

Chapter 1

Prosodic smothering is idiosyncratic and lexical

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Prosodic units, such as the phonological phrase ϕ , typically correspond to morpho-syntactic units, e.g. XPs. However, prosodic effects associated with individual morphemes may idiosyncratically disrupt these correspondences. In particular, some morphemes may condition ‘prosodic smothering’, a pattern in which outer morphemes trigger restructuring of inner prosodic domains. Most analyses of smothering assume that prosodically exceptional elements (i) have regular, unremarkable syntax; and (ii) are lexically specified for their unique prosodic effects. An alternative is to assume that (i) the syntax of smothering triggers is special; and (ii) their prosodic behavior follows directly from their special syntax. Here, I argue against the command-based theory of smothering proposed by [Branan \(2023\)](#), and in favor of the larger claim that smothering effects cannot be reduced to syntactic differences. Instead, I offer an analysis in the CAPHONOLOGIES-BY-PHASE framework ([Sande et al. 2020](#)). Regardless of the specific implementation, prosodic smothering requires idiosyncratic lexical specification.

1 Introduction

Function words and affixes do not generally behave as a uniform class when it comes to phonology (e.g. [Inkelas 1990](#), [Selkirk 1995](#), [Zec 2005](#), [Peperkamp 1997](#), and many others). For example, in British English, the preposition *via* is apparently the only function word which participates in a process of [ɪ]-insertion at word boundaries ([Tyler 2019](#)). In Irish, demonstratives are unusual among function words in forming full prosodic words of their own ([Bennett et al. 2016](#)). More

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broadly, the level-ordering architecture of Lexical Phonology/Stratal OT is motivated in part by the finding that affix classes may have systematic phonological differences (e.g. Bermúdez-Otero 2018 and references there).

Functional items — particularly affixes — may also impose idiosyncractic phonological requirements on the elements they combine with. These requirements can affect how *prosodically integrated* functional morphemes are with their hosts.

To illustrate, consider two English prefixes (1): negative *in-*, as in *in-considerate*; and negative *un-*, as in *un-defeated*. Phonologically, *in-* forms a single stress domain with the stem it attaches to. This can be diagnosed by the fact that *in-* may bear the sole stress in the word, e.g. *ín-finite*, *ím-potent*, etc. This indicates that *in-* belongs to the same prosodic word (ω) as its stem (1a).¹

- (1) English negative *un-*: [*un-* [...] ω] ω
- a. [*ín-finite*] ω
 - b. [*ùn-* [*fínished*] ω] ω (after Inkelas 1990, Booij & Lieber 1993, Raffelsiefen 1999)

In contrast, negative *un-* is consistently outside the domain of primary stress, as in *ùn-finished*, *ùn-interested*, etc. This is an indication that *un-* stands outside the prosodic word of its stem (1a).

The prosodic contrast between *in-* and *un-* can be implemented by means of LEXICAL SUBCATEGORIZATION.² Assume that negative *un-* has a subcategorization requirement like [*un-* [...] ω] ω . This stipulates that *un-* must be separated from its stem by a prosodic word boundary (ω). The presence of this intervening ω boundary ensures a lack of phonological ‘coherence’ between *un-* and its host. As the prefix *in-* lacks a prosodic subcategorization frame, it is instead prosodically integrated into a single ω with its host (the default pattern for affixes).

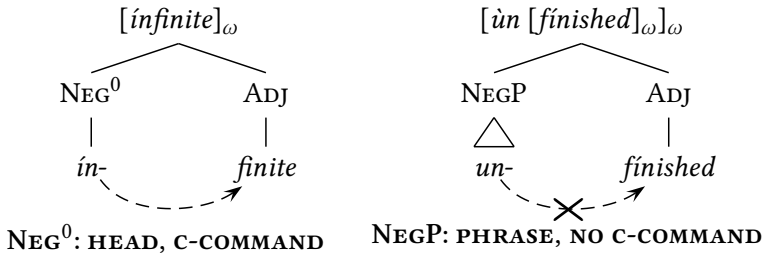
Phonological subcategorization frames have been criticized for being stipulative and non-explanatory, and for failing to capture broader grammatical generalizations (e.g. Bonet et al. 2007, Wolf 2008, Bonet & Harbour 2012, Bennett 2017). In turn, proponents of subcategorization have argued that some degree of synchronic stipulation is sometimes unavoidable when dealing with morpheme-specific prosodic requirements (e.g. Yu 2003, Paster 2006). Still, whenever subcategorization frames are invoked in an analysis, it seems fair to ask whether more explanatory alternatives might be available instead.

¹I’m simplifying here: examples like *in-décent* show that *in-* does not always bear primary stress, even when otherwise eligible. Notably, *un-* never bears primary stress (Allen 1979: 16).

²Prosodic subcategorization frames have been invoked in many analyses of of morphological and/or phonological patterns. For reasons of space I do not provide a thorough list here, but see e.g. Inkelas (1990), Zec (2005), Paster (2006), Bennett et al. (2018) for discussion and citations.

Along these lines, it has been proposed that at least some prosodic differences between functional items can be derived from deeper syntactic differences. This is illustrated for negative *in-* and *un-* in (2). If we assume that e.g. *in-* is a syntactic head, while *un-* is a syntactic phrase, then *in-* and *un-* will stand in different structural relations with their stems.³ If phonology is sensitive to structural relations in the syntax — and in particular, c-command relations — then the prosodic differences between *in-* and *un-* might follow straightforwardly, without stipulation (for proposals that c-command at least partially determines prosodic patterning, see Kaisse 1985, Kalivoda 2018, Branau 2023 and the detailed discussion below).

(2) English negative prefixes: does syntax determine parsing?



In this paper, I approach these issues through the lens of PROSODIC SMOTHERING, a phenomenon in which certain morphemes idiosyncratically force their hosts to be prosodically restructured (section 2). Bennett et al. (2018) and Rolle & Hyman (2019) have analyzed prosodic smothering by means of idiosyncratic lexical subcategorization frames. In contrast, Branau (2023) has proposed that at least some cases of prosodic smothering can be reduced to underlying syntactic differences between morphemes.

I will argue that prosodic smothering effects *must* be stipulated: they are truly idiosyncratic properties of individual morphemes or morpheme classes, and cannot be derived from other grammatical properties of the items in question. In section 5 I sketch an analysis of prosodic smothering in the COPHONOLOGIES BY PHASE model of Sande et al. (2020), which implements phonological idiosyncrasy by allowing individual morphemes to shape the grammar of prosodic parsing.

