

A cyclic account of prefix integration in Kaqchikel Mayan

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Overview Recent work argues for lexically-specified, violable prosodic subcategorization frames, which interact with constraints on prosodic structure (Bennett, 2018; Bennett et al., 2018; Rolle and Hyman, 2019; Tyler, 2019). This framework is largely motivated by prefixes in Kaqchikel Mayan, which integrate into prosodic structure in seemingly idiosyncratic ways (Bennett, 2018; Bennett et al., 2018). We argue that prefix integration follows straightforwardly in a cyclic derivational model of the syntax-phonology interface. Violable subcategorization frames are not required, suggesting these should be abandoned in favor of broader grammatical generalizations where possible.

Exceptional prefixes The prosodic word in Kaqchikel Mayan is defined by (a) word-final stress, (b) [ʔ]-epenthesis before initial vowels, and (c) degemination of adjacent fricatives (Bennett et al., 2018). Two types of nominal prefixes lie outside the minimal prosodic word, but are not themselves a prosodic word (Bennett, 2018). First, there is a set of bound but non-inflectional prefixes, including /aχ-/ *aj* AGT, /iʃ-/ *ix* FEM, /aʃ-/ *ach* COM, and /jaχ-/ *yaj* ‘related by marriage’. The evidence is that these prefixes do not bleed left-edge [ʔ]-epenthesis (**bold** in 1a), and adjacent fricatives (underlined) across the prefix-stem boundary do not degeminate (1b).

- (1) a. [ʔaχ-¹ʔikʔ] ***ajik*** ‘domestic worker’ (AGT-month)
 b. [ʔaχ-χu'kuʔ] ***ajjuku*** ‘boatman’ (AGT-boat)

Second, absolutive prefixes which agree with the subject of non-verbal predicates do not bleed [ʔ]-epenthesis before a noun (2a) or modified noun (2b), and adjacent fricatives across the absolutive-stem boundary do not degeminate (2c). The entire morphological word is itself parsed to a prosodic word, indicated by the single final stress and initial [ʔ] in (1) and (2).

- (2) a. [ʔin-ʔu'laʔ] *in ula* ‘I am a foreigner’
 b. [ʔin-ʔaχ-¹ʔikʔ] *in ajik* ‘I am a domestic worker’ (cf. 1a)
 c. [ʔoχ-χo't-ɔl] *öj jot-öl* ‘We are elevated.’ (cf. 3b)

Default prefix integration Otherwise, all prefixes are parsed into an adjacent prosodic word: they bleed glottal stop epenthesis, (3a–c), and a fricative at the right edge of a prefix degeminates before another fricative, (3b). Prefixes like /r(u)-/ *r*- ‘3SG.ERG’ even integrate with prefixes like /aχ-/ *aj*- ‘AGT’, which are themselves outside the prosodic word containing the stem, (3c).

- (3) a. [ʃ-ok^h] *xok* ‘(s)he entered’ cf. [ʔok-i-¹ʃɔ] *okib'äl* ‘entryway’
 b. [ʃ-oχ-o't-eʔ] *xojjote* ‘we climbed’ cf. [χo't-ɔ] *jotöl* ‘above’
 c. [r-aχ-ʔe'j-aχ] *rajeyaj* ‘his/her dentist’ (*[ru-ʔaχ-ʔe'j-aχ])

Unified properties: spell out domains We argue that both constructions with “exceptional” prefixes involve structures commonly associated with a spell out domain and thus receive a natural explanation under traditional assumptions about syntax-phonology interface (Arad, 2005; Chomsky, 2001; Embick, 2010; Embick and Marantz, 2008; Marantz, 2007; Marvin, 2002; Newell, 2008).

