Prosodic smothering in Macedonian and Kaqchikel*

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Abstract

This paper is concerned with the description and analysis of a so-far unnoticed phenomenon in prosodic phonology, which we dub PROSODIC SMOTHERING. Prosodic smothering arises when the prosodic status of a clitic or affix varies with the presence or absence of some outer morpheme. Beyond motivating the existence of prosodic smothering by way of novel data from two genetically unrelated languages—Macedonian (Slavic, Macedonia) and Kaqchikel (Mayan, Guatemala)—we provide a unified account of the phenomenon based on a principled extension of the theory of prosodic subcategorization (Inkelas 1990, Peperkamp 1997, Chung 2003, Yu 2003, Paster 2006, Bye 2007, among others). In particular, while prosodic subcategorization is usually understood to involve only local, laterally adjacent elements, we show that prosodic smothering naturally emerges in a theory that allows prosodic subcategorization to implicate the vertical dimension—namely the prosodic category that dominates a morpheme. The resulting analysis not only makes sense of the novel data in Macedonian and Kaqchikel, it does so with purely local subcateogrization frames. This would not be possible in a theory that allowed only lateral subcategorization, and so this paper not only introduces prosodic smothering, but removes it as a potential counterexample to the claim that prosodic subcategorization is strictly local.

1 Introduction

This paper is concerned with the description and analysis of a so-far unnoticed phenomenon in prosodic phonology, which we dub PROSODIC SMOTHERING. This phenomenon, illustrated schematically in (1), concerns a specific type of contexual variability in the prosody of dependent morphemes (affixes and clitics). Assume that two co-occurring morphemes, A and B, are normally realized with the prosodic structure in (1a). In this structure morpheme A is parsed into a higher prosodic domain than morpheme B (e.g. morpheme B might be dominated by a prosodic word ω, while morpheme A is dominated by a phonological phrase ϕ; the exact category labels aren't important). Now assume that A and B can also co-occur with a third, outer functional morpheme $\mathbb{F}$. In many cases the presence of $\mathbb{F}$ will have no

effect on the prosody of A and B (1b): compare, for example, English phrases like *the window* [ðə (_ω 'wɪn.do͡ʊ)] vs. *in the window* [ɪn ðə (_ω 'wɪn.do͡ʊ)] (Selkirk 1995).

But this is not the only possible outcome: as we will show, in some cases $\mathbb{F}$ can trigger restructuring of the prosodic boundary between A and B. This is prosodic smothering: in the presence of some morpheme $\mathbb{F}$, the prosody of A and B flattens out such that all three morphemes are contained within the same domain (1c). In our terminology morpheme $\mathbb{F}$ 'smothers' A because the presence of $\mathbb{F}$ (an outer morpheme) appears to compress A (an inner morpheme) into a lower prosodic domain than it would otherwise belong to.

(1)   a.   /A B/ → [_δ A [_π B]]   ($\delta \geq \pi$ on the prosodic hierarchy)

      b.   /$\mathbb{F}$ A B/ → [_δ $\mathbb{F}$ A [_π B]]   (no effect of $\mathbb{F}$)

      c.   /$\mathbb{F}$ A B/ → [_π $\mathbb{F}$ A B]   (prosodic smothering by $\mathbb{F}$)

The effect of smothering is to generate prosodic alternations akin to faux-English *the window* [ðə (_ω 'wɪn.do͡ʊ)] vs. *in the window* [(_ω ɪn 'ði wɪn.do͡ʊ)], in which the stressability of *the* depends on the presence or absence of an outer functional morpheme. In this paper we demonstrate that prosodic smothering (1c) occurs in both Macedonian (section 2) and Kaqchikel (section 3), two genetically and geographically disparate languages.

The theoretical import of prosodic smothering resides, in part, with the notion of phonological locality. Phonological processes are typically local, in the sense that phonological interactions occur between string-adjacent elements (where 'adjacency' may be defined over different levels of representation, such as autosegmental tiers; see Goldsmith 1990, Archangeli & Pulleyblank 1994, Gafos 1999, Hansson 2010, and references there). Indeed, one of the great insights of prosodic phonology has been the reduction of apparently non-local phonological interactions (such as rhythmic stress assignment) to simpler, local processes computed over abstract prosodic structure (e.g. Liberman & Prince 1977, Prince 1983, 1991, Nespor & Vogel 1986, Halle & Vergnaud 1987, Hayes 1995, and many others). In this light, prosodic smothering presents a puzzle: how is it that an outer morpheme ($\mathbb{F}$) can condition the prosodic boundary between two other morphemes (A and B) when that outer morpheme is not itself adjacent to the boundary in question? The analytical question, then, is whether and how such apparently non-local interactions can be reformulated in terms of conditioning by higher prosodic structure.

This brings us to a second facet of prosodic smothering: in both case studies presented here smothering is lexically idiosyncratic, being triggered by some but not all morphemes in the relevant configuration (1b,c). As we argue below, it is not in general possible to predict which morphemes will trigger smothering: the ability to induce non-local prosodic reparsing appears to be an arbitrary property of individual lexical items. For reasons laid out in sections 2 and 3, we believe that the lexical specificity of smothering effects implicates PROSODIC SUBCATEGORIZATION as a driving force behind patterns of variability like (1a)~(1c).

Prosodic subcategorization refers to a family of theories in which dependent morphemes may select for prosodic properties of their hosts (e.g. Inkelas 1990, Peperkamp 1997, Chung 2003, Yu 2003, Paster 2006, Bye 2007, among others). These requirements are formalized as lexical subcategorization frames which specify prosodic structure to the left or right of the selecting morpheme. By way of illustration, consider the subcategorization frames in (2b,e)

(inspired by Inkelas 1990, Raffelsiefen 1999). In English, the default pattern of stress assignment for underived adjectives places primary stress on the antepenultimate syllable (2a) (we oversimplify here for expositional reasons; see Chomsky & Halle 1968, Hammond 1999 for more details). The English prefix *un-* selects for a completed prosodic word to its right (3b), and so blocks the normal pattern of antepenultimate stress found for English adjectives (3d). In contrast, the trivial subcategorization frame for *in-* (2e) places no requirements at all on its host, and so allows the otherwise expected integration of this prefix into the same prosodic word as the following stem, with concomitant antepenultimate stressing (3f).

(2)   English *un-* and *in-* (after Inkelas 1990, Raffelsiefen 1999)

    a.   Default adjective stress: antepenultimate
        íntimate, prímitive, dérelict, ásinine,...

    b. $[_\omega$ un- $[_\omega$ ...]]
    c.   *ùnfínished* → $[_\omega$ *ùn-* $[_\omega$ *fínished*]]
    d.   **únfinished* → ***$[_\omega$ *ún-finished*]

    e. $[_\omega$ in- [...]]
    f.   *ínfinite, *ìnfínite* → $[_\omega$ *ín-finite*]

The idiosyncratic stressing of *un-* and *in-* cannot be reduced to independent facts about the phonology, syntax, or semantics of these prefixes: it must somehow be stipulated as part of their lexical entries.[1] We follow Zec (2005) and many others in taking lexical subcategorization to be a simple, natural, and conceptually appropriate tool for formalizing morpheme-specific prosodic requirements of this sort.

Prosodic subcategorization is typically understood to be LATERAL and LOCAL. By 'lateral', we mean that prosodically dependent morphemes may subcategorize for prosodic properties of their hosts—that is, for prosodic structure occurring on either side of the morpheme itself. In (1) we have an example of subcategorization for a following element, but enclitics and suffixes can also subcategorize for preceding elements (and there might exist elements that subcategorize for material in both directions).

By 'local' we mean that prosodic subcategorization frames may refer only to strictly adjacent elements, as discussed above. This principle is enshrined as the GENERALIZED FOCUS DETERMINANT ADJACENCY CONDITION of Inkelas (1990) (see also Paster 2006, Embick 2010). The selectional restrictions encoded by local subcategorization frames are therefore limited to referring to a single, string-adjacent prosodic constituent. (See McCarthy & Prince 1986/1996:1, McCarthy 2003:80, Buckley 2009 for related definitions of prosodic locality.)

Less attention has been paid to the vertical dimension of prosodic subcategorization—the

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[1]In the framework of Lexical Phonology and Morphology (LPM) *in-* and *un-* would be assigned to different lexical strata; this conclusion is motivated by a constellation of different morphological, phonological, and semantic properties that appear to correlate with the Level 1 vs Level 2 distinction in English (Chomsky & Halle 1968, Siegel 1974, Allen 1979, Lieber 1980, Kiparsky 1982, 1985, etc.). However, it has long been known that these diagnostics do not correlate quite as neatly as predicted by strong versions of LPM (see Raffelsiefen 1999 for a recent critique). In any case, the discussion in this section is merely intended to illustrate the formal device of prosodic subcategorization: we are not committed to any particular analysis of the English prefixes *in-* and *un-*.

prosodic constituent *produced* by the attachment of a dependent morpheme to its host.[2] In non-procedural terms, we can think of vertical subcategorization as encoding a restriction on the prosodic category that immediately dominates the selecting morpheme. For example, the subcategorization frames in (1) can be restated in terms of domination by different levels of a recursive prosodic word structure ω (3).

(3) $[_{\omega\text{-NonMin}}$ un- $[\ldots]]$ $[_{\omega\text{-Min}}$ in- $[\ldots]]$

In (3) the prefix *un-* subcategorizes for domination by a non-minimal prosodic word ω-NonMin, this being a ω-level constituent that dominates one or more constituents belonging to the same ω-level.[3] This subcategorization frame effectively forces *un-* to be parsed into a recursive ω structure with its host, accounting for the exclusion of this prefix from the stress domain of the stem, $[_{\omega\text{-NonMin}}$ *ùn-* $[_{\omega\text{-Min}}$ *fínished* $]]$. In contrast, the prefix *in-* selects for domination by a *minimal* prosodic word (i.e. a prosodic word that dominates no other prosodic word); this insures its integration into the same stress domain as the stem, $[_{\omega\text{-Min}}$ *ín-finite* $]$. By restricting vertical subcategorization to selection for an immediately dominating prosodic category, we ensure that the subcategorization frames in (3) retain the local character of classic lateral subcategorization.

We will argue that prosodic smothering (1) is in fact a response to the vertical subcategorization requirements imposed by certain functional morphemes. Schematically, a vertical subcategorization frame like (4) can trigger non-local prosodic reparsing (5c) in exactly those cases where the default prosodic structure would lead to a violation of the lexical requirements of the selecting morpheme (5b).

(4)   Vertical subcategorization for $\mathbb{F}$: $[_\pi \mathbb{F} [\ldots]]$

(5)   a.   /A B/ $\to [_\delta$ A $[_\pi$ B $]]$ ($\delta \geq \pi$ on the prosodic hierarchy)

        b.   /$\mathbb{F}$ A B/ $\to$ *$[_\delta \mathbb{F}$ A $[_\pi$ B $]]$ (lexical requirements of $\mathbb{F}$ are not met)

        c.   /$\mathbb{F}$ A B/ $\to [_\pi \mathbb{F}$ A B]   (prosodic smothering by $\mathbb{F}$)

In this way, apparently non-local patterns of prosodic reparsing can in fact be reduced to strictly local conditioning by vertical subcategorization. While the effect of prosodic smothering is indeed non-local, in that some morpheme $\mathbb{F}$ triggers a distal prosodic change, the formal mechanisms which drive reparsing are themselves strictly local in character.

Though we frame our analysis in terms of vertical subcategorization, the larger point to be made here is that purely lexical factors can dramatically impinge on prosodic parsing, even at the phrase level. This observation has both practical and theoretical consequences for research on the interface between morpho-syntax and prosodic phonology. We will return to these issues after establishing the empirical facts that motivate our analysis.

Section 2 analyzes the context-dependent prosody of object clitics in Western Macedonian

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[2]The schema that Inkelas (1990) develops for prosodic subcategorization explicitly includes the prosodic output of affixation/cliticization. However, in all the cases that Inkelas discusses this specification is essentially redundant, being predictable from other facts about the morphemes being concatenated (see p.112ff.).

[3]The predicates '(non-)minimal' and '(non-)maximal' are also locally-defined structural relations. For more discussion of these notions in the context of recursive prosodic structure, see Itô & Mester 2007, 2013, Elfner 2012 and references there.

as a prosodic smothering effect, triggered by the vertical subcategorization requirements of morphemes high in the clausal spine. Section 3 provides convergent evidence that absolutive agreement markers in Kaqchikel have a different prosodic status depending on their larger morpho-phonological context; this prosodic variability is then analyzed as another instance of prosodic smothering conditioned by vertical subcategorization. Section 4 discusses the theoretical implications of our proposal and concludes.

2   Macedonian

Macedonian is a South Slavic language, spoken by over 1.3 million people in the Republic of Macedonia and by minority communities in neighboring Balkan countries. In this paper, we are concerned with the Western dialects of Macedonian, which are characterized by fixed, antepenultimate stress (Rudin et al. 1999, Vidoeski 2005, Tomić 2012). The clitic system of these Macedonian dialects provides a relatively straightforward case of prosodic smothering, whereby the prosody of preverbal pronominal clitics varies with the presence or absence of certain preceding function words. It can be shown that these function words are themselves phonologically deficient, being prosodically dependent on the following word. Furthermore, these function words are parsed into a lower prosodic domain than the default parse observed for pronominal clitics. When pronominal clitics co-occur with these prosodically deficient functional items, the prosodic requirements of the latter take precedence, forcing the clitics to be parsed into a lower prosodic domain than they otherwise would be. This is the essence of prosodic smothering.

2.1   The Macedonian clitic system

Macedonian has a system of object clitics marking person, number, and gender features of both direct and indirect objects (Table 1). These clitics are left-adjacent to tensed verbs (i.e., those that bear tense morphology but also -l participles; Joseph 1983) (6).[4]

	Direct object	**Indirect object**
1SG	me	mi
2SG	te	ti
3SG	go (non-fem) / ja (fem)	mu (non-fem) / ì (fem)
1PL	nè	ni
2PL	ve	vi
3PL	gi	im
Reflexive	se	si

Table 1: Object clitics in Macedonian

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[4]Examples are given in a romanized Macedonian orthography. Capital letters indicate stress placement, as in other work on the prosody of South Slavic clitics (e.g. Rudin et al. 1999, Tomić 2012).