2 Prosodic smothering

PROSODIC SMOTHERING refers to a phenomenon in which an outer morpheme ‘compresses’ an inner morpheme into a smaller prosodic domain than it would

³See Newell (2008: 175–83) for a proposal in this spirit, which nonetheless differs from the sketch analysis in (2) in several important respects.

otherwise belong to (Bennett et al. 2018). This is schematized in (3).

- (3) a. / A B / → A [B]_π
 b. / M A B / → [M A B]_π (prosodic smothering by M)

Normally, morpheme A is realized outside of the prosodic domain π of morpheme B, as in (3a). However, in the presence of an outer morpheme M, all three of A, B, and M are parsed together into π , as in (3b). The presence of M thus ‘compresses’ or ‘smothers’ B into π .

Zanzibar Makonde (section 3) provides our first illustration.

3 Prosodic smothering in Zanzibar Makonde

Makonde is a Eastern Bantu language spoken in Tanzania and Mozambique, and to a lesser extent Zanzibar and Kenya (e.g. Liphola 2001, Manus 2003, Kraal 2005, Makanjila 2019). As discussed by Rolle & Hyman (2019) and Branen (2023), Makonde dialects show prosodic smothering at the phrase level.

In Zanzibar Makonde, demonstratives trigger a prosodic restructuring of the noun phrase. In noun phrases, the default pattern is to place the noun and all noun modifiers in their own phonological phrases (ϕ), as in (4). Phonological phrasing in Zanzibar Makonde can be diagnosed by penultimate lengthening within ϕ , as well as various tonal changes; see Manus (2003, 2010) for details. Penultimate lengthening is shown via underlining in (4) and (5).

- (4) Default ϕ -phrasing in noun phrases in Zanzibar Makonde
 a. (vi-loôngo)_φ (ví-kúmeene)_φ (vy-á naáswe)_φ (vi-viĩli)_φ
 CL8-pot CL8-big CL8-GEN white CL8-two
 ‘two big white pots’
 b. (NOUN)_φ (ADJ)_φ (ADJ)_φ (NUM)_φ

Demonstratives occur at the right edge of the noun phrase. The addition of a demonstrative has the effect of prosodically ‘flattening’ the entire noun phrase: the demonstrative, noun, and all intervening noun modifiers are parsed into a single, shared phonological phrase ϕ (5a,b). The same effect is visible in simple [NOUN DEM] expressions as well (5c,d).

(5) Phrase-level smothering by demonstratives in Zanzibar Makonde⁴

- a. (ví-lóngó ví-kúméné vy-á náswé ví-vílí aviilá)_ϕ
 CL8-pot CL8-big CL8-GEN white CL8-two CL8.DEM
 ‘those two big white pots’
- b. (NOUN ADJ ADJ NUM DEM)_ϕ
- c. (lí-jémbé aliilá)_ϕ
 CL5-hoe CL5.DEM
 ‘that hoe’
- d. (NOUN DEM)_ϕ

Rolle & Hyman (2019) analyze the smothering pattern in (5) by means of a prosodic subcategorization frame for demonstratives: (NOUN_{HD}...DEM)_ϕ. This subcategorization frame requires that all demonstratives occur in a single, flat ϕ with their associated head noun, and any intervening material.⁵

3.1 Arguments against lexical subcategorization

Branan (2023) critiques the use of lexical subcategorization in the analysis of smothering effects in Makonde along several lines. First, Branan argues that lexical prespecification is not sufficiently restrictive. This point is well-taken: subcategorization frames like (NOUN_{HD}...DEM)_ϕ are powerful devices, in that they express non-local relations between non-adjacent elements (e.g. between DEM and NOUN_{HD}, regardless of what intervenes). And at present, there is no broader theory of what kinds of elements can be referred to by frames of this type. Prosodic subcategorization frames like (NOUN_{HD}...DEM)_ϕ might then massively over-predict the range of prosodic smothering effects actually attested in natural language.

Second, Branan notes that most cases of prosodic smothering documented to date involve CATEGORY-LEVEL behavior. In Makonde, for example, it is the entire class of demonstratives which triggers ϕ -level smothering. Subcategorization frames are intended to express morpheme-specific requirements (section 1). Item-specific subcategorization does not explain why prosodic smothering triggers seem to form coherent syntactic classes.

⁴I will sometimes indicate SMOTHERING TRIGGERS with boxed text.

⁵By ‘flat’, I mean ‘non-recursive’, i.e. (NOUN DEM)_ϕ rather than ((NOUN)_ϕ DEM)_ϕ; see e.g. Itô & Mester (2013), Bennett et al. (2018) and section 5.1 below.

3.2 Smothering via command relations

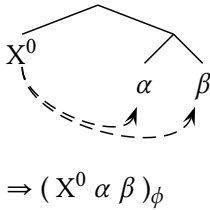
Branan (2023) develops an alternative, syntactically-oriented analysis of Zanzibar Makonde within the framework of COMMAND THEORY (Kalivoda 2018). In Command Theory, prosodic phrasing at the ϕ level is determined by c-command relations between terminal nodes in the syntax. The basic principles of Command Theory are embodied in the violable, Optimality Theoretic constraints in (6).

(6) **Command-theoretic parsing constraints** (Kalivoda 2018, Branan 2023)

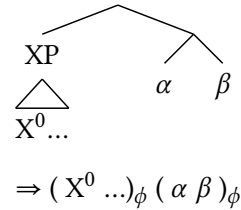
- a. TOGETHER (7):
If terminal X c-commands terminal Y, X and Y must be in a ϕ *together*.
- b. APART (8):
If terminal X is *not* in a c-command relationship with terminal Y, X and Y must be in *separate* ϕ s

The basic effects that these constraints have on ϕ -phrasing are shown in (7) and (8). When a higher syntactic node c-commands one more more lower nodes, the grammar prefers those nodes to be parsed into the same ϕ (7). In the absence of c-command, the default is for terminal nodes to phrase separately (8).

(7) **C-command:**



(8) **No c-command (X^0 embedded):**

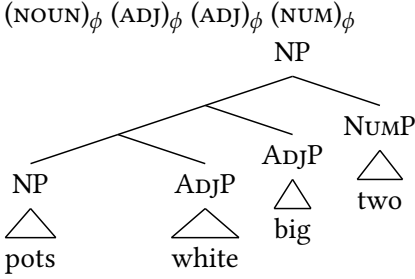


Only c-command by *terminals* (X^0 s) matters for ϕ -phrasing in Command Theory. C-command by *phrases* (XPs) is entirely irrelevant for prosodic parsing in this framework.

