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Phonological solutions to morphological problems

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A longstanding debate in the literature centres around the question of how to determine whether a pattern is derived via phonological or morphological means. A textbook example of this is the [k/s] alternation in *electric/electricity*. If one takes velar softening to be phonological, one expects regular application of the rule and must explain exceptions such as *antique/antiquity*. If one takes this alternation to be morphological, one must explain its phonological regularity, where /k/ → [s], and no other segment becomes [s] in the clearly phonological environment of before [i]. A middle-ground is often taken, proposing that phonological rules may reference particular lexical environments (/k/ in *electric, opaque* … →[s]/__i). Importantly, these analyses are not conceptual equivalents or notational variants because they can implicate massive differences at the level of the linguistic architecture.

Analyses from the middle-ground, that include morphophonological rules, constraints or operations, frustrate a fully modular architecture of grammar. In such a grammar, phonology and morphosyntax are entirely separate computational systems. In this volume, we present a number of analyses where patterns that are apparently morphophonological are reanalysed in phonological terms, thereby removing empirical counterclaims to the modular approach.

There is an *a priori* conceptually neat approach to linguistic derivations that is fully modular, where each kind of information is handled in its own component in the derivation and the outputs of these computations are mapped/spelled out onto the vocabulary of the next module (Scheer 2012). Theories that have this feed-forward, modular architectural ambition include Distributed Morphology (Bobaljik 2017; Embick and Noyer 2007; Harley and Noyer 1999; Marantz 1997) and Nanosyntax (Baunaz et al. 2018; Caha 2009; Starke 2010). Some previous work that has had as its goal to reanalyse modularity violations and account for problematic morphological patterns through phonological means are Newell (2009), Scheer

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(2016), Lampitelli (2017), Zimmermann (2017), Barillot et al. (2017), Faust et al. (2018), Faust (2020) and Ulfsbjorninn (2020).

The papers herein continue this research programme. We believe that these previous works, along with the papers herein, demonstrate that the success of such a programme is not only envisageable, but attainable.

Alternate frameworks take morphophonological patterns at face-value. They contend that such alternations argue for non-modular frameworks. Examples of these are frameworks that have affix/morpheme-specific phonologies and/or lexically indexed constraints (Benua 1995; Orgun 1996; Pater 2000; 2007; Plag 1999). Others propose that any morphological construction could have its own co-phonology (Inkelas 2014).

Still other non-modular approaches, involving apparent phonological sensitivity to affix-ordering, such as McCarthy and Prince (1993) have explicitly proposed a single morphophonological computation where phonological/prosodic (P) and morphological constraints (M) are computed in parallel and a phonological condition can be ranked higher than a morphological constraint leading to phonologically conditioned morphosyntactically unexpected affix-orderings (P » M). For a review of this literature, see Paster (2009) and see Embick (2010) for a direct criticism of this type of framework.

The modular/non-modular debate is a crucial one. The properties attributed to the phonological module have the potential to profoundly affect our understanding of the nature and function of the preceding computational modules; the morphology and the syntax (or the unified morphosyntax). Studies at the interface have, as Scheer (2011) puts it, treated the phonology as a "dustbin … where things are unloaded that syntacticians do not want to accommodate in syntax, but which are not phonological either". The papers in the current volume fight against this theoretical littering and require that the phonology be clean and that the morphosyntax deal with its own waste. If a process cannot be located in the phonology, and if the phonological module is completely independent, then said process has to be handled in the morphosyntax. This has implications for our understanding of both the phonology and of the morphosyntax in relation to questions of, for example, locality (Bobaljik 2000; Dolbey 1997; Embick 2010; Paster 2006), cyclicity (Bermúdez-Otero 2011; Inkelas 1993; Kiparsky 2000; Newell and Piggott 2014) and the lexicalization of morphemes (Faust and Lampitelli 2016; Scheer 2016 and the papers in that volume).

The way that supposedly morphophonological patterns are handled can radically affect our understanding of the linguistic architecture and dramatically alter our understanding of the computational nature of each module. In many cases, including in the papers to follow in this volume, a good phonological analysis can neatly do away with the need to appeal to morphophonological

processes. In these cases, the sub-patterns involved are revealed to be derivable entirely within the independent domains of the phonology and the morphosyntax; such analyses are modular and offer phonological solutions to the inherent and important challenge of morphophonological problems.

The papers in this volume can be divided into three related groups.