(6) a. go   VIde
         3SG.M.ACC see.3SG.PST
         '(S)he saw him'

     b. go   ZEde
         3SG.M.ACC take.3SG.PST
         '(S)he took it'

     c. toj mu   go   DAL
         he 3SG.M.DAT 3SG.M.ACC given.3SG.M
         'he gave it to him'

     d. sum mu   go   ZEL
         am 3SG.M.DAT 3SG.M.ACC taken.1SG
         'I took it from him'

Note that the Macedonian object clitics are strictly monosyllabic and are not characterized by an independent (lexically assigned) stress. In other words, they are prosodically deficient elements in that they are parsed as something less than a full prosodic word ω (e.g. as bare syllables).[5]

   Pronominal object clitics appear in post-predicate position with all tenseless predicates (7): non-tensed verbs (e.g., imperatives and most participles) and non-verbal predicates (though see Tomić 2012:65 on variation in clitic placement with tenseless predicates):

(7) a. DAJ   mi   go
         give.IMP   1SG.DAT 3SG.M.DAT
         'give it to me'

     b. MIL mi   e Petko
         dear 1SG.DAT is Petko
         'Petko is dear to me.'

These constructions are largely outside the scope of the paper, as is the patterning of auxiliary clitics like *sum* 'am' in (6d); see Rudin et al. (1999), Tomić (2012), Harizanov (2014) for more discussion.[6]

2.2 Stress assignment in Macedonian

Our interest in the object clitic system of Macedonian lies in the non-uniform behavior of these clitics with respect to stress placement. Stress in the Western dialects of Macedonian is regularly antepenultimate (8a,b,c), or initial in monosyllabic and disyllabic words (8d,e) (examples from Tomić 2012:53-59; see also Lunt 1952, Franks 1989, Idsardi 1992, Hyde 2012).

(8) a. proizVEduva 'produce (3SG.IMPFV.PRS)'
     b. proIZvede 'produce (3SG.PST)'
     c. PROizvod 'product'
     d. VOdi 'lead (3SG.IMPFV.PRS)'
     e. LIK 'figure, image'

Post-predicate clitics, just like inflectional suffixes, affect stress placement: stress is antepenultimate within the predicate-clitic complex, and so the addition of an object enclitic can trigger rightward stress shift (9).[7]

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[5]We assume that the minimal prosodic word ω-MIN is the domain of stress assignment in Macedonian, but little hinges on this point (see Lunt 1952, Franks 1989, Rudin et al. 1999 for some examples of stress assignment in multi-word domains).

[6]Preverbal auxiliary clitics have the same prosodic behavior as preverbal object clitics, with which they form a single clitic cluster (Franks & King 2000, Tomić 2012). We focus on the latter series simply for the sake of convenience.

[7]Encliticization can, in principle, shift stress entirely off the lexical host of the clitics in examples that involve clitic clusters with three or more clitics—see (14).

(9)　　a.　DOnesi 'Bring!'
　　　　b.　doNEsi go 'Bring it!'
　　　　c.　doneSI mi go 'Bring it to me!'　　　　　　　　　　　(Rudin et al. 1999:551)

Assuming that the minimal prosodic word is the domain relevant for stress assignment, the postverbal object clitics lie within that domain: [$_{\omega\text{-Min}}$ doneSI mi go] (see Harizanov 2014 for additional arguments for this parse).

　　Preverbal clitics do not generally affect stress placement. With tensed verbs, stress remains on the predicate rather than shifting to antepenultimate position within the clitic-host complex (10) (in addition to (6)).

(10)　　a.　mi go DAle 'They gave it to me.'
　　　　b.　*mi GO dale　　　　　　　　　　　　　　　　　　(Rudin et al. 1999:553)

Preverbal object clitics are therefore outside the stress domain containing the verb. Nor do they receive a stress of their own, as already observed. The pre-verbal object clitics are thus extraprosodic with respect to the domain of stress, the minimal prosodic word (see again Harizanov 2014):

(11)　　a.　[mi go [$_{\omega\text{-Min}}$ DAle]]
　　　　b.　[CLITIC(S) [$_{\omega\text{-Min}}$ VERB]]

　　A comparison with other preverbal clitics demonstrates that the stress pattern in (10) and (11) owes to the interaction between the default stress placement rule in Macedonian and prosodic structure, rather than a blanket ban on stressed clitics (e.g. Klavans 1995). Recall that clitics do not introduce an independent lexical stress. However, nothing in principle prevents clitics from coming to bear stress as the result of regular stress assignment rules (e.g. Klavans 1995, Anderson 2011, who discuss a number of cases of stressed clitics). Stressed clitics are, in fact, encountered in Macedonian. For example, the negative clitic *ne* belongs to the same stress domain as the following verb and happens to bear stress (12), even though it does not contribute a lexical stress itself. (Examples like (12) play an important part in our analysis, and we treat them in more detail in the following section.) Prepositions can also bear stress despite being prosodically deficient, (13) (see also Lunt 1952:Ch.4, p.53). Most importantly, examples like (14) demonstrate that pronominal object clitics can in fact bear stress in certain contexts.[8] Accounting for clitic stress in these contexts is the main goal of the following sections.

(12)　　[NE　znam　　　]
　　　　　NEG　know.1SG
　　　　'I don't know'　　　　　　　　　　　　　　(Lunt 1952:23, Friedman 2010:254)

(13)　　a.　[so neVEStata] 'with the bride'
　　　　b.　[SO mene] 'with me'　　　　　　　　　　(Franks 1989, Tomić 2012:62-3)

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　　[8]This example involves *kamo* 'where-to', which is found in the Southwestern dialects of Macedonian and occurs in clauses without a lexical verb (see Rudin et al. 1999:554 and Tomić 2012:194, fn.38).

(14)   [Kamo   MI   ti   e   ] knigata?
        where.to 1SG.DAT 2SG.DAT be.3SG   the.book
        'Where is your book, my dear little one?'   (Tomić 2012:194)

2.3   Exceptional clitic stress

There are several environments in which pre-verbal clitics systematically receive stress, in a clear deviation from the unmarked pattern (6) and (10), in which such clitics behave as extraprosodic for the purposes of stress assignment. One such environment is clauses that include sentential negation—when the negative marker *ne* is present, pre-verbal object clitics form a prosodic constituent with the verb for regular antepenultimate stress assignment:

(15)   a.   [Ne   GO   vide   ]
              NEG 3SG.M.ACC see.3SG.PST
              '(S)he didn't see him'   (Lunt 1952)

        b.   go [VIde]

        c.   [Ne   mu   GI   dava   ] [jaBOLkata]
              NEG 3SG.M.DAT 3PL.ACC give.3SG.PRS   the.apples
              '(S)he is not giving him the apples.'   (Tomić 2012:66)

        d.   mu gi [DAva] [jaBOLkata]

Franks (1989) and Rudin et al. (1999) refer to this phenomenon as an ENLARGED STRESS DOMAIN (ESD); we mark such domains with square brackets. Examples like (12) demonstrate that the marker of sentential negation, being able to carry the antepenultimate stress itself, is included in the same stress domain as the verb and preverbal clitics, a point we return to below.[9]

    The same pattern of stress assignment occurs in both root and embedded *wh*-questions in which the clitic cluster contains an *wh* pronoun or a *wh* adverbial word:

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[9]There is an exception to this pattern provided by the 'Monosyllabic Head Effect' (Franks 1989): when the verb is monosyllabic, stress placement in an enlarged stress domain is penultimate (on the syllable immediately preceding the verb) rather than antepenultimate:

(i)   a.   ne   mu   GO   dal   ∼ *ne MU go dal
            NEG 3SG.DAT 3SG.ACC given.3SG.M
            '(He) did not give it to him.'

       b.   što   bi   MU   zel   ∼ *što BI mu zel
            what whould 3SG.DAT taken.3SG.M
            'What should he take from him?'

We assume that the Monosyllabic Head Effect reflects a constraint demanding that root syllables be parsed into feet (Buckley 1997, Itô & Mester to appear). Since this constraint can only be violated when antepenultimate stress occurs with a monosyllabic verb, e.g. *[što (BI mu) zel] vs. [što bi (MU zel)], the desired effect is achieved. See also Beasley & Crosswhite (2003), Tomić (2012:66, fn.44) for discussion, and Franks (1989:559) for the observation that trisyllabic stress domains do not necessarily exhibit the Monosyllabic Head Effect, so that stress is either antepenultimate or penultimate.

(16) a. [kako SE vikaš]
how REFL call.2SG
'What's your name?' (Lunt 1952:23)

b. [koj mu GI dava] [jaBOLkata]
who 3SG.M.DAT 3PL.ACC give.3SG.PRS the.apples
'Who is giving him the apples?' (Tomić 2012:66)

c. [koj TI veli]
who 2SG.DAT say.3SG.PRS
'Who says so to you?' (Lunt 1952:23)

d. [zošto mu GO dade]
why 3SG.M.DAT 3SG.M.ACC give.3SG.PST
'Why did you give it to him?' (Vidoeski 2006:21)

e. [NE znaeš] [TI] [kako SE žali] [za mominSKO
NEG know.2SG.PRS you how REFL sorrow.3SG.PRS for maiden
vreme]
time
'You don't know how one sorrows for her maiden life.' (Lunt 1952:24)

f. jaglenarot [RAZbral] [ŠTO saka] [MEČkata]
the.charcoal-burner understood what want.3SG.PRS the.bear
'the charcoal-burner understood what the bear wanted' (Lunt 1952:24)

g. NEmam [što da TI piša]
not.have.1SG.PRS what to 2SG.DAT write.1SG.PRS
'I have nothing to write to you about' (Hendriks 1976:95)

In the western Macedonian dialects that we are concerned with, these single-word *wh* phrases behave like the object clitics in Macedonian in that they are parsed in the same minimal prosodic word as the verb for the purposes of stress assignment (Tomić 2012:419ff):

(17) a. [Koj DOnese] poDAroci?
who bring.3SG.PST presents
'Who brought presents?' (Tomić 2012:419)

b. [KOJ reče]?
who.NOM say.3SG.PST
'Who said it?' (Rudin et al. 1999:557)

c. [koMU dade] [poDAroci]?
who.DAT gave.2/3SG.PST presents
'To whom did you/(s)he give presents?' (Tomić 2012:419)

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d. [koGA odiš   ]?
    when go.2SG.PRS
    'When are you going?'   (Tomić 2012:420)

e. [JAS] [ne VNImavav   ] [KAJ   gazam   ]
    I   not pay.attention.1SG.PST   where step.1SG.PST
    'I wasn't paying attention to where I was stepping'   (Lunt 1952:23)

In other words, both single-word *wh* phrases and the sentential negation marker *ne* (as shown in (12)) are themselves included in the same stress domain as the verb and any preverbal clitics. When these elements contain the antepenultimate mora in the minimal prosodic word, they carry the stress associated with the verb, (17).[10],[11]

The prosodically dependent behavior of (at least some) *wh* words in the western Macedonian dialects is of more general nature. For instance, certain *wh* modifiers internal to the nominal phrase form a stress domain with the NP that follows them:

(18)   a. [kaKOV   fustan] [SAkaš   ]
           what.kind.SG.M dress   want.2.SG.PRS
           'What kind of dress do you want?'   (Tomić 2012:420)

       b. [čii   KONduri] [OBleče   ]
           whose.PL shoes   put.on.2/3SG.PST
           'Whose shoes did you/(s)he put on?'   (Tomić 2012:420)

       c. [kolKU   pari   ] [SAkaš   ]
           how.much money   want.2SG.PRS
           'How much money do you want?'   (Lunt 1952:23)

In addition, extension of the stress domains is not limited to or triggered only in questions. The same clitic *wh*-words that trigger enlarged stress domains in root and embedded questions also do so in exclamatory sentences (Hendriks 1976, p. 95):

(19)   a. [kaKO   griziš   ] [JABloka]!
           which.way chew.2SG.PRS   apples
           'the way you chew apples!'

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[10]Rudin et al. (1999:556-61) report that examples like (17) can also be realized with a distinct lexical stress on negation or the *wh*-word: e.g., [KOJ] [REče] 'Who said it?'. This stress pattern implies some sort of semantic or pragmatic focus on negation or the *wh*-word itself. When the verb is emphasized, it may bear stress instead of the *wh*-word or negation: e.g., [što da PRAvam] 'What shall I *do*?' (Lunt 1952:24). See section 2.5 for more discussion.

[11]The stressing of preverbal negation and *wh*-words (17) is most clearly observable for mono- and disyllabic verbs without preverbal object clitics. Monosyllabic verbs are subject to the monosyllabic head effect (footnote 9), which restricts stress to the immediately preverbal clitic (e.g., *Koj GO zel?* 'Who took it'?). In disyllabic verbs with preverbal object clitics, those clitics bear the stress rather than negation or the *wh*-word (e.g., *Koj GO vide?* 'Who saw him/it?'). Trisyllabic and larger verbs bear the stress themselves (e.g., *prikaŽUvale* 'they told'). Examples from Lunt (1952) and Franks (1989).

b. [kolku   ME   bolit   ]
   how.much 1SG.ACC hurt.3SG.PRS
   'how (much) it hurts me!'

c. [kolKA bola] [Imat   ]
   what pain   have.3.SG.M.PRS
   'what pain he has!'

Summarizing our descriptive conclusions so far, we claim that *ne* (the marker of sentential negation) and *wh* clitics are in the same stress domain as the following verb (20a) (or the following NP in constructions like (18)), and that preverbal object clitics are typically outside the stress domain of the following verb (20b).[12] The crucial exception is when one or more object clitics co-occurs with *ne* or a *wh* clitic, in which case all preverbal clitic elements are integrated into a single stress domain (ω-MIN) which includes the verb (20c).