3.2.1 Demonstrative smothering in Zanzibar Makonde

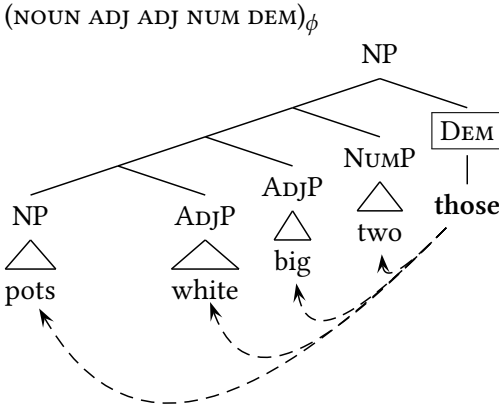
Branan's (2023) Command Theoretic analysis of demonstrative smothering in Zanzibar Makonde proceeds as follows. First, assume that noun modifiers are generally full XPs in Zanzibar Makonde. This ensures that there will be no c-command relations, of any sort, between nouns and noun modifiers. (Again, it is important that only c-command between *terminal nodes* matters for ϕ -phrasing in this framework.) The constraints TOGETHER and APART (6) then predict that nouns and noun modifiers should all phrase into their own independent ϕ s (9).

- (9) *Parse apart* without DEM: no c-command relations *between words*



Now, assume that demonstratives differ from other noun phrase modifiers in being heads, rather than full XPs. Since demonstratives are peripheral within the noun phrase, it is plausible that they attach high within NP (10). In such a configuration, DEM will c-command the noun and all noun phrase modifiers (10).

- (10) *Parse together* when DEM c-commands all terminals



Given the constraint TOGETHER (6), this analysis correctly predicts that DEM should form a single, flat ϕ with all other words in the noun phrase.

The central claim of [Branan's \(2023\)](#) Command-Theoretic analysis is that prosodic smothering in Zanzibar Makonde reduces to an underlying syntactic difference between demonstratives (= X^0 heads) and other noun phrase modifiers (= XPs). There are several appealing aspects of this analysis. First, it straightforwardly captures the fact that demonstratives behave as a class for prosodic smothering in Zanzibar Makonde. This follows from the assumption that syntactic structure is built with reference to lexical categories, not individual lexical items (e.g. [Chomsky 1965](#)).

Second, this analysis relies on a theory of prosodic phrasing – Command Theory – which was originally proposed for unrelated reasons ([Kalivoda 2018](#)).

There is little in the way of new formal machinery here, which counts in favor of the approach.

Lastly, Command Theory makes no reference to subcategorization, or to other types of arbitrary lexical specification. In that sense, it appears to be less stipulative than comparable analyses which rely on subcategorization (section 3).

However, I will argue that this last advantage is *only* apparent: the Command Theoretic analysis of prosodic smothering in Makonde still requires considerable stipulation to get off the ground.

3.3 Smothering by c-command is still stipulative

It is critical that demonstratives be heads, not phrases, for the Command-Theoretic analysis sketched above to work. The obvious question is whether there is any independent evidence for this claim.

Branan (2023) suggests that certain morphological facts support the claim that demonstratives are heads rather than phrases in Zanzibar Makonde. He notes (p.115) that “Non-demonstrative modifiers...take a prefixal class marker”, while “Demonstratives likewise display concord...[but the marker] appears to be suffixal and drawn from a separate paradigm”. This is illustrated in (11); class markers are underlined.

- (11) (ví-lóngó ví-kúméné vy-á náswé ví-vílí a-vii-lá)_ϕ
 CL8-pot CL8-big CL8-GEN white CL8-two **DEM-CL8-DEM.DIST**
 ‘those two big white pots’

The claim, then, is that (i) prefixation vs. suffixation, and (ii) morphological paradigm structure, both diagnose a structural difference between XP vs. X⁰ modification in Zanzibar Makonde.

There are several issues with this claim. The first concerns the assumption that prefixation vs. suffixation is informative about the syntactic status of demonstratives as X^0 heads vs. XP phrases.

Class marking does appear to be suffixal on proximal demonstratives in Zanzibar Makonde (12) (I discuss other demonstratives below).

- (12) PROXIMAL DEMONSTRATIVES
 mí-lándy' áá-ì (NOUN DEM)_φ
 CL4-tree DEM-CL4
 'these (proximal) trees'

I am personally skeptical that the distinction between prefixation and suffixation tells us much about syntax (cf. Branan 2023: 115-6). To give just one example: it has been argued that verb-initial word order is produced by roll-up verb movement in both Irish and Kaqchikel (e.g. McCloskey 1996, Clemens & Coon 2018). Subject agreement on verbs is suffixal in Irish, but prefixal in Kaqchikel. This difference is surprising if the direction of affixation is dependent on syntactic structure. While it may be possible to explain away individual cases of this type, I doubt that affixation can, in general, be taken as a reliable diagnostic for syntactic structure.⁶

Branan’s (2023) second claim is that class markers follow a different paradigm on demonstratives than on other nominal modifiers (in particular, adjectives). It is true that the paradigm for class marking on demonstratives is slightly different from the paradigm for adjective concord. Adjective class prefixes are identical to demonstrative class prefixes *except* in classes 1, 4, and 6 (13). (The loss of vowels in demonstrative class markers reflects a tonally-conditioned hiatus avoidance process, Manus 2003: 101-9.)

(13) Adjective vs. demonstrative noun class markers in Zanzibar Makonde

(Manus 2003: 37-9, 46-7, 55, 80, 93-100)

CLASS	ADJ	DEM	NOUN
1	mu-, N-	j(u)-	mu-, N-
4	mi-	i-	mi-
6	ma-	l(a)-, a-	ma-

The difference in class marking for adjectives and demonstratives in (13) could be taken as evidence that demonstratives are indeed X^0 heads rather than XPs in Zanzibar Makonde.

⁶Furthermore, there are reasons to doubt that class marking is suffixal on demonstratives in Zanzibar Makonde. First, the same DEP I paradigm which marks noun class agreement on demonstratives can occur in other constructions, and in those constructions class marking is clearly *prefixal*, not suffixal (e.g. (14) below).

Second, in other varieties of Makonde, class marking can occur word-initially on demonstratives, when the initial demonstrative morpheme is dropped e.g. Chinnima Makonde [(n-dí-dí a-uu-lá)_φ] ~ [(n-dí-dí uu-lá)_φ] ‘that rope (CL3-rope (DEM-)CL3-DEM.DIST)’ (Kraal 2005: 85, 132-7; see also Devos 2008: 168-75, Makanjila 2019: 141-4). This pattern is obviously incompatible with treating demonstrative class markers as suffixal, because they occur word-initially.

