A Guide to Morphosyntax-Phonology Interface Theories: How Extra-Phonological Information Is Treated in Phonology since Trubetzkoy’s Grenzsignale


Kayono Shiobara
Tokyo Woman’s Christian University*

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1. Introduction

The book under review itself has the characteristics of a review in the following sense: It is a portion of Scheer’s 2008 manuscript, which was originally designed to be the second volume of Scheer (2004), but turned out to be too long to fit into the covers of a single book. Accordingly, only the first two parts of the manuscript are published as this book with significant revisions from the original manuscript, and the third part was made into an independent book, Scheer (2012) (which Scheer calls Vol. 2 in this book). The two parts in the book under review here contain (i) a history of the interface between morpho-syntax and phonology roughly since World War II, in particular, a survey of morpho-syntactic information in phonology, and (ii) a discussion on what we can learn from previous interface theories. Thus, this book contains a comprehensive review of the historical development of morphosyntax-phonology interface theories.

In contrast to the first two parts, the third part (Vol. 2) exposes Scheer’s own view of the interface, “Direct Interface,” which is based on the idea that only truly phonological objects can be representational carriers of morpho-syntactic information in phonology. Scheer argues that phonology is entirely flat: no concatenation of any pieces, no Merge, no projection, and no trees. He also defends what he calls Interface Dualism, the idea that

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natural language provides for and sees both procedural and representational aspects of the interface. Scheer’s view of the interface builds on the lessons established in this book.

Throughout the book, “modularity” is the key concept which guides the survey of literature and the discussion. Scheer points out that generative grammar is deeply rooted in modularity (Fodor (1983)), but that modularity is often absent in the interface literature. The readers of this book should be reminded of the assumption in the generative tradition that morpho-syntax and phonology are distinct modules that carry out computation on the basis of domain specific vocabulary. In order for two modules to talk to each other, there must be a mediating device which understands the vocabulary of both modules and translates information from one into the other. In other words, translation is required at the interface.

This book is organized into two main parts, Part One “morpho-syntactic information in phonology” and Part Two “lessons from interface theories,” preceded by an “Introduction,” and with an “Interlude (Modularity)” between the two parts. Part One is divided into twelve chapters, starting with the introduction of Kenstowicz and Kisseberth’s (1977) classification of linguistic processes at the interface as the context for a discussion of the relationship between morpho-syntax and phonology (Chapter 1, Part One). The following chapters review structuralist and generative interface thinking chronologically, and also proceeds theory by theory. For example, Chapter 5 is concerned with the contributions that the “Sound Patterns of English” (SPE, Chomsky and Halle (1968)) made to interface theory. Scheer posits that the argument that the communication at the interface is both procedural and representational has its roots in SPE. The final chapter of Part One focuses on Distributed Morphology, where phonology is assumed to have direct access to the morphology.

The Interlude after Part One aims to contextualize for the reader issues associated with “modularity,” the key guiding concept in the book.

The main purpose of Part Two is to organize for the reader theoretical ideas and assumptions concerning the morphosyntax-phonology interface, and to locate them in the context of current minimalist syntax.

In a nutshell, this book contains a thorough survey of morpho-syntactic information in phonology, and is of significant use and importance for syntacticians who are interested in exploring the morphosyntax-phonology interface but who have rather limited knowledge of phonology or phonological theories. In the next section, I will review the book focusing on the issue of cyclic derivation and spell-out, a hot issue among syntacticians since
Uriagereka (1999) and Chomsky (2001), and one which is rarely considered from a phonological viewpoint.

2. Cyclic Derivation and Spell-Out from a Phonological Perspective

2.1. A Very Brief Historical Review

Cyclic derivation was introduced by Chomsky et al. (1956: 75), where it appears as an algorithm that specifically derives stress placement (as with, for example, the oft-quoted compound *light house keeper*, with three possible meanings depending on the stress pattern). However, at that time, discussion only concerned the representational side of the interface.

Halle and Vergnaud (1987) proposed granting cyclic status only to a subset of morpho-syntactic divisions. In other words, some nodes trigger interpretation while others do not, depending on lexical specification of affixes. This is what Scheer calls “selective spell-out” and this is exactly how modern syntactic phase theory works. Halle and Vergnaud (1987) was “the starting point of a new tradition in the procedural communication between morpho-syntax and phonology” (p. 185).1 Let us look at examples.

