This book is a collection of thirteen papers on topics related to the syntax-semantics and syntax-phonology interfaces in the framework of the Minimalist Program, focusing especially on Phase Theory. The contributions are developed from presentations at the 2006 Interphases conference, held in Nicosia, Cyprus, and have undergone critical review.

Although these papers deal mainly with syntactic phenomena and the syntactic component of the grammar, they are informed by - and have consequences for - theories of those components that interface with syntax, namely morphology, phonology, and semantics. Therefore, I have tried to make this review accessible to those (like myself) who do not work primarily in the Minimalist framework, but in intersecting fields that concern theories of the interfaces.

Following an introductory chapter, the volume is divided in three parts, each comprising four papers on loosely similar themes. The papers in Part I (chapters 2-5), 'Conceptual Issues', address questions concerning the architecture of the framework itself. Those in Part II (chapters 6-9), 'Articulatory Issues', add data from phonological phenomena, asking what these say about the theory. Last, those in Part III (chapters 10-13), 'Ordering Issues', explore problems in the ordering of operations and conditions, asking where during the derivation they apply.

Chapter 1: Phases and Interfaces, by Kleanthes K. Grohmann. In this introduction, Grohmann offers an overview of the volume, and of the framework in which these studies are set. This background includes the nature and role of the interfaces as conceived in the Minimalist Program, and more particularly, the origin, purposes, and consequences of Phase Theory within that framework, some of which it may be useful to review here.

Among the developments of the Minimalist Program (Chomsky 1993, 1995) is a shift in the search for explanations of syntactic phenomena toward the language faculty's interfaces with the conceptual-intentional system and the sensorimotor (or articulatory-perceptual) system. Put another way, the purpose of syntax is hypothesized to be to mediate between the semantic and phonological components, and its formal properties to be motivated and explained by this role.

In this model of the grammar, the output of the syntactic derivation is sent to the semantic and phonological interfaces, namely Logical Form (LF) and Phonetic Form (PF), by the process of Spell-Out (or 'Transfer'). In classical Minimalism, Spell-Out happens once, at whatever point the requirements of the formal syntax are resolved (whether through feature checking or Agree), after which the LF and PF branches of the derivation proceed independently.
Phase Theory (Chomsky 2000, 2001, 2004, 2007, 2008) posits that Spell-Out is cyclic, occurring more than once at structural points called 'phases'. More specifically, upon the completion of a phase - classically vP and CP - the complement of the head of the phase is removed from the syntactic derivation, and sent to the interfaces. Subsequent operations cannot affect spelled out material, potentially explaining locality phenomena, and the ordering of derivational conditions. Other models in which Spell-Out is cyclic or 'dynamic' include Multiple Spell-Out (Uriagereka 1999), Spell-Out-as-you-merge (Epstein et al. 1998), and Prolific Domains (Grohmann 2003).

The studies in the remainder of the volume chart courses between two overarching goals: to apply this model of the interfaces to the analysis of various empirical puzzles, and to refine the model based on conceptual issues. For example, what phenomena can Phase Theory account for? Which syntactic projections are phases? What determines that a particular projection is a phase? And how parallel or independent are the transferences of information to LF and PF?

Part I: Conceptual Issues

Chapter 2: The Successor Function + LEX = Human Language? by Wolfram Hinzen. Hinzen's contribution, and the following by Munakata, consider the nature of the conceptual-intentional system, and how it influences the narrow syntax. Hinzen argues against the general idea that an intentional interface, through LF structures, motivates several core structures and conditions of the narrow syntax, including phases, adjunction, displacement, Agree, binary branching, hierarchical relations, the EPP principle, and the A/A’ distinction.

Hinzen begins with the hypothesis that the syntactic operation Merge is reducible to the successor, or set-of, function: \( f(x, y) = \{x, y\} \). For example (page 31):

(1)
\[
\begin{align*}
\text{Merge } (1, 2) &= \{1, 2\} \\
\text{Merge } (3, \{1, 2\}) &= \{3, \{1, 2\}\} \\
\text{Merge } (4, \{3, \{1, 2\}\}) &= \{4, \{3, \{1, 2\}\}\}
\end{align*}
\]

etc.