Manus (2003) does not discuss demonstratives in which the initial demonstrative morpheme has been omitted, so I do not know if this pattern also occurs in Zanzibar Makonde (though I suspect it does). For what it’s worth, Manus (2010: 163) explicitly states that glosses like ‘Dem5’ “[do] not mean that the class marker is suffixed” on demonstratives.

However, this analysis predicts a neater correlation between class marking and prosody than we actually observe. Differences between class marking paradigms are attributed to the X^0 vs. XP status of modifiers; this is also the factor which is supposedly responsible for differences in prosodic phrasing across modifiers. If both class marking and phrasal prosody reflect the syntactic distinction between X^0 vs. XP modifiers, they should be tightly correlated. But they are not.

Demonstratives carry class markers belonging to the DEP I paradigm. Importantly, the DEP I paradigm also occurs on modifiers in other constructions (14).

- (14) a. sǐ́-nú sǐ́-ɲǐ (NOUN)_ϕ (OTHER)_ϕ
 CL7-thing CL7-other
 ‘another thing’
 b. mùú-nú jùú-mò (NOUN)_ϕ (ONE)_ϕ
 CL1-person CL1-one
 ‘one person’

(Manus 2003: 106-7)

Modifiers bearing DEP I class marking may prosodically phrase with the noun, or phrase separately, depending on the construction (14, 15) (Manus 2003: 93-118, Manus 2010; see also Rolle & Hyman 2019).

(15) No correlation between CL1 marking and prosodic phrasing

CONSTRUCTION	CL1 PREFIX	PROSODIC PHRASING	PARADIGM
NOUN + ADJ	mu-, N-	(NOUN) _ϕ (ADJ) _ϕ	ADJ
NOUN + DEM	j(u)-	(NOUN DEM) _ϕ	DEP I
NOUN + OTHER/ONE	j(u)-	(NOUN) _ϕ (OTHER/ONE) _ϕ	DEP I
NOUN + GEN + NOUN	u-	(NOUN) _ϕ (GEN NOUN) _ϕ	DEP II
NOUN + POSS	u-	(NOUN POSS) _ϕ ~ (NOUN) _ϕ (POSS) _ϕ	DEP II

The same dissociation between class marking and prosodic structure can be seen for the DEP II paradigm in the last two rows of (15).

Such dissociations are problematic for the claim that class marking paradigms track the X^0 vs. XP status of modifiers. After all, the X^0 vs. XP distinction is also supposed to explain the prosody of noun modifiers: this wrongly predicts a strong correlation between prosody and noun class paradigms.

The fact that demonstratives follow a different class marking paradigm than adjectives and numerals does suggest some underlying difference between these modifiers. But this is trivially true: demonstratives belong to a different lexical

category than adjectives, numerals, etc. That fact alone could explain the patterns at hand — there is no need to assume that class marking paradigms reflect deeper, structural properties of the syntax itself (see also [Branan 2023](#): 115-6,123,129). (Indeed, exactly the same point can be made about the fact that class marking appears to be suffixal, rather than prefixal, on proximal demonstratives.)

I conclude that class marking paradigms do not support the claim that demonstratives are X^0 heads rather than full XPs.

If anything, the morphological structure of demonstratives in suggests that they are phrasal. Demonstratives in Zanzibar Makonde are multi-partite and internally-complex. They consist of a generic demonstrative element *a-*, followed by a class marker, and finally a morpheme indicating the distal or anaphoric character of non-proximal demonstratives (16) ([Manus 2003](#)).

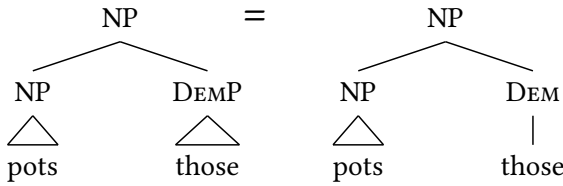
- (16) a. Proximal demonstratives: DEM-CLASS
lú-pémby’ áá-lù (NOUN DEM)_φ
CL11-horn DEM-CL11
‘this (proximal) horn’
- b. Distal demonstratives: DEM-CLASS-DEM.DIST
lú-pémbé à-lùù-lá (NOUN DEM)_φ
CL11-horn DEM-CL11-DEM.DIST
‘that (distal) horn’
- c. Anaphoric demonstratives: : DEM-CLASS-DEM.ANAPH
lú-pémbé àà-lw-ó (NOUN DEM)_φ
CL11-horn DEM-CL11-DEM.ANAPH
‘that (previously mentioned) horn’

To the extent that morphological complexity is diagnostic of syntactic complexity, then the morphological evidence implies that demonstratives are phrasal XPs in Zanzibar Makonde, *not* simplex X^0 heads.

Indeed, it has been argued that demonstratives are always syntactic phrases, composed of a definite marker, an agreement marker, and a deictic/anaphoric element within a complex XP ([Leu 2015](#)). This corresponds, rather exactly, to the structure of the demonstrative in Zanzibar Makonde (16).

There thus appears to be no compelling, independent evidence for the purported X^0 status of demonstratives in Zanzibar Makonde. There is also a somewhat technical argument against this claim. In BARE PHRASE STRUCTURE, there is no meaningful difference between an X^0 head and an XP which is internally non-branching (17) ([Chomsky 1995](#)).

(17) Non-branching DEM⁰ = DEM⁰ in Bare Phrase Structure



If bare phrase structure is adopted, then the crucial structural distinction between bare X^0 heads and non-branching XPs (9, 10) cannot even be formulated, much less used to explain the prosody of demonstratives.

3.3.1 Interim summary

The Command Theory analysis of prosodic smothering in Zanzibar Makonde hinges on the claim that demonstratives are unique among nominal modifiers in being X^0 heads. I have argued that this is not plausible or well-motivated.

Because Command Theory is a *general* theory of the syntax-prosody interface, it is poorly suited to deal with truly idiosyncratic patterns. Only one strategy can be pursued: special prosody must reflect special syntax. But in this case, the requisite ‘special syntax’ is simply not credible, on either syntactic or morphological grounds. It is at best a stipulation, and at worst incorrect.

Despite these criticisms, the Command Theory analysis retains one important advantage over lexical subcategorization: it accounts for the fact that demonstratives behave as a class for prosodic smothering in Zanzibar Makonde.

In the following section I discuss prosodic smothering in Macedonian. The Macedonian case is important because Command Theory is plainly unable to generate the observed prosodic facts. Hence, any purported advantages of Command Theory are rendered moot.

4 Prosodic smothering in Macedonian

Macedonian shows prosodic smothering at the ω level, involving negation and *wh*-expressions. It is discussed in detail by Bennett et al. (2018). Evidence for prosodic smothering in Macedonian comes from the system of stress assignment. Following Bennett et al. (2018), I focus on Western Macedonian.