(20) a. $[_{\omega\text{-Min}}$ *ne*/WH VERB]   (cf. (12) and (17))

      b. [CLITIC(S) $[_{\omega\text{-Min}}$ VERB]]   (cf. (10))

      c. $[_{\omega\text{-Min}}$ *ne*/WH CLITIC(S) VERB]   (cf. (15) and (16))

Macedonian clitic stress thus instantiates the phenomenon of prosodic smothering, precisely as defined in section 1: the prosody of the clitic-verb complex depends on the presence or absence of some outer morpheme (*ne* or a *wh* clitic). This appears to be a non-local interaction, in that the triggering morpheme is not adjacent to the prosodic boundary that undergoes restructuring.

We emphasize that these patterns are lexically idiosyncratic, being conditioned by sentential negation and clitic *wh* words but not by other functional elements high in the clausal spine, including other clitics. Auxiliary proclitics like *k'e* and modal particles like *da* do not trigger an enlarged stress domain (21a-d). Nor does the interrogative enclitic *li* (21e,f) (on which, see Rudin et al. 1999:552). Proclitic complementizers (21g,h) are similarly inert for the assignment of stress.

(21) a. k'e se   [VENča   ]
          will REFL   marry.3SG
          'He will get married'   (Lunt 1952:23)

      b. *[k'e SE venča]

      c. [SAka   ] da se   [VENča   ]
          want.3SG.PRS   to REFL   marry.3SG
          '(S)he wants to get married'   (Lunt 1952:23)

      d. *[SAka] [da SE venča]

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[12]This default parse for preverbal object clitics presumably owes to syntax-prosody mapping constraints that force a prosodic boundary between a syntactic head (e.g. the verb) and its specifier or preceding higher functional heads (e.g. an object clitic or a *wh* clitic). This effect can be generated by constraints like ALIGN-L/R(LEX, ω), which we discuss in section 2.4.

e. [doNEsuvaš   ] li?
   bring.2SG.PRS   Q
   'Are you bringing (it)?'   (Rudin et al. 1999:552)

f. *[doneSUvaš li]

g. deka [DOšol   ]
   that   come.3SG.PST
   'that he came'   (Franks 1987:129)

h. *[deKA došol]

Likewise, *wh*-words that introduce adjunct clauses, including restrictive and non-restrictive relative clauses, do not trigger extended stress domains even though their homophonous counterparts in questions and exclamatory sentences do. This is illustrated, for example, by the contrast between questions (22), in which stress shifts leftward onto the *wh*-word, and adjunct clauses (23), in which stress remains on the verb while the *wh*-word procliticizes to it (Koneski 1987, p. 168-169):

(22) a. [koGA dojde   ] [TOJ]?
        when come.3SG.PST   he
        'When did he come?'

     b. [KAJ   saka   ] da [Odi   ] [TOJ]?
        where want.3SG.PRS   to   go.3SG.PRS   he
        'Where does he want to go?'

(23) a. koga [DOJde   ] [TOJ], [TEbe   ] te   [NEmaše   ]
        when   come.3SG.PST   he   you.ACC   2SG.ACC   not.have.3SG.PST
        'when he came, you weren't there'

     b. kaj   [SAka   ] [NEka] [Odi   ]
        where want.3SG.PRS   let   go.3SG.PRS
        'let him go where he wants (to go)'

Simiarly, when *što* introduces a relative clause, it procliticizes to the verb but does not trigger stress domain extension, as the following examples show:

(24) a. [prviOT čovek], što se   [KAžuva   ] [Adam]
        the.first man   who REFL   call.3SG.PRS   Adam
        'the first man, who is called Adam'   (Lunt 1952:105)

     b. [poLIcata], što [BIla   ] nad [KAtot   ]
        the.rack   that be.3SG.F.PST   over the.floor
        'the rack that was over the floor'   (Lunt 1952:109)

The following example further illustrates the distinct behavior of *wh*-words in questions and non-questions with respect to the position of stress. Here, the adverbial adjunct clause introduced by *koga* and the relative clause introduced by *što* do not trigger the extension of the stress domain, while the *wh* question word *kakov* 'what (kind)' does.

(25) koga ke ni   se   [ROdi   ] [DEtevo] što go
     when will 2.PL.DAT REFL be.born.3SG.PRS   baby   that 3SG.ACC

     [NOsam]   [VO mene], [kakVO   ime] ke mu   [KLAdeme   ]?
     carry.1SG.PRS in me   what.3SG.N name will 3SG.DAT put.1PL.PRS
     'When the baby I'm carrying is born, what name are we going to give him?'
     (Lunt 1952:109)

These distinct behaviors can be understood if it is [+Q] *wh*-words that idiosyncratically extend stress domains, while [−Q] *wh*-words—despite being homophonous with their [+Q] counterparts—do not. The failure of [−Q] *wh*-words to trigger expansion of a following stress domain is unlikely to be due to a systematic difference in their structural position: while relative *što* can be considered a complementizer (occupying a distinct position from the [+Q] *wh*-phrase *što* in, e.g. (16g)), all other *wh*-words introducing adjunct and relative clauses have been argued to occupy [SPEC,CP], i.e. the same position their [+Q] counterparts occupy in root and embedded questions (Rudin 2015).

Our overall conclusion is that the prosodic behavior of sentential negation and clitic *wh* words in Macedonian cannot be reduced to the syntactic position or the semantic function of these items. The expanded stress domains associated with these function words must be determined arbitrarily, through some type of lexical specification. We propose that prosodic subcategorization provides exactly the right notion of lexical idiosyncrasy needed for an analysis of exceptional clitic stress in Macedonian.

2.4   Analysis: vertical subcategorization

Vertical subcategorization (section 1) provides a strikingly simple analysis of exceptional clitic stress in Macedonian. We argued above that the prosodic idiosyncrasies of sentential negation and *wh* clitics in Macedonian must be lexically specified. We implement such lexical specification in (26) using the vertical subcategorization format introduced in section 1. Specifically, both sentential negation *ne* and *wh* clitics select for an immediately dominating minimal prosodic word:

(26) $[_{\omega\text{-}{\rm MIN}}$ ne $[\,\ldots\,]\,]$ $[_{\omega\text{-}{\rm MIN}}$ WH $[\,\ldots\,]\,]$

Note that while the dominance requirement of negation and the *wh* clitics would be satisfied by a parse like *[NE] [ZNAeš] (where the stressless *ne* has been strengthened to a prosodic word itself and has come to bear stress), the adjacency requirement that these elements must lean onto *something* to their right would not be. The upshot is that the selectional requirements in (26) require that *ne/wh* clitics be parsed into (and immediately dominated by) the very same minimal prosodic word $\omega\text{-}{\rm MIN}$ as their host. Given that *ne* and *wh* clitics are stressed as a unit with the following verb (15)-(16), this is the correct result.

The subcategorization frames (26) can now be used to explain why the presence of *ne* or a *wh* clitic also causes preverbal object clitics to be parsed into a stress domain with the verb. As just mentioned, *ne* and *wh* clitics must belong to the same minimal prosodic word as their hosts, lest the subcategorization frames (26) be violated. The host is identified as the prosodic constituent that immediately follows the function word in question. When the host is a verb and no other clitics are present, as in (12) and (17), no significant problem

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arises: *ne* or the *wh* clitic is simply parsed into the same minimal ω as the verb, accounting for the enlarged stress domains observed in these contexts.

However, what if the morpheme that follows *ne* or a *wh* clitic is itself a clitic rather than a verb?[13] By default, preverbal object clitics are parsed outside of the minimal prosodic word ω:

(27)   [CLITIC(S) [$_{\omega\text{-Min}}$ VERB]]

But in configurations of this type, the subcategorization requirements of *ne/wh* clitics cannot be satisfied: there is no possible way for *ne/wh* clitics to be added to this structure while also being parsed into the same minimal prosodic word as its host (the following clitic) when the host itself is completely external to the ω-Min level:

(28)   *[*ne*/WH CLITIC(S) [$_{\omega\text{-Min}}$ VERB]]

In such cases, the selectional requirements of *ne* and *wh* clitics take precedence over default prosodic parsing in (27): to satisfy the subcategorization frames (26), the stress domain of the verb is expanded to include preverbal object clitics along with *ne* and/or any *wh* clitics:

(29)   [$_{\omega\text{-Min}}$ *ne*/WH CLITIC(S) VERB]

This extension of the ω boundary allows *ne* and *wh* clitics to be parsed into the same minimal ω as their hosts:

(30)   a.   go   [$_{\omega\text{-Min}}$ VIde   ]
             3SG.M.ACC   see.3SG.PST
             '(S)he saw him'

        b.   *[$_{\omega\text{-Min}}$ <u>GO</u> vide]

        c.   [$_{\omega\text{-Min}}$ ne   GO   vide   ]
                      NEG 3SG.M.ACC see.3SG.PST
             '(S)he didn't see him'

        d.   *ne go [$_{\omega\text{-Min}}$ VIde]

        e.   *[$_{\omega\text{-NonMin}}$ ne go [$_{\omega\text{-Min}}$ VIde]]

Stress on the object clitics is incidental here, and arises only because the preverbal object clitics intervene between the selecting morpheme (*ne* or the *wh* clitic) and the nearest host that can satisfy the selectional requirements of that morpheme. This is PROSODIC SMOTHERING: the prosodic demands of *ne* or *wh* clitics force any following clitics into a lower prosodic domain than they would otherwise belong to. In this case prosodic subcategorization trumps the default syntax-prosody mapping otherwise responsible for determining stress domains.[14]

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[13]Due to the ordering constraints on the clitics in Macedonian, the only possible interveners are object and/or auxiliary clitics (see Franks & King 2000).

[14]Without further elaboration, our account of exceptional clitic stress (30) does not extend to multiword stress domains in Macedonian that involve only lexical words, such as numeral expressions like [PET dena] 'five days' (Lunt 1952). By their very nature, subcategorization frames are item-specific and do not flexibly

In (31)-(32) we provide a formally explicit analysis of our proposal, couched in Optimality Theory (Prince & Smolensky 1993/2004) and illustrated with example (15c). We adopt two constraints from Selkirk (1995): ALIGN-L(LEX, ω), which requires the left edge of every lexical word to coincide with the left edge of some minimal prosodic word; and ALIGN-R(ω, LEX), which requires the right edge of every minimal prosodic word to coincide with the right edge of a lexical word (see also Anderson 2005, Werle 2009). Constraints of the SUBCAT($\mathbb{F}$) family are violated whenever the prosodic subcategorization of item $\mathbb{F}$ is not met in the output (here, the subcategorization frame for *ne*, (26); see also Bonet et al. 2007).[15]

(31)

mu gi [$_V$ dava] [$_{DP}$ jabolkata]	SC(ne)	AL-R(ω, LEX)	AL-L(LEX, ω)
a. ☞ {$_\phi$ mu gi [$_{\omega\text{-MIN}}$ DAva] } [$_{\omega\text{-MIN}}$ jaBOLkata]			
b. ☞ [$_{\omega\text{-NONMIN}}$ mu gi [$_{\omega\text{-MIN}}$ DAva]] [$_{\omega\text{-MIN}}$ jaBOLkata]			
c. [$_{\omega\text{-MIN}}$ mu GI dava] [$_{\omega\text{-MIN}}$ jaBOLkata]			*! W
d. [$_{\omega\text{-MIN}}$ MU gi] [$_{\omega\text{-MIN}}$ DAva] [$_{\omega\text{-MIN}}$ jaBOLkata]		*! W	

(32)

ne mu gi [$_V$ dava] [$_{DP}$ jabolkata]	SC(ne)	AL-R(ω, LEX)	AL-L(LEX, ω)
a. ☞ [$_{\omega\text{-MIN}}$ ne mu GI dava] [$_{\omega\text{-MIN}}$ jaBOLkata]			*
b. {$_\phi$ ne mu gi [$_{\omega\text{-MIN}}$ DAva] } [$_{\omega\text{-MIN}}$ jaBOLkata]	*! W		L
c. [$_{\omega\text{-NONMIN}}$ ne mu gi [$_{\omega\text{-MIN}}$ DAva]] [$_{\omega\text{-MIN}}$ jaBOLkata]	*! W		L
d. [$_{\omega\text{-MIN}}$ NE mu gi] [$_{\omega\text{-MIN}}$ DAva] [$_{\omega\text{-MIN}}$ jaBOLkata]		*! W	L

The effect of SUBCAT(ne) is to eliminate candidates which parse this clitic outside the minimal prosodic word containing the verb, either by excluding *ne* from the ω level entirely (32b) or by integrating it into a recursive ω structure (32c).

The optimal candidate (32a) satisfies the subcategorization requirement of *ne* through prosodic smothering: the prosodic word corresponding to the verb is extended leftward to encompass both *ne* and any intervening object clitics. But there are other conceivable responses to the prosodic dilemma presented by *ne*. One might imagine, for instance, that *ne* (or a *wh* clitic) could appear in a minimal prosodic word containing any following object clitics but not the verb. This is candidate (d) of (32), in which the clitic string constitutes its own independent ω and the verb retains its own stress. However, this hypothetical outcome involves the creation of a prosodic word which contains only functional material. It is typically assumed that prosodic words are licensed by virtue of their association with

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generalize to other morphemes or constructions. However, while there are clear parallels across different types of multiword stress domains in Macedonian (such as the monosyllabic head effect, footnote 9), it is likely that prosodic subcategorization does not drive stress domain extensions in these cases because all participating items are lexical words (that are generally not prosodically dependent). In any event, previous work on this topic has largely remained at the observational level: to our knowledge no one else has even attempted to explain why sentential negation and *wh* clitics induce exceptional clitic stress, much less unified these patterns with other enlarged stress domains in Macedonian.

[15]In section 4 we comment on morpheme-specific alignment, another common device for capturing item-specific prosodic requirements (e.g. Kim 2010 and references there).

a lexical word. We express this requirement through the alignment constraint ALIGN-R(ω, LEX), which penalizes prosodic words which do not have a lexical word at their right edge. This constraint is responsible for eliminating candidate (32d).

Another strategy for satisfying the prosodic subcategorization requirements (26) would be to re-order *ne* or the *wh* clitic with respect to any preverbal clitics (33b,d). Such configurations would meet the selectional requirements of *ne* and the *wh* clitic while leaving the pronominal object clitics outside the domain of stress, as dictated by the default prosodic mapping.

