The Prosody of the Extended VP

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Abstract: This paper studies the syntax of VSO and VOS clauses in Mandar (Austronesian) by leveraging the prosodic phonology. Mandar allows free alternations between VSO and VOS orders, but phonotactic diagnostics reveal that VSO strings are optimally parsed into tight prosodic constituents where VOS strings are not. These results converge with syntactic diagnostics to show that VSO orders arise from leftward movement of the verb while VOS orders arise from rightward Ā-scrambling of the S (Polinsky & Potsdam, 2021). Targeted manipulations reveal that phonological phrases can be built around substrings of arguments in the VSO string, providing evidence for internal syntactic constituency in the extended VP (Larson, 1988). The prosodic parse of the final S in VOS strings, finally, shows that Ā-scrambling in Mandar places its targets in adjunct positions (Chomsky, 1993), setting up an account of scrambling that is grounded in the principle of Greed (Lasnik, 1995).

Keywords:
Prosody, VP-Structure, Verb-Initiality, Scrambling, Sulawesi

1 Introduction

The internal structure of the verb phrase has become a central domain of syntactic inquiry since the initial discovery of functional structure therein (Larson, 1988). Investigations in this space typically begin from a question of constituency: how are the verb and its arguments hierarchically arranged in extended VP? The answers to this question have since been brought to bear on fundamental questions in syntactic theory, surrounding the mechanisms that give rise to linear order (Sproat, 1985; McCloskey, 1991; Massam, 2001a; Otsuka, 2005), the constraints that govern binding and coreference (Ernst, 1994; Bruening, 2014), the derivational course of structure building (Phillips, 2003), and ultimately the theories of selection, adjunction, and reprojection (Landau, 2007a; Janke & Neeleman, 2012). The larger importance of these results, in turn, reinforces the need to refine the analytical toolkit that allows us to study the internal syntax of the extended VP.

This paper lays the foundations to study the syntax of the extended VP in a new way. On an empirical level, its focus will fall on the syntax of VSO-VOS alternations in Mandar, an Austronesian language of Indonesia. Broadly speaking, VSO clauses are often assumed to show a right-branching or *descending* syntax, in which the V c-commands the following S and O (1a). But VOS strings raise a question of constituency: do these show a descending syntax as well, with the V c-commanding the following S (1b), or do they show a left-branching or *ascending* syntax, where the V is c-commanded by the S to its right (1c)?

(1) *The Syntax of VSO and VOS*

a. VSO: Descending Syntax: [$_{voiceP}$ V [$_{vP}$ S [$_{VP}$ _ O]]]

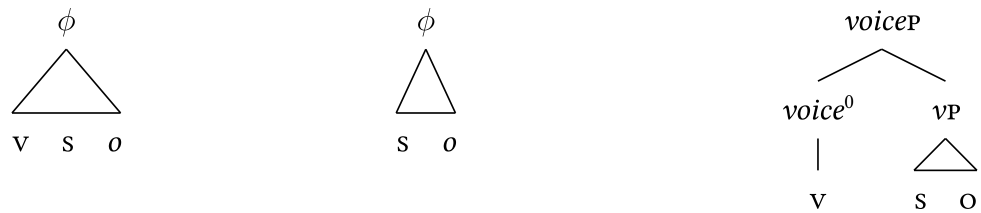
b. VOS: Descending Syntax: [$_{voiceP}$ V [$_{FP}$ O [$_{vP}$ S [$_{VP}$ _ _]]]]

c. VOS: Ascending Syntax: [$_{FP}$ [$_{voiceP}$ V [$_{vP}$ _ [$_{VP}$ _ O]]] S]

To study the syntax of Mandar VSO and VOS strings, this paper will turn to the prosody. The theory of the Prosodic Hierarchy holds that phonological strings are organized into hierarchical constituent structures that correspond in a systematic but imperfect way to the syntax that lies beneath them (Selkirk, 1984, 1986; Nespor & Vogel, 1986). The high-level constituents in this structure can be detected through phonotactic restrictions in the phrasal phonology, and this fact will allow us to build a properly phonological case for the syntactic constituency of the postverbal space. Focusing on the optimal prosody that emerges when well-planned clauses are produced under broad focus, we can detect two facts of prosodic constituency in Mandar clauses of the order VSO. First, the string VSO typically forms a phrase-level prosodic constituent (2a). Second, under the right circumstances, the substring SO does as well (2b). These results lays the foundation for a particular syntactic analysis in Mandar: one on which the VSO string forms a constituent that is built by raising of the V from a projection that contains the S and O (2c).

(2) *Prosodic Evidence for Functional Structure*

a. *VSO: Prosody* b. *SO: Prosody* c. *VSO: Syntax*



This joint investigation of syntax and prosody then leads to a separate conclusion about Mandar strings of the order VOS:, these must be derived by a process of rightward Ā-scrambling which shifts the S to a position above the VO string (3a). The specific prosody of VOS clauses, shown in (3b), then leads us to a final syntactic result: the relevant process of scrambling must place its targets in adjunct positions. These results open up a properly phonological case that Ā-scrambling must result in adjunction (Chomsky, 1993)—and thus suggest that it cannot be driven by the logic of Attract (Lasnik, 1995; Bošković, 1995).

(3) *Postverbal Constituency in Mandar*

a. *The Syntax: VOS* b. *The Prosody: VOS*

The remainder of the paper is structured as follows. Section 2 provides background information on Mandar and the methodology of elicitation, lays out the facts of word order, introduces the theory of the prosodic hierarchy, and sets up diagnostics for the maximal phonological phrase. Section 3 presents the prosodic organization of VSO strings and connects those with syntactic diagnostics to build a theory of clause structure. Section

4 lays out a strategy to create mismatches between syntactic and prosodic constituency and then leverages this result to detect functional structure in the *voice*P. Section 5 turns to the prosodic organization of VOS clauses and works through the prosody of adjunction to build a rightward Ā-scrambling analysis. Section 6 concludes by drawing connections to our emerging understanding of the phonologization of selection.

2 Background

Mandar is an Austronesian language that is spoken by 400,000 people in West Sulawesi, Indonesia (Grimes & Grimes, 1987). It is a member of the South Sulawesi subfamily and has been the subject of an Indonesian-language grammar (Pelenkahu *et al.*, 1983), a description of adverbs (Sikki *et al.*, 1987), a compilation of traditional poetry (Muthalib & Sangi, 1991), a conversational handbook (Friberg & Jerniati, 2000), and many smaller works by the Language Office of South Sulawesi (e.g., Jerniati 2005, 2017). This paper will focus on the standard variety, spoken on the coast between the cities of Polewali and Majene.[1]

Mandar is a predicate-initial language that shows flexible word order in the postverbal domain. The language allows for *pro*-drop and shows no morphological case-marking. Transitive verbs host ergative agreement with the external argument, and every finite clause contains a second-position clitic that spells out agreement with the absolutive argument. All of these features are shown in the Mandar clause in example (**??**) below.

(4) *The Shape of a Mandar Clause*

Na-solangang	a'	yau	iKaco'	mua'	lamba	a'	___	manini.
3ERG-accompany	1ABS	1SG	NAME	if	go	1ABS	*pro*	later

'Kacho' will accompany me if I go later.'

This investigation of Mandar will focus on the phrasal phonology of the language, and more specifically, on phonotactic restrictions that emerge at the edges of particular prosodic domains. These processes interact in crisp and categorical ways with each other and with the system of stress, they are easy to hear in regular speech, and they are often

[1]GLOSSING: ABS: absolutive, ANTIP: antipassive, APPL: applicative, ERG: ergative, COM: comitative; CAUS: causative; GEN: genitive; 1SG: first-person singular. ORTHOGRAPHY: <c>: /t͡ʃ/, <'>: /ʔ/, <ng>: /ŋ/. Mandar can also be compared with the other languages of the South Sulawesi subfamily, whose syntax is described by, a.m.o., Friberg 1991, 1996; Strømme 1994; Matti 1994; Valkama 1995a,b; Jukes 2006; Lee 2008; Kaufman 2008; Laskowske 2016; Finer 1994, 1997, 1998, 1999; Béjar 1999, and Finer & Basri 2020

reflected in the popular orthography. Nevertheless, they are difficult to study for two reasons. First, they are sensitive to the phonology of focus and to many non-phonological factors that can derail prosodic phrasing, like hesitations in planning. Second, they are often deemed substandard in untrained elicitation contexts by speakers who wish to emphasize the ways that words are pronounced in isolation. In my experience, then, these processes can only be studied in working relationships that are relatively deep, in which consultants have internalized the goals of linguistic investigation, accepted the existence of phrasal phonology as a real component of the grammar, become accustomed to producing naturalistic broad-focus prosody in elicitation contexts, and ultimately learned to give judgments about the optimal application of rules in the phrasal phonology.

The judgments in this study have thus been gathered over two years of targeted work on prosodic phonology with one speaker of Mandar, Jupri Talib, with whom I have been working for five years overall. The processes under investigation were first noted through natural observation, and their distribution was documented slowly, as the influence of focus was sorted out, as Jupri was taught the essentials of Prosodic Hierarchy Theory, and as a strategy was developed to study prosody through pairwise comparison. To collect each judgment, Jupri was given a pair of written sentences that differed in the application of a phonological rule. Once the sentences were established as pre-phonologically acceptable, he was then walked through a context in which the sentences could be uttered under broad focus. After that, he was asked to produce each sentence several times. Once the sentences had become familiar, Jupri was then asked whether one version could be identified as acceptable and comparatively "more normal" (Indonesian: *lebih biasa*) in contexts that did not place narrow focus on any constituent (*konteks biasa*). If this was possible, he was then asked to rate the second example as "also possible with regular prosody" (*bisa juga dengan nada biasa*), "only possible with narrow focus" (*hanya dengan penekanan khusus*), or "incorrect" (*salah*). In the summer of 2022, this strategy was repeated with several item sets to test every generalization in this paper; in the summer of 2023 it was repeated at a similar level of scrutiny with different examples and yielded identical results. The primary language of contact was Indonesian; Mandar was used often as well.[2]

[2]This discussion will not engage with the phonology of focus, which consistently derails the regular mapping from syntax to prosody in Mandar. The core generalizations about contrastive focus in Mandar are: (*i*) Contrastive foci do not occupy a unique linear position (though two kinds of focus-movement exist); (*ii*) Maximal phonological phrase boundaries are inserted after contrastive foci, wherever they fall, and (*iii*) In the space before contrastive foci, all expected maximal phonological phrase boundaries are erased

At the end of the research process, several recordings were made with Jupri; these are presented in the appendix. A subset of the data was then rechecked with Hairuddin (Universitas Hasanuddin) and Sitti Sapia (Universitas Sulawesi Barat), two native-speaker phonologists; both offered judgments that were consistent with Jupri's. Based on these results and my own experience listening to the language, I believe that the following description of Jupri's idiolect is a replicable representation of the standard variety of Mandar.

2.1 The Ordering Alternation

The following diagram shows the linear position of the Mandar verb: across all clause types, it follows complementizers, negation, and auxiliaries, precedes VP-adjuncts, and precedes arguments that are not moved to the left by topicalization or WH-movement.