The first group contains two articles that argue that patterns that might be considered morphophonological are in fact entirely phonological. These entirely phonological explanations are therefore perfectly coherent with a modular framework. Zimmermann's *Two is too much. … in the phonology!: A Phonological Account of Unfaithful Multiple Reduplication* argues that the underlying phonological structure of reduplicative morphemes (as empty phonological structure) along with independently necessary phonological constraints, captures why reduplication of the same morpheme may have distinct overt realizations in derivations that include multiple reduplication. Ulfsbjorninn's *A Phonological Reanalysis of Morphological Segment Deletion and De-affrication in Ik* demonstrates that morpheme-specific phonological alternations involving segment deletion and palatalization require no reference to particular morphemes as long as their underlying representations are properly specified, appealing to independently-proposed autosegmental notions such as floating segments. This locates all of these morphemes' idiosyncratic properties in the underlying form which is already the locus of unpredictable information.

The second group contains papers which argue that patterns that have been proposed to be morphological are in fact the result of multiple independent stages of derivation. Morphosyntactic operations precede the relevant phonological operations, and these two domains are demonstrably distinct. In these accounts it is the separation of the phonology from the morphosyntax that allows for the emergence of a modular solution. Ziková & Faltýnková's *How to derive allomorphy: a case study from Czech* argues for a Nanosyntactic account of suppletion for certain stem and suffix alternations in the *chicken* paradigm in Czech. Importantly, a part of the surface alternation that might otherwise require morphophonological specificity is argued to be due to floating phonological structure as part of the underlying lexical form of the stem-building suffix involved in the construction of this paradigm. In Faust's *Size, allomorphy and guttural-final stems in Modern Hebrew* he discusses a complex pattern in the derivation of gutteral-final future and infinitival verbal constructions. In place of arbitrary morphophonological diacritics, it is argued that the different syntactic derivations of these two constructions lead to different domains for allomorph selection, and that this allomorph selection may be phonologically conditioned. Fully phonological autosegmental and gradience-sensitive alternative analyses are also considered.

The third group can be considered a sub-group of the second, in that these three papers argue that separate morphological and phonological parts of the derivation are necessary to account for the patterns in question. In addition to this, they speak directly to questions of the architecture of the grammar, tackling three longstanding issues that have been much discussed in more morphosyntactic circles: The Mirror Principle, Outwardly-conditioned phonologically-triggered allomorph selection, and Bracketing Paradoxes. Goad & Travis' *Phonological evidence for morpho-syntactic structure in Athapaskan* offers a detailed and novel analysis of apparent Mirror Principle violations involving verbal prefixes in this language family. They argue that two separate types of operation are required to fully account for the surface patterns: the first is a specification regarding syntax-morphology mapping mechanisms, while the second is a 'tucking-in' operation that is triggered for purely phonological reasons. Kiparsky's article *Phonology to the Rescue: Nez Perce Morphology Revisited* tackles allomorphy that has been proposed in the literature to be outwardly-conditioned by phonology. Such an analysis is incompatible with feed-forward realizational systems of allomorphy, and Kiparsky argues that it is incorrect. The Nez Perce pattern is argued to be a combination of root-conditioned suffix allomorphy and the regular phonology of the language. Finally, in Newell's *Bracketing Paradoxes resolved* she argues that the entire existence of Bracketing Paradoxes, a pattern for which many morphological proposals have been advanced, is due to an erroneous theoretical turn in the history of generative phonology. Bracketing Paradox problems are argued to have been created by the introduction of hierarchical prosodic structure, and that removing hierarchy from the phonology allows for these (non)paradoxical patterns to emerge from a strict sequence of independent morphosyntactic and phonological derivations.

All of the articles in this volume demonstrate that a strictly modular architecture can capture even the most truculent patterns in the realm of morphophonology, and serve as further examples in the modularist framework for how separating morphosyntax from phonology is not only possible, but preferable.

References

Barillot, Xavier, Sabrina Bendjaballah & Nicola Lampitelli. 2017. Verbal classes in Somali: Allomorphy has no classificatory function. *Journal of Linguistics* 54(1). 3–43.

Baunaz, Lena, Liliane Haegeman, Karen De Clercq & Eric Lander (eds.). 2018. *Exploring nanosyntax*. Oxford/New York: Oxford University Press.

