual number, which Adger presents as a central reason for adopting privative features. The feature system as a whole would be simplified and would be more elegant if ONLY attribute-value features were adopted.

4.3.2.3 *Unconstrainedness*

Lastly, the feature theory in *Core syntax* is unconstrained. The problem of noncompositionality is also, in a sense, a problem of unconstrainedness, but even if that problem were addressed, the following two properties would independently yield a highly unconstrained theory:

(12)   a.   *Feature-value unrestrictiveness*:
             Feature valuation is unrestricted with respect to what values attribute-value features may receive.

        b.   *Free valuation:*
             Feature valuation applies freely, subject to Locality of Matching (218).

The consequence of these two properties of Adger's feature theory is that feature valuation is completely unconstrained: any feature can in principle have any value and be valued by any other feature.

Let us first consider feature-value unrestrictiveness. It is tellingly demonstrated by Adger's proposal for English present tense subject-verb agreement (170–171). Agreement relates to the uninterpretable inflection feature on little *v*, [*u*Infl:], which must be valued. In general, little *v*'s [*u*Infl:] is valued by an interpretable tense feature on T which Agrees with [*u*Infl:], thus valuing and checking it, with results such as [~~*u*Infl~~:past]. A separate Spellout rule applies to the derivation, spelling out *v*[~~*u*Infl~~:past] as *ed* for English regular verbs (170).[15] However, in the present tense, T bears no tense feature, instead bearing only

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[15]Adger adopts a pedagogically useful abbreviatory convention: orthographic representation is used instead of phonological representation in Spellout rules.

a number feature that it receives from the subject in Spec*v*P (see also 220–221). Crucially, it is T's number feature, e.g. [singular], that values little *v*'s [*u*Infl:] feature in the present tense, e.g. yielding [~~*u*Infl~~:singular]. A Spellout rule pronounces this as *(e)s*.[16] Lastly, Adger assumes (171) that 'the semantic rules will interpret T lacking a tense feature as present tense.'

This is minimally tantamount to the claim that tense features and number features have something in common: namely, they can be the value of [*u*Infl:]. It is instructive to think about what such a claim would mean in a typed feature theory, such as the one employed in Head-Driven Phrase Structure Grammar (HPSG; Pollard & Sag 1987, 1994). If number and tense features can equally be the value of [*u*Infl:] then, on a typed feature theory, one of three conditions must hold:

(13) a. Number is a subtype of tense; or

  b. Tense is a subtype of number; or

  c. There is a supertype of both number and tense and it is this supertype that is the type of the value of [*u*Infl:].

Notice that these are substantive claims about language. As such, there is no reason to believe that either of the first two claims holds. We are therefore left with the last claim. If we require the values of [*u*Infl:] to be restricted to just number and tense features, then there must be some immediate supertype, call it *number-tense*, that is the type of the value of [*u*Infl:]. Unless there is an independent reason to assume that there is a natural language category of number-tense, the value of [*u*Infl:] must be completely unrestricted (i.e., it must be the root type, e.g. *object*). The minimal assumption is that all features work like [*u*Infl:], since no theoretical reason has been given for why [*u*Infl:] is special in this regard. This means that the feature theory is unconstrained: like [*u*Infl:], any feature can have any value.

The analysis presented by Adger to motivate the unrestricted feature theory has an empirical problem that would persist even if the theory were restricted such that only [*u*Infl:] has the property of feature-value unrestrictiveness. For example, a derivation goes through in which T is valued for tense with [past] but in which it is the number feature [singular] on the subject that directly values little *v*'s [*u*Infl:] feature. The result would be morphologically a present tense sentence but semantically a past tense sentence. In other words, a sentence like *Enkidu misses Gilgamesh* could freely be assigned the interpretation of *Enkidu missed Gilgamesh*. In fact, the problem is arguably worse than this, given Locality of Matching (218), which requires Agree for a feature F to hold between X and the closest c-commanding Y that matches for F. The subject in Spec*v*P c-commands *v*, so the theory would seem to predict that it should always be the subject's number features that value [*u*Infl:].[17] One could imagine an appeal to the Hierarchy of Projections to ensure that T is the closest possible valuer for *v*. However, Locality of Matching is invoked in cases where the target is not on the same hierarchy as the valuer

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[16]This account of singular agreement is also problematic in a more mundane sense: it generates sentences like *I leaves* and *You leaves*, since the first and second person singular pronouns would equally value *v*'s [*u*Infl:] feature as [~~*u*Infl~~:singular]. The Spellout rule must therefore be sensitive to more than just [singular].

[17]Note that the subject's number features must project to its topmost node, since it is the subject as a whole that is interpreted for number, not just the N within the subject.

(e.g., in explaining why an object cannot satisfy the EPP feature on T; 218), rendering such an appeal purely ad hoc.

This brings us to the property of free valuation. A possible reply to the problem just outlined with respect to Locality of Matching is that the [*u*Infl:] feature on little *v* is always valued by T, and thus cannot be directly valued by the subject. However, the theory actually has no way of making this statement: valuation is free, subject only to the general conditions imposed by Agree and Locality of Matching. In other words, a feature can be valued by any other feature, providing the two features are in a sufficiently local relationship and Agree holds. For example, a privative feature can value an attribute-value feature, and a feature with attribute *attribute*$_1$ can value a feature with *attribute*$_2$ (e.g., [*u*ϕ:singular] can value [*u*Infl:]). Feature-value unrestrictiveness entails that there is basically no restriction on matching, provided that one of the two features is unvalued. This means that there in fact are no conditions on the feature valuation imposed by Agree, beyond c-command, which is independently imposed by Locality of Matching. The upshot is that any feature can value a feature (free valuation) with any value (feature-value unrestrictiveness), provided the two features are in a sufficiently local relationship. The condition of locality still leaves a lot of room for problematic valuation, as sketched above, given the unconstrained nature of the system.