(33) a. [$_{\omega\text{-MIN}}$ ne GO vide]   (cf. (30c))
      b. *go [$_{\omega\text{-MIN}}$ NE vide]

      c. [$_{\omega\text{-MIN}}$ Kako SE vikaš]?   (cf. (16a))
      d. *se [$_{\omega\text{-MIN}}$ kaKO vikaš]?

Such alternatives merit serious consideration in light of the growing body of research which argues that word order may be prosodically conditioned in some circumstances, especially when prosodically weak functional elements are involved (see Agbayani & Golston 2010, Richards 2010, Bennett et al. to appear a,b, Harizanov 2014 and references there). It has even been argued that clitic placement in Macedonian is sensitive to prosodic factors, albeit factors distinct from the subcategorization requirements we have proposed for *ne* and *wh* clitic (Rudin et al. 1999, Harizanov 2014).

While our account does predict that patterns like (33b,d) should be possible in *some* language, they can very easily be ruled out in the specific case of Macedonian.[16] It is clear that the unmarked word order in Macedonian (as elsewhere) would be one which transparently reflects syntactic dominance relations, with words/morphemes preceding the words/morphemes that they asymmetrically c-command (e.g., Kayne's 1994 Linear Correspondence Axiom). We might implement this preference formally with a constraint requiring a transparent mapping between dominance/c-command relations and linear order (see López 2009, Elfner 2012 for this idea in an Optimality-Theoretic context). As long as this mapping constraint takes precedence over any constraint which favors excluding clitics from the domain of stress (the minimal prosodic word ω-MIN in Macedonian), outcomes like (33b,d) will be correctly ruled out as ungrammatical.

2.5   Alternative approaches to item-specific prosody

We have so far assumed that vertical subcategorization is needed to express the item-specific prosodic requirements that induce prosodic smothering in Macedonian. In this section we defend that assumption against two alternative formalizations of item-specific prosody, lateral subcategorization and prosodic prespecification.

Lateral subcategorization refers only to the prosody of those elements adjacent to the selecting morpheme, i.e. to the prosody of the dependent morpheme's host. To capture the fact that *ne* and *wh* clitics attach low, inside the same minimal prosodic word as the following host, one could assume the subcategorization frames in (34).

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[16]See Bickel et al. (2007) for evidence from Chintang that prosodic subcategorization requirements can indeed determine linear ordering in some cases.

(34)   Lateral subcategorization frames for *ne* and *wh* clitics (to be rejected):
         [ne [$_\sigma$ ...]]   [WH [$_\sigma$ ...]]

These frames should be interpreted as selecting for a syllable to the right, with no other prosodic boundary intervening between *ne* or a *wh* clitic and its host. Such frames could conceivably generate examples like *NE znam* (12), in which the selecting clitic is parsed into a stress domain with the verb. But even under this exhaustive interpretation of the formalism, these frames are utterly unable to generate prosodic smothering. The essential problem is that frames like (34) will be satisfied by having *ne* or a *wh* clitic lean directly on a following object clitic, without any reparsing of the prosodic word which dominates the verb. These frames are effectively indifferent as to the prosodic category which dominates the selecting morpheme: they do not distinguish between clitic strings contained in a ω-Min (35a,d), ω-NonMin (35c), ϕP (35b), or any other category. Without some explicit sensitivity to the prosodic constituent produced by attaching *ne* or a *wh* clitic to its host, subcategorization simply cannot derive prosodic smothering. (L-SubCat(ne) in (35) is shorthand for the lateral subcategorization frame in (34).)

(35)

ne mu gi [$_V$ dava] [$_{DP}$ jabolkata]	L-SC(ne)	Al-R(ω, Lex)	Al-L(Lex, ω)
a. ☺ [$_{\omega\text{-Min}}$ ne mu GI dava] [$_{\omega\text{-Min}}$ jaBOLkata]			*!
b. ☞ {$_\phi$ ne mu gi [$_{\omega\text{-Min}}$ DAva] } [$_{\omega\text{-Min}}$ jaBOLkata]			
c. ☞ [$_{\omega\text{-NonMin}}$ ne mu gi [$_{\omega\text{-Min}}$ DAva]] [$_{\omega\text{-Min}}$ jaBOLkata]			
d. [$_{\omega\text{-Min}}$ NE mu gi] [$_{\omega\text{-Min}}$ DAva] [$_{\omega\text{-Min}}$ jaBOLkata]		*!	

The second alternative analysis we consider exploits the notion of prosodic prespecification (e.g. Idsardi 1992, Halle & Idsardi 1995, Özçelik 2014 and references there). Assume that *ne* and *wh* clitics are lexically specified with a left ω-Min boundary, e.g. /[$_{\omega\text{-Min}}$ ne/. If this open constituent must be closed by a corresponding right-edge ω boundary in the surface phonology (Halle & Vergnaud 1987), we might expect prosodic smothering as in (36).

(36)   /[$_{\omega\text{-Min}}$ ne go vide/ → [$_{\omega\text{-Min}}$ ne GO vide]

The principal difficulty for this approach comes from constructions with multiple triggers, in which a *wh* clitic is followed by *ne*. Stress assignment in multiple-trigger constructions is exactly parallel to single-trigger constructions (37b,c), and therefore implicates the exact same flat ω-Min structure (penult stress is also possible in these forms; see footnote 9).[17] The prosody of these constructions is as predicted by vertical subcategorization (37a): the entire

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[17]Descriptive sources on Macedonian often claim that [WH ne verb] constructions have two distinct stresses, as in *ZOšto ne ME skorna?* 'Why didn't you wake me?' (Garde 1968:36 and many citing it, such as Groen 1977, Elson 1993; see also Hendriks 1976:88-95). However, the examples given by these authors are all reason questions, and the Macedonian equivalents of 'why' are plausibly bimorphemic, e.g. *zo + što* 'what'. Since internally-complex *wh*-expressions in Western Macedonian carry a separate stress for independent reasons (18), we doubt that reason questions are probative as to the prosody of two-trigger constructions. In any case, these examples may be contaminated by the factors illustrated in examples (38)/(39), as single-stressed examples like *zaš ne GO zede* 'Why didn't (s)he take it?' can also be found in texts (Hendriks 1976:248).

clitic string is parsed into a single stress domain (ω-Min), thereby satisfying the selectional requirements of both triggering clitics simultaneously.[18]

(37)   a.   [$_{\omega\text{-Min}}$ ŠTO ne zel] 'What didn't he take?'   (Victor Friedman, p.c.)

        b.   [$_{\omega\text{-Min}}$ NE bi dal] 'He should not have given.'
        c.   [$_{\omega\text{-Min}}$ KOJ go zel] 'Who took it?'   (Franks 1989:559)

One might worry that the stress pattern in (37a) reflects some kind of pragmatic or discourse emphasis on the *wh* clitic *što* 'what' (as Victor Friedman has, in fact, suggested to us). Even so, evidence from the interaction between stress and emphasis in other contexts confirms that we are dealing with a single ω-Min in (37a). Certain kinds of emphasis—variously called "semantic emphasis" (Rudin et al. 1999:560-2), "formal or semantic" prominence (Elson 1993), emphasis of the "meaning" of the relevant word (Lunt 1952:24), "contrastive" marking (Tomić 2001:§3), or "special logical emphasis" (Koneski 1987)—can indeed trigger stress shift within the stress domain containing the verb. This is illustrated in (38) (examples from Koneski 1987:167-8; see too footnote 10, Garde 1968, Hendriks 1976:89). In this case stress shifts rightward onto the verb, falling on the penultimate syllable in the stress domain.

(38)   a.   Toj [ne   MU   reče   ]
            he   NEG 3SG.DAT tell.3SG.PST
            'he didn't tell him'

        b.   Toj [ne mu REče]
            'he didn't *tell* him' ("presupposes a certain consequence", Koneski 1987:167)

Wh clitics and *ne* can also carry stress-attracting emphasis. But the prosody of such constructions is importantly different from those that involve verbal emphasis: here we observe two distinct stresses (39), one falling on the verb and one falling on the emphasized clitic. (Elson 1993 offers a different characterization of this pattern which is nonetheless consistent with our general argument.)

(39)   a.   [KOJ] [mu   REče   ], samo da znam
            who   3SG.M.DAT tell.3SG.PST   only to know.1SG.PRS
            'If I only knew who told him!'   (Koneski 1987:§102)

        b. #[KOJ mu rece] / #[KOJ] mu rece

        c.   Toj [NE] [mu   REce   ]
            he   NEG   3SG.M.DAT tell.3SG.PST
            'he *didn't* tell him (I insist)'   (Koneski 1987:167-8)

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[18]While Macedonian allows multiple *wh*-questions like *Koj što dobi?* 'Who got what?' (Tomić 2012:425), we do not know where stress falls in questions with more than one preverbal *wh* clitic. The issue is complicated by the observation that "question words are always focused" in a general semantic sense (Rudin et al. 1999:561), making it difficult to control for the non-phonological factors which affect stress assignment in Macedonian. In fact, the preverbal phrasal position in Macedonian is, in general, a focus position. Our account predicts the same pattern of default stress assignment for multiple *wh* questions as for [WH ne verb] constructions like (37a).

d. #[NE mu rece] / #[NE] mu rece

These examples demonstrate that the *wh* clitic *što* in (37a) does not carry stress-attracting emphasis. If it did, we should find two distinct stresses: #[$_{\omega\text{-Min}}$ ŠTO] [$_{\omega\text{-Min}}$ NE zel]. But this is not what we find: instead, we observe a single stress domain [$_{\omega\text{-Min}}$ ŠTO ne zel]. We conclude that examples like (37a) reflect the prosodic structure of two-trigger constructions in which neither trigger carries a stress-attracting emphasis. (While *wh*-words may be inherently discourse-prominent, this type of pragmatic prominence does not appear to interact with stress placement, (37a), Rudin et al. 1999:fn.20.)[19]

This result is difficult to guarantee through prosodic prespecification. To account for prosodic smothering with single-trigger cases, it must be assumed that *ne* and all *wh* clitics come with a prespecified left ω-Min boundary in their lexical representations. Given that the two-trigger forms in (39) consist of just a single prosodic word, it follows that underlyingly specified prosodic boundaries need not persist into the surface (perhaps they are deleted under domination from constraints like ALIGN-R(ω, LEX), which would penalize parses like [$_{\omega\text{-Min}}$ ŠTO] [$_{\omega\text{-Min}}$ NE zel]). But this raises a puzzle: if underlying ω-Min boundaries may be deleted, why would an exhaustive ω-Min-parse like [$_{\omega\text{-Min}}$ ŠTO ne zel] be favored over a non-exhaustive ω-Min-parse like [što [$_{\omega\text{-Min}}$ NE zel]]?[20] Both parses delete a prespecified ω-Min boundary, but the non-exhaustive parse has the further virtue of excluding the initial *wh* clitic from the domain of stress (recall that, in the general case, preverbal clitics are excluded from stress domains in Macedonian). Without further stipulation, prosodic prespecification cannot account for the stressability of the initial clitic in two-trigger constructions like (39).[21] In contrast, this result is easy to guarantee under vertical subcategorization, as prosodic structures like (39) fully satisfy the subcategorization requirements of both smothering triggers (all selecting morphemes are parsed into the same ω-Min as their hosts).

The is another theoretical device that merits consideration here: morpheme-specific alignment constraints could, in principle, be used to model the prosodic selectional requirements of *ne* and *wh* clitics in Macedonian (McCarthy & Prince 1993, Kim 2010, Pater 2010). The comparison between vertical subcategorization and morpheme-specific alignment is subtle, and so we defer the comparison of these formalisms to section 4.1.

2.5.1 Against a syntactic analysis of clitic stress

Finally, it's worth considering the viability of a more syntactically-oriented analysis of variable clitic stress in Western Macedonian. Is it possible that the different prosodic parses

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[19]Interesting questions of course remain about the interaction between discourse pragmatics and stress in two-trigger constructions. For example, emphasis on the second trigger seems to result in just a single stress within the verbal complex: *koj ŠTO zel?* 'Who bought *what*?' and *što NE zel?* 'What *didn't* he take?' (Victor Friedman, p.c.). Since the existence of such patterns does not affect our basic claim that the stress pattern of (37a) is neutral or default (in lacking 'emphasis' of the relevant sort), we do not attempt to account for them here.

[20]Depending on one's assumptions about how underlying ω-Min boundaries should be closed on the surface, a recursive parse like [$_{\omega\text{-NonMin}}$ što [$_{\omega\text{-Min}}$ NE zel]] might be favored for a second reason, namely that the initial ω-Min boundary persists despite not being strictly minimal on the surface.

[21]Beasley & Crosswhite (2003) propose a derivational account of Macedonian stress that could successfully generate antepenultimate stress in two-trigger forms like (37a). Since our focus is on fully parallelist OT models of Macedonian prosody, we defer comparison with Beasley & Crosswhite (2003) till another occasion.

found in the presence and absence of *ne/wh* clitics result directly from a difference in the syntax (see also Tomić 2001)? For instance, the observed prosodic differences might correspond to a difference in whether the object clitics form a complex head with the verb. On the assumption that complex syntactic heads ($\approx$ morphological words) map to minimal prosodic words, adopting a complex head structure in constructions with *ne/wh* clitics would generate the desired variation in prosodic parsing. Concretely, we might suppose that the verb raises to the polarity head Σ^0 (Laka 1990) when *ne* is present, picking up the pronominal object clitics on the way (40b). When *ne* is absent, verb raising must not occur (40a).