4.1 The basic stress pattern: antepenultimate

Default stress in Western Macedonian is antepenultimate, or initial in words of 1-2 syllables (18). I indicate stress by means of capitalization, following most prior literature on Macedonian prosody. Examples are given in a Romanized orthography.

(18) Default antepenultimate stress

- a. proizVEduva ‘produce (3SG.IMPF.PRS)’
- b. proIZvede ‘produce (3SG.PST)’
- c. PROizvod ‘product’
- d. VOdi ‘lead (3SG.IMPF.PRS)’
- e. LIK ‘figure, image’ (Tomić 2012: 53-9)

Macedonian has a number of pronominal and clausal proclitics which precede verbs. These proclitics are typically unstressed, even when antepenultimate in the verbal complex (19).

(19) Pronominal and clausal proclitics outside the domain of stress

- a. mi go [DAle] ‘They gave it to me.’
- b. *[mi GO dale] (Rudin et al. 1999: 553)
- c. da [Odiš] ‘You should go!’
- d. *[DA odiš] (Tomić 2012: 33)

I assume that the domain of stress is the prosodic word ω . It follows that pronominal and clausal proclitics are outside of the ω containing the verb (20).

(20) Default verb prosody: CLITIC(S) [VERB] $_{\omega}$

4.2 Exceptional stress domains triggered by functional items

The stress domain of the verb expands leftward in the presence of two types of functional item: negation (section 4.2.1), and *wh*-expressions (section 4.2.2).

4.2.1 Negation

In the presence of the negative marker *ne*, the stress domain of the verb expands to include negation, as well as any intervening clitics (21). This can be diagnosed by the fact that preverbal clitics may take the sole stress of the verbal complex when preceded by *ne*, if they are in antepenultimate position.

(21) [NEG (CLITICS) HOST]_ω

(22) [**ne** **mu** **GI** **dava**]_ω [jaBOLkata]_ω
NEG 3SG.M.DAT 3PL.ACC give.3SG.PRS the.apples

‘(s)he is not giving him the apples.’ (Tomić 2012: 66)

This constitutes prosodic smothering: the negative marker *ne* is ‘compressing’ intervening clitics into a smaller prosodic domain than they would otherwise belong to (section 2). It is exactly analogous to the flattening of ϕ structure by demonstratives in Zanzibar Makonde (section 3).

The negative marker *ne* may itself be stressed when antepenultimate in the verbal complex (23).

(23) [**NE** **znam**]_ω
NEG know.1SG.PRS

‘I don’t know’ (Lunt 1952: 23, Friedman 2010: 254)

This confirms that negation is also within the ω sponsored by the verb.

4.2.2 *Wh*-expressions

The very same pattern of smothering occurs with interrogative *wh*-expressions in Macedonian (24). This is illustrated for matrix *wh*-questions in (25).

(24) [WH (CLITICS) HOST]_ω

(25) Matrix *wh*-questions

a. [KOJ **reče**]_ω?
 who.NOM say.3SG.PST

‘Who said it?’

b. [KAJ **saka**]_ω da [Odi]_ω [TOJ]_ω?
 where want.3SG.PRS to go.3SG.PRS he

‘Where does he want to go?’

(Lunt 1952: 23, Koneski 1987: 168-9, Rudin et al. 1999: 557)

Smothering occurs inside of complex *wh*-expressions (26).

(26) Complex *wh*-expressions

[kaKOV **fustan**]_ω [SAkaš]_ω?
 what.kind.SG.M dress want.2.SG.PRS

‘What kind of dress do you want?’

(Tomić 2012: 420)

Smothering also occurs with interrogative *wh*-expressions in embedded clauses, and in exclamatives (27). (Example 27a also illustrates smothering by negation *ne*.)

- (27) a. *wh*-expressions in embedded clauses
 [**NE** znaeš]_ω [TI]_ω [**kako** SE žali]_ω ...
 NEG know.2SG.PRS you how REFL sorrow.3SG.PRS ...
 ‘You don’t know how one sorrows...’ (Lunt 1952: 24)
- b. Exclamatives
 [**kaKO** griziš]_ω [JABloka]_ω !
 how chew.2SG.PRS apples
 ‘the way you chew apples!’ (Hendriks 1976: 95)

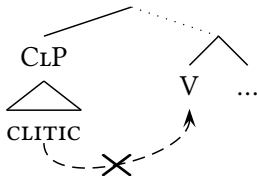
Non-interrogative *wh*-constructions, such as relative clauses and adjunct modifiers, do not show prosodic smothering in Macedonian; see Bennett et al. (2018).

Bennett et al. (2018) analyze prosodic smothering in Macedonian with lexical subcategorization frames. Here, I argue that these patterns cannot be analyzed in Command Theory (section 4.3). Then, in section 5.2, I provide an analysis of in the Cophonologies-by-Phase framework.

4.3 Macedonian smothering in command theory

Command Theory requires several problematic assumptions to analyze prosodic smothering in Macedonian. First, pronominal and clausal proclitics normally phrase apart from the following verb. It follows that there cannot be any c-command relations between proclitics and verbs. This requires clitics to be embedded inside an XP phrase of some type (28).

- (28) Most verbal proclitics: inside XP

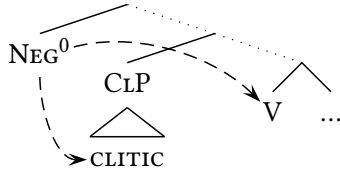


No c-command:

CLITICS [VERB]_ω

In contrast, negation and *wh*-words phrase together with a following verb, and any intervening clitics. Hence, negation and *wh*-words must differ in being high, c-commanding heads (29), (30).

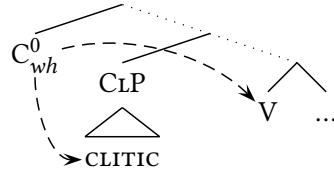
(29) Negation: X^0 head



C-command:

[NEG (CLITICS) HOST]_ω

(30) *Wh*-words: X^0 heads



C-command:

[WH (CLITICS) HOST]_ω

Immediate problems arise for this analysis. First, simplex *wh*-words are phrases, not merely heads. This is clear from the fact that they undergo long-distance, cross-clausal, phrasal \bar{A} -movement (31).

- (31) KAJ saka [da Odi TOJ _____]_{CLAUSE?}
where want.3SG.PRS to go.3SG.PRS he
 ‘Where does he want to go?’