Benua, Laura. 1995. Identity effects in morphological truncation. *University of Massachusetts Occasional Papers in Linguistics* 18. 77–136.
Bobaljik, Jonathan. 2000. The ins and outs of contextual allomorphy. *University of Maryland Working Papers in Linguistics* 10. 35–71.
Bobaljik, Jonathan. 2017. Distributed morphology. In *Oxford research encyclopedia of linguistics*. Oxford: Oxford University Press.
Bermúdez-Otero, Ricardo. 2011. Cyclicity. In Marc van Oostendorp, Colin Ewen, Elizabeth Hume & Keren Rice (eds.), *The Blackwell Companion to Phonology*, 2019–2048. Malden, MA: Wiley-Blackwell.
Caha, Pavel. 2009. *The nanosyntax of case*. Tromsø: University of Tromsø Doctoral Dissertation.
Dolbey, Andrew. 1997. Output optimization and cyclic allomorph selection. In *Proceedings of the 15th West Coast Conference on Formal Linguistics*, 97–112. Stanford: CSLI.
Embick, David & Rolf Noyer. 2007. Distributed morphology and the syntax/morphology interface. In *Oxford handbook of linguistic interfaces*, chapter 9. Oxford: Oxford University Press.
Embick, David. 2010. Localism versus globalism in morphology and phonology. *Linguistic Inquiry Monographs*. Cambridge, Mass: MIT Press.
Faust, Noam 2020. The inflection of Tigre weak-final and strong verbs. *Acta Linguistica Academica* 67(1). 135–154.
Faust, Noam & Nicola Lampitelli. 2016. Allomorphy—its logic and limitations: opening remarks from the guest editors. *Morphology* 26(3). 229–234.
Faust, Noam, Nicola Lampitelli & Shanti Ulfsbjorninn. 2018. Articles of Italian Unite: Italian definite articles without allomorphy. *Canadian Journal of Linguistics* 63(3). 1–27.
Harley, Heidi & Rolf Noyer. 1999. State-of-the-article: Distributed morphology. *Glot International* 4. 3–9.
Inkelas, Sharon. 1993. Deriving cyclicity. In *Studies in lexical phonology*, 75–110. San Diego: Academic Press. https://doi.org/10.1016/b978-0-12-325071-1.50009-1.
Inkelas, Sharon. 2014. *The interplay of morphology and phonology*. Oxford: Oxford University Press.
Kiparsky, Paul. 2000. Opacity and cyclicity. *The Linguistic Review* 17(2/4). 351–366.
Lampitelli, Nicola. 2017. A morphophonological analysis of the velar insert in Italian verbs. *Glossa: A Journal of General Linguistics* 2(1). 47.
Marantz, Alec. 1997. No escape from syntax: Don't try morphological analysis in the privacy of your own lexicon. *Penn Working Papers in Linguistics* 4. 201–225.
McCarthy, John J. & Alan Prince. 1993. Prosodic morphology: Constraint interaction and satisfaction. *Linguistics Department Faculty Publication Series* 14.
Newell, Heather. 2009. *Aspects of the morphology and phonology of phases*. Montreal: McGill Doctoral Dissertation.
Newell, Heather & Glyne Piggott. 2014. Interactions at the syntax–phonology interface: Evidence from Ojibwe. *Lingua* 150. 332–362.
Orgun, Cemil Orhan. 1996. *Sign-based morphology: a declarative theory of phonology-morphology interleaving*. Berkeley: University of California PhD dissertation.
Paster, Mary. 2006. *Phonological conditions on affixation*. Berkeley: University of California Ph.D. Dissertation.
Paster, Mary. 2009. Phonological conditions on affixation. *Word Structure* 2(1). 18–37.
Pater, Joe. 2000. Non-uniformity in English secondary stress: The role of ranked and lexically specific constraints. *Phonology* 17(02). 237–274.

Pater, Joe. 2007. The locus of exceptionality: Morpheme-specific phonology as constraint indexation. In L. Bateman, M. O'Keefe, E. Reilly & A. Werle (eds.), University of Massachusetts Occasional Papers in Linguistics 32, Papers in Optimality Theory III, 259–296. Amherst: GLSA.

Plag, Ingo. 1999. Morphological productivity: Structural constraints in English derivation. Berlin: Mouton de Gruyter.

Scheer, Tobias. 2011. *A guide to morphosyntax-phonology interface theories: how extra-phonological information is treated in phonology since Trubetzkoy's Grenzsignale*. Berlin: Mouton de Gruyter.

Scheer, Tobias. 2012. *Direct Interface and One-Channel Translation. Vol.2 of A Lateral Theory of Phonology*. Berlin: Mouton de Gruyter.

Scheer, Tobias. 2016. Melody-free syntax and phonologically conditioned allomorphy. *Morphology* 26. 341–378.

Starke, Michal. 2010. Nanosyntax: A short primer to a new approach to language. *Nordlyd* 36(1). 1–6.

Ulfsbjorninn, Shanti. 2020. Segment-Zero Alternations in Galician Definite Article Allomorphy: Floating consonants at the left-edge of morphemes. *Acta Linguistica Academica* 67(1). 155–170.

Zimmermann, Eva. 2017. *Morphological length and prosodically defective morphemes*. Oxford: Oxford University Press.