(40)   a. $[_{\Sigma P} [_{VP} \text{go vide}]] \rightarrow [\text{go} [_{\omega\text{-MIN}} \text{VIde}]]$

     b. $[_{\Sigma P} \text{ne} [_{VP} \text{go vide}]] \rightarrow [_{\omega\text{-MIN}} \text{ne GO vide}]$

For *wh* clitics, one might assume verb raising to C^0 or [SPEC, CP], depending on one's assumptions about the syntax of *wh*-questions and the mechanisms behind head raising (e.g. Matushansky 2006, Bayer & Brandner 2008)

While this approach might be technically workable (though less obviously so in the case of *wh* clitics), it is unclear why the object clitics would form a complex head with the verb only in the presence of *ne* or a *wh* clitic but not otherwise. Furthermore, there is no independent morpho-syntactic evidence that head movement is triggered by *ne* and *wh* clitics but not by other higher clausal elements like auxiliaries and complementizers (many of which are themselves proclitics). In other words, there is no evidence at all (e.g., as far as word order is concerned) that the syntax of preverbal object and auxiliary clitics is different in the context of higher negation and *wh* clitics.

Note, in addition, that clitic *wh* elements exhibit the same prosodic behavior in a different syntactic context: as (18) demonstrates, prosodically dependent *wh*-words lean on the element to their right even in complex *wh*-expressions where the host for the *wh* clitic is an NP complement rather than the verb. Not only would these patterns of stress assignment require a separate explanation—perhaps N^0 to D^0 raising occurs in complex *wh*-expressions?—one must also assume that verb raising does *not* occur in these contexts, lest the verb be incorrectly integrated into the same prosodic word as the complex *wh*-expression (e.g. *$[_{\omega\text{-MIN}}$ kolku paRI sakaš], cf. (18)). On balance, this syntactic counter-analysis offers at best a fragmentary and stipulative account of the facts. As such we believe that syntax-oriented approaches should be viewed unfavorably in comparison to the more holistic explanation offered by prosodic subcategorization.

2.6   Discussion

Having made the case for vertical subcategorization as a driving force behind prosodic smothering, we now reflect on the deeper architectural consequences of the Macedonian data and our proposed analysis. Perhaps the most striking fact about clitic stress in Macedonian is that purely lexical factors (prosodic subcategorization) impinge on phrase-level prosody, which is typically taken to be postlexical in character. We are thus forced to the conclusion that at least some lexical information must percolate to the phrase level.

Though we've couched our analysis in terms of a fully parallel model of prosodic computation, these results also have consequences for cyclic theories of the interface between

morpho-syntax and phonology. In cyclic frameworks stress assignment would need to be modeled as a word-level process in order to account for the exclusion of most clitics from stress assignment (the existence of lexical exceptions to antepenultimate stress also suggests that stress is a word-level process in Macedonian, see Kiparsky 1982, 1985, Idsardi 1992, Hyde 2012 and references there among others). Prosodic smothering, being a later postlexical process triggered by clausal clitics, must therefore be capable of overwriting prosodic structure built at an earlier stage of the cyclic derivation. This data thus argues against any strong version of STRICT CYCLICITY—in particular the FREE ELEMENT CONDITION— which predicts that word-level prosodic structure should not be radically altered at the postlexical level, in particular by the displacement of primary stress to a previously unstressed syllable (see e.g. Kiparsky 1982, 1985, Prince 1983, 1985, Inkelas 1990, Halle 1990, Halle & Kenstowicz 1991, Marvin 2002, Newell 2008, Bermúdez-Otero 2012 among many others).

Having completed our discussion of Macedonian, we now proceed to extend our proposals to a similar pattern of prosodic variability in Kaqchikel.

3 Kaqchikel

Kaqchikel is a K'ichean-branch Mayan language spoken by over half a million people in the central highlands of Guatemala (Richards 2003). As in Macedonian, the prosody of verbal agreement morphology in Kaqchikel is conditioned by the presence or absence of higher functional elements. Specifically, absolutive agreement markers behave as phonological affixes on tensed verbs (where aspect is overtly marked), but as phonological clitics on non-verbal predicates (which lack overt aspect marking). In this section we argue for a parallel treatment of Kaqchikel, which like Macedonian, instantiates prosodic smothering: the phonological subcategorization requirements of verbal aspect markers trump the default prosodification of absolutive agreement.

3.1 Person agreement in Kaqchikel

Kaqchikel, like all Mayan languages, has a system of verbal agreement in which core arguments (subjects and direct objects) are cross-referenced by agreement morphology on the verb. The system of verbal agreement follows an ergative-absolutive pattern of alignment. The absolutive markers (ABS) index transitive objects, as well as subjects of intransitives and aspectless non-verbal predicates (41); the ergative markers (ERG) index transitive subjects, as well as nominal possessors (42).[22]

(41)   Absolutive marking in Kaqchikel
   a.   y-ix-ki-tz'ët
        INCPL-2PL.ABS-3PL.ERG-see
        'They see y'all.'

   b.   x-ix-anin
        CPL-2PL.ABS-run
        'Y'all ran.'

   c.   ix   tijonel-a'
        2PL.ABS teacher-PL
        'Y'all are teachers.'

[22]All Kaqchikel examples are given in standard Mayan orthography. The orthography is fairly shallow, hewing closely to phonemic form. Most symbols have their IPA values, with the following exceptions: ⟨V̈⟩ = lax (centralized) vowel, ⟨C'⟩ = glottalized consonant, ⟨tz⟩ = [t͡s], ⟨x⟩ = [ʃ], ⟨ch⟩ = [t͡ʃ], ⟨j⟩ = [χ], ⟨y⟩ = [j], ⟨'⟩ = [ʔ] (except in ⟨C'⟩).

(42) Ergative marking in Kaqchikel
  a. y-a-<u>qa</u>-q'etej   b. <u>qa</u>-jolom
    INCPL-2SG.ABS-<u>1PL.ERG</u>-hug   <u>1PL.ERG</u>-head
    '<u>We</u> hug you.'   '<u>Our</u> head.'

Ergative and absolutive markers always precede their hosts in Kaqchikel. In this respect Kaqchikel differs from those Mayan languages in which ABS follows its host in at least some contexts (e.g. Tsotsil, Aissen 1987, Woolford 2011).

	Ergative	**Absolutive**
1SG	in-/inw-	i-/in-
2SG	a-/aw-	a-/at-
3SG	ru-/r-/u-	∅
1PL	qa-/q-	öj-
2PL	i-/iw-	ïx-
3PL	ki-/k-	e-/e'-

Table 2: Predicate agreement markers in Kaqchikel

As a matter of orthographic convention, absolutive markers in Kaqchikel are written as sub-parts of a complex word in verbal contexts (41a,b), but as independent words in non-verbal predicate constructions (41c). While this convention does reflect the grammatical organization of Kaqchikel—in particular the prosodic variability of ABS markers (section 3.2), which we return to shortly—it masks the fact that ABS behaves as a dependent morpheme even when occurring with non-verbal predicates (NVPs).[23] The ABS markers fail a number of standard tests for independent wordhood in NVP contexts. First, ABS is always predicate-adjacent (García Matzar et al. 1999:p. 289): it cannot be separated from the NVP by other content words (43)-(46), or by functional items like particles and clitics (49)-(47).

(43) a. wakamin e   tijonel-a'   b. *e   wakamin tijonel-a'
    now 3PL.ABS teacher-PL   3PL.ABS now   teacher-PL
    'Now they are teachers.'   'Now they are teachers.'

(44) a. jantape öj   ch'ayonel   b. *öj   jantape ch'ayonel
    always 1PL.ABS fighter   1PL.ABS always fighter
    'We're always quarrelsome.'   'We're always quarrelsome.'

(45) a. jun b'e chik ïx   nüm   b. *ïx   jun b'e chik nüm
    one time more 2PL.ABS hungry   2PL.ABS one time more hungry
    'They're hungry again.'   'They're hungry again.'

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[23]As noted in section 1 the term 'dependent morpheme' subsumes both morpho-syntactic affixes and morpho-syntactic clitics (as opposed to roots and other free elements). We address the clitic vs. affix status of Kaqchikel ABS markers in section 3.2.

(46) a. yalan in   jwi'
          very 1SG.ABS smart
          'I'm very smart'

      b. *in   yalan jwi'
          1SG.ABS very smart
          'I'm very smart'

(47) a. e   aq'omanel-a' k'a
          3PL.ABS doctor-PL   then
          'They're doctors, then.'

      b. *e   k'a aq'omanel-a'
          3PL.ABS then doctor-PL
          'They're doctors, then.'

The inseparability of ABS from its NVP host holds even in the case of clitic interveners which can normally interrupt syntactic constituents. The negative/irrealis clitic *ta* freely intervenes between function words and their complements. This is illustrated for the focus marker *ja* in (48) (see Majzul et al. 2000:145-9 for Kaqchikel, Henderson 2012, Yasavul to appear for K'iche'). But the same clitic *ta* cannot separate ABS from its host in NVP constructions (49).

(48) a. Ja   ixim nintij
          FOC corn I.eat.it
          'It's CORN that I'm eating.'

      b. Man ja ta   ixim nintij
          NEG FOC NEG.IRR corn I.eat.it
          'It's not CORN that I'm eating.'

(49) a. man at   tz'uyül ta
          NEG 2SG.ABS seated NEG.IRR
          'You're not sitting.'

      b. *man at   ta   tz'uyül
          NEG 2SG.ABS NEG.IRR seated
          'You're not sitting. / It's not you
          who's sitting.'

Second, ABS markers cannot appear in isolation—they are not free forms. One could not respond to the question *Achike aq'omanel?* 'Who is a doctor?' with the 1SG.ABS marker *in* 'me' (the free-standing pronoun *rïn∼yïn* would be used instead). Third, ABS markers cannot be coordinated:

(50) in   (*chuqa' at)   aq'omanel-a'
      ABS.1S (and   2SG.ABS) doctor-PL
      INTENDED: 'You and I are doctors.'

These properties distinguish ABS markers from true pronouns, which can co-occur with ABS marking (51) and which have a more flexible distribution than ABS agreement (52), allowing intervening adverbials and particles. True pronouns may also appear as the object of a preposition, while ABS markers may not (53).

(51) a. rat at   aj=kematz'ib'
          you 2SG.ABS AGT=computer
          'You are a computer programmer.'

      b. röj öj   q'ojomanel-a'
          we 1PL.ABS musician-PL
          'We are musicians.'

(52) a. rïx (ojer)   ïx   tijoxel-a
          they (before) 2PL.ABS student-PL
          'They are (used to be) students.'

      b. röj k'a öj   q'ojomanel-a'
          we then 1PL.ABS musician-PL
          'We are musicians, then.'

      c. man röj ta   öj
          NEG we NEG.IRR 1PL.ABS
          na'ojinel-a'
          politician-PL
          'We're not politicians / It's not us
          who are politicians.'

(53) a. matyöx chiwe' rïx
thanks to y'all
'Thanks y'all.'

b. *matyöx chiwe' ïx
thanks to 2PL.ABS
'Thanks y'all.'

The same diagnostics identify both ABS and ERG as dependent morphemes in inflected verbs (54). Here we show only that particles like *k'a* 'then' cannot separate ABS and ERG from their hosts in verbal contexts.

(54) a. x-at-in-tz'ët
CPL-2SG.ABS-1SG.ERG-see
'I saw you.'

c. *x-a(t)-k'a-in-tz'ët
CPL-2SG.ABS-then-1SG.ERG-see
INTENDED: 'I saw you, then.'

b. *x-in-a(t)-tz'ët
CPL-1SG.ERG-2SG.ABS-see
INTENDED: 'I saw you.'

d. *x-at-in-k'a-tz'ët
CPL-2SG.ABS-1SG.ERG-then-see
INTENDED: 'I saw you, then.'

We conclude that the ABS and ERG markers in Kaqchikel are dependent morphemes in all contexts in which they appear. Since the ABS markers are also formally identical in all of their contexts of use (apart from phonologically-conditioned allomorphy, Table 2 and section 3.2.1), we draw the further conclusion that ABS markers constitute a single set of morphemes which happen to be used in both verbal and non-verbal contexts. There is no reason to assume a lexical difference between the ABS markers used with verbs and those used with non-verbal predicates.[24]

3.2 The prosodic variability of ABS

Having concluded that the ABS markers are a unified morphological class across verbal and non-verbal contexts, in this section we argue that the prosody of ABS marking is in fact heterogeneous in Kaqchikel. Absolutive agreement markers behave as PROSODIC CLITICS in NVP structures (where there is no aspect marking), and as PROSODIC AFFIXES in verbs (when aspect marking is present). Section 3.2.1 provides phonological and morpho-phonological evidence for this conclusion, and section 3.2.2 provides supporting data from sub-segmental phonetic patterning. In section 3.3 we argue that the prosodic variability of ABS reflects prosodic smothering by higher aspect prefixes, and argue against alternative syntactic accounts of this prosodic difference.

We assume a distinction between prosodic affixes and prosodic clitics familiar from work like Inkelas (1990), Selkirk (1995), Peperkamp (1997), and Anderson (2005). For our purposes a prosodic affix is defined as a dependent morpheme M_d that gets parsed inside the minimal prosodic word containing its phonological host, $(_\omega M_d$ - HOST). Prosodic clitics are instead parsed outside the minimal prosodic word containing their phonological host, either in a recursive prosodic word structure $(_\omega M_d = (_\omega \text{HOST}))$ or as dependents of a phonological phrase $\{_{\phi p} M_d = (_\omega \text{HOST})\}$. We adopt these terms for the sake of brevity: note that the dif-

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[24]The same conclusions hold for the ergative markers in Kaqchikel, with one caveat: the ERG.1S marker is *in(w)-* with verbs, but *nu-/w-* with nouns. See Kenstowicz (2013) for an attempt to reduce this difference to separate morpho-phonological factors.

ference between prosodic clitics/affixes is equivalent to the distinction between unstressable and stressable (smothered) object clitics in Macedonian.

3.2.1 Phonological evidence for variable ABS prosody

There are two pieces of phonological evidence that the ABS agreement markers have a context-dependent prosodic realization in Kaqchikel. The first comes from the differential behavior of [ʔ]-insertion. Words that begin with an underlying vowel typically bear an epenthetic glottal stop on the surface (55) (García Matzar et al. 1999:12, Barrett 2007; for the sake of readability we omit the initial [ʔ] from our examples except when relevant for the argumentation).