(25b) above

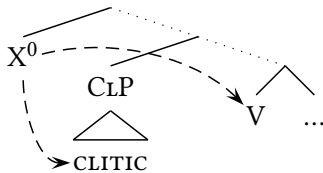
Second, Command Theory determines ϕ parsing, not ω parsing. It has nothing to say about the organization of prosodic words (i.e. stress domains).

Third, and most problematically, it is empirically false that c-commanding heads in the clausal spine trigger smothering effects. Smothering effects are truly limited to negation and interrogative *wh*-words, as I now show.

4.3.1 Other functional heads in the clausal spine

A clear prediction of the Command Theory analysis of Macedonian is that *any* c-commanding head positioned above pre-verbal proclitics should trigger prosodic smothering (32).

(32) Generic smothering by clausal heads



C-command:

[X⁰ (CLITICS) HOST]_ω

This prediction is easily falsified. There are numerous heads in the clausal spine which c-command the verb, and which do not trigger prosodic smothering (see e.g. Tomić 2001, 2012 on Macedonian clausal structure). This is illustrated for a range of clausal elements in (33).

- (33) a. Auxiliaries
- i. k'e se [VENča]_ω
will REFL marry.3SG
'He will get married'
 - ii. *[k'e SE venča]_ω
- b. Subjunctive marking
- i. [MISlam]_ω da [DOJdam]_ω
I.think SUBJ come
'I intend to come.'
 - ii. *[MISlam]_ω [DA dojdām]_ω
- c. Complementizers
- i. deka [DOšol]_ω
that come.3SG.PST
'that he came'
 - ii. *[deKA došol]_ω (Franks 1987: 129, Tomić 2012: 357)

These functional heads fail to expand the stress domain, but *can* themselves be stressed when preceded by negation or a *wh*-word 34. In other words, these clausal heads are *compatible* with enlarged stress domains, but do not trigger them.

- (34) a. [ne] K'E može]_ω
NEG will be.able.3SG
'He will not be able'
- b. [što] DA pravam]_ω
what SUBJ do.1SG
'What should I do?' (Franks 1987: 120)

The lack of smothering with other clausal heads can't be attributed to locality: the heads in question are *more local* to the verb than NEG or *wh*-words (Tomić 2012: 233; note that negation may occur in two distinct 'slots' in the clausal spine).

(35) Order of clausal morphemes in Macedonian

[(?INTER) MOOD [NEG1 MOD MOOD [NEG2 AUX DAT ACC (s)E
(Tomić 2012: 227,233)

- a. [[ne] sum mu GO dala]_ω
NEG am.CLI to.him.CLI it.CLI given
'I haven't given it to him' (Tomić 2001: 653)

- b. [[što] da TI dadam]_ω?
what SUBJ you.CLI give
'What should I give you?' (Tomić 2012: 421)

Finally, to rescue the Command Theory account of smothering in Macedonian, one could argue that non-smothering clausal morphemes are XPs rather than heads. Doing so would break c-command relations between these particles and the lower verb, as in (28), and the desired prosodic phrasing CLITICS [VERB]_ω would follow.

This, too, seems implausible. I am aware of no morphological, syntactic, or scopal evidence that auxiliaries, mood marking, or complementizers (33) are fully phrasal XPs in Macedonian (see e.g. Zanuttini 2001 for discussion of relevant diagnostics). This seems particularly unlikely in the case of complementizers, which are standardly analyzed as selecting C⁰ heads.

As Branagan (2023: 131) points out, a strength of Command Theory is that it predicts correlations between prosodic patterning and syntactic phenomena like scope and movement (and I would add, selection). But with respect to prosodic smothering in Macedonian, the predicted correlations are not borne out.

This is not to suggest that Command Theory itself is flawed. The point is more narrow: as a *general* theory of the syntax-prosody interface, Command Theory is not well-suited for modeling truly idiosyncratic prosodic patterns. Additional, item-specific machinery of some kind must be invoked as well.

5 A cophologies-by-phase analysis of prosodic smothering

In this section I outline some analyses of prosodic smothering in the Cophonologies-by-Phase (CxP) framework (Sande et al. 2020). The appeal of CxP in this context is that it is architecturally designed for item-specific phonological behavior.⁷

⁷I thank Arto Anttila for encouraging me to consider analyses along these lines, and for helpful comments which guided my thinking here.

The CxP framework builds on earlier work in Cophonology Theory, which assumes that different morphological constructions may be associated with different phonological sub-grammars, depending on the particular morphemes they contain (e.g. Anttila 2002, Inkelas & Zoll 2007, and references there). As in Cophonology Theory, CxP is implemented in Optimality Theory (or when weighted constraints are desired, in a variant of Harmonic Grammar). The most important commitments of CxP for present purposes are listed in (36).

- (36) Some important commitments of Cophonologies-by-Phase (CxP)
- a. MORPHEME-SPECIFIC CONSTRAINT RANKING:
Individual morphemes may be associated with idiosyncratic constraint rankings (or weightings).
 - b. SCOPE:
Phonological evaluation occurs once per syntactic phase (on phases, see e.g. Citko 2014 and references there).
 - c. ACTIVITY:
Morpheme-specific constraint rankings only take effect within the most local phase containing them.

CxP is thus designed to implement morpheme-specific phonological patterns.

CxP can also model phonological idiosyncrasy at the level of entire lexical or functional categories (Sande et al. 2020). It does this by associating morpheme-specific constraint rankings with functional heads in the syntax, e.g. with categorizing heads *n*, *v*, etc.; with inflectional heads like *T*; etc. Reference to more specific category types such as $T_{[PAST]}$ is also possible. This property of CxP is critical for implementing category-level prosodic smothering.

5.1 A CxP analysis of prosodic smothering in Zanzibar Makonde

In Zanzibar Makonde, the default prosodic phrasing for complex noun phrases is for the noun and each modifier to parse into its own phonological phrase ϕ (37) (section 3).

- (37) Default prosody of the noun phrase in Zanzibar Makonde
(NOUN) $_{\phi}$ (ADJ) $_{\phi}$ (NUM) $_{\phi}$

I am agnostic as to the source of this default prosody, or the particular framework used to model it.

I make an important assumption here about the prosody of the noun phrase in Zanzibar Makonde. The prosodic structure in (37) does not include a ϕ corresponding to the entire, complex noun phrase. I assume that there is in fact an outer ϕ in this structure (e.g. [Selkirk 2011](#)), though that assumption certainly needs to be justified empirically.

- (38) Default prosody of the noun phrase, with assumed outer ϕ shell
 ((NOUN) $_{\phi}$ (ADJ) $_{\phi}$ (NUM) $_{\phi}$) $_{\phi}$

Demonstratives trigger a flattening of the ϕ -structure of the noun phrase (39), i.e. prosodic smothering.