(5) *The Shape of the Mandar Clause*

C > NEG > AUX > V > ARGUMENTS & ADJUNCTS

The following example shows this order: the V *pole* "come" appears after the negator and an auxiliary, and it precedes the VP-adjunct *dini* "here" and the subject *Kacho'* (a name with the proprial article *i*). The same order emerges in the following non-finite clause, where the predicate *karambo* "far" precedes the subject *boyanna* "his house."[3]

(6) *The Position of the Verb*

Ndammi	rua	pole	dini	[$_S$	iKaco'	]	tappa-na	karambo	boyan-na.
not.3ABS	have	come	here		NAME		since-3GEN	far	house-3GEN

'Kacho' hasn't come here since his house became far away.' Sikki *et al.* 1987, 316

I will argue below that there is a consistent unmarked order of postverbal arguments in Mandar: EXTERNAL ARGUMENT > INTERNAL ARGUMENT > APPLIED ARGUMENT. I will refer to the external argument as the S, the internal argument as the O, and the applied argument as the D, using terminology that avoids reference to Case. I will also represent VP-final adjuncts with the letter X. In these terms, the order in example (7) is VSODX.

(so that contrastive foci are final in the first maximal phonological phrase of the ι). In the space after contrastive foci, all expected maximal phonological phrase boundaries appear undisturbed.

[3] This paper will set aside the syntax of non-verbal predication, which differs from verbal predication in both its syntax and prosody. The core asymmetry in the prosody is the following: verbal predicates are typically parsed into maximal ϕs with following arguments, but non-verbal predicates are never parsed into larger ϕs with following subjects in this way. This important divide is left to future work.

(7) *The Order VSOD*

Na-alli-ang i [S iKaco'] [O mesa bunga] [D iCicci'] [X dio].
3ERG-buy-APPL 3ABS NAME one flower NAME there

'Kacho' bought one flower for Chichi' there.'

In the clause types under investigation below, the order VSOD will always be possible. This order can be seen in ditransitive clauses when the O is indefinite, like example (7) above, as well as ditransitive clauses where the O is definite, like example (8a) below. In the same vein, the related order VSO will be always possible in clauses that lack a D. Example (8b) illustrates this second order in a clause with a transitive V, where the O is both definite and absolutive (the absolutive argument must always be definite in Mandar).

(8) *VSOD Order: Insensitive to Object Definiteness and Voice*

a. Na-alli-ang i [S iKaco'] [O itim bunga] [D iCicci'].
3ERG-buy-APPL 3ABS NAME that flower NAME
'Kacho' bought that flower for Chichi'.'

b. Na-alli i [S iKaco'] [O itim bunga].
3ERG-buy 3ABS NAME that flower
'Kacho' bought that flower.'

Mandar also allows the order VSOD in a construction that is called the "Agent Voice" in many Western Austronesian languages (Kroeger 1993a). In Mandar, this voice is usually formed by replacing the ergative prefixes on the V with the affix *maŋ-*. This voice has three properties: it requires the S to be absolutive; it requires the O and D to be indefinite; and it allows the O and D to be implicit. I will follow the ergative tradition of analysis of Western Austronesian syntax and refer to this voice as an antipassive (De Guzman, 1988; Aldridge, 2004; Paul & Travis, 2006). The following examples show clauses where the verb takes this voice: the first shows the order VSOX and the second the order VSODX.

(9) *VSOD Order: The Antipassive (Agent Voice)*

a. Mam-baca i [S iKaco'] [O buku] dio.
ANTIP-read 3ABS NAME book there
'Kacho' is reading a book there.'

b. Mam-be-ngang i [S iKaco'] [O buku] [D passikola] dio.
ANTIP-give-APPL 3ABS NAME book schoolkid there
'Kacho' is giving books to schoolchildren there.'

The order VSOD is the only order that is possible when arguments appear in the space between a V and a following locative or temporal adjunct. This restriction holds no matter the definiteness of the object or the voice of the verb, and the following examples illustrate: strings of the shape V-NP-NP-NP-X must always be interpreted as VSODX both when the ditransitive (10a) and when it is antipassive (10b).

(10) *V-NP-NP-NP-X → Strict VSODX*

a.

Na-alli-ang	i	[S	iKaco’	]	[O	iGary	]	[D	iCicci’	] dio.
3ERG-buy-APPL	3ABS		NAME			NAME			NAME	there

ONLY VSODX: ‘Kacho’ bought Gary (a local cat name) for Chichi’ there.’

b.

Mak-kiring-ang	i	[S	passikola	]	[O	dottor	]	[D	guru’	] dio.
ANTIP-send-APPL	3ABS		student			doctor			teacher	there

ONLY VSODX: ‘The student sent a doctor to a teacher there.’

Despite this restriction, it is always possible for definite arguments to surface in positions that follow locative and temporal adjuncts to the VP. The following examples illustrate, building from the ditransitive VSODX clause in (10a). In Mandar, the S must always be definite, and as a result, it can always surface in positions that follow locative and temporal adjuncts to the VP (11a). When the O is definite, it can freely take positions of the same type (11b). But when the O is indefinite, it cannot surface in such a position (11c).

(11) *Definite Arguments → Optionally Follow Adjuncts to the VP*

a.

Na-alli-ang	i	[O	iGary	]	[D	iCicci’	]	dio	[S	iKaco’	].
3ERG-buy-APPL	3ABS		NAME			NAME		there		NAME	

‘Kacho’ bought Gary for Chichi’ there.’

b.

Na-alli-ang	i	[S	iKaco’	]	[D	iCicci’	]	dio	[O	iGary’	].
3ERG-buy-APPL	3ABS		NAME			NAME		there		NAME	

‘Kacho’ bought Gary for Chichi’ there.’

c.

*Na-alli-ang	i	[S	iKaco’	]	[D	iCicci’	]	dio	[O	mesa	posa	].
3ERG-buy-APPL	3ABS		NAME			NAME		there		one	cat	

‘Kacho’ bought one cat for Chichi’ there.’

In light of this possibility, the word order of the language is often ambiguous in clauses that do not contain locative and temporal adjuncts to the VP. The following example shows a first corner of this system: the order VSO can alternate freely with the order VOS, and as a result, V-NP-NP strings are always ambiguous between VSO and VOS interpretations when the phonology is not held constant.

(12) *Surface Ambiguity in Written V-NP-NP Strings*

Ma'-itai	i	[$_{??}$ dottor]	[$_{??}$ guru	].
ANTIP-seek	3ABS	doctor	teacher	

VSO: 'The doctor is looking for a teacher.'
VOS: 'The teacher is looking for a doctor.'

This flexibility gives rise to even further ambiguity in strings of the shape V-NP-NP-NP. In ditransitive clauses of this shape, the language allows six interpretations when the phonology is not fixed: VSOD, VSDO, VOSD, VDSO, VODS, or VDOS.

(13) *More Surface Ambiguity*

a.

Na-alli-ang	i	[$_{??}$ iKaco']	[$_{??}$ iGary]	[$_{??}$ iCicci'].
3ERG-buy-APPL	3ABS	NAME	NAME	NAME

b. VSOD: 'Kacho' bought Gary for Chichi'.'
VSDO: 'Kacho' bought Chichi' for Gary.'
VOSD: 'Gary bought Kacho' for Chichi'.'
VDSO: 'Gary bought Chichi' for Kacho'.'
VODS: 'Chichi' bought Kacho' for Gary.'
VDOS: 'Chichi' bought Gary for Kacho'.'

These ordering alternations are not correlated with obvious pragmatic effects, and in this way, they contrast with two separate processes in the language. The first of these is extraposition, which places given arguments in a right-peripheral position where they form their own intonational phrases (14a) (*cf.* Antinucci & Cinque 1977; Aissen 1992). The second is a process of focus movement that draws contrastive foci to the right edge of the clause. This process forces its targets to receive an exceptional form of word-final stress, marked with a grave accent in (14b). We will set both of these operations aside below.

(14) *Extraposition and Rightward Focus-Movement*

a.

Na-alli-ang	i	[$_{O}$ iGary]	[$_{D}$ iCicci']	dio,	[$_{S}$ iKaco'].
3ERG-buy-APPL	3ABS	NAME	NAME	there	NAME

'He bought Gary for Chichi' there, Kacho'.'

b.

Na-alli-ang	i	[$_{O}$ iGary]	[$_{D}$ iCicci']	dio	[$_{S}$ iKacò'].
3ERG-buy-APPL	3ABS	NAME	NAME	there	NAME

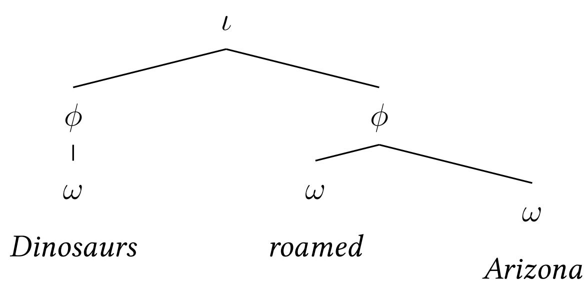
'Gary was bought for Chichi' there by KACHO' (..., not Ali).'

2.2 Phonological Constituency Tests

To study the syntax of these alternations in order, we will turn to the constituency of the phonology. At the metrical level, segments are organized into syllables and syllables are parsed into feet, yielding a hierarchical constituent structure that is built from abstract phonological constituents (Liberman & Prince, 1977). The theory of the Prosodic Hierarchy (Selkirk, 1978, 1984, 1986; Nespor & Vogel, 1986) holds that the same type of hierarchical phonological constituent structure extends above this level: feet are organized into prosodic words and prosodic words are organized into phonological phrases.

Following Itô & Mester 2007, I will assume that this suprametrical prosodic structure is built from three universal phonological categories: the prosodic word (ω), phonological phrase (ϕ), and intonational phrase (ι). An example of this structure is shown in diagram (15), which reflects the parse of the clause *Dinosaurs roamed Arizona.* There, the subject, verb, and object each form ωs and the verb and object are parsed into a single ϕ.

(15) *Phonological Organization above the Word*

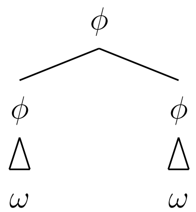


As we investigate the prosodic structure of the postverbal string in Mandar, we will build on three results that are now widely accepted in the mainstream literature on prosody. The first is the understanding that the relationship between syntax and prosody is indirect (the Indirect Reference Hypothesis: Nespor & Vogel 1986). The constituents that provide the domains for phonological events and phonotactic restrictions must be phonological in nature, equated with constituents like the ω, ϕ, and ι rather than constituents of the syntax. In the same vein, these constituents are organized into a hierarchical structure that mirrors—but does not exactly duplicate—the constituent structure of the syntax.