Hinzen argues that this can model adjunction, which is the syntactic counterpart to predicate composition in the semantics, but cannot yield hierarchical syntactic structures. He concludes that hierarchical and other complex syntactic relations more likely originated from the evolution of the syntactic system, than under the influence of a specifically intentional interface.

Chapter 3: The Division of C-I and the Nature of the Input, Multiple Transfer, and Phases, by Takashi Munakata. Similarly to Hinzen, Munakata offers mostly conceptual arguments regarding the structure of the conceptual-intentional (C-I) system, but proposes a more ambitious model of its interaction with the syntax. Based in part on Chomsky's proposal that the C-I system imposes a dual semantics with (i) an argument structure component and (ii) a discourse and scopal component, Munakata proposes to divide the C-I system into two components that interface differently with the syntax. On one hand is (i) the conceptual system, which interfaces with the syntax through the numeration - that is, by selecting the lexical items to be combined by Merge -
and drives the building of a 'lexical phase' up to TP. On the other hand is (ii) the intentional system, which interfaces with syntax through the semantic component, and drives the building of 'functional phases' above TP.

Chapter 4: Dislocation Effects, Uninterpretable Features, Functional Heads, and Parametric Variation: Consequences of Conflicting Interface Conditions, by Hedde Zeijlstra. This chapter is inspired by the Strong Minimalist Thesis, which supposes that human language is a perfect solution to the requirements imposed on it by the interfaces. Zeijlstra seeks to explain four apparent imperfections in language as being optimal solutions to conflicting interface conditions. These are (i) uninterpretable features, (ii) 'dislocation' (displacement), (iii) crosslinguistic differences in functional categories, and (iv) the existence of crosslinguistic variation.

In short, displacement and movement express multiple meanings while minimizing phonological structure, while uninterpretable features are needed to implement these configurations. Languages differ in their functional categories depending on their inventories of interpretable features, and they differ in the first place because there are many, equally optimal solutions to the interface conditions.

Chapter 5: Adjunction, Phase Interpretation, and Condition C, by Petr Biskup. Based on copious illustrative data from Czech, Biskup takes a Phase-Theoretic approach to accounting for certain asymmetries in Binding Condition C and reconstruction effects, with respect to adjuncts as opposed to arguments. Asking when adjuncts are introduced into the derivation, he looks at adverbial and adnominal adjuncts, both clause-sized and sub-clausal, and argues that adjuncts are merged cyclically like other elements, rather than idiosyncratically. The resulting account defines locality in terms of phases, and incorporates information structure differences between vP and CP phases.

Part II: Articulatory Issues

Chapter 6: Non-Simultaneous Spell-Out in the Clausal and Nominal Domain, by Franc Lanko Marusic. Drawing data from Slovenian and English, Marusic explores the possibility that upon completion of a phase, the complement of the phase head is not necessarily sent to both PF and LF, but can be sent to just one of them. The effect of such non-simultaneous Spell-Out, when it is to PF only, is that a phase is pronounced early (low in the tree) but is interpreted late (in a higher position), as in covert movement (e.g. Quantifier Raising). Conversely, LF-only Spell-Out results in early (low) interpretation and late (high) pronunciation, as in reconstruction.

Marusic proposes that LF-only phases include finite TP, non-finite TP, and unaccusative vP. An LF phase has propositional semantics, and acts as a scope island, except to elements that escape by movement through its highest specifier. By contrast, DP/KP is a PF-only phase. A PF phase is a domain of nuclear (phrasal) accent, moves as a unit, and can be pronounced in isolation.

Chapter 7: A Phonological View of Phases, by Kayono Shiobara. Shiobara proposes a Phase-Theoretic model in which the syntactic derivation, and its division into PF phases, proceed not from the bottom up, as standardly assumed, but from left to right. According to this model, Spell-Out is executed in a parallel fashion to parsing, and is responsible for linearization.
Importantly, left-to-right phases are syntactic constituents when they are spelled out, though not necessarily in the final structure. Based on this premise, Shiobara reviews arguments from Phillips (1996, 2003) that left-to-right Spell-Out simplifies the computation of complex coordination, and of binding from fronted V-bar constituents. She then argues that it also simplifies the pronunciation of English heavy NP shift, of contractions like 'they'll', 'hafta', 'don't', 'who's', and of phase-sized prosodic constituents - namely intonational phrases in English, and major phonological phrases (MaP) in Japanese. For example (page 188):

(2)
[CP [NP Neko-ga] [vP t-NP nezumi-o t-v] [v toraeta]].
{MaP Neko-ga } {MaP nezumi-o toraeta}
'A cat caught a rat.'

