Typological consequences of ABCD constraint forms

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Introduction

Much recent work aligns itself under the heading 'Agreement By Correspondence' ('ABCD', with 'D' abbreviating Dissimilation). The core insights first advanced in this body of work are (i) that long-distance agreement between consonants is rooted in similarity, and (ii) that such agreement can be explained in a principled way by positing a similarity-sensitive mechanism of correspondence, coupled with agreement constraints that hold only over correspondents (Rose & Walker 2004, Hansson 2010). Subsequent work develops this notion further, by enriching formal details of various portions of the theory, and by using the same mechanism to analyze other phenomena like vowel harmony, consonant-tone interaction, etc. (Walker 2009, Shih 2013, Shih & Inkelas 2014, Bennett 2015, and others).

But even a cursory survey of any handful of works by different authors shows a striking lack of consensus about the formal details of the theory. In essence, then there is no standard ABCD theory, but a bouquet of different theories, intended to analyze different collections of facts and differing in the way such analyses are constructed. This lack of agreement is both cause and consequence of an incomplete understanding of how such theories generate predictions.

Puzzle

Previous proposals for different versions of ABCD have been backed by either specific empirical cases of interest (e.g. Gallagher & Coon 2009, Walker 2015), or by a priori considerations of simplicity and parsimony (e.g. McCarthy 2010, Bennett 2015; see also McMullin 2016). We take a different tack here: typological analysis. The question at hand is not how to formalize ABCD theory to best fit the ever-moving target of the space of phonological systems that we have glimpsed so far. Instead, we aim to answer the more basic questions of (i) what kinds of constraint interactions are possible in different ABCD theories; and (ii) what the typological repercussions of these choices are, which we could look for in the empirical typology.

Method

We compare 5 instantiations of CON based on different proposals in the literature, analyzing the resulting typologies into ranking properties (Alber et al. 2016, Alber & Prince in prep.).

(1) CON systems compared (voi=[±voice], cont=[±continuant])

Category	**Standard model**	**McCarthy**	**Walker**	**Gallagher & Coon**	**Base**
CORR	CORR(+voi)	CORR-XX	CORR-XX	CORR(+voi)	CORR-XX
	CORR(-cont)			CORR(-cont)	
CC-IDENT	CC-ID(voi)	CC-ID(voi)	CC-ID(voi)/-cont	CC-IDENTITY	CC-IDENTITY
	CC-ID(cont)	CC-ID(cont)	CC-ID(cont)/+voi		

The so-called 'standard model' posits families of both CORR and CC-IDENT constraints as assumed in work by Rose & Walker (2004), Hansson (2010), and Bennett (2015). An alternative proposal by Gallagher & Coon (2009; ='G&C') collapses one family: instead of different CC-IDENT constraints for different features, there is a single constraint CC-IDENT. The proposal of McCarthy (2010) takes the opposite approach, collapsing the CORR constraint family into a single CORR-XX constraint that demands all segments correspond. Correspondence is required blindly, restricted only on the basis of similarity, reference to

which is on the CC-IDENT constraints. This unified CORR proposal has been further developed by Walker (2015), in a proposal which builds sensitivity to shared features back into the system by restricting CC-IDENT constraints to enforce agreement only between correspondents that share a specified feature. We examine systems based on each of these proposals, as well as a further simplification ('Base') collapsing both of the CORR and CC-IDENT families rather than one or the other.

The typological predictions emanating from the formal choices described above are decidedly non-obvious. To discern them, we consider exhaustively the space defined by the simplest type of harmony: interaction between two consonants, with maximally 2 features. Understanding the kinds of grammars each theory produces and how they relate to each other in this case serves as a first look into the real consequences of each formal proposal.

We construct a GEN that produces all combinations of 2 segments, drawn from the inventory {t s d z} (a space defined by free cross-classification of the features [±voice] and [±continuant]). The set of candidates includes all possible mappings from one segmental form to any other, with either correspondence or non-correspondence in the output.

Results

Results show considerable intensional similarity between the five systems: all ABCD typologies consist of combinations of the same ranking structures in which domination of a single constraint determines the type of (non-)correspondence and mapping found in the optima. Differences in the ranking properties of the systems arise in whether the CORR and CC-IDENTITY constraints interact with *all* other constraints (general versions), or only with a subset of these (feature-specific versions), the former having the extensional effect of ruling out some correspondence-type co-occurrences.

Our findings also reveal an unexpected isomorphism between the theories of Walker (2015) and of G&C (2009). Both generate the same categories of mappings—harmony, dissimilation, and faithfulness—and in the same combinations. Moreover, the constraint rankings responsible for each involve completely homologous choices. Although these approaches diverge from the standard ABCD model in very different ways, *their typological consequences are the same*.

Furthermore, while the McCarthy (2010) and G&C theories diverge from the standard ABCD model in parallel ways, *their typologies are not parallel*. These proposals share the characteristic of collapsing one or the other family of correspondence constraints (CORR or CC-IDENT) into a single constraint. They both condense all reference to features onto one family of correspondence constraints. But the G&C theory can produce dissimilatory mappings, while the McCarthy theory cannot. Their typologies have fundamentally different structures.

The typological predictions made by a constraint set are not obvious from the form of the constraints or types of constraints that comprise it. These predictions emerge from interactions between groups of constraints, and can only be discerned by in-depth analysis of the full typologies, as we undertake here.

Selected References: **Alber, B., N. DelBusso, & A. Prince. 2016.** From intensional properties to universal support. *Language* 92(2):e88–e116. **Bennett, W. 2015.** *The Phonology of Consonants: Harmony, Dissimilation, and Correspondence.* Cambridge: CUP. **Gallagher, G. & J. Coon. 2009.** Distinguishing total and partial identity: Evidence from Chol. *NLLT* 27:545–582. **Hansson, G. Ó. 2010**. *Consonant Harmony: Long-Distance Interaction in Phonology*. Berkeley: UC Press. **McCarthy, J. J. 2010.** Agreement by correspondence without CORR constraints. ROA-1089. **Rose, S. & R. Walker. 2004.** A typology of consonant agreement as correspondence. *Language* 80(3):475–531. **Shih, S. S. & S. Inkelas. 2014.** A subsegmental correspondence approach to contour tone (dis)harmony patterns. In *Proceedings of Phonology 2013*. **Walker, R. 2015**. Surface Correspondence and Discrete Harmony Triggers. In *Proceedings of Phonology 2014*.