(1) Halle and Vergnaud’s (1987) analysis of affix classes (based on p. 193)

\[
\begin{array}{cc}
\text{a. univérs-al-ness} & \text{b. govern-mént-al} \\
\gamma & \gamma \rightarrow \text{phon} \\
\text{class 2} & \beta \rightarrow \text{phon} \\
\text{class 1} & \alpha \\
x & \text{root} & x & \text{root}
\end{array}
\]

Under (1a), the word *universalness* illustrates the pattern where a class 1 (cyclic) suffix precedes a class 2 (non-cyclic) suffix, while (1b) shows the reverse order of affix classes with the word *governmental*. According to Halle and Vergnaud (1987), spell-out transforms a tree into a bracketed linear string, which is the input to phonological computation. In (1a), the word is spelled out at the lower portion of the structure, *[univers-al]*; and in (1b), the word is spelled out as a whole structure, *[govern-ment-al]*. Thus,

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1 When only a page number is shown in this review, it refers to the page number of the book under review.
the spell-out mechanism ignores class 2 nodes, and brackets are only inserted at class 1, cyclic nodes. Using modern terminology, class 1 nodes (β in (1a) and γ in (1b)) are phases, but class 2 nodes are not.

Scheer observes that these phonological origins of cyclic derivation and spell-out have gone unnoticed in the syntactic literature (p. 9). He goes on to argue that the offspring of “no look-back” devices was also essentially phonological, as seen in Kiparsky’s (1982) Strict Cycle Condition. Critical for current syntactic phase theory is some such device, which guarantees that previously interpreted strings do not burden later computation (p. 9). No look-back devices have been around since Chomsky (1973) and were recently revived in the Phase Impenetrability Condition (PIC) (Chomsky (2001)). This approach follows naturally from Chomsky’s explicit comment on the fact that the computational economy of active memory concerns phonological as much as syntactic computation: “the phonological component too can ‘forget’ earlier stages of derivation” (Chomsky (2001: 12f, 2004: 107f)). This means that Chomsky takes the PIC to be a general condition on computational systems.

2.2. Problems in the Syntactic Literature

Although the spell-out mechanism is the central piece of morphosyntax-phonology interface theory, its status, particularly on the phonological side, is not well understood. The fact that the spell-out mechanism is understudied is also obvious when syntacticians talk about “PF”: “it is obvious that PF is distinct from phonology (a lot of things are supposed to happen ‘at PF’ and to be ‘phonological’ that are truly miraculous for poor phonologists)” (p. 15). In particular, the minimalist perspective on language drives syntacticians to purge from syntax everything that is not “perfect,” i.e., that is not motivated by interface requirements (“bare output conditions”), or by a general condition on computational efficiency (Chomsky (1995, 2005)). Syntacticians use “PF” or “phonology” as a place where they can unload things that they do not want to accommodate in syntax. However, as Scheer points out, what syntacticians call phonological when they talk about PF-outsourced syntactic operations typically has nothing to do with phonological computation (p. 20). For example, “deletion at PF” is popular among syntacticians, and under some analyses of sluicing or ellipsis in general, phrases or entire CPs may delete (e.g. Merchant (2001), Fox and Lasnik (2003)), although (syntactic) phrases or CPs have nothing to do with phonology. In the next section, I will consider what Scheer predicts the morphosyntax-phonology interface should look like.
3. Morphosyntax-Phonology Interface from a Phonological Perspective

3.1. What Counts as a Phase?

Recall that Scheer uses “modularity” as a guiding concept that evaluates the relevance of interface theories. Since morpho-syntax and phonology are two distinct modules, their interface must do the job of making them communicate with each other. Modern phase theory, originally motivated by economy-driven minimalist reasoning, has made intermodular argumentation possible: morpho-syntactic concatenation proceeds by phase, and it is intertwined with interpretation.

Chomsky tries to derive phasehood from extra-syntactic properties, and defines a phase as “a natural syntactic object SO,” which has a certain degree of independence both phonologically and semantically (Chomsky (2000: 106)). Being independent means being prosodically isolable and movable on the phonological side, and being propositional on the semantic side, which means for example that phases are expected to be θ-complete. Chomsky’s original take on phasehood identifies CP and vP (and possibly DP, Chomsky (2005: 17f)) as phases. Notice however that as the often quoted example in (2) shows, major syntactic phrases in (2a) do not seem to coincide with prosodic units (e.g. intonational structure) under (2b).