- (39) Smothering by demonstratives in Zanzibar Makonde
 (NOUN ADJ NUM DEM) $_{\phi}$

Prosodic smothering in Zanzibar Makonde can be modeled in CxP if some functional head associated with demonstratives — call it *Dem* — triggers a constraint ranking in which NON-RECURSIVITY(ϕ) (40) is undominated.

- (40) NON-RECURSIVITY(ϕ):
 Assign a violation for every ϕ dominated by another ϕ .
 (e.g. [Selkirk 1995](#), [Truckenbrodt 1999](#))

In this construction-specific constraint ranking, the preference for a flat (= non-recursive) ϕ structure will take precedence over default prosodic parsing, represented in (41) with the generic cover constraint DEFAULT ϕ .

- (41) Demonstrative smothering in Zanzibar Makonde

	[NOUN ADJ NUM DEM] _{NOUN PHRASE}	NON-REC(ϕ)	DEFAULT ϕ
a. 	(NOUN ADJ NUM DEM) $_{\phi}$		*
b. 	((NOUN) $_{\phi}$ (ADJ) $_{\phi}$ (NUM) $_{\phi}$ (DEM) $_{\phi}$) $_{\phi}$	*! W	L

The scope of this constraint ranking is the full noun phrase. It is standardly assumed that the outer layer of the noun phrase is the DP, which constitutes a phase (e.g. [Citko 2014](#): Ch. 4.3). Hence, any noun phrase containing a demonstrative will be subject to this flattening effect at the outermost, DP level. Since co-phonological rankings are phase-bounded (36c), this flattening effect will also be *limited* to the noun phrase — it will not have scope over the broader sentence.

One additional candidate needs to be considered, in which NON-REC(ϕ) is satisfied by omitting the *outermost* ϕ , rather than the smaller ϕ s associated with each noun modifier (42b).

(42) Demonstrative smothering in Zanzibar Makonde

	[NOUN ADJ NUM DEM] _{NOUN PHRASE}	NON-REC(ϕ)	PHASE-TO- ϕ	DEFAULT ϕ
a.	ḙḙ (NOUN ADJ NUM DEM) ϕ			*
b.	(NOUN) ϕ (ADJ) ϕ (NUM) ϕ (DEM) ϕ		*! W	*

In CxP, it is assumed that there is a violable preference for parsing all material in the current phase into a single prosodic domain.⁸ I implement this preference with the constraint PHASE-TO- ϕ (43) (effectively the same as MAXIMIZE PROSODIC DOMAINS in Sande et al. 2020: 1222; see also Cheng & Downing 2016, Ishihara & Kalivoda 2022 for citations to other work relating syntactic phases to ϕ s).

(43) PHASE-TO- ϕ

Assign one violation for each phase which does not correspond to a ϕ in the output.

PHASE-TO- ϕ correctly prefers the ‘flat’ ϕ parse desired for noun phrases with demonstratives (42a).

5.1.1 Coastal Shimakonde

The analysis of Zanzibar Makonde potentially extends to Coastal Shimakonde, a closely related Makonde variety. In Coastal Shimakonde, adjectives trigger prosodic smothering. Noun modifiers normally phrase apart from their nouns (44a), but adjectives cause a prosodic flattening of the entire noun phrase (44b).

(44) Smothering by adjectives in Coastal Shimakonde (Liphola 2001: 392-403)

- a. (mapapáaja) ϕ (mataátu) ϕ (NOUN) ϕ (NUM) ϕ
 CL6.papayas CL6.three
 ‘three papayas’
- b. (mápápájá mātátú mángúlúuuma) ϕ (NOUN NUM ADJ) ϕ
 CL6.papayas CL6.three CL6.round
 ‘three round papayas’

This pattern falls out from the assumption that the same co-phonology associated with the *Dem* head in Zanzibar Makonde above is instead associated with

⁸More precisely: Sande et al. (2020) assume that there is a preference for parsing entire *spell-out domains* to prosodic constituents; for them, a spell-out domain consists of a phase head and its complement (pp.1220-2).

the category-defining *a* head on adjectives in Coastal Shimakonde. For more complex patterns that a full-fledged analysis of Coastal Shimakonde would need to contend with, see Liphola (2001), Rolle & Hyman (2019), and Branán (2023).

As a point of theory comparison, it is worth noting that Branán’s (2023) analysis of Coastal Shimakonde depends on syntactic assumptions which are even less plausible than those made for Zanzibar Makonde (section 3.3). In particular, Branán assumes that adjectives are direct complements to nouns, so that nouns will c-command adjectives and thus be forced to phrase into a ϕ together. This is at odds with all standard analyses of adjective modification (e.g. Leu 2015: Ch. 3.4). It also appears to be factually incorrect: multiple adjectives can co-occur in Coastal Shimakonde (45), as expected if they are adjuncts instead of selected complements.⁹

- (45) (lí-ndándóshá lí-kúméné lí-ngúlúguuma) $_{\phi}$ (NOUN [ADJ] [ADJ]) $_{\phi}$
 CL5-ghost CL5-big CL5-round
 ‘big round ghost’

(Liphola 2001: 412-3)

The Coastal Shimakonde data discussed in Liphola (2001), Makanjila (2019), Rolle & Hyman (2019), and Branán (2023) is complex, and there are significant challenges for any analysis.¹⁰ But the syntactic contortions required in the Command Theory analysis suggest that this approach is on the wrong track.

5.2 A CxP analysis of prosodic smothering in Macedonian

The CxP analysis of prosodic smothering in Macedonian proceeds along similar lines. I propose that the exceptional prosody of negation and *wh*-words reflects

⁹Branán’s (2023) analysis of Coastal Shimakonde also requires the assumption that NumP is sometimes a left adjunct to NP, and sometimes a right adjunct, despite invariant NOUN NUM order. Further, the raising of N⁰ to Num⁰ must only occur when an adjective is present. Branán (2023: 121-2) directly addresses these two points, but not the point raised above about the stacking of adjectives in the noun phrase.

Some of Branán’s (2023) syntactic commitments reflect separate considerations about word-order typology. It would also be possible to assume a more streamlined analysis in which adjectives are X⁰ heads which adjoin high in the NP spine, on par with the analysis of demonstrative smothering. This proposal would be subject to essentially the same criticisms raised here for in Zanzibar Makonde.

¹⁰One of these challenges is the analysis of ϕ -phrasing in coordinate structures. To analyze these patterns, Branán (2023: 121-6) invokes a high-ranking constraint against ϕ phrases containing more than two children. I believe this makes the incorrect prediction that [NOUN NUM ADJ] strings should be parsed *(NOUN NUM) $_{\phi}$ (ADJ) $_{\phi}$ rather than the attested (NOUN NUM ADJ) $_{\phi}$ (44b).