(55) a. jun [ʔ]oj
        one avocado
        'an avocado'

     b. lajuj [ʔ]äk'
        ten   chicken
        'ten chickens' (Majzul 2007:93,295)

Prefixation bleeds [ʔ]-insertion, provided that the prefixes are phonological affixes. We illustrate this with ERG possessive prefixes (56)-(57), as well as with the completive aspect marker *x-* (57)-(58). In contrast, morphological prefixes that are prosodically clitics do not bleed [ʔ]-insertion (59), being parsed outside of the minimal ω containing the stem.

(56) a. [ʔ]ik' 'month'

     b. aw-ik'   /   *a(w)-[ʔ]ik'
        2SG.ERG-month
        'Your month/period.'

(57) a. /-el/ 'to leave'

     b. [ʔ]el-e-b'äl
        leave-V-LOC
        'exit'

     c. w-el-e-b'al
        1SG.ERG-leave-V-LOC
        'my exit'

     d. *w-[ʔ]el-e-b'al, *nu-[ʔ]el-e-b'al

(58) x-el   /   *x-[ʔ]el
    CPL-3SG.ABS-leave
    '(S)he left.'   (Majzul 2007:166-7)

(59) a. aj=[ʔ]ik' / *aj=ik'
        AGT=month
        'domestic worker
        (lit. monthly worker)'

     b. ach=[ʔ]al-i' / *ach=ali'
        COM=child.of.a.woman-PL
        'co-parents-in-law
        (Spanish *consuegros*)'
                  (Majzul 2007:59,67,82)

For similar observations in K'iche' and Tz'utujil, two closely related Mayan languages, see Dayley (1981:22-3,245-6) and Larsen (1988:54,130-2).

Turning to the absolutive markers, we see that [ʔ]-epenthesis is blocked by the affixation of ABS when functioning as verbal agreement (60)-(61). This data is consistent with treating ABS as a prosodic affix in this context.

(60) a. y-at-el
INCPL-2SG.ABS-leave
'You leave.'

c. y-in-apon
INCPL-1SG.ABS-arrive
'I arrive.'

b. *y-a(t)-[ʔ]el

d. *y-i(n)-[ʔ]apon

But in NVP constructions, the absolutive markers co-occur with an epenthetic glottal stop (61)-(62). This is to be expected if ABS is a prosodic clitic in this context.

(61) a. at   [ʔ]oj
2SG.ABS aguacate
'You are an avocado.'

c. in   [ʔ]umül
1SG.ABS rabbit
'I am a rabbit.'

b. *at oj

d. *in umül

Patterns of [ʔ]-insertion thus indicate that ABS has a dual prosodic status in Kaqchikel: it is a prosodic affix in verbal contexts, and a prosodic clitic when occurring with non-verbal predicates (see Dayley 1981:84,195 for a similar, albeit less concrete suggestion for Tz'utujil).[25]

Additional support for this conclusion comes from patterns of phonologically-conditioned allomorphy. Ergative markers in Mayan languages typically come in two sets: a pre-vocalic form and a pre-consonantal form (Kaufman 1990). Kaqchikel has extended these alternations to the ABS markers (Table 2).[26] The pre-vocalic forms are C-final (62), the pre-consonantal forms V-final (63). This is a morpho-phonological innovation that has not been reported for other languages in the K'ichean branch. Selection of the pre-vocalic allomorph bleeds [ʔ]-insertion (60).

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[25]It has sometimes been suggested that ABS is a morpho-syntactic clitic in verbal contexts in other closely-related K'ichean languages (e.g., Preminger 2014), that is, a kind of prosodically deficient pronoun. We stress two things here: first, there is no direct relation between morpho-syntactic clitichood and prosodic clitichood, apart from the observation that morpho-syntactic clitics are normally less than full prosodic words (Anderson 2005 and section 3.3). Second, this characterization of the ABS markers appears to be more appropriate for non-K'ichean languages like Q'anjob'al than for languages of the K'ichean branch.

Diachronically, the evidence is strong that ABS was a morpho-syntactic clitic in proto-Mayan (see Robertson 1992:53, Law 2014:179). The synchronic evidence for this claim is much weaker in K'ichean languages, and hinges primarily on the observation that movement-indicating morphemes like *b'e* 'go' can intervene between ABS and ERG in verbs (Majzul et al. 2000:130, see also Larsen 1988:153-161,180-4; the [ʔ] in (i) occurs to resolve hiatus).

(i) y-e-b'e-'-in-tz'et-a'
INCPL-3PL.ABS-go-[ʔ]-1SG.ERG-see-TRANS
'I go to see them.'

Were these movement morphemes themselves morpho-syntactic clitics, one might plausibly conclude that ABS markers are morpho-syntactic clitics too, following the standard diagnostic that only clitics can attach outside other clitics (e.g. Zwicky & Pullum 1983, van Riemsdijk 1999). But the evidence for a clitic treatment of movement morphemes is itself quite weak: the same data seems amenable to an analysis in terms of templatic affix ordering (e.g. Aronoff & Xu 2010, Ryan 2010 and references there). See Heaton 2015 for detailed discussion of the synchronic patterning of movement affixes in Kaqchikel.

[26]García Matzar et al. 1999:178 says that this innovation is seen in the dialects of Tecpan (Iximche') and Semetab'äj, though two of the authors have encountered this more widely across dialects of eastern Kaqchikel.

(62) Pre-V absolutive markers

    a.   x-<u>in</u>-oq
       CPL-1SG.ABS-cry
       'I cried.'

    b.   x-<u>at</u>-in-tzu'
       CPL-2SG.ABS-1SG.ERG-see
       'I saw you.'

(63) Pre-C absolutive markers

    a.   x-<u>i</u>-b'e
       CPL-1SG.ABS-go
       'I went.'

    b.   x-<u>a</u>-ru-tzu'
       INCPL-2SG.ABS-3SG.ERG-see
       '(S)he saw you.'

(García Matzar et al. 1999:178; Majzul 2007:32,40)

That these alternations represent suppletive allomorphy rather than a purely phonological alternation is clear from the following facts: (i) not all ABS markers show the alternations in question (e.g. 1PL.ABS *öj* is invariant); (ii) allomorphy avoids clusters that are otherwise attested in Kaqchikel, e.g. *y-i-b'e/*y-in-b'e* 'I go' vs. *x-in-b'ij* 'I say it' or *muxan-b'äl* 'swimming pool'; and (iii) the alternating consonants are not phonologically predictable, and so cannot represent consonant insertion motivated by hiatus avoidance (the normal strategy for avoiding hiatus in Kaqchikel is [ʔ]-insertion, García Matzar et al. 1999:32).

Importantly, these alternations only occur for ABS in its function as a marker of verbal agreement. In non-verbal predicates, the pre-vocalic (C-final) ABS allomorphs are used, regardless of the initial segment of the NVP host (64)-(65).

(64) a. at   aj=yoq'
         2SG.ABS AGT=to.shepard
         'You are a pastor.'

      b. at/*a   r-achib'il
         2SG.ABS 3SG.ERG-friend
         'You are his/her friend.'

(65) a. in   aj=k'ay
         1SG.ABS AGT=sell
         'I am a merchant.'

      b. in/*i   b'ix-an-el
         1SG.ABS sing-ANTIP-NMLZ
         'I am a singer.'

We suggest that the ABS markers are too prosodically 'distant' from their hosts in NVP constructions for the segmental phonology of those hosts to condition allomorphy of ABS (see also Zwicky & Pullum 1983, Nespor & Vogel 1986, Hayes 1990, Mascaró 1996, 2007, van Riemsdijk 1999, Nevins 2011a,b, Varis 2012, Wagner 2011, 2012; see Henderson 2012 for related facts in K'iche'). Absolutive allomorphy in Kaqchikel can therefore be meaningfully unified with the [ʔ]-insertion patterns in (55)-(61) if we assume that the prosodic boundary between ABS and its host is stronger in NVP constructions than in fully inflected verbs.

3.2.2 Phonetic evidence for variable ABS

Confirmatory evidence for the prosodic variability of ABS marking in Kaqchikel comes from sub-segmental phonetic patterning. Derived (or 'false') geminates are significantly longer across the boundary between ABS and a NVP than across the boundary between ABS and a verbal stem. This contrast is consistent with the presence of a stronger post-ABS prosodic boundary in NVP constructions than in verbal forms.

Like all Mayan languages, Kaqchikel has no phonemic geminates: underlying geminates only occur as the result of morphological or syntactic concatenation (66)-(67). (See e.g. Herrera Zendejas 2014:Chs.9,10 for similar patterns in other Mayan languages.)

(66) a. oj jot-öl
          1PL.ABS elevate-POSIT
          'We are elevated.'

      b. X-oj-jot-e'
          CPL-1PL.ABS-elevate-INTRANS
          'We climbed.'

(67) x-in-tij jun pïx xär
      CPL-1SG.ERG-eat one tomato blue
      'I ate a blue tomato.'

These geminates are 'false' in the sense that they represent a sequence of identical consonants rather than a unitary, monosegmental long consonant (e.g. McCarthy 1986, Blevins 2004).

It is well-known that derived geminates may differ in duration from singleton consonants, and that this durational difference may be sensitive to the strength of the boundary between the two identical consonants. In English, for example, the word *innumerable* has a shorter doubled *nn* [n] than a phrase like *in Nevada* [nn] or a compound like *tin nickels* [nn] (e.g. Inkelas 1990:97, Hammond 1999, Martin 2007, Oh & Redford 2012; compare too with the prefix *un-* in *unnumbered* [nn]). Here duration correlates with boundary strength: derived geminates are longer across stronger boundaries.

We investigated whether these results would extend to the ABS markers in a production study with Kaqchikel speakers. Our expectation was that derived geminates should be phonetically longer across ABS-NVP boundaries (67a) than across ABS-VERB boundaries (67b), given the phonological evidence for a stronger boundary in ABS-NVP constructions (section 3.2.1). Two of the authors recorded six Kaqchikel speakers in Chimaltenango, Guatemala, to test this claim. The speakers were presented with a written list of phrases in Spanish, composed of copular constructions corresponding to NVP constructions in Kaqchikel (67a) (e.g. Spanish *Soy grande* → Kaqchikel *In nïm* 'I am large') as well as non-copular verb phrases corresponding to inflected verbs in Kaqchikel (67b) (e.g. Spanish *Ustedes se sentaron* → Kaqchikel *Xixtz'uye'* 'Y'all were sitting down.'). Participants were asked to translate the Spanish phrase to Kaqchikel, then produce it twice in the carrier phrase (68):

(68) María x-∅-u-b'ij _____ pa b'ey.
      María CPL-3SG.ABS-3SG.ERG-say in the.street
      'María said _____ in the street.'

The materials were presented in Spanish rather than in Kaqchikel to avoid an orthographic confound: the absolutive markers are written as separate words in NVP constructions, which might prime participants to produce NVPs with a stronger prosodic boundary. Most Kaqchikel speakers are also more comfortable reading Spanish than Kaqchikel.

The target items were NVP constructions or intransitive verbs like (68b). In both cases the ABS marker is in immediately pre-predicate position. We focused on the ABS markers *öj* ABS.1P and *ïx* ABS.2P, as these are the only two phonologically-invariant ABS markers (other ABS markers have patterns of allomorphy that make it impossible to create derived geminates, section 3.2.1.) Our dependent measure was the duration of the ABS-final consonant, these being *j* [χ] and *x* [ʃ]. The two ABS markers *öj* and *ïx* were paired with hosts beginning in *j* [χ] and *x* [ʃ] to test the durations of derived geminates (69a,b). These items were compared with singleton *j* [χ] and *x* [ʃ] in non-geminate clusters (69c,d).

(69) a. Geminate [C-C] in a verb: *x-ix-xik'an* 'Y'all flew.'
      b. Geminate [C=C] in a NVP: *ix xar* 'Y'all are blue.'

      c. Singleton [C] in a verb: *x-ix-katäj* 'Y'all got up'
      d. Singleton [C] in a NVP: *ix nïm* 'Y'all are large.'

These items were combined with filler forms containing other absolutive markers (e.g. *in kow* [in ko̦w] 'I am tough') or ergative markers (e.g. *xinjäl* [ʃ-in-χəl] 'I changed it'), as well as some bare roots (e.g. *b'aq* [ɓaqʰ] 'bone'). This gave a total of 40 experimental items.

All recordings were made using a head-mounted microphone, at a sampling rate of 44.1 kHz. We measured the duration of the fricatives *j* [χ] and *x* [ʃ] in each target item by marking the beginning and end of aperiodic noise in the waveform corresponding to the ABS-final consonant (e.g. Turk et al. 2006). Productions with obvious disfluencies in the target item were excluded from analysis. All measurements were done in Praat (Boersma & Weenink 2010), and the statistical analysis was completed in R (R Development Core Team 2013) using the `lmer` and `ggplot2` packages (Bates et al. 2011, Wickham 2009).

The results are presented graphically in Figure 1. Our measurements display exactly the predicted pattern of fricative duration. The duration of the singleton fricatives *j x* [χ ʃ] is about the same in both verbal and NVP contexts, but the duration of derived geminates varies with morpho-syntactic context.

Partial degemination of the ABS-final consonant occurs with intransitive verbs: derived geminates are somewhat longer than singletons, but not as long truly doubled consonants (Δ: *x* [ʃ] = 69ms, *j* [χ] = 52ms; Ratio: *x* [ʃ] = 1.57, *j* [χ] = 1.46). With NVP constructions, the durational difference between false geminates and singletons is much larger (Δ: *x* [ʃ] = 97ms, *j* [χ] = 143ms; Ratio: *x* [ʃ] = 1.67, *j* [χ] = 2.28), indicating a lesser degree of degemination in this environment. This is as expected if the prosodic boundary between ABS and an NVP host is stronger than between ABS and a following verbal stem. This contextual difference emerges as strongly significant in a linear mixed-effects model (the PREDICATE TYPE X C LENGTH interaction in Table 3; Pinheiro & Bates 2000, Gelman & Hill 2006): derived geminates are roughly 73ms shorter when the host predicate is a verb rather than a non-verbal predicate.[27]

As already suggested, these patterns of sub-phonemic variation can be easily explained if there is a relatively strong prosodic boundary between the absolutive marker and its predicate host in non-verbal predicate constructions. This boundary must be absent, or at least weaker between absolutive markers and intransitive verbal stems. These findings dovetail with the phonological and morpho-phonological evidence for a distinction in the strength of the post-ABS boundary across NVP and verbal contexts (section 3.2.1).