We analyze the non-inflectional prefixes as n^0 heads. The evidence is that they place selectional restrictions on their complement (they only combine with nouns) but they do not change category (they project a noun). Simple nouns combine directly with n^0 prefixes, as in [ʔaχ-¹ʔikʔ] AGT-month_N ‘domestic worker’, but other categories must first be nominalized by an overt suffix, bolded

in [r-aχ-toʔ-ɔ̃] _{ERG-AGT-help_V-NMLZ} ‘his/her helper’. The examples in Bennett (2018); Bennett et al. (2018) where n^0 prefixes combine directly with verbs likely contain a null categorizer, as other dialects use an overt categorizing suffix in the same words (Patal Majzul et al., 2000).

These constructions therefore stack an n^0 over a categorized xP, triggering spell out of the xP. In support of this analysis, stacked categorizing suffixes also trigger spell out. Bare roots can combine with a nominalizing suffix without inducing spell out, e.g., the bare root /uts/ *utz* ‘good’ in [r-uts-i] _{ERG-good-NMLZ} ‘his/her favor, goodness, improvement’ (not *[ru-ʔuts-i]). However, the allomorphy of ergative prefixes in result nominalizations (which contain a verbal suffix followed by a nominal suffix) provides evidence for an internal spell out domain (Burukina, 2024, 37).

Non-verbal predication in many languages must be supported by an additional element (e.g. Baker, 2008; Bowers, 1993). We argue that non-verbal predicates in Kaqchikel Mayan contain a null Pred^0 . We analyze PredP as a spell out domain, which is supported by independent syntactic evidence (den Dikken, 2006; Ko, 2014). *ABS* prefixes, introduced by *Infl* above Pred^0 (Coon et al., 2014), are thus excluded from the phonological cycle containing the root.

Analysis: cyclic spell out We adopt a model where the translation from syntactic structure to prosodic structure (“spell out”) is cyclic. At each point of spell out, a portion of syntactic structure is interpreted cyclically from the root outward (Bobaljik, 2000; Kiparsky, 1982; Myler, 2017; Wolf, 2008), where interpretation involves the linearization and phonological realization of morphemes. Crucially for us, a phonological cycle only occurs as the final step of spell out. In this step, the input is parsed into a prosodic word, and regular phonological processes like syllabification, stress, [ʔ]-epenthesis, and degemination are applied. The two relevant points of spell out for Kaqchikel Mayan are stacked categorizing heads (4a) (= 1a) and Pred^0 (4b) (= 2a). The innermost xP does not constitute a phonological cycle (Embick, 2015; Kiparsky, 1982).



Each spell-out domain is included in later phonological cycles (Harðarson, 2020). Thus, the first cycle in (4a) spells out /ikʔ/ ‘month’, yielding [ʔikʔ]. The full word also undergoes a phonological cycle, spelling out /aχ/ ‘AGT’ together with the previous output to yield [ʔaχ-ʔikʔ]. Faithfulness across cycles ensures that previous epenthesis and degemination remain (Kiparsky, 1982).

Previous analyses Because the two types of exceptional prefixes do not form a morphosyntactic class, Bennett (2018) argues they each contain a prosodic subcategorization frame requiring them to be sister and daughter to a prosodic word, e.g. $\omega[\text{---}]$. To explain why absolutive prefixes like /oχ-/ *öj-* ‘1_{PL.ABS}’ are external to the minimal prosodic word in non-verbal predicates (2c), but internal to the minimal prosodic word in verbal predicates (3b), Bennett et al. (2018) locate a second subcategorization frame in the aspectual prefixes, which “smothers” the effects of the absolutive subcategorization frame in verbal contexts, forcing absolutes into the minimal prosodic word.

Discussion Subcategorization frames traditionally hold only while linearizing or expounding morphemes, or while building prosodic structure (e.g., Bye, 2007; Inkelas, 1990; Kalin and Rolle, 2024; Paster, 2006; Yu, 2007; Zec, 2005). The surface-oriented prosodic subcategorization frames in Bennett (2018); Bennett et al. (2018) are more powerful, as their effects “linger” through the phonological cycle. Our reanalysis of Kaqchikel Mayan suggests that surface-oriented subcategorization frames should be abandoned in favor of broader grammatical generalizations.

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