The second foundational hypothesis surrounds *recursion*: prosodic constituents can dominate elements of the same type on the prosodic hierarchy (16). This result has been established decisively at the level of the ϕ, which shows patterns of embedding that cannot be captured by stipulating additional strictly-layered constituents (Ladd 1986; Wagner 2005, 2010; Itô & Mester 2007, 2012, 2013; Elfner 2012, 2015; see also Bennett 2018; Itô &

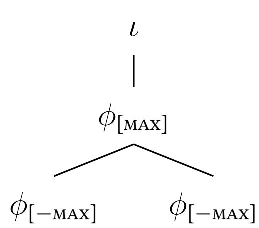
Mester 1992; Martínez-Paricio & Kager 2015). These results have led to the generalized adoption of Weak Layering Theory (Itô & Mester, 1992), which holds that prosodic structure allows recursion, unbalanced sisterhood (ωs can be sisters to feet), and level-skipping succession (ωs can directly dominate syllables, so long as they have heads).

(16) *Prosodic Recursion*



Our final guiding hypothesis is the understanding that the phonology can recognize and exploit relational distinctions between phonological constituents that are recursively nested (Itô & Mester, 2012, 2013; Elfner, 2012, 2015; Elordieta, 2015). More specifically, I will assume that phonotactic restrictions and prosodic events can be keyed to the edges of ϕs that are directly dominated by an ι and not nested inside any higher instances of the category ϕ, as shown in diagram (17). In the relational terms of Itô & Mester 2012, 2013, these are maximal ϕs. I will denote the maximal ϕ as the $\phi_{[\text{MAX}]}$ below.

(17) *The Maximal* ϕ



2.2.1 The Building Blocks

We can now begin with the building blocks of prosodic organization. At the metrical level in Mandar, a single instance of stress falls on every constituent that corresponds to a head at the base of an extended projection (Grimshaw, 1991): N^0, V^0, ADJ^0, and ADV^0 (including many adverbs that surface in second-position). It is absent from heads that sit higher on the functional spine, such as P^0, DEM^0, C^0. This stress surfaces once per word and falls on the penultimate syllable (Pelenkahu *et al.*, 1983), and its most salient phonetic correlate is a low tone (co-occurring with increases in amplitude and length). The following examples shows its distribution with the format that I will use below: the top line shows an abstract surface form of the utterance, and the second shows its underlying form.[4]

(18) *Penultimate Stress*

óro	oróaŋ	oroánna
oro	oro-aŋ	oro-aŋ-na
sit	sit-NOMINALIZER	seat-NOMINALIZER-3GEN

'to sit, a seat, her seat'

I propose that this stress marks the right edge of the prosodic word (ω). The distribution of stress thus suggests that N^0, V^0, ADJ^0, and ADV^0 always form ωs in Mandar, as they do elsewhere (McCarthy & Prince, 1993; Selkirk, 1996, 2009; Truckenbrodt, 1999).

Above the level of the ω, there is another prosodic constituent that we can easily detect. Most types of XPs in Mandar are followed by a single final high hone (H). The following example shows its distribution: it appears after sequences of X^0s and X^0-level adjuncts, like ADV-V and N-ADJ (19). I will assume that this H falls at the right edge of a prosodic constituent above the ω: the minimal phonological phrase, or minimal ϕ.

(19) *The Phonological Phrase*

máne	wémme^{H}	i	iti	ãnd͡ʒóro	káiaŋ^{H}	ó^{H}
mane	bemme	i	itiŋ	and͡ʒoro	káiaŋ^{H}	ó^{H}
just	fall	3ABS	that	coconut	big	there

'That big coconut there just fell.

2.2.2 The Maximal Phonological Phrase

We can see that minimal ϕs are organized into an even higher level of prosodic constituency by leveraging specific restrictions in the phrasal phonology. The following section presents four. First, Mandar has a process of Coalescence that reduces */ai ae/* to *[e]* and */au ao* / to *[o].* The following example shows how this process operates in three-word VSX clauses. When the verb ends in a vowel sequence in this context, it must show coalescence under default prosody (*/naitai/* "seek" $\rightarrow$ [*néte*]). But when the S ends in a final vowel sequence in this context, it cannot show coalescence under default prosody (*/balao/* "mouse" $\nrightarrow$ [*wálo*]). The same restriction holds over the X (*/di baŋgae/* $\nrightarrow$ [*di wáŋge*]).

[4]Regular secondary stress has not been described in other languages of the subfamily: Mithun & Basri 1986 do not mention secondary stress in Selayarese, while Friberg & Friberg 1991 and Jukes 2006 argue that it is absent in Konjo and Makassarese. Pending further study, I assume that it is absent in Mandar as well.

(20) *Coalescence: The First Asymmetry*

nét**e**$^{\text{H}}$	i	wal**áo**$^{\text{H}}$	di waŋg**áe**$^{\text{H}}$
na-itai	i	balao	di baŋgae
3ERG-look for	3ABS	mouse	in PLACE

'The mouse looked for it in Banggae.'

Second, Mandar has a process of Gliding that shows the same distribution. This process reduces prevocalic */i u/* to *[j w]*. In three-word clauses of the shape VSX, this process applies at the right edge of the V but it does not apply at the right edges of the S or X. The following example illustrates this pattern: the V */napapia/* "make" must reduce to [*napápja*], but the S */imaria/* "NAME" cannot reduce to [*imárja*] (21). The same restriction extends to the right edge of the final X (*/di lamasariaŋ/*↛ [*di lamasárjaŋ*]).

(21) *Gliding: A Second Asymmetry*

napáp**ja**$^{\text{H}}$	i	imar**ía**$^{\text{H}}$	di lamasar**ía**ŋ$^{\text{H}}$
na-papia	i	imaria	di lamasariaŋ
3ERG-make	3ABS	NAME	in PLACE

'Maria made it in Lamasariang.'

Third, the same restrictions emerge in a process of Glottal Coda Deletion. In Mandar, intervocalic /ʔ/ is always syllabified as a coda and intervocalic /ŋ/ is syllabified as a coda word-finally (on the glottal status of coda /ŋ/: De Lacy 2006). The following example shows how these segments are realized intervocalically in a three-word VSX clause. At the right edge of the V, a process of intervocalic Glottal Coda Deletion must apply, reducing */nakaraʔus/* "scratch" to [*nakáros*]. But at the right edge of the S, the same process is blocked: thus */iripaʔi/* "NAME" cannot reduce to [*irípe*] (22). The same restriction extends to the right edge of the X (*/di rebataʔa/* ↛ [*di rewáta*]).

(22) *Glottal Coda Deletion: A Third Asymmetry*

nakár**os**$^{\text{H}}$	i	irip**áʔi**$^{\text{H}}$	di rewat**áʔa**$^{\text{H}}$
na-karaʔus	i	iripaʔi	di rebataʔa
3ERG-scratch	3ABS	NAME	in PLACE

'Ripa'i scratched it in Rebata'a.'

Fourth, the same patterns emerge around a process of Voiced Obstruent Lenition. At the junctures that require Coalescence, Gliding, and Glottal Coda Deletion at the right edge of one constituent, intervocalic */b d d͡ʒ g/* must lenite to *[w ɹ j ɣ]* at the left edge of the next. The following example illustrates in a three-word VSX clause. Under default prosody, the right edge of the V must show Coalescence, Gliding, and Glottal Coda Deletion in this context. At the same time, the left edge of the S must show Voiced Obstruent Lenition when the preceding segment is a vowel. As a result, the S /*do guru*/ "that teacher" is realized as [*ɹo ɣúru*] (23). As Coalescence, Gliding, and Glottal Coda Deletion are blocked at the right edge of the S, Voiced Obstruent Lenition is also blocked at the left edge of the X (/*di genaʔ*/ "earlier" ↛ [*ɹi ɣénaʔ*]).

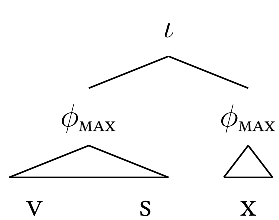
(23) *Voiced Obstruent Lenition: A Fourth Asymmetry*

nawát͡ʃa$^{\text{H}}$	i	**ɹ**o	ɣúru$^{\text{H}}$	**d**i	ɣénaʔ$^{\text{H}}$	ó$^{\text{H}}$
na-bat͡ʃa	i	do	guru	di	genaʔ	o
3ERG-read	3ABS	that	teacher	in	earlier	there

'That teacher there read it earlier.'

These restrictions suggest the pattern of constituency in diagram (24): the VS string forms a domain that allows Coalescence, Gliding, Glottal Coda Deletion, and Voiced Obstruent Lenition internally. The right edge of this constituent blocks the first three processes, banning final Coalescence, Gliding, and Glottal Coda Deletion in a two-syllable window at the right edges of the S and X. The left edge of this constituent blocks the last process, banning initial Voiced Obstruent Lenition in the X. As these restrictions cannot be keyed to syntactic constituents, we must identify the relevant domain as a prosodic constituent that falls between the minimal ϕ and the intonational phrase (ι). I propose that this constituent is the maximal phonological phrase, or $\phi_{[\text{MAX}]}$. On this analysis, the minimal ϕs that contain the V and the S are parsed into a higher ϕ, yielding a pattern of recursive prosodic constituency. This higher ϕ is directly dominated by the ι, and as a result, it acquires the relational property of maximality, as shown in tree (24).

(24) *The Parse of VSX*



On this analysis, we can understand the restrictions on Voiced Obstruent Lenition, Coalescence, Gliding, and Glottal Coda Deletion to provide diagnostics for the left and right edges of the maximal ϕ. The following table integrates this result with our earlier observations on stress (marking the ω) and the H tone (marking the minimal ϕ) to summarize the phonological diagnostics that will allow us to study prosodic constituency below.[5]

(25) *Prosodic Constituents and Diagnostics*

CONSTITUENT	LEFT EDGE	RIGHT EDGE
ω		Stress
ϕ		H tone
$\phi_{[\text{MAX}]}$	✗Voiced Obstruent Lenition	✗Coalescence ✗Gliding ✗Glottal Coda Deletion
ι		✗Nasal Assimilation

3 The Structure of the VSOD String

The suprametrical constituent structure of the prosody is roughly grounded in the constituent structure of the syntax beneath it. The phonological phrase (ϕ), for instance, is widely understood to be built in response to an interface pressure to preserve the distribution of syntactic XPs (Selkirk, 1984, 1986; Selkirk & Tateishi, 1988, 1991; Selkirk & Shen, 1990; Selkirk, 1995; Nespor & Vogel, 1986; Inkelas, 1989; Inkelas & Zec, 1995; Selkirk, 2009; Elfner, 2012, 2015). Following Itô & Mester 2019a, I will assume that this requirement is one of existential correspondence, which demands that every XP in the syntax be placed in correspondence with a ϕ in a global, output-oriented calculus (26a). Each ϕ is then aligned with its corresponding XP by the PROSODY-TO-SYNTAX MATCH constraint in (26b).

[5] The ϕ_{MAX} can also be distinguished from the intonational phrase (ι), which is built around matrix clauses, parentheticals, preposed adjunct CPs, left- and right-topics, and extraposed constituents. The right edge of the ι blocks Nasal Assimilation. In Mandar, coda /ŋ/ assimilates to all following segments and denasalizes before all non-nasals but */b d $\widehat{d\text{ʒ}}$ g/* (Pater, 1999), across ω- and ϕ-boundaries but not across the edge of the ι. Example (1) shows it cannot apply between a topic and V but must apply between an S and an X.

