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This is a contribution from *Studies in Language* 40:4  
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## REVIEW

**Inkelas, Sharon.** 2014. *The interplay of morphology and phonology*. Oxford: Oxford University Press [Oxford Surveys in Syntax and Morphology 8]. xix+422 pp. (ISBN 978-0199280483)

Reviewed by Michael Cahill (SIL International)

The *Interplay of Morphology and Phonology*, hereafter IMP, is not exactly an encyclopedia of morphology-phonology interactions, but it comes close. It is labeled as a “phenomenon-oriented survey,” and this puts the emphasis on a display of a wide variety of cases where morphology affects phonology, phonology affects morphology, or yet more complex relationships. IMP is not a book that develops new theory, but Inkelas describes how various theories interact with these phenomena. Most chapters of IMP start with a brief description of phenomena and theoretical issues that arise for these, then move to a much heftier section describing phenomena from a variety of languages, and conclude with a review of how various theories have handled — or not handled — these phenomena.

After an Introduction chapter, which explains the general approach, Chapter 2, “Morphologically conditioned phonology,” begins the main part of IMP by focusing on perhaps the most obvious cases of morphology-phonology interaction, where a phonological process depends on some specific morphological configuration. Inkelas lays the foundation for theoretical discussion in later chapters by bringing up two general theoretical approaches to these. The first is Single Grammar Theories such as the Sound Pattern of English (Chomsky and Halle 1968) and some Optimality Theory (OT) models (e.g. McCarthy and Prince 1995), which index phonological constraints or rules with morphological tags. The second is Multiple Grammar Theories such as Lexical Phonology (e.g. Kiparsky 1982, Mohanan 1986), Cophonology (e.g. Inkelas and Zoll 2005), or Stratal OT (e.g. Kiparsky 2000), in which different grammars are applied to different morphological constructions or lexical strata. As Inkelas notes, most phenomena of this chapter can be analyzed adequately with either approach, though Chapter 7 presents cases in which the theories make different predictions. In the main sections, Inkelas presents phonology that is sensitive to lexical class, such as differing stress assignment in nouns vs. verbs and adjectives in Lenakel, and arbitrary lexical classes in Sacapultec. Phenomena sensitive to roots vs. affixes are also presented. Here she discusses McCarthy and Prince’s (1995) proposal that roots are universally more faithful than affixes, showing examples where this is obeyed, but also details counterexamples, e.g. stem-final deletion of Turkish velars when they

become intervocalic as a result of suffixation. More generally, IMP presents examples of deletion, germination, dissimilation and other segmental and suprasegmental phonology that apply only with certain morphemes or morpheme classes. The chapter closes with a theoretical discussion of how various theories would address the question “how many types of morphologically conditioned phonological patterns can exist in a language?” Some theories, e.g. Lexical Phonology and its successors constrain the range severely, while others such as Cophonology predict the possibility of a larger number of patterns.

Chapter 3, “Process morphology,” focuses on morphology which is realized not by concatenation of morphemes, but by some other sort of phonological process. This differs from a phonological process that is triggered by the presence of some morpheme (discussed in Chapter 2), though there is some overlap in the patterns involved. IMP presents examples of the same types of processes examined in the previous chapter (deletion, vowel lengthening, dissimilation, etc.), except these have no concomitant additional morphemes. This process morphology is important to inform theories of morphology, specifically that not all morphology can be regarded as concatenation of items. At the same time, it is sometimes difficult to neatly assign a process to one or the other of these, as in tone replacement in Hausa. In theories such as Cophonology Theory, the theoretical choice does not have to be made, since there is no formal distinction. However, in Level Ordering theories, a clear distinction must be made. And since the number of levels in these is small, it appears that the fine-grained analysis of examples of languages in this chapter constitute a challenge for these.

Chapter 4, “Prosodic templates,” starts with a reminder of McCarthy’s approach to Arabic words, e.g. perfective verbs have the form [CV][CVC], with relevant consonants and vowels which are themselves morphemes fitting into this template. Templates can instantiate a maximum or minimum size limit, with insertions or deletions applying to satisfy these. Some languages’ templates apply only to a single construction, while others apply more widely, in some cases even throughout the whole language. There is proportionately a greater amount of this chapter spent on theoretical approaches than in previous chapters. Approaches generally refer to a template directly (two subsets of theories are mentioned) or as a result of constraints interacting with each other, an “emergent” approach. Sierra Miwok and Tiene are examined in the light of the latter. The chapter closes with a discussion of Downing’s (2006) “Morpheme-Based Generalized Template Theory,” which, in contrast to the language-specific discussions of the rest of the chapter, tackles broader generalizations across languages.