We conclude that the prosody of ABS is indeed variable and context-dependent in Kaqchikel. The puzzle then is why such variation exists, given that the ABS markers represent a single

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[27]The linear mixed-effects model in Table 3 was determined by a step-down model selection procedure using the log-likelihood and AIC tests to compare nested models. The initial full model had fixed effects for CONSONANT LENGTH ($/C_k/$ vs. $/C_k C_k/$), PREDICATE TYPE, PLACE OF ARTICULATION, the stress profile of the initial syllable of the host (STRESS), and syllable count of the host (HOST LENGTH). A fixed effect for the CONSONANT LENGTH X PREDICATE TYPE interaction was also included. The model also includes by-speaker random slopes for CONSONANT LENGTH, PREDICATE TYPE, PLACE OF ARTICULATION, STRESS, and CONSONANT LENGTH X PREDICATE TYPE, as well as simple random effects for speaker and item (see Baayen et al. 2008, Barr et al. 2013).
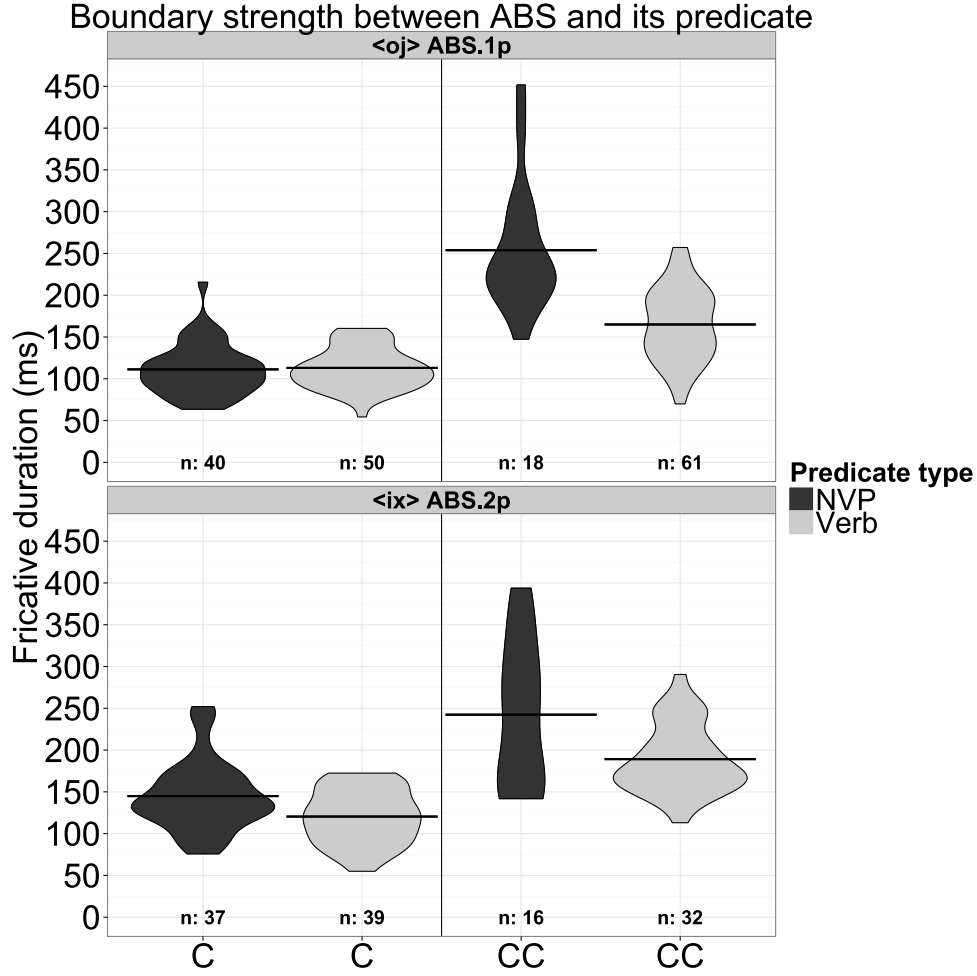
Figure 1: Duration of the fricatives in *öj* [oχ-] ABS.1P and *ïx* [iʃ-] ABS.2P by context.

	Estimated β (ms)	SE(β)	t	p-value
(Intercept)	-59	11.2	-5.30	$< .001$
CONSONANT LENGTH ($/C_k/$ vs. $/C_kC_k/$)	127	17.4	7.29	$< .001$
PREDICATE TYPE X C LENGTH (verb x $/C_kC_k/$)	**-73**	**14**	**-5.22**	**$< .001$**
PLACE OF ARTICULATION (x [ʃ])	23	8.4	2.80	$< .006$
STRESS (ABS + σ́)	25	9.2	2.70	$< .008$
PREDICATE TYPE (verb)	13	10.3	1.30	$< .20$

Table 3: Final fricative duration model. Coefficients express predicted increase in fricative duration.

set of lexical items realized as dependent morphemes in both NVP and verbal constructions.

In the following section we argue that this variation can be reduced to prosodic smothering: the presence or absence of an outer aspect marker conditions the prosody of inner absolutive agreement, for reasons related to the prosodic subcategorization requirements of aspect.

3.3 Analysis: vertical subcategorization

Section 2 demonstrated that variation in the prosodic parsing of Macedonian object clitics can receive a straightforward account in terms of prosodic smothering, formalized with prosodic subcategorization frames which make direct reference to dominating categories. The goal of this section is to show that prosodic smothering in Kaqchikel absolutive marking is amenable to the same type of analysis. This suffices to establish prosodic smothering as a typologically recurrent pattern. Moreover, the fact that a unified analysis is available for these two phenomena, which come from unrelated languages and which recruit completely different phonological processes, provides further support for the use of vertical subcategorization frames in the analysis of prosodic smothering.

Like the functional elements of the Macedonian clausal spine, verbal inflection in Kaqchikel can be split into those dependent morphemes that must be dominated by a minimal prosodic word and those which are by default parsed outside of the minimal ω containing the verb. We propose that aspect in Kaqchikel, like *ne* and *wh* clitics in Macedonian, has a prosodic subcategorization frame (70) which requires immediate domination by a minimal prosodic word. Example (71) shows the behavior of aspect under such a parse in a clause with no overt person marking. That aspect belongs to the same minimal prosodic word as the verb stem can be diagnosed by the failure of [ʔ]-insertion in examples like *x-el* '(S)he left' (58).

(70)   ASP
        [$_{\omega\text{-MIN}}$ ASP [...]]

(71)   a. [$_{\omega\text{-MIN}}$ x-   wär]   b. *[x- [$_{\omega\text{-MIN}}$ wär]]
                CPL sleep
            'He/she/it slept.'

While Kaqchikel aspect markers subcategorize for domination by a minimal prosodic word, we assume that absolutive markers are prosodic clitics by default, parsed outside of the ω containing their host. This is illustrated for a non-verbal predicate construction in (72).

(72)   a. in=   [$_{\omega\text{-MIN}}$ nïm]   b. *[$_{\omega\text{-MIN}}$ in-nïm]
            1SG.ABS   big
            'I'm big.

When aspect and ABS co-occur in verbal contexts, a conflict results: it is not possible to assign ABS its default parse as a prosodic clitic while also incorporating aspect into a minimal prosodic word containing its host. This is illustrated in (73). Here we see that ASP appears to the left of ABS, with the consequence that satisfying the default prosody of ABS would prevent ASP from occuring in the minimal prosodic word of its host, leading to a violation of the vertical subcategorization frame (70).

(73) a. *x-   in=   [$_{\omega\text{-Min}}$ wär]
          CPL   1SG.ABS   sleep
          'I slept.'

      b. *ASP-ABS=[$_{\omega\text{-Min}}$ V]

If this conflict is resolved in favor of the prosodic subcategorization of ASP, as proposed for Macedonian, the result is prosodic smothering. Example (74) illustrates that when aspect is parsed inside the minimal prosodic word, the absolutive marker is similarly parsed, contra its default behavior as a prosodic clitic (cf. (72)).

(74) a. [$_{\omega\text{-Min}}$ x-   in-   wär]
          CPL   1SG.ABS sleep
          'I slept.'

      b. [$_{\omega\text{-Min}}$ ASP-ABS-V]

The behavior of the absolutive markers, then, is completely parallel with that of the Macedonian object clitics. We have a second case in which vertical subcategorization frames take precedence over default parsing, which prosodic smothering as the result. And just as in Macedonian, standard syntax-prosody mapping constraints are responsible for ruling out alternative repairs to the prosodic dilemma in (73)-(74).

(75)

[$_{VP}$ in- wär]	SubCat(asp)	Align-R(ω, Lex)	Align-L(Lex, ω)
a. ☞ {$_\phi$ in= [$_{\omega\text{-Min}}$ wär] }			
b. ☞ [$_{\omega\text{-NonMin}}$ in= [$_{\omega\text{-Min}}$ wär]]			
c. [$_{\omega\text{-Min}}$ in- wär]			*! W
d. [$_{\omega\text{-Min}}$ in] [$_{\omega\text{-Min}}$ wär]		*! W	

(76)

[$_{AspP}$ x- [$_{VP}$ in- wär]]	SubCat(asp)	Align-R(ω, Lex)	Align-L(Lex, ω)
a. ☞ [$_{\omega\text{-Min}}$ x- in- wär]			*
b. {$_\phi$ x- in= [$_{\omega\text{-Min}}$ wär] }	*! W		L
c. [$_{\omega\text{-NonMin}}$ x- in= [$_{\omega\text{-Min}}$ wär]]	*! W		L
d. [$_{\omega\text{-Min}}$ x- in] [$_{\omega\text{-Min}}$ wär]		*! W	L

3.3.1   Against a syntactic analysis of the prosodic variability of ABS

As with the Macedonian data (section 2.5.1), we must address a competing syntactic analysis of ABS marking in Kaqchikel in which the variable prosody of the ABS markers owes to an underlying syntactic difference between verbal and NVP constructions. One might reasonably assume that ABS is part of a complex syntactic head in verbal contexts (77), but part of a head-complement structure in non-verbal predicates (78). As with our proposal, the presence or absence of higher aspect marking might be the determining factor behind this difference: predicates raise to ASP when ASP is present in the structure (or at least phonologically overt) (77), but otherwise remain *in situ*.

(77)   ABS as a complex head in verbal *xatinwoyoj* 'I called you'.

AspP
- Asp° — x-<u>at</u>-inw-oyoj
- TP
  - T° — t_{ABS}
  - vP
    - v° — t_{ERG}
    - VP
      - V° — t_i
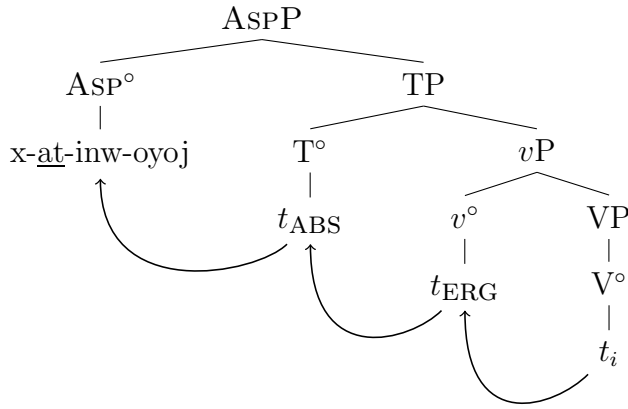
(78)   ABS in a head-complement structure in non-verbal *at tijonel* 'You are a teacher'.

AspP
- Asp° — ∅
- TP
  - T° — <u>at</u>=
  - PREDP
    - PRED°
    - NP
      - N° — tijonel
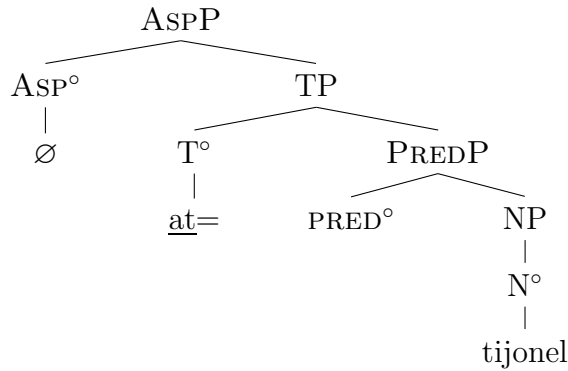
For proposals along these lines see Baker (2003), Mateo Toledo (2008), Coon et al. (to appear), among others. Now assume with authors like Selkirk (2011) that the default mapping from syntax to prosody parses complex heads (77) into single prosodic words ω, while parsing head-complement structures (78) into multiple prosodic words. Such a mapping algorithm would derive the observed prosodic variation in ABS marking from the hypothesized syntactic structures (77)-(78) without any special stipulations about the morphology or prosody of ABS itself. We stress that very few of the syntactic particulars matter here: the argument hinges only the structural distinction between complex heads and head-complement structures, along with a syntax-prosody mapping algorithm that treats such structures differently by default. The central premise of this analysis is that syntactic integration necessarily entails prosodic integration.

   We suspect that something like the syntax sketched in (77)-(78) is correct for predicative structures in Kaqchikel. But whatever the syntax of predication may be in Kaqchikel, we believe that the analysis just sketched is deficient in several important respects. Perhaps most problematic is the assumption of a transparent mapping between syntactic and prosodic structure. While the correlation between syntactic headedness and prosodic wordhood is no doubt a robust tendency, there is strong evidence for a double-dissociation of this apparent correspondence (a conclusion reached independently by Harley 2013, Barrie & Mathieu to appear, and Green & Morrison 2015 among others).