(1) *Nasal Assimilation: A Diagnostic for the ι*

$\{_\iota$ $\{_{\phi[\text{MAX}]}$	$\}$ $\}$ $\{_\iota$ $\{_{\phi[\text{MAX}]}$		$\}$	$\{_{\phi[\text{MAX}]}$	$\}$ $\}$
itim búlaŋ[H],	póle[H]	i	irámas[H]	sola wenéna[H]	
itiŋ bulaŋ	pole	i	iramaŋ	sola baine-na	
that month	come	3ABS	NAME	with wife-3GEN	

'That month, Ramang came with his wife.'

(26) *The Isomorphism Constraints*

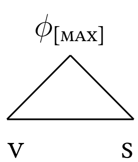
a. MAX-XP: Let SX be an input syntactic representation and PR its corresponding output representation. Assign one violation for every XP in SX which does not correspond to a ϕ in PR.

b. MATCH(ϕ,XP): Let SX be an input syntactic representation and PR its corresponding output representation. Assign one violation for every ϕ in PR that has a corresponding XP in SX such that the left and right edges of the ϕ not aligned with the left and right edges of the XP.

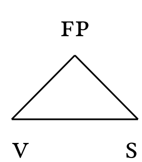
These constraints work together to parse strings into prosodic constituent structures that roughly preserve the constituency of the syntax. For instance, the mapping from maximal XPs to ϕs forces DPs and PPs to form ϕs in Mandar, as we have already seen. But the mapping constraints have also been argued to force the recursive mapping of functional projections to ϕs as well (Elfner, 2012, 2015; Itô & Mester, 2019a). As a result, we might take the mapping of the VSX string to reveal a fact about the syntax: as the V and S are typically parsed into ϕ (37a), they may form an XP in the syntax (37b).

(27) *Extrapolating XPs from ϕs*

a.



b.



The task of this section is to build from this starting prosodic case to a syntactic result. We will first build a prosodic argument that the VSOD string must form a constituent before an X, and from there we will work toward the syntax of this string.

3.1 The Prosody of the VSOD String

We can begin this prosodic investigation with a starting fact about adjunction. Under default prosodic conditions, we have seen that the final X in a VSX string is always parsed into its own maximal ϕ. In clauses that contain multiple Xs, we can now observe that the same parse is extended to each. Example (28) illustrates: when a VS string is followed by *dio* "there," *dionging* "yesterday" and *o* "there," Voiced Obstruent Lenition and Glottal Coda Deletion are blocked between every X. These restrictions suggest the prosodic parse $\{_{\phi[\text{MAX}]}$ VS $\}$ $\{_{\phi[\text{MAX}]}$ X $\}$ $\{_{\phi[\text{MAX}]}$ X $\}$ $\{_{\phi[\text{MAX}]}$ X $\}$.

(28) *VSX Clauses: Each Adjunct = ϕ_{MAX}*

$\{_{\phi[\text{MAX}]}$			$\}$	$\{_{\phi[\text{MAX}]}$ $\}$	$\{_{\phi[\text{MAX}]}$ $\}$	$\{_{\phi[\text{MAX}]}$ $\}$
nasáka$^{\text{H}}$	i	ɹo	wal**áo**$^{\text{H}}$	**dío**$^{\text{H}}$	**dj**óŋi**ŋ**$^{\text{H}}$	ó$^{\text{H}}$
na-saka	i	do	balao	dio	dioŋiŋ	o
3ERG-catch	3ABS	that	mouse	there	yesterday	there

'That mouse caught it there yesterday.'

The same parse extends to all material that is right-adjoined to the VP, and this fact can be seen from the behavior of PPs. In Mandar, PPs are parsed into maximal ϕs with the VS string when they are selected by the V: in example (29a), for instance, the comitative PP *sola iMina* "with Mina" is selected by the reciprocal verb *siala* "marry." But when these PPs are adjoined to the VP—for instance, in example (29b)—they form maximal ϕs alone.

(29) *The Parse of PPs depends on Argument-Adjunct Status*

a.

$\{_{\phi[\text{MAX}]}$			$\}$	$\{_{\phi[\text{MAX}]}$ $\}$
sjála$^{\text{H}}$	i	irí**pe**$^{\text{H}}$	sola imína$^{\text{H}}$	djóŋiŋ$^{\text{H}}$
si-ala	i	iripaʔi	sola imina	dioŋiŋ
COM-take	3ABS	NAME	with NAME	yesterday

'Ripa'i took with Mina yesterday (= they got married).'

b.

$\{_{\phi[\text{MAX}]}$		$\}$	$\{_{\phi[\text{MAX}]}$ $\}$	$\{_{\phi[\text{MAX}]}$ $\}$
lámba$^{\text{H}}$	i	irip**áʔi**$^{\text{H}}$	sola imína$^{\text{H}}$	djóŋiŋ$^{\text{H}}$
lamba	i	iripaʔi	sola imina	dioŋiŋ
go	3ABS	NAME	with NAME	yesterday

'Ripa'i went with Mina yesterday.'

These restrictions suggest a generalization that is familiar from previous work on the parse of adjunction structures at the syntax-prosody interface (Truckenbrodt 1999; also Cinque 1993). Much like Xiamen (Chen, 1987) and Tohono O'odham (Hale & Selkirk, 1987), Mandar requires right-adjuncts to the VP to be parsed into separate phrase-level prosodic domain from the rest of the extended VP. More specifically, in our terms, every X form an independent maximal ϕ in Mandar. In the same vein, multiple XS cannot be parsed into maximal ϕs with each other in Mandar—and their presence does not disrupt the parse that should be independently expected for the Mandar VSOD string. This network of generalizations is summarized below.

(30) *The Generalization on Adjunction*

The presence of VP-level adjuncts does not influence the prosodic parse of the VP. Every VP-level adjunct forms a ϕ_{MAX} of its own when focus does not interfere.

With this much secure, we can now advance upon the prosodic constituency of the VSODX string. We will focus on clauses in which the sequence of the verb and its arguments forms exactly three ωs for now, reserving the study of four- and five-ω clauses for section 5. The following example introduces the first generalization in this domain: when the verb is transitive, the string VSOX must always receive the parse $\{_{\phi[\text{MAX}]}$ VSO $\}$ $\{_{\phi[\text{MAX}]}$ X $\}$. In other words, before an X, a three-ω transitive VSO string must form a maximal ϕ.

(31) *VSO = ϕ_{MAX} (Transitive)*

$\{_{\phi[\text{MAX}]}$				$\}$	$\{_{\phi[\text{MAX}]}$ $\}$	$\{_{\phi[\text{MAX}]}$ $\}$
nét**e**$^{\text{H}}$	i	irípe$^{\text{H}}$	ɹe	wúku$^{\text{H}}$	díni$^{\text{H}}$	é$^{\text{H}}$
na-itai	i	iripaʔi	de	buku	dini	e
3ERG-look for	3ABS	NAME	this	book	here	here

'Ripa'i is looking for this book here.'

The string VSOX receives the same parse when the verb is ditransitive as well. The following examples illustrate: in example (33a) the O is indefinite and in example (33b) the O is definite, and in each case, the VSOX string must be parsed $\{_{\phi[\text{MAX}]}$ VSO $\}$ $\{_{\phi[\text{MAX}]}$ X $\}$.

(32) *VSO = ϕ_{MAX} (Ditransitive)*

a.

$\{_{\phi[\text{MAX}]}$				$\}$	$\{_{\phi[\text{MAX}]}$ $\}$
nakiríŋ**a**$^{\text{H}}$	**ã**	irípe$^{\text{H}}$	mesa	wúku$^{\text{H}}$	djóŋiŋ$^{\text{H}}$
na-kiriŋ-aŋ	aʔ	iripaʔi	mesa	buku	dioŋiŋ
3ERG-send-APPL	1ABS	NAME	one	book	yesterday

'Ripa'i sent me one book yesterday.'

b.

$\{_{\phi[\text{MAX}]}$				$\}$	$\{_{\phi[\text{MAX}]}$ $\}$	$\{_{\phi[\text{MAX}]}$ $\}$
nakiríŋ**a**$^{\text{H}}$	**ã**	irípe$^{\text{H}}$	ɹe	wúku$^{\text{H}}$	djóŋiŋ$^{\text{H}}$	é$^{\text{H}}$
na-kiriŋ-aŋ	aʔ	iripaʔi	de	buku	dioŋiŋ	e
3ERG-send-APPL	1ABS	NAME	this	book	yesterday	here

'Ripa'i sent me this book here yesterday.'

The same parse holds for two other three-ω substrings of the order VSOD: VSD and VOD. The following examples illustrate: in example (33a) the string VSDX is parsed $\{_{\phi[\text{MAX}]}$ VSD $\}$ $\{_{\phi[\text{MAX}]}$ X $\}$, and in example (33b) the string VODX is parsed $\{_{\phi[\text{MAX}]}$ VOD $\}$ $\{_{\phi[\text{MAX}]}$ X $\}$.

(33) *VSD / VOD = ϕ_{MAX} (Ditransitive)*

a.

$\{_{\phi[\text{MAX}]}$			$\}$	$\{_{\phi[\text{MAX}]}$ $\}$
najoló**a**$^{\text{H}}$	**ĩ**	irípe$^{\text{H}}$	**ɣ**úru$^{\text{H}}$	djóŋiŋ$^{\text{H}}$
na-d͡ʒolo-aŋ	i	iripaʔi	guru	dioŋiŋ
3ERG-point-APPL	3ABS	NAME	teacher	yesterday

'Ripa'i showed it to the teacher yesterday.'

b. {$_{\phi[\text{MAX}]}$ } {$_{\phi[\text{MAX}]}$ }

ujoló**a**$^{\text{H}}$	**ĩ**	**wálo**$^{\text{H}}$	**ɣ**úru$^{\text{H}}$	djóŋiŋ$^{\text{H}}$
u-d͡ʒolo-aŋ	i	balao	guru	dioŋiŋ
1ERG-point-APPL	3ABS	mouse	teacher	yesterday

'I showed the teacher a mouse yesterday.'

The same parses emerge in clauses where the verb is antipassive in a specific phonological context. The usual antipassive prefix in Mandar is *maŋ-*, and this prefix exceptionally carries an instance of word-level stress. Before vowel-initial roots, this prefix can surface in two forms. When it is explicitly protected by the phonology of focus—for instance, when speakers are asked to provide citation forms for verbs in the antipassive voice—this prefix is realized before vowel-initial roots as [*máʔ-*] (34a). But under default prosodic conditions (e.g., in a VSX clause spoken under broad focus), the nucleus of this prefix is erased before vowel-initial roots by the combined work of Glottal Coda Deletion and Coalescence. The prefix thus loses its word-level stress and takes the form *m-* (34b).

(34) *The Phonology of the Antipassive Prefix*

a.

máʔánde,	**mátt**únu,	**mám**báwa
maŋ-ande	maŋ-tunu	maŋ-baba
ANTIP-eat	ANTIP-roast	ANTIP-bring

'Eat, roast, bring.'

b. {$_{\phi[\text{MAX}]}$ } {$_{\phi[\text{MAX}]}$ }

mánde$^{\text{H}}$	i	**j**óŋa$^{\text{H}}$	dío$^{\text{H}}$
maŋ-ande	i	d͡ʒoŋa	dio
ANTIP-eat	3ABS	deer	there

'The deer are eating there.'