Shiobara offers a briefer discussion of whether Spell-Out to LF is also left to right, suggesting that this might account for cases where wh-scope in Japanese plausibly corresponds to a left-to-right phase, but not to any bottom-up constituent.

Chapter 8: A Dynamic Approach to the Syntax-Phonology Interface: A Case Study from Greek, by Anthi Revithiadou and Vassilios Spyropoulos. Revithiadou and Spyropoulos present new data on the phonological phrasing of clitic-doubled objects in Greek, and offer an account of these facts in terms of Multiple Spell-Out. Taking the unit of Spell-Out to be the 'derivational cascade' (Uriagereka 1999), as opposed to the phase, they assume that a cascade is aligned to a phonological (p-) phrase at PF, but show that its division into one or more p-phrases is constrained to make p-phrases binary if possible - that is, containing exactly two prosodic words. Evidence for p-phrasing comes from intonation, from inter-word sandhi patterns, and from 'fill words' that are placed after the first p-phrase of their intonational phrase.

By these criteria, the authors argue that clitic-doubled object DPs, which are assumed to be adjoined to MoodP or CP, are independent cascades. On the syntactic side, clitic-doubled objects corefer with an object clitic, are islands for extraction from within, and are interpreted as topics. On the phonological side, clitic-doubled objects are always parsed as independent p-phrases, even when this results in sub-minimal p-phrases.

Chapter 9: Spelling out Prosodic Domains: A Multiple Spell-Out Account, by Yosuke Sato. Sato draws elements both from Chomsky's Phase Theory model, and from Uriagereka's Multiple Spell-Out model, to argue that the prosodic domains of inter-word phonological alternations in a number of languages correspond to the units of Spell-Out in one or the other of these models. Whereas Phase Theory takes vP and CP to be phases, according to Multiple Spell-Out a head is spelled out with its complement, but a specifier is spelled out with a following head only if non-branching, and if branching is spelled out independently.

Sato first cites patterns in Taiwanese tone sandhi, French liaison, Gilyak word-initial lenition, and Kinyambo tone deletion that are bounded by the units of Multiple Spell-Out. Moving then to patterns of mutation in Welsh and Irish, he finds that these are bounded by vP and CP, the Spell-
Out units of Phase Theory. He concludes that elements of both models are needed to account for the observed range of alternations.

Part III: Ordering Issues

Chapter 10: Toward a Phase-Based Analysis of Postverbal Sentential Complements in German, by Jiro Inaba. Addressing the different word orders of DP objects and CP complements of embedded verbs in German, which are respectively preverbal and postverbal, Inaba offers an account in terms of the order in which DP and CP complements are spelled out. Based on the principles that Spell-Out proceeds upward from the bottom of the tree, and that more deeply embedded elements are linearized later (Kayne 1994, Haider 1995), Inaba proposes that elements spelled out earlier are pronounced later.

Then, on the further assumption that the German verb and its complement are at the bottom of the clause, CP complements are spelled out before their verb because CP is a phase, and are therefore pronounced later (postverbally), whereas DP complements are spelled out with their verb, and are pronounced preverbally. Last, Inaba considers whether other verb-final languages in which both DP and sentential complements are preverbal - namely Bengali, Persian, and Japanese - represent counterexamples to the account. He concludes that they do not, because the preverbal elements in question are not CPs, but PPs, VPs, or DPs, or are not complements.


(3)
[John met the man who wrote __], and [Mary met the woman who published __] [RN the recent bestseller about bats].

Arguing against accounts in terms of Across-the-Board movement and ellipsis under coordination, they propose instead that cyclic Spell-Out provides the necessary notion of locality for an account in terms of multiple dominance, whereby the right node (RN) is a daughter of two discontinuous mother nodes. After showing that RNR is less local than movement, and differs semantically from coordination, they address issues in the linearization of such multiple dominance structures.

