The division of labor between representations and cophonologies in doubly conditioned processes in Amuzgo

Yuni Kim[1] and Hannah Sande[2]
University of Essex[1], Georgetown University[2]

Introduction: Here we discuss an as yet underexplored source of evidence for determining the architecture of the morphology-phonology interface: double conditioning of phonological alternations. Doubly conditioned alternations are those where, e.g., both a morphologically specific condition and a lexically specific one must be met for an alternation to surface. Models of cyclic application of phonology, such as Lexical Phonology (Kiparsky 1982), Stratal OT (Bermudez-Otero 1999, Kiparsky 2000, 2008), or phase-based spell-out (Embick 2010, Sande 2019), predict restrictions on the locality of conditioning factors. For example, in Cophonologies by Phase (CBP; Sande & Jenks 2018, Sande 2019), true extra-phonological double conditioning is restricted to morphemes introduced within the same syntactic phase domain, since morphosyntactic features of a phase domain are no longer available after morphophonological evaluation. Sande (2019) predicts that apparent interactions across phase domains can only be the interaction of phonological content of a previously spelled out domain and a single morphological or lexical conditioning factor of a higher phase domain.

In this talk, we examine data from Amuzgo (Oto-Manguean) [southern Mexico], which at first glance contradicts Sande's prediction: lexical inflection class and first-person features appear to jointly condition phonological alternations (Kim 2019a), despite being introduced in different phase domains. We reanalyze these inflection classes as a difference in underlying phonological form rather than morphological feature content, motivated by the phonological unity of the alternations as well as the fact that inflection classes play no role in the syntax or semantics of the language. Thus there is only a single extra-phonological trigger: first-person. This contrasts with a true case of morphological inflection class in Amuzgo (Kim 2016, 2019b), whose phonological form is indeed sensitive to phase boundaries. We frame the analysis in CBP, which is able to capture interaction between multiple morpho-lexical triggers while making predictions about locality based on independently motivated syntactic phases. More broadly, we argue that the architecture of CBP imposes an acquisition bias in cases of analytical underdetermination (Bermúdez-Otero 2012): for learners, the division of labor between morphology and phonology may be determined by the morphosyntax of the construction in question.

Puzzle: All Amuzgo data are from the variety of San Pedro Amuzgos, Oaxaca, as documented by native speaker Fermín Tapia García and analyzed by Kim (2016, 2019ab). Most Amuzgo verb stems are monosyllabic and inflect for person and number via mutations in glottalization, vowel height, and tone. There are multiple, lexically arbitrary mutation paradigms along two of these dimensions: 5 for glottalization and at least 11 for tone; these are independent of each other and cross-classify.

Table 1 shows the Class 4 and Class 5 patterns of glottal mutation. While both types are CVʔ in 2nd/3rd person, they have different shapes in 1st person forms: Class 4 has laryngealization metathesis, while in Class 5 there is an apparently epenthetic echo vowel.

	Class 4	'eat' (completive sg.)	Class 5	'mended' (sg.)
1sg/excl/incl	**CʔV**	tkʷʔaᴴᴹ	**CVʔV**	thaʔᴴᴹaᴹ
2sg/pl	CVʔ	tkʷaʔᴸ	CVʔ	thaʔᴴᴸ
3sg/pl	CVʔ	tkʷaʔᴹ	CVʔ	thaʔᴹᴴ

Table 1. Inflectional glottalization shapes for Class 4 and Class 5 verbs (Kim 2019a)

The Class 4 vs. 5 difference is also present in derived causative forms, illustrated in (1ab). Again, lexical inflection-class features of the stem and 1st person features in AGR appear to jointly condition the shape of the surface form.

(1) a. siᴴ-kiᴹ-**tʔa**ᴴᴹ 'begin something, 1sg. completive' cf. 3sg. siᴴ-kiᴹ-**taʔ**ᴴᴹ
     b. siᴴ-**tʰɔ̃ʔ**ᴴᴹ**ɔ**ᴹ 'unify, 1sg. completive' cf. 3sg. siᴴ-**tʰõʔ**ᴴᴹ

Here, the problem is that lexical roots and class information are introduced lower in the structure ($\sqrt{}$ or v) than person features (AGR): [AGR [Voice [v [$\sqrt{}$]]]], in different phase domains. We assume that causative formation is associated with a Voice head which constitutes a phase head (Chomsky 2000, 2001), i.e. triggers spell-out, and as such intervenes between AGR and the stem. There is also Amuzgo-internal evidence for causative Voice heads as phase heads: they induce locality effects that block the *tonal* inflection-class features from interacting with AGR. Under causativization, tonal inflection classes become invisible, and tonal exponence of person/number is either suspended (as in 1ab) or results from non-lexically-specific morphotactic adjustments. Thus, neither a suppletive allomorphy analysis nor a double-conditioning analysis can derive the difference between (1a) and (1b), since both require simultaneous visibility of person features and lexical class information across the phase boundary.

Our analysis: We analyze the Amuzgo glottalization facts not as double conditioning, but rather as a single morphological trigger (first person) associated with a cophonology that disprefers final glottal stops. Noting that lexical glottalization classes in Amuzgo never have a morphosyntactic or semantic effect, we propose a purely representational difference between classes. Class 4 are underlyingly /CVʔ/, and Class 5 are /CVʔV/. The 1st person vocabulary item (mapping of morphosyntactic to phonological content), given in (2), is not associated with any underlying phonological form (F) or prosodic content (P), but is associated with a phonological sub-grammar, or cophonology, R.

(2) 1st person ↔ F: Ø
                   P: Ø
                   R: *ʔ# >> Max, ω=σ

The analysis allows unification of the metathesis and V~Ø alternations under a constraint *ʔ#, capturing the fact that in first person contexts, no matter the lexical item present, we never see a word-final glottal. The morpheme-specific ranking requirement in (2R) overrides the default ranking of Max>>ω=σ >>*ʔ#, which prevents deletion of the final vowel in /CVʔV/ roots, only in first person contexts. For /CVʔ/ roots, the final glottal stop fails to surface in first person contexts, because of the ranking of *ʔ# over Max: [CV]. In 2nd and 3rd person contexts, though, the default phonological grammar of the language will apply, in which case /CVʔV/ words surface as [CVʔ] due to the priority of the ω=σ constraint, and /CVʔ/ roots surface faithfully as [CVʔ] due to the priority of Max over *ʔ#.

Conclusion: Amuzgo demonstrates that putative morphological and lexical conditions on phonological processes must be examined in morphosyntactic context. We predict that in other apparent cases of doubly morphologically conditioned phonology, interactions across phase boundaries will necessarily involve recognizably phonological operations and constraints. This follows from the architecture of CBP, which guides learners in using morphosyntactic information to resolve otherwise ambiguous divisions of labor across the morphology-phonology interface.

Selected references: Kim, Y., 2019a. A morphophonological parameter hierarchy for Amuzgo glottalization classes. *Amerindia, 41*. Sande, H. 2019. A unified account of conditioned phonological alternations: Evidence form Guébie. *Language, 95.3*.