When the antipassive prefix loses its stress in this way, antipassive clauses show the parses above. The string VSOX is parsed {$_{\phi[\text{MAX}]}$ VSO } {$_{\phi[\text{MAX}]}$ X } (35a). The string VSDX is parsed {$_{\phi[\text{MAX}]}$ VSD } {$_{\phi[\text{MAX}]}$ X } (35b). The string VODX is parsed {$_{\phi[\text{MAX}]}$ VOD } {$_{\phi[\text{MAX}]}$ X } (35c).

(35) *VSO / VSD / VOD:* $= \phi_{MAX}$ *(Antipassive)*

a. {$_{\phi[\text{MAX}]}$ } {$_{\phi[\text{MAX}]}$ }

mánde$^{\text{H}}$	i	**j**óŋa$^{\text{H}}$	**j**ólen$^{\text{H}}$	dío$^{\text{H}}$
maŋ-ande	i	d͡ʒoŋa	d͡ʒoleŋ	dio
ANTIP-eat	3ABS	deer	guava	there

'The deer are eating guavas there.'

b. {$_{\phi[\text{MAX}]}$ } {$_{\phi[\text{MAX}]}$ }

mál**lja**[H]	**ĩ**	irí**pe**[H]	**ɣ**úru[H]	djóŋiŋ[H]
maŋ-alli-aŋ	i	iripaʔi	guru	dioŋiŋ
ANTIP-buy-APPL	3ABS	NAME	teacher	yesterday

'Ripa'i was buying stuff for teachers yesterday.'

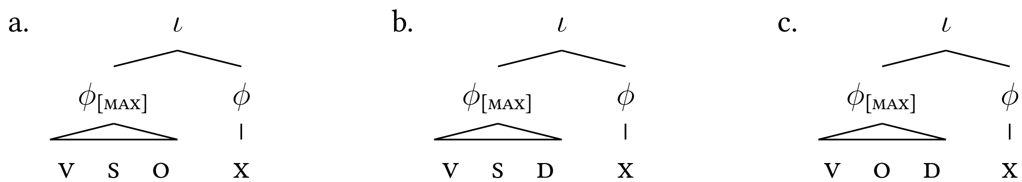
c. {$_{\phi[\text{MAX}]}$ } {$_{\phi[\text{MAX}]}$ }

mál**lja**[H]	**ĩ**	**w**úku[H]	**ɣ**úru[H]	djóŋiŋ[H]
maŋ-alli-aŋ	i	buku	guru	dioŋiŋ
ANTIP-buy-APPL	3ABS	book	teacher	yesterday

'He was buying books for teachers yesterday.'

We thus arrive at a stable prosodic generalization: in the space before an X, where the word order is strictly VSOD, three-word substrings of the order VSOD are always parsed into single maximal ϕs. The following diagrams show this starting prosodic result.

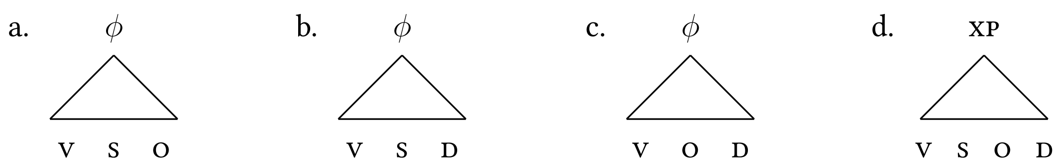
(36) *Stable Prosodic Constituency*



3.2 Convergent Diagnostics

As three-word VSO, VSD, and VOD strings systematically form maximal ϕs before Xs under default prosodic conditions, I propose that these strings always form XPs when they precede an X. Extending this conclusion to four-word strings of the order VSOD, we arrive at the result in (37d): the VSOD string can also form a syntactic constituent.

(37) *Prosodic Constituency to Syntax*



This prosodically driven analysis can be confirmed with two diagnostics for constituency in the syntax. The first is a pattern of displacement. There is a construction in Mandar in which the control verb *pogau'* "work on, do" selects a non-finite predicate that can raise into the left periphery (38). I will refer to this process as Predicate Clefting.

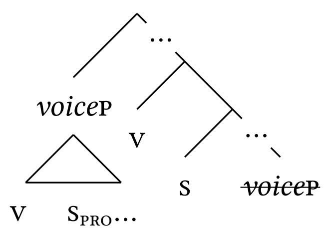
(38) *Predicate Clefting*

[$_{FP}$ **Mam-baca** tappa' PRO [$_{voiceP}$ na-pogau' iBa'du ~~mam-baca tappa' PRO~~]].
ANTIP-read only 3ERG-do NAME ANTIP-read only

'The only thing that Ba'du does is read.' Sikki *et al.* 1987, 783

I assume that the constituent that moves under Predicate Clefting is the XP in (37d). I will label this constituent as the *voice*P and assume that it moves to the typical left-peripheral landing site of WH-movement in Mandar (Brodkin, 2020), as shown in (39).

(39) *The Syntax of Predicate Clefting*



As VOD strings always form maximal ϕs before an X, we predict that VOD strings should always form constituents for Predicate Clefting. This prediction is correct. No matter the voice of the V or the definiteness of the O, Predicate Clefting can target the VOD string (40).

(40) *Stable Constituency for VOD*

a. [$_{FP}$ Mam-be-ngang [$_{O}$ buku] [$_{D}$ passikola] [$_{voiceP}$ na-pogau' iAli _]].
ANTIP-give-APPL book schoolkid 3ERG-work NAME
'The thing that Ali does is give students books.'

b. [$_{FP}$ Na-alli-ang [$_{O}$ bau] [$_{D}$ posa-na] [$_{voiceP}$ na-pogau' iCicci' _]].
3ERG-buy-APPL fish cat-3GEN 3ERG-work NAME
'The thing that Chichi' does is buy her cat fish.'

The second test that confirms this pattern of constituency is one of ellipsis. Mandar has a process of ellipsis that targets the complements of aspectual auxiliaries and the negator (41). This ellipsis has much in common with the VP-ellipsis (VPE) of English and Indonesian (Fortin, 2007): it can license sloppy readings, occur in embedded clauses, and involve antecedents in embedded clauses (Hankamer, 1979; Johnson, 2009).

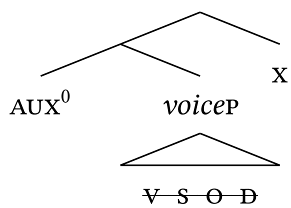
(41) *VP-Ellipsis in Mandar*

a. U-sanga ndangi [$_{PERFP}$ rua [$_{voiceP}$ na-pikkiri iAli ponologi]].
1ERG-think not.3ABS have 3ERG-think.of NAME phonology
'I thought that Ali had never thought about phonology…'

b. Tiwikke' a' [$_{CP}$ apa' [$_{PERFP}$ rua i ~~napikkiri~~ ~~iAli~~ ~~ponologi~~]].
shocked 1ABS because have 3ABS thought of NAME phonology
'...I'm shocked that he has ~~thought about phonology~~.'

I will assume that VP-ellipsis suppresses a syntactic constituent that sits immediately beneath the licensing auxiliary: plausibly, the *voice*P (42). This analysis sets up a prediction. If the VSOD string always forms a syntactic constituent before an X, then VP-ellipsis should always suppress the full VSOD string. In other words, this type of ellipsis should render it impossible for the S, O, and D to surface between a licensing auxiliary and an X.

(42) *The Constituency Prediction: Ellipsis*



This prediction is correct. When VPE suppresses an antipassive V, it bans the appearance of an S between the licensing auxiliary and an adjunct. This is shown in example (43b), which shows that neither the S nor a coreferent epithet can appear there.

(43) *The Constituency of the VS String*

a. Usanga di ruambongi ndangi rua maccoro iKaco'.

'I used to think that Kacho' had never stolen anything.'

b. Mane u-issang i [$_{CP}$ mua' [$_{PERFP}$ rua i...
just now 1ERG-know 3ABS that have 3ABS

[$_{voiceP}$ ~~mac-coro~~ (*iKaco' / *do asu)] di duambongi]].
ANTIP-steal NAME that dog in the past

'Now I know that (*Kacho'/*that jerk) has ~~stolen~~ in the past.'

When VPE targets a ditransitive V in a VSODX clause, the facts are the same: all material must be silenced between the licensing auxiliary and a postverbal adjunct. As a result, this space cannot contain any overt epithets that refer to the S, the O, or the D (44).

(44) *Stable Constituency for VSOD*

a. Usanga di ruambongi ndangi rua nawengang iKaco' bulawang gamallo kotta'na.

'I used to think that Kacho' had never given false gold to his girlfriend.'

b. Mane u-issang [$_{CP}$ mua' [$_{PERFP}$ rua i...
just now 1ERG-know that have 3ABS

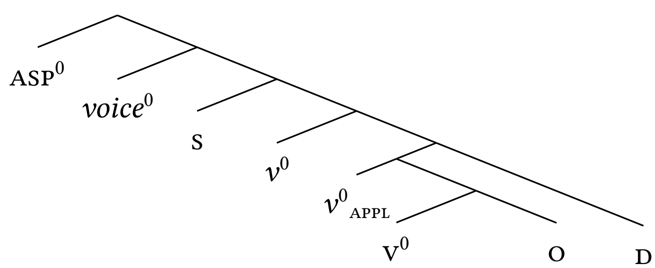
[$_{voiceP}$ ~~na-bengang~~ (*do asu) (*do roppong) (*do tokasiasi)] dionging]].
3ERG-give that dog that grass that poor thing recently

'Now I know (*that jerk) has ~~given~~ (*that junk) (*to the poor thing) recently.'