(2) a. \[
\begin{align*}
\text{CP} & \text{ This } \text{vP} \text{ is } \text{DP} \text{ the cat } \text{vP} \text{ caught } \text{DP} \text{ the rat } \text{CP} \\
& \text{ that } \text{vP} \text{ stole } \text{DP} \text{ the cheese}]
\end{align*}
\]

b. (This is the cat) (that caught the rat) (that stole the cheese)

Furthermore, according to Chomsky, the item that should enjoy extra-syntactic independence is whatever is actually spelled out. However, since only the complements of v and C, rather than vP and CP themselves, are sent to PF(/LF) upon the spell-out of vP and CP, it should be the complements that enjoy interface independence. As Scheer correctly points out, this is obviously not the case (p. 656).²

The example in (2) was used to show the non-isomorphism between syntax and (prosodic) phonology, but the non-isomorphism is only based on the bias of a domain-based view of morphosyntax-phonology mapping. Instead, we can see from (2) that intonational chunks begin with every CP. Based on this edge-matching between morpho-syntax and phonol-

² Other phases proposed in the literature are, e.g. AspP (Hinterhölzl (2006)) and PP (Abels (2003)). Discussion on phasehood can be empirically as well as theoretically driven (pp. 654–659).
ogy, Shiobara (2004, 2010) defines a phase, which Shiobara assumes equals a unit of spell-out, as a pair of a syntactic object and a prosodic object whose size is prosodically determined and subject to parametric variation. Though space limitations do not allow me to reproduce the details of the argument, this definition of phase meets the extra-syntactic consideration that a phase should exhibit prosodic independence.

Note that taking intonation into consideration when we approach the status of the morphosyntax-phonology interface is in order. In fact, intonation is a good window from phonology to morpho-syntax. Scheer argues that intonation is "the only case that [he is] aware of where the cyclic spell-out of words leaves phonological traces—if intonation is any phonological at all" (p. 674). Besides the example in (2) above, we are aware of examples which suggest that intonation should directly depend on syntactic structure. A characteristic example is the contrast seen in (3) (Bresnan (1971), underscored words are intonationally prominent).

(3) a. Helen left directions for George to follow.
   b. Helen left directions for George to follow.

The sentence in (3a) means that Helen has left some directions, and George should follow those directions, while (3b) is an invitation for George to follow Helen. Since both sentences are phonetically identical (aside from intonation) but have contrasting syntactic structure, the different intonation must be a consequence of the latter. Under (3a), follow is transitive and belongs to a relative clause whose head is directions, while under (3b) it is intransitive and complements directions.

Scheer speculates that the calculus of intonation is actually not the result of phonological computation (p. 675, see also p. 616 fn 167). Relevant is the argument that intonation is recursive (Ladd (1986)), which is the privilege of morpho-syntax (Hauser et al. (2002)). In other words, intonation has the syntactic character of recursive structure on the one hand, and gets realized in the phonology as sentential prominence on the other. Therefore, an intonation chunk can be regarded as a good candidate for a phase, whose job at the interface is to mediate morphosyntax-phonology communication (as argued in Shiobara (2004, 2010), see also fn 3). Notice, however,

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3 For example, a phase is \{CP, IntP\} in English. Unlike Scheer, I assume prosodic units such as Intonational Phrase (IntP) in the Prosodic Phonology to be a mediating level between morpho-syntax and phonology. Whether this is necessary or not is worth reconsidering in terms of modularity of levels and the mechanism of spell-out.
that identifying an intonational chunk as a phase requires the postulation of something like prosodic structure (Nespor and Vogel (1986), Selkirk (1986)), of which an intonational chunk is a part. This goes against Sheer’s Direct Interface view (see section 1), or Cinque’s (1993) purely syntactic analysis of sentence stress.

3.2. Issues: Phonological Impact on Syntax and More on Intonation

At the outset, Scheer states that this book is about the interface theories that follow the inverted T model (Chomsky (1965)). That is to say, communication is only considered in one direction, from morpho-syntax to phonology, and eventual phonological influence on morpho-syntax lies beyond the scope of the book (p. 16). In this section, I shed light on the question of what kind of issues recent interface theories raise for phonological influence on morpho-syntax.