With respect to free valuation, it is again instructive to compare Adger's feature theory to one in a different syntactic theory, this time Lexical Functional Grammar (LFG; Kaplan & Bresnan 1982, Bresnan 2001, Dalrymple 2001). LFG's feature theory — unlike HPSG's, but like Adger's — is untyped. There are no conditions imposed in the feature theory itself as to what values features may have. Any such conditions are imposed by the substantive linguistic theory that the feature theory models. For example, there is nothing in the feature theory itself that precludes a feature structure from containing a feature NUMBER with the value PAST or a feature TENSE with the value SINGULAR. However, there is also no free valuation in LFG: in order for a feature structure f[TENSE SINGULAR] to be produced, there must be some explicit statement in the grammar or lexicon that (f TENSE) = SINGULAR (where such statements are normally made using the familiar LFG metavariables, ↑ and ↓, instead of labels like f). In the absence of such a statement, there is no way for the attribute-value feature in question to surface in an f-structure. Let us call feature valuation in LFG *explicit valuation*. Thus, one option for constraining Adger's feature theory is to replace free valuation with explicit valuation and to add a facility for making statements of the form '[*u*Infl:] on little *v* is valued by T.' In its current form, though, the theory lacks any such capacity and has free valuation. Together with feature-value unrestrictiveness, this means that any feature can in principle have any value and be valued by any other feature.

It should again be noted that the problem of unconstrainedness is about the underlying unconstrainedness of Adger's feature theory and not about the analysis of [*u*Infl:] on little *v* per se — just as the problem of noncompositionality is about the fundamental capacity of the feature theory to allow noncompositional feature bundles, not about the analysis of dual or Hopi. The fundamental joint problem of feature-value unrestrictiveness and free valuation is, for example, equally exemplified by Adger's analysis of English subject *wh*-questions and their lack of T-to-C movement or *do*-support (358–361), which is admittedly a tricky theoretical problem. Adger proposes that, in subject *wh*-questions, the [*u*clause-type:] feature on T is valued by [wh] from the *wh*-subject, rather than by

the interrogative force feature [Q] on C, which otherwise values [*u*clause-type:] on T. (Valuation by [Q] is what triggers T-to-C movement and, if there is no auxiliary, *do*-support.) However, [wh] is an interpretable morphosyntactic feature that has to do with the morphology, syntax, and semantics of *wh*-words (349) — it is not a force feature that identifies the type of the clause. Once again, this entails that either [Q] and [wh] are sortally related, which seems to be an ontological category error, or that [*u*clause-type:] can be valued by anything, with the attendant problems.

4.3.3 *Summary*

Adger's feature theory in *Core syntax* is superior to the informal and unclear alternative offered by Radford in *Minimalist syntax* (although Radford is just applying the standards of the original literature), because Adger at least makes an attempt at formalization, with the usual accompanying gains in clarity and precision. However, the particular feature theory offered by Adger is still highly problematic, because it is noncompositional, complex, and — as a result of feature-value unrestrictiveness and free valuation — extremely unconstrained.

5 CONCLUSION

At the end of each of these books, what we have is a transformational theory of syntax in which lexical specification is very important and which makes use of something very much like feature unification. In the interest of theoretical minimalism and 'virtual conceptual necessity', it would make sense to make the final transition to a unification-based, lexicalist framework which is adequately formalized (like other lexicalist frameworks) and which is not encumbered by the additional transformational mechanism of Move/internal Merge.[18]

On the contrary, rather than eliminating Move, Minimalism has instead clung to it vociferously. Chomsky (2005: 12) has recently exalted Move, continuing the quote on page 9 as follows:

> That property [the displacement property of language — AA & IT] had long been regarded, by me in particular, as an "imperfection" of language that has to be somehow explained, but in fact is a virtual conceptual necessity; some version of transformational grammar seems to be the null hypothesis and any other mechanisms, beyond internal Merge, carry a burden of proof.

The 'virtual conceptual necessity' of Move is predicated on the assumption that internal Merge (Move) is a natural subcase of Merge that arises in the absence of a stipulation to the contrary: 'Given A, we can merge B to it from outside A or from within A; these are external and internal Merge[.]' (Chomsky 2005: 12). However, this assumption is flawed. It relies on the hidden assumption that the inside of structure A is open to syntactic operations. This assumption does not come for free: it is a theoretical decision whether

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[18]Notice that we do not mean 'a unification-based, lexicalist framework' to have a specific denotation: We are not advocating that Minimalists shift to a particular, existing alternative. Rather, the resulting sort of theory could be purely Minimalist in spirit and keep many of its insights and, crucially, its programmatic assumptions, which are not shared by other theories of the kind advocated.

A is open or closed to syntactic operations — neither is a more 'natural' position. The assumption that yields Move as a 'virtual conceptual necessity' of Merge depends on an assumption that is itself not 'virtually conceptually necessary' (nor is its negation). Therefore, Move cannot be a conceptual necessity and transformational grammar is one hypothesis among many, not the null hypothesis, nor, perhaps, the minimal one.

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