3.3 The Syntax of VSOD

These results allow us to pin down the syntax of the VSOD string. I assume that the syntax beneath the head that licenses VPE has the shape in (45): moving downwards, it contains a *voice*^{0} that hosts the outer morphology of the voice system (Brodkin, 2022b), a v^0 that introduces the S in its specifier (Collins, 2005; Merchant, 2013), an *appl*^{0} that introduces the D (Pylkkänen, 2008), and a V^0 which selects the O. The *voice*P is the constituent upon which our constituency diagnostics converge: it contains the string VSOD, it hosts VP-level adjuncts at its edge, it is the target of Predicate Clefting and VPE, and it corresponds to the maximal ϕs that contain the strings VSO, VSD, and VOD (37).[6]

(45) *The Syntax of the VSOD String*



I assume that the content of the *voice*P is linearized in the postsyntax (Chomsky, 1995), with the order VSOD derived in the following way. The head *appl*^{0} demands that its specifier be linearized to the right, yielding an order where the structurally higher D follows the structurally lower O. The verb, in turn, undergoes a process of postsyntactic head-movement that carries it up its extended projections (Harizanov & Gribanova, 2019),

[6]I will use the labels S, O, and D to represent arguments in the trees below; I will assume that these are NPs when indefinite and DPs when definite. Bare Phrase Structure (Chomsky, 1995) creates complexities at the interface; our discussion will sidestep these and use the terminology of X-bar theory (Jackendoff, 1977).

amalgamating it with the heads *appl*^{0}, *v*^{0}, and *voice*^{0} and allowing it to be linearized in a position that precedes the content of the VP. This analysis is shown in tree (46).[7]

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[7]The V invariably forms a ϕ in the prosody, but this parse is unexpected on Match Theory if it raises into a X^0-position (as it should then form a ω). As a result, this parse must be understood to reflect a mismatch between the syntax and prosody that is driven by a constraint that forces prosodic deviations to satisfy requirements of phonological well-formedness (Selkirk & Elordieta, 2010; Itô & Mester, 2019b). The natural candidate for such a constraint is StrongStart, which mandates various types of phonological strengthening at the left edge of the ι (Selkirk, 2011). The operative formulation of this constraint is shown in (1a); it must outrank Dep-ϕ to force the promotion of V (see Clemens & Coon 2018; Clemens 2019 for similar analyses in other verb-initial languages). This effect is shown in tableau (1): StrongStart rules out the faithful candidate (a), in which V^0 is mapped to a ω, and favors candidate (b), where the V forms a ϕ.

(1) *Deriving the Phrasal Parse of V^0*

a. StrongStart: Assign one violation for every intonational phrase in which the leftmost ω is not left- and right-aligned with a minimal ϕ.

b.

[$_{voiceP}$ V^0 [$_{vP}$ [$_{DP}$ S] [$_{VP}$ __]]]	Strong Start	Dep-ϕ
a. {$_\iota$ {$_\phi$ V {$_\phi$ S } } }	*!	
☞ b. {$_\iota$ {$_\phi$ {$_\phi$ V } {$_\phi$ S } } }		*

There is direct evidence for this effect in the system of coordination. Mandar has a coordinator which takes the form *na* in ι-medial positions, where it does not carry stress or an H-tone (2a). When a conjunct is extraposed and *na* appears at the left edge of an ι, its parse is changed: there, it shows stress, hosts an H at its right edge, and expands to the disyllabic *anna* (2b). This is similar to the English alternation between *'n* and *an'*, which is driven by the need for a new CONJ-ϕ to contain a licit ω.

(2) *Coordinator Promotion at the Left Edge of the Intonational Phrase*

a. {$_{\phi[\text{MAX}]}$ wítaᴴ i ikát͡ʃoʔᴴ **na** ɣúruᴴ } {$_{\phi[\text{MAX}]}$ di ɣénaʔᴴ }
u-ita i ikat͡ʃoʔ na guru di genaʔ
1ERG-see 3ABS NAME and teacher in earlier

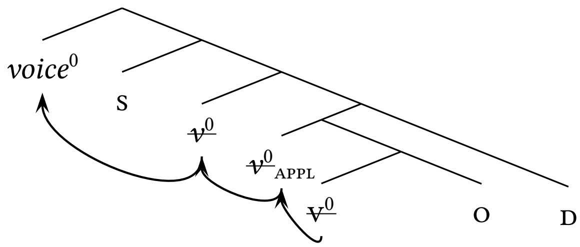
'I saw Kacho' **n'**/$^{??}$an' the teacher earlier.'

b. {$_\iota$ {$_{\phi[\text{MAX}]}$ witaᴴ i ikát͡ʃoʔᴴ } {$_{\phi[\text{MAX}]}$ di ɣénaʔᴴ, } } {$_\iota$ {$_{\phi[\text{MAX}]}$ **ánna**ᴴ ɣúruᴴ } }
u-ita i ikat͡ʃoʔ di genaʔ na guru
1ERG-see 3ABS NAME in earlier and teacher

'I saw Kacho' earlier, **an'**/***n'** the teacher.'

This effect is unique to the coordinator and does not occur with functional heads, like D^0, P^0, and C^0. I assume that this follows from a deeper syntactic split: functional heads like P^0, D^0, and C^0 are integrated into extended projections with lexical heads like N^0 and V^0, while the coordinator is not. As a result, I assume that P^0, D^0, and C^0 are parsed into ωs with their complements (they are *internal* clitics; Selkirk 1996) but that the coordinator is not parsed into a ω with its complement in the same way (it is directly dominated by the ϕ, so it is an *external* clitic; Selkirk 1996). As such, only the coordinator is visible to StrongStart.

(46) *The Syntax of VSOD Order in Mandar*



The ensuing analysis captures the word order and constituency of the extended VP with one further addition. Many patterns converge in Mandar to suggest that the argument which triggers absolutive agreement— the S in the antipassive, the O in the transitive, and the D in the ditransitive— always raises to a derived A-position above all other arguments in the clause (Brodkin, 2021b, 2022a,b). To provide an example, this movement can be seen in the system of variable binding. The universal quantifier in Mandar, *nasang* "every," is a second-position element that adjoins to the V in clauses of the order VSOD. In a ditransitive VSOD clause where the O is quantified in this way, the O cannot bind a variable in the S or the O (47a). But in a transitive VSO clause, where the O triggers absolutive agreement, an O that is quantified in this way can bind a variable in the preceding S (47b).

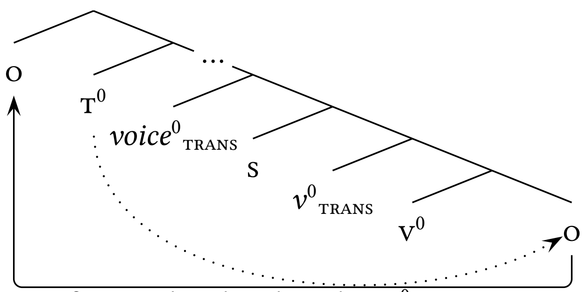
(47) *Variable Binding Shows that the Absolutive Argument Raises Covertly*

a. Na-kiring-ang nasang i [$_S$ panulis-na] [$_O$ buku *t*] [$_D$ pa'alli-na].
3ERG-send-APPL every 3ABS author-3GEN book buyer-3GEN
'Its$_{*i,j,k}$ author sent every book$_i$ to its $_{*i,j,k}$ buyer.'

b. Na-itai nasang i [$_S$ panulis-na] [$_O$ buku *t*].
3ERG-look for every 3ABS author-3GEN book
'Its$_{i,j}$ author looked for every book$_i$.'

Patterns of this sort reveal that Mandar is a High Absolutive language, in the sense of Coon *et al.* 2014: it requires the absolutive argument to raise to the highest A-position in the clause. This step correlates neatly with the appearance of absolutive agreement, which sits in T^0 (Brodkin, 2021a, 2022b), and it suggests the activity of a classical EPP: in every finite clause, the absolutive argument must raise to SPEC,TP (just as the *pivot* has been argued to raise in other Austronesian languages of the region, setting the terminology of ergativity aside: Schachter 1976; Guilfoyle *et al.* 1992; Kroeger 1993b; Richards 2000; Paul 2000; Rackowski 2002; Aldridge 2004; Potsdam 2007; Legate 2014; Erlewine 2018; Erlewine & Lim 2023; Nie 2019, 2020; Hsieh 2020). In a transitive clause like (47b), where the facts of variable binding show that the o raises to the highest clause-internal a-position, this conclusion yields the rough syntax in (48) (see Brodkin 2022b for detailed discussion).

(48) *High Absolutive Syntax: the Transitive*



The epp feature localized to this T^0 must impose no requirements on the spell-out of the chain that it creates. When the absolutive argument raises to spec,tp, then, it will never be forced to be pronounced in that position by the output filters that mandate the presence of overt elements in other contexts (Landau 2007b; McFadden & Sundaresan 2018). Instead, the higher copy in spec,tp is always suppressed and the lower copy pronounced: quite possibly in a calculus driven by output-oriented constraints on prosodic organization (Sabbagh, 2014) in a case of phonologically-motivated lower-copy spell-out (Bošković, 2001, 2002). The result is the rough a-syntax sketched below: different arguments raise across the antipassive, transitive, and ditransitive constructions, but this does not disrupt the emergence of a stable surface constituent that corresponds to the *voice*p.

(49) *The Rough Syntax of Mandar Voice*

a. Antipassive: [$_{TP}$ ~~S~~ [$_{voiceP}$ V [$_{vP}$ S [$_{applP}$ [$_{VP}$ O] D]]]].

b. Transitive: [$_{TP}$ ~~O~~ [$_{voiceP}$ V [$_{vP}$ S [$_{VP}$ O]]]].

c. Ditransitive: [$_{TP}$ ~~D~~ [$_{voiceP}$ V [$_{vP}$ S [$_{applP}$ [$_{VP}$ O] D]]]].

4 The Internal Structure of the VoiceP

The results of our prosodic investigation have thus revealed that the vsod string always forms a surface constituent in Mandar, but we should expect to see finer-grained patterns of constituency than this. Mandar shows many of the asymmetries in binding, coreference, scope, and movement that suggest hierarchical asymmetries between arguments in the *voice*p (Larson, 1988; Pesetsky, 1995; Bruening, 2001): for instance, the applied argument seems to c-command the internal argument when neither argument is absolutive.

As a result, we have assumed the presence of several functional projections in the *voice*P: minimally, a *v*P that contains the string SOD and an *appl*P that contains the string OD.

This hypothesis opens up a second line of prosodic inquiry. In Mandar, we cannot detect *voice*P-internal functional projections with the types of syntactic constituency tests developed in Section 3. For instance, Mandar has a clause-initial focus position that can attract either the O or the D (50a). But it is impossible for this position to attract the substring OD (50b), even though we have hypothesized that it forms an *appl*P—just as clefting cannot target the DO string in English (Takano, 2000; Funakoshi, 2012).

(50) *Headless Functional Projections: Cannot be Moved*

a. [$_{FP}$ Buku [$_{voiceP}$ na-bengang i iTalib [$_{appl}$ __ iMina]]].
book 3ERG-give 3ACC NAME NAME
'It was a book that Talib gave Mina __.'

b. [$_{FP}$ [$_{appl}$ *Buku iMina] [$_{voiceP}$ na-bengang (i) iTalib ________]].
book NAME 3ERG-give 3ACC NAME
'*It was Mina a book that Talib gave __.'

The task of this section is thus to build a prosodic case for the existence of headless functional constituents in the extended VP. Our investigation will take the following path. It has now been established that the TP can be mapped to a ϕ (Elfner, 2015; Itô & Mester, 2019a). Under the right prosodic circumstances, it may then be possible to detect ϕs that correspond to headless functional constituents inside the *voice*P, like the *v*P and *appl*P. These ϕs may not always be built and organized into the recursive prosody in (51a), as the mapping constraints interact with other pressures that disturb perfect correspondence and often destroy prosodic constituents that should otherwise be built. But if there are contexts in which we can detect ϕs that contain the strings SOD and OD, and if we can deduce that such ϕs are not built for phonological reasons alone, then we can make a prosodic case for the recursive *voice*P-internal syntax in (51b).