Chapter 5, “Reduplication,” is one of the longer chapters, not surprising considering the author’s previous major work on the subject (Inkelas and Zoll 2005). But she diligently evokes the multitude of other theories that impinge on the topic

and as far as I can tell, compares them objectively and fairly. This chapter mentions different theories somewhat earlier than other chapters; it does not start with a pure documentation of the phenomena. By its very nature, reduplication is both phonological and morphological, and Inkelas distinguishes two broad streams of approaches to reduplication: one using a phonological base and the other regarding morphology as the more basic. Her first pass at describing reduplication is in the context of phonologically based theories. She covers partial and full reduplication, and also the wide varieties of partial reduplication. Even in fairly “normal” cases such as Mokilese *nikid/nik-niked* ‘save/saving,’ more recent research has concluded that the reduplicant is prosodically defined (e.g. “bimoraic syllable” here), not strictly in terms of CV patterns. She also offers lesser known and rarer cases such as non-local reduplication, where the reduplicant is at the opposite edge of the base, as in Madurese *dus-garadus* ‘fast and sloppily,’ or reduplicative infixes, e.g. Mangarayi *g-urj-urjagji* ‘having a lot of lilies.’ She presents analyses in terms of Base Reduplicant Correspondence Theory (BRCT) of McCarthy and Prince (1995), as well as others, bringing in her Morphological Doubling Theory (Inkelas and Zoll 2005) as well. Over- and under-application of phonological processes in reduplicants are discussed. She notes that what I would term a prototypical phonological reduplication has one distinct set of properties, and prototypical morphological reduplication has a different set, but many cases straddle the line between these. IMP then turns to specifically morphological reduplication. Bantu exemplifies the case where different portions of a word may be reduplicated, but that at least a part of the root is included in the reduplicant. Some reduplicants require a disyllabic form, and this may or may not include affixal material. In other languages, the reduplicant size varies with the size of the morpheme that is reduplicated, strongly suggesting a morphological reduplication. Though reduplication is generally thought of as a word-level phenomenon, Inkelas also notes (unusual) cases of *phrasal* reduplication.

Chapter 6, “Infixation,” is shorter than some of the other chapters, presumably since infixation, an affix appearing inside the base, is not as common as some of the other phenomena in IMP. Inkelas, citing Yu’s (2007) survey as well as others, shows that infixes appear in a great variety of functions, unlike reduplication, which mostly appears to have an iconic function of some sort. The positions, or “pivots,” of infixes are severely restricted, occurring next to a **peripheral** constituent (vowel, consonant, syllable), or next to a stress, that is, edges or prominences. For example, Chamorro *tristi* ‘sad,’ *tr-um-isti* ‘becomes sad’ has the pivot before the first vowel. Ulwa’s pivot is after the stressed syllable, e.g. *alá:kum*, *alá:-ka-kum* ‘Muscovy duck.’ Infixation can be reduplicative, but unlike some reduplicants discussed in Chapter 5, this internal reduplication always copies local material, not long distance. In terms of theory, IMP cites McCarthy and Prince’s (1993)

view that infixation is a phonological adjustment to an affix, making it more well-formed, e.g. in terms of syllable structure. But since some cases of infixation are neutral or even harmful with respect to improving well-formedness, there also needs to be a more lexical approach in such cases, stipulating location without reference to phonological well-formedness.