First, both within and outside of Kaqchikel we find complex syntactic heads that do not map to unitary prosodic words (see also Inkelas 1990, Poser 1990, Peperkamp 1997). We've already encountered one such example: agentive nominals formed with the prefix *aj-* in Kaqchikel behave phonologically like clitic=host structures rather than simple prosodic words (59). Morpho-syntactic diagnostics clearly indicate that agentive nouns like *ajq'ij* 'shaman' are prefixed stems, i.e. internally complex morpho-syntactic words (e.g. Zwicky 1977, Zwicky & Pullum 1983, van Riemsdijk 1999, Anderson 2005, Nevins 2011a). For instance, affixal inflectional morphology may appear outside of *aj-*, suggesting that this morpheme is also a morpho-syntactic affix rather than a morpho-syntactic clitic (Zwicky & Pullum 1983). In (79) we see that *aj-* forms stems that can be further inflected with ergative possessor agreement.[28]

(79)   a.   r-aj=to'-öl   b.   r-aj=t'is
           3SG.ERG-AGT=help-NMLZ   3SG.ERG-AGT=sew
           'his/her helper'   'his/her tailor'   (Majzul 2007:75)

A second test concerns the behavior of *aj-* with obligatorily bound stems. As example (80) shows, *aj-* patterns with unambiguous morpho-syntactic affixes in being able to satisfy the morphological requirements of these stems.

(80)   a.   -xikin 'ear'   f.   -chi' 'mouth'
           b.   aj=xikin 'listener'   g.   aj=chi' 'chatty person'
           c.   nu-xikin 'my ear'   h.   nu-chi 'my mouth'
           d.   *-xikin '(an) ear'   i.   *-chi '(a) mouth'
           e.   (cf. xikin-aj '(an) ear')   j.   (cf. chi-'aj '(a) mouth')
                                        (Macario et al. 1998; Majzul 2007)

Finally, while *aj-* usually has transparent agentive semantics, it is only semi-compositional in some forms, indicating the higher degree of lexicalization which is characteristic of affixes (e.g. Inkelas 1990, Zwicky & Pullum 1983). For instance, the nominal derived by combining *aj-* with *potz'* 'police' is not agentive, but a derisive form of the noun. This again points towards the conclusion that *aj-* is a word-level prefix rather than a morpho-syntactic clitic or independent function word.

(81)   a.   potz' 'police'   e.   iq' 'ceramic container'
           b.   ajpotz' 'police (derisive)'   f.   aj'iq' 'person with a sweet-tooth'

           c.   chij 'wool; sheep; candle'   g.   ch'ak 'meat, flesh'
           d.   ajchij 'annoying person'   h.   ajch'ak 'hawk; carnivore'
                                            (Macario et al. 1998; Majzul 2007)

---

[28]One might expect to find prosodic smothering in forms like (79) when *aj-* is attached to a vowel-initial stem and then possessed, e.g. *aj'ik'* [ʔaχ=ʔikʼ] 'domestic worker' ∼ *rajik* [r-aχ-ik] (*aj-* smothered). We do not know what the facts are here, but either outcome would be consistent with our proposals. Either possessive inflection smothers *aj-*, in which case we must assume that the ergative prefixes in Kaqchikel have a subcategorization frame like that of ASP (70), or smothering fails to occur, in which case we can assume that the ergative prefixes have no particular prosodic requirements of their own. We thank Heidi Harley for bringing examples like these to our attention.

All such tests confirm that *aj-* is a morphosyntactic prefix in Kaqchikel, forming a complex head with its host. But as demonstrated earlier, *aj-* has the phonological behavior of a prosodic clitic. First, it fails to bleed word-initial [ʔ]-insertion on its stem (82).

(82)   aj=[ʔ]eyaj   /   *aj=eyaj'
        AGT=tooth
        'dentist'   (Majzul 2007:67)

Furthermore, *aj-* does not trigger degemination when attaching to a stem that also begins with *j* [χ]:

(83)   a.   aj=juku'   [ʔaχ=χukuʔ]   b.   aj=jach'öl   [ʔaχ=χat͡ʃʔɔ̥l]
             AGT=boat   AGT=shuck
             'boatman'   'corn-shucker'   (Majzul 2007:69)

The primary conclusion from this data is that morpho-syntactic wordhood does not itself guarantee phonological wordhood. The tendency for correspondence between these notions of 'word' can be disrupted by arbitrary and idiosyncratic properties of individual morphemes. Crucially, this conclusion interferes with the core assumption necessary for a syntactic explation of the prosodic alternations of Kaqchikel ABS markers, namely that prosodic affixhood is equivalent to forming a complex head in the syntax.

It is even more straightforward to show that syntactic heads may (and frequently do) form a single prosodic word with their complements, despite being syntactically independent objects. This is especially true of functional elements. One such example comes from prepositional phrases in Western Macedonian: prepositions are proclitic to their complements, and together form a single stress domain (ω-MIN), e.g. [$_{\omega\text{-MIN}}$ PRED vas] 'before you' (Tomić 2012:63). See Selkirk (1995), Zec (2005) and references there for related discussion. This completes the double-dissociation between syntactic unity and prosodic unity that the syntactic alternative relies on.

The goal of this section has been to defuse a potential syntactic analysis of the variable prosody of ABS marking in Kaqchikel. Crucially, such an analysis presupposes a tight mapping between syntax and prosody. Every complex syntactic head would need to be mapped to a minimal prosodic word, and vice versa. We have shown that this critical assumption is flawed. The data instead supports a fundamental assumption of our own proposals: idiosyntactic, lexically-specific constraints on prosodic phrasing can disrupt more general patterns of syntax-prosody correspondence. We contend that in Kaqchikel, as in Macedonian, these lexically-specific constraints should be understood as subcategorization requirements operating over the vertical dimension.

4   Discussion

Drawing on data from Macedonian and Kaqchikel, we have argued that prosodic smothering is a general phenomenon which may occur whenever item-specific prosodic requirements take precedence over default patterns of prosodic parsing. The typical configuration for prosodic smothering is [X [Y Z]], where X triggers a non-default prosodic parse for Y: [$_\delta$ Y ($_\pi$ Z)] but [$_\delta$ X ($_\pi$ Y Z)]. This characterization of prosodic smothering leaves completely

unspecified the lexical identities of the participating elements and their morpho-syntactic relationships, as well as the prosodic categories involved. It may be that this characterization of the phenomenon is too broad: we do not yet have a rich typological profile for prosodic smothering, and so we do not yet know if it is limited to particular morpho-syntactic or prosodic contexts. With this caveat in mind, there are several similarities between the Macedonian and Kaqchikel cases which deserve consideration and future study.

First, in both languages the subcategorization requirements of a functional head X (Asp in Kaqchikel; NEG and *wh* clitics in Macedonian) in the extended projection of Z (a verb) are satisfied at the expense of disrupting the default prosodic behavior of some element Y (ABS in Kaqchikel; object clitics in Macedonian) that is both structurally and linearly closer to Z. Second, in both languages, the relevant heads and extended projections are verbal. Finally, in both languages, the prosodic constituent at issue is the minimal prosodic word.

One might reasonably wonder if these similarities are accidental. We suspect that two shared features—smothering in verbal constituents, and at the ω-Min level—are simply coincidental. That is, we do not expect prosodic smothering to be restricted solely to verbal projections or to prosodic words. On one hand, prosodic phenomena are not usually sensitive to syntactic category distinctions (Nespor & Vogel 1986). And on the other hand, prosodically-conditioned processes (e.g. domain-final devoicing; Wetzels & Mascaró 2001) are not typically restricted to a single level of the prosodic hierarchy (see Poser 1990, Henderson 2012 for possible examples of prosodic subcategorization at the ϕP- and ιP-levels). And of course, nothing about our analysis of prosodic smothering predicts that the phenomenon should be limited to particular syntactic or prosodic categories.

What may not be accidental is the observation that prosodic smothering takes place within a single extended projection in both Macedonian and Kaqchikel. More formally, it may be that the vertical subcategorization frames which trigger prosodic smothering cross-linguistically all conform to the following schema:

(84)   Element α in the extended projection of head H is required to occur in the same prosodic constituent $\pi \in \{\omega, \phi\text{P}, \iota\text{P}\}$ as H

This is of course speculative, but we offer the prospective generalization in (84) to set the stage for future research. If it turns out that all cases of prosodic smothering involve co-members of the same extended projection, the subcategorization template in (84) will need to be formally incorporated into the theory in some way (see Richards 2014, Clemens 2014 for similar ideas in a very different context).

4.1   Further comments on vertical subcategorization

In these paper we have couched vertical subcategorization in terms of violable constraints (e.g. SubCat(ne), (31)). It should be noted, however, that in the cases under consideration these constraints are never in fact violated. We are thus agnostic as to whether prosodic subcategorization requirements should be formalized as violable constraints or as surface-true dictums, obeyed absolutely in output forms. In either case, we are committed to the view that prosodic subcategorization requirements can trigger phonological repairs: they must do more than simply mark certain combinations of morphemes as ill-formed. For related discussion, see Kiparsky (1994), Inkelas (1990), Chung (2003), Raffelsiefen (2004),

Zec (2005), Paster (2006), Yu (2007), Bye (2007), Kim (2010).

Supposing that prosodic subcategorization requirements are indeed best understood as violable constraints, we are still left with a question of formalization. Item-specific prosodic requirements, of the sort we've modeled with vertical subcategorization, can also be stated in terms of violable morpheme-specific alignment constraints (McCarthy & Prince 1993, Kim 2010, among others; see section 2.5 on other approaches to item-specific prosody). For example, the basic pattern of prosodic smothering triggered by *ne* and *wh* clitics in Macedonian can be captured with constraints requiring that the left edge of these clitics correspond to the left edge of a minimal prosodic word (85b,c). As with vertical subcategorization, basic syntax-prosody alignment constraints will eliminate candidates in which the clitic string constitutes a prosodic word to the exclusion of the verb (85d).

(85)

ne mu gi [$_V$ dava] [$_{DP}$ jabolkata]	AL-L(ne, ω-MIN)	AL-R(ω, LEX)	AL-L(LEX, ω)
a. ☞ [$_{\omega\text{-MIN}}$ ne mu GI dava] [$_{\omega\text{-MIN}}$ jaBOLkata]			*
b. {$_\phi$ ne mu gi [$_{\omega\text{-MIN}}$ DAva] } [$_{\omega\text{-MIN}}$ jaBOLkata]	*! W		L
c. [$_{\omega\text{-NonMIN}}$ ne mu gi [$_{\omega\text{-MIN}}$ DAva]] [$_{\omega\text{-MIN}}$ jaBOLkata]	*! W		L
d. [$_{\omega\text{-MIN}}$ NE mu gi] [$_{\omega\text{-MIN}}$ DAva] [$_{\omega\text{-MIN}}$ jaBOLkata]		*! W	L

Morpheme-specific alignment differs from vertical subcategorization in its predictions about constructions which contain multiple triggers for prosodic smothering. Consider for instance the following example, repeated from section 2.5, which contains a *wh* clitic and *ne*.

(86)   [$_{\omega\text{-MIN}}$ ŠTO ne zel] 'What didn't he take?'

Example (86) demonstrates that in the configuration [*wh* ne VERB], the *wh* clitic is parsed into the same prosodic constituent as *ne* and the verb. As discussed in section 2.5, this structure falls out immediately from vertical subcategorization: it is the only configuration that satisfies the selectional requirements of both triggering morphemes while also satisfying mapping constraints like ALIGN-R(ω, LEX). Here it is crucial that the subcategorization frames of *ne* and *wh* clitics refer to the immediately dominating prosodic category rather than to edges of prosodic domains, as only the leftmost trigger is aligned with a ω-MIN-edge in (86).

Given the prosodic structure (86), analyses which rely on morpheme-specific alignment must assume that ALIGN-L(WH, ω-MIN) outranks ALIGN-L(ne, ω-MIN) (87).

(87)

što ne [$_V$ zel]	AL-L(WH, ω-MIN)	AL-L(ne, ω-MIN)	AL-R(ω, LEX)	AL-L(LEX, ω)
a. ☞ [$_{\omega\text{-MIN}}$ ŠTO ne zel]		*		*
b. što [$_{\omega\text{-MIN}}$ NE zel]	*! W	L		*

Under this analysis it is essentially accidental that the morpheme-specific alignment constraint associated with the leftmost trigger is the highest ranked in Macedonian. The question, then, is whether such a ranking can be supported with independent evidence. Here it

becomes relevant that alignment, but not vertical subcategorization, is sensitive to the linear order of triggers in multiple trigger constructions. Vertical subcategorization and morpheme-specific alignment therefore make different predictions about constructions in which the order of triggers is reversed, as in (88).

(88)   a.   *ne* WH VERB
       b.   ne što zel

Morpheme-specific alignment predicts that there will be a ω-MIN boundary at the left edge of the *wh* clitic, and thus predicts that stress should not be able to migrate onto *ne*: [*ne* [$_{\omega\text{-MIN}}$ WH VERB]]. Unfortunately, this order of clitics is not attested in Macedonian and we are not aware of any other way to independently assess the ranking that the morpheme-specific alignment analysis requires in order to handle multiple-trigger patterns like (86). We must therefore leave a proper comparison of vertical subcategorization and morpheme-specific alignment to another day.

4.2   Practical implications

Along with the the theoretical conclusions of this paper, we draw several practical lessons from our investigation of prosodic smothering. In particular, we have demonstrated two important facts about the mapping between syntactic and prosodic structure. First, there is a double-dissociation between between syntactic and phonological bracketing: not all syntactic constituents map to prosodic constituents, and not all prosodic constituents correspond to syntactic constituents. This is particularly true at the level of the word: while there is a clear tendency for complex syntactic heads to correspond to prosodic words (and vice-versa), this isomorphism is at best partial.

Second, we have shown that item-specific prosodic requirements are an important conditioning factor for such non-isomorphisms. Surface prosodic structure is determined not only by general syntax $\Leftrightarrow$ prosody mapping constraints, but also by idiosyncratic prosodic properties of individual morphemes. The upshot is that we need to be very cautious about using prosodic differences as a diagnostic for underlying morpho-syntactic structure, especially at the level of the word and below. This lesson is not completely new (see Harley 2013, Barrie & Mathieu to appear, and Green & Morrison 2015, among others), but it is sharply underscored by the observation that individual morphemes can exert their own peculiar influence on the prosodic structure of output forms.

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