(51) *The Prosodic Case for Functional Structure*

a. POSSIBLE ϕS: $\{_{\phi voiceP}$ V $\{_{\phi vP}$ S $\{_{\phi applP}$ $\{_{\phi VP}$ O $\}$ D $\}$ $\}$ $\}$

b. RECURSIVE SYNTAX: [$_{voiceP}$ V [$_{vP}$ S [$_{applP}$ [$_{VP}$ O] D]]]

4.1 The Tools for Disruption

We can launch this second investigation with a brief return to the antipassive prefix. When the affix *maŋ-* appears before consonant-initial roots in Mandar, it invariably remains syllabic and bears an independent instance of ω-level stress. In connection with this fact, the antipassive prefix is always scanned as a stressed syllable when it appears before a consonant-initial root in Mandar poetry (Jupri Talib, p.c.). This behavior is relevant for its impact on the facts of prosodic phrasing. In VSO clauses where the antipassive prefix is reduced, we have seen, the optimal parse is $\{_{\phi[\text{MAX}]}$ V SO $\}$ (52a). But in VSO clauses where the antipassive prefix carries stress, the parse shifts to $\{_{\phi[\text{MAX}]}$ V $\}$ $\{_{\phi[\text{MAX}]}$ SO $\}$ (52b).

(52) *Antipassive Clauses: Phrasing depends on Prefix Reduction*

a. $\{_{\phi[\text{MAX}]}$ … $\}$ $\{_{\phi[\text{MAX}]}$ … $\}$

mánde$^{\text{H}}$	i	**jóŋa**$^{\text{H}}$	jólen$^{\text{H}}$	dío$^{\text{H}}$
maŋ-ande	i	d͡ʒoŋa	d͡ʒoleŋ	dio
ANTIP-eat	3ABS	deer	guava	there

'The deer are eating guavas there.'

b. $\{_{\phi[\text{MAX}]}$ … $\}$ $\{_{\phi[\text{MAX}]}$ … $\}$ $\{_{\phi[\text{MAX}]}$ … $\}$

mámbw**ái**$^{\text{H}}$	i	**gúru**$^{\text{H}}$	wáʔba$^{\text{H}}$	dío$^{\text{H}}$
maŋ-buai	i	guru	baʔba	dio
ANTIP-open	3ABS	teacher	door	there

'The teacher is opening doors over there.'

The same parse can be forced by adding any other type of prosodic word to the minimal ϕ that contains the verb. The following examples introduce two further cases of this sort: adding either a X^0-adjunct like *mane* "just" (53a) or a second-position adverb like *memang* "indeed" (53b) will force out the parse $\{_{\phi[\text{MAX}]}$ V $\}$ $\{_{\phi[\text{MAX}]}$ SO $\}$.

(53) *Prosodic Phrasing is Disrupted by Adjunction to V*

a. $\{_{\phi[\text{MAX}]}$ … $\}$ $\{_{\phi[\text{MAX}]}$ … $\}$ $\{_{\phi[\text{MAX}]}$ … $\}$

máne	naw**ái**$^{\text{H}}$	i	**gúru**$^{\text{H}}$	ɹe	wáʔba$^{\text{H}}$	é$^{\text{H}}$
mane	na-buai	i	guru	de	baʔba	e
just	3ERG-open	3ABS	teacher	this	door	here

'The teacher just opened this door here.'

b. $\{_{\phi[\text{MAX}]}$ … $\}$ $\{_{\phi[\text{MAX}]}$ … $\}$ $\{_{\phi[\text{MAX}]}$ … $\}$

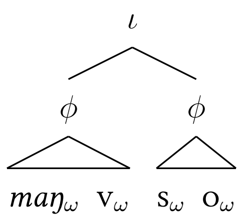
nawúe	méman$^{\text{H}}$	i	**gúru**$^{\text{H}}$	ɹe	wáʔba$^{\text{H}}$	é$^{\text{H}}$
na-buai	memaŋ	i	guru	de	baʔba	e
3ERG-open	indeed	3ABS	teacher	this	door	here

'The teacher opened this door here indeed.'

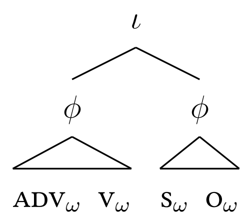
The following diagram shows this second parse: in a four-ω VSO string where the minimal ϕ that hosts the verb contains two ωs, the parse must be $\{_{\phi[\text{MAX}]}$ V $\}$ $\{_{\phi[\text{MAX}]}$ SO $\}$.

(54) *The Disruptions under Ternarity*

a.



b.



These patterns suggest that there is a restriction on the size of the maximal ϕ in Mandar: it cannot contain more than three ωs. We can derive this effect from the interaction of two constraints on *binarity* (Itô & Mester, 1992; Kubozono, 1993; Itô & Mester, 2013; Ishihara, 2014). The first of these is MINIMAL BINARITY (55a), which bans the emergence of maximal ϕs that only contain one ω. The second is MAXIMAL BINARITY (55b), which bans the emergence of maximal ϕs that contain more than two ωs. In the terminology of OT (Prince & Smolensky, 2004), we can derive the parse of three-ω VSO strings by ranking Minimal Binarity over Maximal Binarity. This ranking forces three-ω VSO to be parsed into maximal ϕs, violating Maximal Binarity, to avoid creating single-ω maximal ϕs that would violate Minimal Binarity.

(55) *Deriving the Emergence of Ternary Phrases*

a. MIN-BIN$_{\text{MAX}}$: Assign one violation for every ϕ_{MAX} that contains under two ωs.

b. MAX-BIN$_{\text{MAX}}$: Assign one violation for every ϕ_{MAX} that contains over two ωs.

c.

$[_{voiceP}$ V^0 $[_{vP}$ $[_{\text{DP}}$ S $]$ $[_{\text{VP}}$ $[_{\text{NP}}$ O $]$ $]$ $]$ $]$	MIN-BIN	MAX-BIN
☞ a. $\{_{\phi[\text{MAX}]}$ V S O $\}$		*
b. $\{_{\phi[\text{MAX}]}$ V $\}$ $\{_{\phi[\text{MAX}]}$ S O $\}$	*!	

Through the same constraints, we can derive the appearance of a ternarity constraint. When the phonology is presented with a four-ω string, it can satisfy both Binarity constraints by building two maximal ϕs that each contain two ωs. The following tableau illustrates this fact: in a four-word VSO string where the verbal complex contains two ωs, as seen in example (52b), the parse must be $\{_{\phi[\text{MAX}]}$ V $\}$ $\{_{\phi[\text{MAX}]}$ SO $\}$.[8,9]

(56) *Deriving the Ternarity Effect*

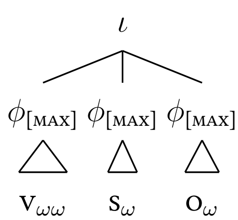
[$_{voiceP}$ *maŋ*-v^0 [$_{vP}$ [$_{\text{DP}}$ S] [$_{\text{VP}}$ [$_{\text{NP}}$ O]]]]	MIN-BIN	MAX-BIN
a. $\{_{\phi[\text{MAX}]}$ *maŋ*-V S O $\}$		*
☞ b. $\{_{\phi[\text{MAX}]}$ *maŋ*-V $\}$ $\{_{\phi[\text{MAX}]}$ S O $\}$		

4.2 The Exposure Effect

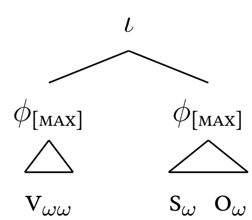
This weight constraint opens up a strategy to prosodically split the V from the remainder of the *voice*P and force it to form its own maximal ϕ. In this context, the material that follows the V will come to be directly dominated by the ι. As a result, a new set of ϕs in the postverbal space will become maximal ϕs—and will thus become visible to our phonotactic tests. The following diagram shows the possibilities that emerge in this context. If the VSO string is internally flat in the syntax, with no internal functional projection that contains the S and the O, then we might expect the S and O to each form their own independent maximal ϕs, with no higher ϕ built around them (57a). But if the VSO string does contain a headless functional projection that contains the S and the O, then we should expect the S and the O to form a single maximal ϕ together—one corresponding to a headless *v*P (57b).

(57) *The Logic of Exposure*

a. *Flat Syntax → Prosody*



b. *Recursive Syntax → Prosody*



[8] To capture the absence of weight effects in contexts where the syllabic content of this prefix is erased, I assume that the construction of the ω that corresponds to the antipassive prefix can be blocked by segmental constraints in the phrasal phonology. This is an expected possibility if prosodic constituents are built in a parallel and global phonological derivation in which the mapping can be disrupted by routine phonological constraints (Prince & Smolensky, 2004; Selkirk, 2009, 2011)). It is not expected on a cyclic theory in which prosodic structure is built at a stage that precedes the phrasal phonology (e.g., Lee & Selkirk 2023).

[9] Two other types of affix trigger the same pattern: *p*-initial prefixes which are contained inside the antipassive affixes (*maŋ*- is underlyingly /N-paŋ/) and the reduplicant. If these ω-level prefixes are embedded in the ω that corresponds to the V, the binarity constraints will need to look into ωs to determine the weight of the ϕ. This would go beyond the versions of leaf-counting Binarity that have been employed in the literature to date (Kalivoda & Bellik, 2018; Van Handel, 2021). Further work on this topic is required.

The phonology of Mandar demands the parse in (57b): when the V is forced into its own maximal ϕ by the weight constraint, the substring SO must be parsed into a ϕ_{MAX}. The key evidence is repeated in example (58): in a transitive VSO clause where the verb hosts a X^0-level adjunct, Voiced Obstruent Lenition is blocked at the left edge of the S but forced at the left edge of the O. This pattern reveals the existence of an SO-ϕ that is only visible when the verb forms its own maximal ϕ. I will refer to this pattern as the Exposure Effect.

(58) *Weight Manipulations reveal a VP-ϕ*

$\{_{\phi[\text{MAX}]}$		$\}$ $\{_{\phi[\text{MAX}]}$		$\}$ $\{_{\phi[\text{MAX}]}$ $\}$
máne naw**ái**^{H}	i	**g**úru^{H}	ɹe wáʔba^{H}	é^{H}
mane na-buai	i	guru	de baʔba	e
just 3ERG-open	3ABS	teacher	this door	here

'The teacher just opened this door.'

Whenever the V is split off in this way, similar ϕs are visibly built around two- and three-ω substrings of the order SOD. The following examples present two more cases of this type: ϕs are also built around the substrings SD (59a) and OD (59b).

(59) *The SD and OD Constituents*

a.

$\{_{\phi[\text{MAX}]}$		$\}$ $\{_{\phi[\text{MAX}]}$		$\}$ $\{_{\phi[\text{MAX}]}$ $\}$
máne nasj**ái**^{H}	i	**d**o sanéke^{H}	waróʔbo^{H}	ó^{H}
mane na-siai	i	do sanaeke	baroʔbo	o
just 3ERG-salt	3ABS	that kid	corn stew	there

'That kid there just salted the corn stew.'

b.

