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**Paradigms in phonological theory.** Ed. by LAURA J. DOWNING, T. ALAN HALL, and RENATE RAFFELSIEFEN. Oxford: Oxford University Press, 2005. Pp. 349. ISBN 0199267715. \$49.95.

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The eleven chapters in this volume pursue a deeper understanding of the influence of paradigm structure on phonological processes. The core strategy present in the chapters is to identify apparent exceptions to synchronic phenomena and then to pursue an explanation based on paradigmatic relations.<sup>1</sup>

The book begins with an unusually useful introduction by the editors, who give us a quick reminder of the importance of notions like PARADIGM UNIFORMITY and PARADIGM LEVELING in structuralist linguistics, as well as a brief review of how these notions can be modeled in generative phonology, for example, through rule reordering in an SPE (*The sound pattern of English*, Chomsky & Halle 1968) model, or through the assignment of a phonological rule to a particular level in lexical phonology. The remainder of the introductory chapter sketches the status of the paradigm in optimality theory (OT), discussing the two main types of models that pervade the book. Base-priority approaches focus primarily on derivational relationships, such that a derivationally simplex form provides some insight into the phonological properties of a complex form for which it serves as a base. Symmetrical models, by contrast, give no priority to a base, but instead allow the members of a paradigm to exert influence upon one another independent of their derivational relationships.

The book includes ten chapters in addition to the introduction. Several of these focus on specific languages, including OUTI BAT-EL on Hebrew, STUART DAVIS on English, LAURA J. DOWNING on Jita, and PÉTER REBRUS and MIKLÓS TÖRKENCZY on Hungarian. MICHAEL KENSTOWICZ's chapter surveys several cases, especially of paradigm contrast, while JOHN MCCARTHY presents an extension of OT to model paradigm uniformity effects. The four remaining chapters, by ADAM ALBRIGHT, LUIGI BURZIO, RENATE RAFFELSIEFEN, and SUZANNE URBANCZYK, focus on various issues at the phonology-morphology interface and highlight their relevance for work on paradigms. The chapters share optimality theory as their theoretical context.

This review cannot cover all of the chapters in the book, and instead attempts to bring out a few examples of the kind of phenomena under consideration in most of the chapters, as well as some aspects of the formal developments these phenomena demand. Skipping over some of the chapters implies nothing but limited space, and the volume in toto deserves careful consideration by researchers looking at the phonology-morphology interface along with those interested in the kinds of relations that must obtain among lexical items. The overview offered here draws primarily on the chapters by Kenstowicz and McCarthy, presenting examples of the relevant phenomenon and one proposal about how to model their analysis.

Kenstowicz's chapter is a well-organized smorgasbord of the type of phenomena that drive the work in this volume (although see Raffelsiefen's article for important discussion of alternate views on portions of the empirical object). He sets his sights on examples that do not show 'containment' or transparent derivational relationships, that is, cases for which a cyclic analysis would fail. In other words, he stays away from examples like the oft-cited contrast between *compensation* and *condensation*, in which responsibility for the nonreduction of the vowel in antepenultimate *den* is laid at the feet of *condense* and its derivational relationship to *condensation*. (For more extensive principled discussion about the (non)role of the derivational relationship in phonology and morphology, see Burzio's chapter.)

Two types of examples are given in the chapter, both involving apparent failures of the synchronic (morpho)phonology. (Presentations of data below follow Kenstowicz's conventions.) Paradigm uniformity involves cases in which a synchronic process is blocked to avoid having members of a paradigm be too dissimilar. As an example, Kenstowicz (following Aguero-Bautista 1998, and referring also to Crowhurst 1992, Harris 1994, and Elordieta & Carreira 1996) offers

<sup>1</sup> I'm grateful to Bruce Morén for helpful discussion of this review.

Spanish diminutive formation, an interesting case because it illustrates conflicting pressures to conform for two overlapping subparadigms. (A kindred, intriguing discussion of the role of subparadigms is found in Bat-El's chapter.)

Selection of the diminutive allomorph *it* (as in *koronita*, from *korona* 'crown') serves to keep a consonant which is an onset in the base word as an onset in the diminutive. Selection of the allomorph *sit* (as in *limonsito*, from *limon* 'lemon') keeps a coda in the base as a coda in the diminutive, forgoing the opportunity to eliminate phonological markedness by opting for *\*limonito*. This is captured with the ad hoc constraint CORR- $\Sigma$ -ROLE, which punishes paradigms in which segments in the base have different syllabic roles in the different members of the paradigm (see Kenstowicz's chapter for a critique of alternate analyses).