Chapter 7, “Interleaving: the phonological interpretation of morphologically complex words,” distinguishes between cyclicity proper and layering. The term “cyclicity” has been used in various ways, so Inkelas uses “cyclicity proper” when the same phonological constraint applies at every step of the morphology, resulting in an output different than if the constraint applied only once on the morphologically complex word. These cases are relatively limited, with most but not all attested cases involving syllabification or stress assignment. For example, Turkish syllabification, epenthesis, and vowel harmony apply in three cycles, resulting in an output *tʃajuɹma* ‘my tea-DAT’ rather than the unattested \**tʃajma*, the result if the processes were applied only once. Layering, in contrast to cyclicity proper, is when phonological processes apply at different stages of the morphology, but different processes apply at each stage. In Finnish, for example, a consonant gradation process must apply only at a stem-formation stage, but not at the word-formation stage. Interleaving phenomena provide a testing ground for the different approaches of level ordering theories such as Lexical Phonology (and Stratal OT) and Cophonology Theory, mentioned in the Chapter 2 summary above. Inkelas presents previously published analyses of Malayalam and Turkish as counterexamples to fixed level ordering, but which are amenable to other approaches which can incorporate layering. Finally, the crucial issue of bracket erasure is discussed at some length — what internal structure can a constraint refer to? Theories vary, with positions ranging from strict (brackets erase at all cycles, i.e. visible only during a cycle, as in Cophonology) to weak (brackets always visible at any cycle, common in OT literature). Inkelas presents several cases in which internal structure must be accessible to higher-level phonology, though at least some of these may be amenable to reanalysis which does not require this.

Chapter 8, “Morphologically derived environment effects,” dives into theory more immediately than most of the chapters, appropriate for this specific topic. It discusses those cases in which a process occurs in a derived environment, but not in an underived one. A well-known example is Finnish assibilation, in which heteromorphemic /t+i/ becomes /si/, but monomorphemic /ti/ remains unchanged. Typically the target and the conditioning environment are in different morphemes, and neutralization of contrast occurs only in derived environments. After invoking Kiparsky’s early Alternation Condition and later Strict Cyclicity, IMP brings up the Comparative Markedness approach within OT (McCarthy 2003), in which markedness constraints distinguish between structures present in the input from

structures present in the output. Appropriate ranking will preserve the old structures but not the new ones. Comparative Markedness can be extended to cases where the environment is phonologically derived, not just cases of morphological derivation. However, data from Tohono O’odham and other languages pose problems for Comparative Markedness which are not easily solved, if at all. The Cophonology approach can handle these, but does not fare well in other cases, and Inkelas writes that there is no current theory which applies insightfully to all cases of morphologically derived environmental effects. There is the possibility that the right theory has not yet been proposed, but Inkelas raises another possibility: that these “morphologically derived environments” are not a single class of phenomena at all. A detailed look at Turkish velar deletion shows that a derived environment is not necessary.

Chapter 9, “When phonology interferes with morphology,” discusses when phonological considerations outrank morphological ones. In comparison with other phenomena in IMP, these are relatively rare, but do exist. One non-controversial type of phenomena is suppletive allomorphs, which cannot be derived from each other, but surface in a complementary distribution controlled by phonology. In Modern Western Armenian, for example, the definite suffixes *-n* and *-ə* follow vowel-final and consonant-final nouns, as in *lezu-n* ‘the tongue’ and *atorr-ə* ‘the chair.’ Such cases are easily accounted for in terms of syllabic well-formedness, but not all suppletive allomorphy is so obvious in its motivation, even when the phonological environments defining the distribution are clear. Another relatively non-controversial topic is when some morphological construction is prevented from occurring for a phonological reason. A well-known English example is that the comparative suffix *-er* occurs only in adjectives which are monosyllabic or have a very small second syllable, e.g. *greener* and *subtler*, but *\*honester* is blocked and the periphrastic *more honest* must be invoked. The chapter concludes with two types of cases which have less scholarly agreement than the preceding. One is the tendency in languages to avoid sequences of homophonous morphemes — the Repeated Morph Constraint — though in many cases the morphemes are not phonologically identical, but only similar. One wonders about the conceptual similarity to the Obligatory Contour Principle, limiting or prohibiting identical adjacent features, but Inkelas does not bring up the possibility, and it may be that no one has written about this. The chapter closes with an examination of cases where phonological considerations at least partially determine the variable order of affixes.

Chapter 10, “Nonparallelism between phonological and morphological structure,” is concerned with the fact that phonological structure does not match the morphological structure of a morphologically complex word, sometimes called “bracketing paradoxes.” Compounds in some languages function as one phonological domain in some cases, two in others. For example, Dutch suffixes may *or*

may not combine with the root as part of the phonological word. More strikingly, some languages have a cluster of affixes which acts as its own separate phonological word, separate from the root. This relates to the literature on the syntax-phonology interface as well, but that prosodic structure mediates between syntax and phonology is fairly well-established, but does not seem to be the case for morphology and phonology; reference to morphological structure is still required.