Chapter 13: The Ellipsis Movement Generalization and the Notion of Phase, by Masanori Nakamura. Comparing ellipsis phenomena in English, Japanese, and Irish, Nakamura proposes the Ellipsis Movement Generalization: if, in a particular language, a category can undergo ellipsis, then it cannot move unless phonologically null. He then goes on to derive this generalization from Phase Theory, on the premise that the elimination of uninterpretable features on a phase head triggers Spell-Out of its complement. Finding that VP and IP can be phases, in addition to vP and CP, he proposes that any projection can in principle be a phase, once all of its uninterpretable features are eliminated.

Chapter 14: Island Repair, Non-Repair, and the Organization of the Grammar, by Howard Lasnik. Lasnik seeks to clarify certain problems for cyclic Spell-Out from islands, ellipsis, and
Sluicing, which have to do with where during the derivation the relevant violations are assessed. For example, ellipsis ameliorates some structural violations, such as certain island violations, but not others, such as preposition stranding and Superiority violations. Further, some island violations that are repaired under Sluicing are not repaired under VP ellipsis. Although he offers no firm solutions, Lasnik suggests that islands generally represent PF effects, and that those violations that ellipsis - a PF phenomenon - fails to repair are violations at LF.

EVALUATION

As a volume, the present collection of papers serves the useful purpose of conveying the state of the art in Phase Theory, and in the study of the interfaces in the Minimalist Program, which have developed through a lively and distributed body of scholarship. Grohmann's introduction, in particular, provides a succinct and accessible synthesis of research in these areas.

The collection also serves to advance the Minimalist enterprise, both by developing the framework, and by testing interface explanations for various grammatical phenomena. In the rest of this review, I will discuss three productive research threads that I see emerging from these studies. These are empirical evidence for phasehood, progress toward defining the relation between phases and prosody, and exploration of the Strong Minimalist Thesis.

First, several chapters contribute to the necessary task of measuring Phase Theory against empirical data. Of these, Biskup's, Marusic's, and Bachrach and Katzir's contributions stand out by their application of rigorous syntactic criteria for phasehood, and Revithiadou and Spyropoulos's contribution by its rigorous investigation of phonological evidence. Further, Marusic’s program, which looks equally at the semantic and phonological significance of phases, lays the groundwork for a model that accommodates apparent mismatches between these.

Next, I was particularly interested in those contributions that addressed the relationship between phases and phonological constituents, as these contribute to resolving a potential redundancy between phase-based explanations for the domains of inter-word phonological phenomena, and existing explanations from the Prosodic Phonology framework. In Revithiadou and Spyropoulos's analysis, phonological phrases are not necessarily identical to phases, but are contained within them. By contrast, Shiobara's exploration of left-to-right Spell-Out assumes that derivational phases and prosodic domains are more or the same thing, but also provides the basis for a model of the prosodification of phases in which prosodification desirably mirrors parsing, and serves in a Minimalist fashion to reduce computational load.

Last, I found that Hinzen's and Zeijlstra's contributions, while somewhat removed from actual language data, zero in on specific steps toward an answer to the Strong Minimalist Thesis. That is, that language is a perfect solution to interface conditions. Or, to put it another way, the shape of the formal syntactic component is determined by its role as mediator among lexicon, semantics, and phonology.

Hinzen, taking seriously the idea that hierarchical syntactic structure, displacement, functional projections and other formal aspects of syntax might be determined entirely by their interface to
a conceptual-intentional system, concludes that by and large they cannot. The implication, it would seem, is away from the Minimalist Thesis in its strong form.

In the other direction, Zeijlstra's work to derive uninterpretable features, displacement, and crosslinguistic variation from the conflicting demands of semantic interpretability and phonological euphony seems to represent progress toward a testable framework for how interface conditions yield syntax. Moreover, his claim that crosslinguistic variation is to be attributed not to parameter settings, but to differently optimal resolutions of conflicting interface conditions, has an Optimality-Theoretic flavor that it would be interesting to see developed further.

REFERENCES


ABOUT THE REVIEWER

Adam Werle is Adjunct Assistant Professor of Linguistics at the University of Victoria. His research interests include prosodic phonology, the syntax-phonology interface, the syntax and
phonology of clitics, and Wakashan languages. His 2009 dissertation investigates the syntactic and prosodic representations of clitics in Bosnian, Serbian, and Croatian, and their interactions with word accent, phonological phrasing, and word order. He conducts periodic fieldwork on the Wakashan languages Ditidaht, Nuu-chah-nulth, and Kwak'wala.