The pressure to have a fixed shape for the stem in the subparadigm consisting of the stem and its diminutive is overridden, however, by pressure to have a fixed shape for the stem in the subparadigm consisting of two diminutives differing only in gender. For example, we would expect diminutive formation of *ratona* 'mouse' to yield *\*ratonita*, such that the [n] is an onset in both forms. In fact, the diminutive is *ratonsita*. Kenstowicz claims that selection of the unexpected allomorph can be understood by noting that the feminine *ratona* is in a paradigmatic relationship with the masculine *raton* which predictably selects the consonant-initial suffix, *ratonsito*. The pressure for the masculine and feminine diminutives to have a stem with the same syllabification outranks the pressure for a word and its diminutive to have stems with the same syllabification. Hence, the diminutive subparadigm is {*ratonsita*, *ratonsito*}.

Of course, the diminutives of *ratona* and *raton* would just as well have syllabically identical stems if we added *it* to them both, giving *\*{ratonita, ratonito}*. Indeed, this option would give phonologically superior forms since the [n]s would be onsets. Kenstowicz rules out the use of *it* here by claiming that *sit* is the default, invoking a constraint (or two) *\*-IT* >> *\*-SIT*.

There is an alternative to this invocation of the relative markedness of the two allomorphs. One could instead explode CORR- $\Sigma$ -ROLE into CORR- $\Sigma$ -ROLE<sub>masc</sub> and CORR- $\Sigma$ -ROLE<sub>fem</sub>. The masculine-specific constraint will be violated by *\*{raton, ratonito}*, and the feminine-specific one by {*ratona, ratonsita*}, in both cases because the [n]s are syllabified differently in the base and the diminutive. This shows us that when CORR- $\Sigma$ -ROLE<sub>fem</sub> is relatively low-ranked, the correct subparadigm will be selected. This approach suggests that the unmarked category masculine may labor under stricter enforcement of paradigm uniformity than the marked feminine category, and raises the question of whether other examples can be found suggesting subtle distinctions in the phonologies of gender categories.

The flipside of paradigm uniformity is paradigm contrast, which is a tool for blocking a process when its result would collapse a distinction between members of a paradigm. Kenstowicz provides several examples of this phenomenon, and I briefly review perhaps the simplest of these, involving vowel reduction in Bulgarian.

The Trigrad dialect of Bulgarian shows reduction of /o/ to [a] in unstressed syllables. Vowel reduction is regular in stems but some affixes for some stems show seemingly exceptional behavior. The singular suffix *-o*, for example, is expected to reduce when it is unstressed, as in *kapít-a* 'hoe' or *kláb-a* 'ball of thread'. In other forms, it fails to reduce, as in *zórno-o* 'grain, seed' or *blág-o* 'blessing'.

The failure of vowel reduction in Bulgarian is analyzed here as the failure of a phonological process when its output leads to neutralization with the plural. The plural suffix is *-a*, but evaluation of homophony pays attention to the location of stress. Paradigms such as {*kapít-a<sub>sg</sub>*, *kapít-á<sub>pl</sub>*} or {*kláb-a<sub>sg</sub>*, *kláb-á<sub>pl</sub>*} satisfy the requirement in Bulgarian that members of a paradigm contrast. For stems that have fixed stress, however, reduction of the singular marker leads to homophony. This is avoided by suspending the vowel reduction rule, resulting in paradigms such as {*zórno-o<sub>sg</sub>*, *zórno-a<sub>pl</sub>*} and {*blág-o<sub>sg</sub>*, *blág-a<sub>pl</sub>*}. Were the singular *-o* to reduce, the resulting singular forms *\*zórno-a<sub>sg</sub>* and *\*blág-a<sub>sg</sub>* would be homophonous with the plural and would thereby violate the constraint(s) insuring paradigm contrast.

The Spanish and Bulgarian examples are representative of the kind of data and the flavor of analysis that dominate the chapters in this book, and they of course raise a number of fundamental

questions. Central among these are how a paradigm should be defined and how relationships between members of paradigms should be modeled. One proposal for modeling intraparadigmatic effects is presented by McCarthy, who advances the OPTIMAL-PARADIGMS (OP) model.

The crucial formal development in the optimal-paradigms model is the strategy of offering full paradigms as candidates. That is, a tableau consists of several candidates, and each of these candidates is itself a possible expression of the paradigm one is attempting to construct.

Several architectural questions spring up in the face of this proposal, requiring future discussion of the OT module known as Gen, which takes inputs and freely manipulates them to provide a candidate set. Among these questions, we find the following: What inputs return a paradigm as a candidate? Is it a stem and a set of affixes or can a stem alone be manipulated by Gen to give a candidate paradigm? What is the structure of Gen empowering it to take such an input and return a paradigm? Imagine a paradigm (cf. Kenstowicz's Chimwi:ni example) with a perfect, an applicative, and a perfect applicative. What is the nature of the Gen function that returns a candidate paradigm including members not only with the perfect and the applicative affixed independently to the stem but also with them both affixed to the stem? How do we render a candidate paradigm nonoptimal with the perfect and the applicative but not the perfect applicative? These questions give just a preliminary taste of the architectural details that remain to be worked out for this approach.