Chapter 11, “Paradigmatic effects,” demonstrates two types of paradigmatic phenomena. The first preserves the base identity in the face of phonological pressure to change it. This can also be analyzed by interleaving morphology and phonology as discussed in previous chapters. In other cases the cyclicity and paradigmatic analyses make different predictions. As Inkelas points out, paradigmatic effects in synchronic phonology have a diachronic parallel in well-known cases of leveling in historical linguistics. Examples up to this point have enforced identity between paradigmatic elements, but there are also cases where phonology enforces a change in form to avoid identical forms — “anti-homonymy.” One example is Lesbian Greek, in which an unstressed vowel is generally deleted, but then there exists counterexamples like *kóv* ‘(he/she) cuts’ and *kóv-u* ‘(I) cut’. If the unstressed vowel in the latter were deleted, homophony would result, with accompanying loss of morphological information. Several other phonological processes which are also blocked or triggered by anti-homophony are illustrated from different languages.

## Evaluation

To say that this is a detailed book is an understatement. Fortunately, navigation helps abound, beginning with a meticulous table of contents that is seven pages long, actually longer than the subject index (which probably could be enhanced). There are 34 pages of references, and the language index lists over 150 individual languages, as well as eight language families. Thus the very few languages mentioned in this review are merely the tip of the proverbial iceberg; multiple language data sets are examined for each phenomena discussed. I appreciate Inkelas’ mix of examples that are well known with those which have not been cited as much in the literature. The multiplicity of languages cited for each phonological pattern is one of the strengths of the book, since she does not hang her theoretical hat too heavily upon one language sample.

For many researchers and educators, including me, IMP will be quite handy as a reference book to look up examples of phenomenon X. Since the chapters are arranged by phenomenological topic, not by theoretical topic, this facilitates finding the particular phenomenon one is seeking.



The book blurb asserts that IMP is intended to be used in graduate or advanced undergraduate courses. It is certainly appropriate as a reference book for various patterns, but I am dubious as to its suitability for an undergraduate course, unless the purpose is to illustrate phenomena and downplay the theoretical aspects. To get maximum benefit from the book, one would need some background in Optimality Theory, the stratal phonology theories of Kiparsky, and Cophonology, as a minimum, probably not a common situation at the undergraduate level. That being said, IMP would be an excellent text for a course specifically focusing on the morphology-phonology interface.

Because of the aim of IMP to present multiple examples of most phenomena, the volume often and understandably presents an abbreviated form of the data and argumentation. The fact that there are opposing analyses is mentioned where appropriate, but a work like this is not the place for detailed discussion of the pros and cons of every theoretical viewpoint, and this can leave the reader who is interested in that particular point wanting more details. The original sources for both data and analysis are always cited, however, so such a reader can find the detailed data and argumentation that presumably exist elsewhere. As Inkelas herself somewhat wryly comments about one specific example (p. 303), “But as so often happens in the phonology-morphology interface (and is undoubtedly, unfortunately, probably true of many of the examples taken at face value in this book), there is more to the story.”

In general, IMP is a well laid out and well edited book. Typographically, there are a few places where phonetic transcriptions did not display well, as with a tone mark not centered on a vowel (p. 39), or the  $\int$  squashed against the ‘t’ in ‘t $\int$ ’ (p. 44). One bit that escaped an editor’s eye is on page 103: “On this approach, Yowlumne would contain constraints to the effect ‘Root shape =  $\sigma_{\mu}\sigma_{\mu\mu}$ ’ and “Root shape =  $\sigma_{\mu}\sigma_{\mu\mu}$ .’” There should be two different root shapes. Finally, though this may be a deliberate choice, I find it curious to have a few “hanging sections;” for example, there is a Section 5.2.5.1 with no 5.2.5.2.

As previously noted, IMP is advertised as “a phenomenon-oriented survey.” While it is also useful to get a first glimpse at how different theories can handle these phenomena, the phenomena remain at the heart of this volume.

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