Of course, I do not myself offer an analysis of the coordination facts here. As such, this criticism should be taken with a large grain of salt.

a morpheme-specific STRONGSTART(ϕ) effect (46).

(46) STRONGSTART(ϕ)

Assign one violation for every ϕ which does not begin with a phonological word ω .

(Werle 2009, Selkirk 2011, Elfner 2012, Bennett et al. 2016)

STRONGSTART(ϕ) is normally low-ranked in Macedonian, which explains the permissibility of the default phrasing (CLITIC [VERB] _{ω}) _{ϕ} (see also Harizanov 2014).

However, in constructions with negation or a *wh*-word, STRONGSTART(ϕ) is promoted to undominated status. This accounts for the leftward extension of the ω associated with the verb in these constructions.

(47) Prosodic smothering in Macedonian

	[NEG/WH clitics verb] _{CP}	STRONGSTART	DEFAULT ω
a.	([NEG/WH CLITICS VERB] _{ω}) _{ϕ}		*
b.	([NEG/WH CLITICS [VERB] _{ω}) _{ϕ}	*! W	L

The scope of STRONGSTART(ϕ) effects should be the first phase containing negation or the *wh*-word, which I take to be the containing CP.

Some additional candidates must again be excluded. Following Bennett et al. (2018), I assume that ALIGN-R(ω , LEX) (48) is high-ranking in Macedonian.¹¹

(48) ALIGN-R(ω , LEX)

Assign one violation for every prosodic word with a right edge that does not align with the right edge of a lexical word.

(e.g. Selkirk 1995, Werle 2009)

ALIGN-R(ω , LEX) eliminates candidates which attempt to satisfy STRONGSTART by parsing clitics into a prosodic word of their own (49). Effectively, prosodic words are only licensed when they contain a lexical word at their right edge.

(49) Prosodic smothering in Macedonian

	[NEG/WH clitics verb] _{CP}	STRSTART	AL-R(ω , LEX)	DEFAULT ω
a.	([NEG/WH CLITICS VERB] _{ω}) _{ϕ}			*
b.	([NEG/WH CLITICS] _{ω} [VERB] _{ω}) _{ϕ}		*! W	L

¹¹ALIGN-R(ω , LEX) could be replaced with any constraint that effectively minimizes the number of prosodic words overall, e.g. * ω . In any event, *something* must enforce the typological observation that function words do not normally sponsor prosodic words of their own; ALIGN-R(ω , LEX) does that work here.

Interestingly, prosodic ‘smothering’ is not really a coherent phenomenon in the CxP analyses above. Certain morphemes trigger co-phonologies, and these co-phonologies sometimes trigger unusual prosodic effects, like prosodic reparsing. But from the perspective of CxP, there is nothing ‘deep’ about this observation: prosodic smothering is just one of the many expected outcomes of allowing item-specific co-grammars.

5.3 CxP as a general approach to prosodic smothering

Branan (2023) raises several important critiques of lexical subcategorization as a tool for the analysis of prosodic smothering effects. I believe that the CxP analyses presented above go at least some way toward addressing those issues.

First, the CxP analyses developed here are arguably more restrictive than the subcategorization frames used in previous work on prosodic smothering. For example, Rolle & Hyman (2019) propose the frame $(\text{NOUN}_{\text{HD}} \dots \boxed{\text{DEM}})_{\phi}$ for Zanzibar Makonde. This subcategorization frame is expressively powerful: in particular, it is non-local, as it refers to non-adjacent elements which are potentially separated by an unbounded distance.

In contrast, the constraints used above involve only local relations between grammatical units. Furthermore, these constraints have all been proposed on independent grounds, on the basis of prosodic patterning in other languages.

This highlights an important property of co-phonologies: all morpheme- or construction-specific grammars must correspond to possible *default* patterns in human language. That requirement also increases the restrictiveness of the CxP framework relative to lexical subcategorization.

Second, Branan (2023) notes that prosodic smothering often involves entire natural classes of morphemes. This is implemented in CxP by associating co-phonologies with abstract functional heads (similar to the association of subcategorization with abstract features in Bennett et al. 2018). An additional advantage of CxP is that it has the flexibility to associate co-phonologies with individual morphemes, as well as entire grammatical categories.

Command Theory struggles with item-specific and/or idiosyncratic behavior, because it is not designed (or intended!) to deal with true exceptions. In its barest form, Command Theory has no choice but to yoke special prosody to special syntax. This can force the analyst to make implausible syntactic commitments. But exceptionality is in the bones of CxP, which frees the theory from making deeper syntactic claims when confronted with exceptional prosodic patterns.

To be clear, I am neither advocating against Command Theory, nor in favor of CxP as such. Command Theory may be an appealing general theory of the

syntax-prosody interface (e.g. Kalivoda 2018); I take no stance on this here. Similarly, CxP has been critiqued on a number of grounds, and it is by no means clear that it represents the best theory of item-specific phonological effects, or prosodification (e.g. Cheng & Downing 2016, Zimmermann 2023, 2025).

I *do* want to commit myself to two claims. First, I have argued that prosodic smothering in Makonde and Macedonian is truly idiosyncratic, and not reducible to deeper grammatical facts. Second, I believe there is promise in localizing that idiosyncrasy in item-specific, phonological sub-grammars of some type (see also Hsu 2019). But regardless of the specific implementation, prosodic smothering requires *some* sort of lexical specification.

It remains something of a puzzle why smothering effects appear, in general, to be specified at the level of entire lexical categories. I speculate that this is largely an artifact of grammatical learning. Language learners tend to generalize aggressively (e.g. Yang 2016, Linzen & Gallagher 2017, and references there). Aggressive generalization will naturally lead to patterns operating over natural classes, rather than individual items.

Along similar lines, items with the same special prosody may trace that prosody back to a shared diachronic source — the explanation for category-level behavior would thus be historical, not synchronic (see e.g. Manus 2010: 170). For example, the unusual prosody of *ne* and *wh*-expressions in Macedonian may trace back to intonational patterns associated with focus or other information-structural factors (see e.g. Harizanov 2011).

6 Conclusion

It is easy to interpret item-specific behavior as peripheral or marginal when trying to understand how phonological systems work. But I hope to have shown that the investigation of item- and category-specific phonology can shed light on deeper architectural questions, and on the role of explanation vs. stipulation in phonological theory.

I have argued that some prosodic patterns are irreducibly idiosyncratic and item-specific. It is possible that I am wrong on this point. But for the moment at least, deeper synchronic explanations for the patterns discussed here seem elusive.

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