The optimal-paradigms model also includes an expansion of the indexing options available for correspondence and a concomitant enhancement of the set of constraints. In particular, OP-FAITH constraints serve to evaluate the members of a paradigm pairwise, comparing the stem portion of two members which are in an OP-correspondence relation and noting when they deviate from one another, thereby formalizing the pressure for paradigms to be uniform in their expression of the stem. (Urbanczyk's chapter illustrates a subtle interaction between the OP correspondence relations and the IO (input-output) ones in the context of an analysis of vowel reduction and reduplication in varieties of Halkomelem.)

While McCarthy's initial presentation of the optimal-paradigms approach leaves some questions regarding the structure of Gen, as well as increasing the number of faithfulness constraints assigned to the universal constraint set Con, its merits are nonetheless considerable. If some notion of paradigm uniformity is relevant to understanding sporadic failures of the morphophonology, such as in the Spanish case sketched above or the many others sketched throughout this book, then any analysis will require some strategy for consulting one member of a paradigm while deriving another. As a model of intraparadigmatic interaction on the phonology-morphology interface, the optimal-paradigms model has few explicitly articulated competitors, if any.

Of course, not just any kind of consultation with the other members of the paradigm is possible. McCarthy identifies various properties of paradigm-uniformity effects that follow from this approach and that a competitor would also have to consider. For example, when leveling is possible through either underapplication or overapplication, the OP model predicts that it will be achieved through overapplication, since the paradigm showing overapplication also satisfies a relevant highly ranked markedness constraint. Another property is that a relatively unmarked member of a paradigm will serve as an ATTRACTOR for the purposes of leveling. (This contrasts with the idea that there is a base that has some priority, as Albright argues in his chapter; cf. related discussion of a 'base' in Downing's and Burzio's chapters.) Finally, the approach predicts that the pattern that is most common in a paradigm will exert influence under leveling.

The preceding paragraphs offer a sketch of how the optimal-paradigms model constitutes a formal strategy for representing paradigm-uniformity effects. But as noted above, paradigm uniformity is only half of the story when talking about the role of the paradigm in explaining seemingly exceptional phonological events. There are also cases that are proposed as examples of paradigmatic contrast preservation, such as the Bulgarian example seen above. The optimal-paradigms model as McCarthy presents it is unsuited to modeling these cases.

Recall that OP-faithfulness constraints check correspondence relations between the stem portion of members of the paradigm. (See Davis's chapter for argumentation regarding the role of nondistinctive features in paradigm-uniformity effects.) This is natural for a model of paradigm-

uniformity effects, since the uniformity pressure is not on the entire word—there can be no penalty for members of a paradigm being distinct from one another as the result of having different affixes. But paradigm contrast takes the entire inflected form, not just the stem, as its domain. Because their domains are somewhat different, it would be imprecise to characterize paradigm uniformity and paradigm contrast as conflicting or competing forces, pushing the same correspondence relationship in different directions. An informal functionalist perspective easily casts the two forces as complementary. The stem portion of the members of a paradigm should be identical, to facilitate identification of paradigm membership. But each complete member of the paradigm should be different from the next one to facilitate unique identification of the morphemes being expressed. (For detailed discussion of this point and its implications for a formal model, see the chapter by Rebrus and Törkenczy.)

Whether the optimal-paradigms model can be enhanced to cover cases of paradigm contrast as well remains a topic for future research. The elements of such an enhancement may include establishing a correspondence relation between the complete words in the paradigm, and having some set of constraints that considers just the stem portions while others consider the entire form. The constraints assuring contrast also have to be formalized.

The book is easy to recommend in terms of both content and production. The editors have done a good job of focusing the chapters on an important, well-defined, and specific topic, and the production is fine. There is relatively little discussion between the chapters, although the editors occasionally add relevant cross-referencing. Finally, while I applaud the publication of a paperback version simultaneously with the hardback, the purpose of doing that is surely to make the book affordable for individual researchers. Unfortunately, it isn't.

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**Preferred argument structure:** Grammar as architecture for function. Ed. by JOHN W. DU BOIS, LORRAINE E. KUMPF, and WILLIAM J. ASHBY. (Studies in discourse and grammar 14.) Amsterdam: John Benjamins, 2003. ISBN 1588113698. \$156 (Hb).

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Du Bois (1987) introduced the term PREFERRED ARGUMENT STRUCTURE for a set of closely related universal statistical tendencies of argument distribution in spoken discourse. The fifteen contributions to the book under review examine these tendencies (also called CONSTRAINTS), reproduced in 1a–d, in a range of different languages and discourse genres.