Recent biolinguistics looks at language from a biological and evolutionary perspective. Based on Hauser et al. (2002), the idea is that the appearance of language in the evolution of the species sets a restrictive frame that imposes certain properties upon grammar. Chomsky (2005) identifies three factors in language design: i) UG (i.e. genetically endowed properties that are specific to language), ii) experience and iii) more general cognitive capacities that are not specific to language or even to the species. The shift is from UG to the third factor, and language relies on mechanisms that are much less specific to language than what was believed in earlier generative theories. Hauser et al. (2002) suggest that UG could actually reduce to recursion (Merge) and the ability to communicate with the interfaces (Phase): this is the Faculty of Language in the Narrow sense (FLN). In the biolinguistic perspective, phonology and semantics belong to the animal-based Faculty of Language in the Broad sense (FLB) and hence do not really belong to what is language-specific in the human cognitive system. “PF and LF are thus supposed to have been present before the one or two innovations that produced Merge and phase, and therefore to be available to and mastered (or masterable) by (certain) present-day animals” (p. 547). Under this view, phonology is an independent module, but not a “linguistic”

4 In earlier minimalism, however, some parts of the performance systems (i.e. the sensori-motor system and the conceptual-intentional system) are considered to be linguistic, and hence PF and LF are inside of the linguistic cognitive system as well (Chomsky (1995: 1–2), Fukui (2001: 105–106)).
module (Samuels (2009)).

Given this, phonological impacts on syntax (if any) are regarded as nonlinguistic impacts on the linguistic cognitive system. As a potential case of the phonological impact on syntax, discussion of “PF movement” is in order here. Motivation for PF movement comes from both the syntactic and phonological sides. On the former side, so called “stylistic” rules come to mind in that they do not have syntactic motivation, and may violate syntactic regularities (Chomsky (1995: 324–325)). For example, a phrase may be extrapolated to sentence-final position from the subject position, from which an item may not usually be extracted. This is illustrated in (4).

(4)  
   a. [Reviews ____] will appear shortly in all the major linguistics and philosophy journals [of that new book we have all been waiting for].  
   b. [An analysis ____] has not been forthcoming [that is not uncomplicated].  

(Stucky (1987: 388))

On the phonological side, we see that intonation, focus, minimal word constraints and the like appear to be able to bear on morpho-syntax. To take the example of extraposition again, Truckenbrodt (1995) argues that extraposition is phonologically governed in the sense that it applies to an intonational phrase and is blocked by an intervening intonational phrase. Look at the example in (5a), with the intonational phrasing in (5b) (items in parentheses construct an intonational phrase).

(5)  
   b. (A book ____) (delighted Mary) (by Chomsky).  

Notice here that Truckenbrodt’s analysis is based on the existence of prosodic structure.

Thus, extraposition is the kind of evidence which suggests that syntactic movement may be sensitive to phonological constraints. Any reasonable interface theories must be able to treat this simultaneous availability of morpho-syntactic structure and phonological content. The treatment of PF movement in the minimalist literature where these displacements are expelled to PF for the sake of perfect syntax (or FLN) is obviously no solution (cf. section 2.2).  

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5 Scheer also discusses heavy NP shift in this light (pp. 359–361, p. 484, 142f), but is dubious about the idea that size (or heaviness) is phonological. See Shiobara (2004, 2010) and references therein for related discussion.
4. Conclusion

I hope to have shown in this short review that the book under review is not long without reason: this book is not only very informative but very enlightening. It starts with a historical review of the interface between morpho-syntax and phonology, using modularity as a referee for interface theories, and finally locates the interface debate in the context of current minimalist syntax and phase theory. Despite its intimidating length, this book can be approached in different ways, and should serve many linguists in different ways. The reader is frequently directed to other areas in the book which are relevant to the current section they are reading. Also, the section numbers are embedded in the text and their locations are given in bold in the margins of the page, which makes this large book reader-friendly (Leonard (2013)).

On a final note, this book is also fun to read thanks to Scheer’s sense of language. For example, he argues for flat phonology and names it “deforestation”: unlike morpho-syntax, no merge and no trees appear in phonology. Readers should refer to Scheer (2012) to see what this all means.

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Department of Literature and Culture in English
Tokyo Woman’s Christian University
2–6–1 Zempukuji, Suginami-ku
Tokyo 167–8585

e-mail: kayonois@lab.twcu.ac.jp