$\{_{\phi[\text{MAX}]}$		$\}$ $\{_{\phi[\text{MAX}]}$		$\}$ $\{_{\phi[\text{MAX}]}$ $\}$
nánne ném**aŋ**^{H}	i	**b**álo^{H}	waróʔbo^{H}	dío^{H}
na-annai memaŋ	i	balao	baroʔbo	dio
3ERG-put indeed	3ABS	rat	corn stew	there

'They did indeed drop a rat in the corn stew over there.'

The same type of ϕ can be seen around the full three-ω SOD string. Example (60) illustrates: there, the minimal ϕ that contains the V hosts three ωs: a X^0-level adjunct, the V, and a second-position adverb. In this context, Coalescence, Glottal Coda Deletion, and Voiced Obstruent Lenition show that the parse is $\{_{\phi[\text{MAX}]}$ V $\}$ $\{_{\phi[\text{MAX}]}$ SOD $\}$.

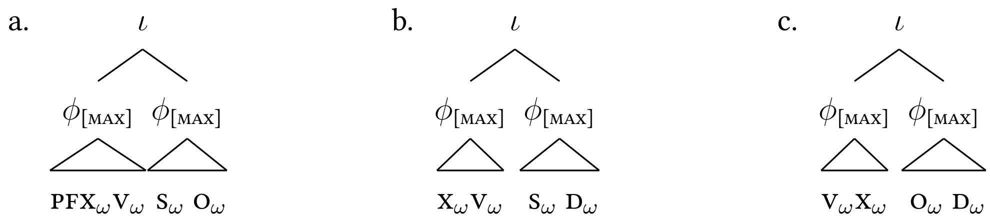
(60)

$\{_{\phi[\text{MAX}]}$		$\}$ $\{_{\phi[\text{MAX}]}$			$\}$ $\{_{\phi[\text{MAX}]}$ $\}$
máne nawéŋam mémaŋ^{H}	i	**d**o rípe^{H}	**w**úku^{H}	**ɣ**úru^{H}	ó^{H}
mane na-beŋaŋ memaŋ	i	do ripaʔi	buku	guru	o
just 3ERG-give indeed	3ABS	that NAME	book	teacher	there

'That Ripa'i there did indeed just give a book to the teacher.'

The following diagrams illustrate this interim result: by manipulating the parse of the verb, we can see that ϕs can be built around the particular substrings SO, SD, OD, and SOD.

(61) *The SOD ϕ*



It is at least conceivable that these new ϕs are forced into existence in this context by a purely phonological constraint like MINIMAL BINARITY, which would disfavor the construction of maximal ϕs that contained only one ω. But there is phonological evidence to suggest that such an analysis is not on the right track. In contexts where the V is forcibly split off into its own maximal ϕ, postverbal arguments are never parsed into ϕs with constituents that are normally excluded from the ϕ that corresponds to the *voice*P. For instance, postverbal arguments are still parsed into maximal ϕs that exclude every following X, even when the result is a string of maximal ϕs that each contain only one ω. This generalization is shown in the examples in (62): in a VS clause where the verbal complex contains three ωs, a single-ω S will form a ϕ_{MAX} even when followed by an X (62b).

(62) *Weight Manipulations: No Visible Eurythmic Effects*

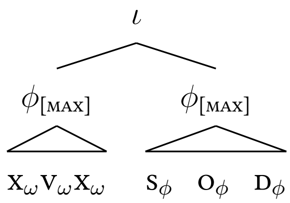
a. {$_{\phi[\text{MAX}]}$ máne táma méma**ŋ**$^{\text{H}}$ } i {$_{\phi[\text{MAX}]}$ **b**álao$^{\text{H}}$ }
mane tama memaŋ i balao
just go in indeed 3ABS mouse
'The mouse did indeed just run inside.'

b. {$_{\phi[\text{MAX}]}$ máne táma méma**ŋ**$^{\text{H}}$ } i {$_{\phi[\text{MAX}]}$ **baláo**$^{\text{H}}$ } {$_{\phi[\text{MAX}]}$ **d**ío$^{\text{H}}$ }
mane tama memaŋ i balao dio
just go in indeed 3ABS mouse there
'The mouse did indeed just run inside there.'

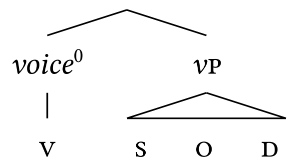
In light of this prosodic stability, I argue that ϕs are built around the substrings SO, SD, OD, and SOD in direct response to the mapping constraint MAX-XP: namely, a category-blind pressure to translate every XP into a ϕs. From this perspective, the Exposure Effect provides evidence for a headless functional projection that excludes the V and contains the S, O, and D. More specifically, I propose that it provides evidence for a headless *v*P.

(63) *Prosodic Evidence for the* vP

a. *The Phonology: SOD*



b. *The Syntax: SOD*



The following tableau illustrates the essential derivation of this effect, focusing on the antipassive VSO clause in (52b). In this clause, the mapping constraint MAX-XP demands the construction of ϕs that correspond to the *voice*P and *v*P (and plausibly the headless VP, not shown). The Maximal Binarity Constraint then blocks the integrated parse in Candidate (a), where the four-word string forms a ϕ_{MAX}. The result is that the winner is the split parse in Candidate (b), where the PFX-V string forms a ϕ_{MAX} that plausibly corresponds to the *voice*P and the SO string forms a ϕ_{MAX} that corresponds to the *v*P.

(64) *Deriving the Exposure Effect*

[$_{voiceP}$ *maŋ*-V^0 [$_{vP}$ [$_{DP}$ S] [$_{VP}$ [$_{NP}$ O]]]]	MATCH(ϕ,XP)	MAX-BIN
a. {$_{\phi[MAX]\,voiceP}$ *maŋ*-V {$_{\phi}$ $_{vP}$ S O } }		*!
☞ b. {$_{\phi[MAX]\,voiceP}$ *maŋ*-V } {$_{\phi[MAX]}$ $_{vP}$ S O }		

We can now extend the same manipulation to build a prosodic case for the existence of a headless *appl*P. By adding ωs in the right places in a VSOD string, we can create a prosodic configuration in which the substring OD cannot be parsed into a higher ϕ with the preceding V or S. The following example shows what happens when this is done: the O and the D are visibly parsed into a maximal ϕ.

(65) {$_{\phi[MAX]}$ } {$_{\phi[MAX]}$ } {$_{\phi[MAX]}$ } {$_{\phi[MAX]}$ }

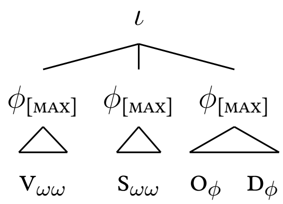
máne nalatt͡ʃári[H] i solána[H] jáli[H] **d**o taláɣ**e**[H] **ɣ**úru[H] ó[H]
mane na-latt͡ʃari i sola-na iali do talagae guru o
just 3ERG-throw 3ABS friend-3GEN NAME that tomato teacher there

'Ali's friend just threw that tomato there at the teacher!'

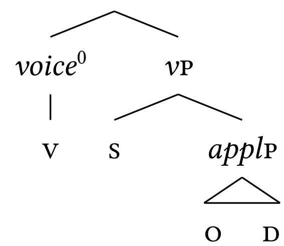
The emergence of this ϕ, shown in (66a), reveals the existence of the *applP* in (66b).

(66) *Prosodic Evidence for the applP*

a. *The Phonology: OD*



b. *The Syntax: OD*



Stepping back, these results reinforce the hypothesis that the syntax-prosody interface is able to build ϕs in correspondence with all types of XPs at the derivational moment where syntax and phonology meet (Selkirk, 2009, 2011; Elfner, 2012, 2015). In doing so, they adduce further evidence for the claim that functional XPs can be translated to ϕs (Elfner, 2015; Itô & Mester, 2019a). On the analysis of clause structure adopted here, they also reveal that the mapping algorithm can build ϕs around XPs whose heads have been carried away by word-building head-movement (cf. Kalivoda & Bellik 2021; Van Handel 2021). In this connection, they also reveal that such XPs need not be destroyed by head-movement of this type (cf. É Kiss 2008; Stepanov 2012).

Turning back to the syntax, these results provide an immediate rejoinder to our earlier observation on constituency: while it is difficult to detect headless VP-shells in the VSOD string in the syntax, it is possible to isolate and reveal these constituents in the prosody. This result opens up a novel line of evidence that the extended VP is built from a nested series of functional projections, and in doing so, it reconfirms the guiding hypothesis of a broad literature that has reached the same conclusion on many different grounds.

5 The Syntax and Prosody of Scrambling

By this stage, we have built from the facts of surface prosody toward a finely articulated syntax of the VSOD string. The final task that remains is thus to address the ordering alternations of Section 2—and more specifically, the syntax of deviant orders like VOS.

We can begin with a return to the linear position of VP-level adjuncts. We have seen that arguments can only surface outside the order S-O-D when they follow overt adjuncts to the VP (setting aside the clause-final *e* "here" and *o* "there"). When an X is introduced in a VOS clause, for instance, the word order must be VOXS (67).

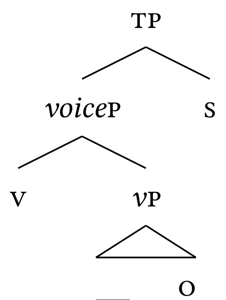
(67) *Misordered Arguments follow Final Adjuncts to the VP*

Na-itai	i	[$_O$ iCicci']	[$_X$ dio]	[$_S$ iKaco'].
3ERG-seek	3ABS	NAME	there	NAME

'Kacho' is looking for Chichi' there.'

In light of this fact, I propose that these ordering alternations involve a process of rightward scrambling. This process shifts arguments to a position outside the *voice*P that is linearized to the right of all Xs, yielding the syntax in (68) for a string of the order VOS.

(68) *VOS → Rightward Scrambling of S*



This analysis breaks from many alternatives that would derive orders like VOS from movement to the left. Two alternatives stand out in this domain: one which would derive VOS from leftward movements of the V and O (Otsuka, 2005); (69a) and one which would derive VOS from the fronting of a constituent like the VP (Massam, 2001a,b); (69b).

(69) *Alternative Analyses of VOS*

a. LEFTWARD SCRAMBLING: [$_{voiceP}$ V [$_{FP}$ O [$_{vP}$ S [$_{VP}$ ___ ___]]]]

b. PREDICATE-FRONTING: [$_{voiceP}$ [$_{VP}$ V O] [$_{vP}$ S ~~[$_{VP}$ V O]~~]]

Adopting the rightward scrambling analysis for Mandar, many facts fall into place. First, this analysis explains the linear position of VP-level adjuncts: if these elements are right-adjoined to the *voice*P, then they should follow the VSOD string when it is contained in the *voice*P (70a) and precede arguments that are scrambled to the right (70b).

(70) *The Position of Adjuncts*

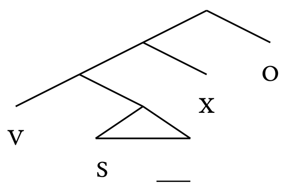
a. WITHOUT SCRAMBLING: [$_{voiceP}$ [$_{voiceP}$ V [$_{vP}$ S O]] X]

b. WITH SCRAMBLING: [$_{FP}$ [$_{voiceP}$ [$_{voiceP}$ V [$_{vP}$ ___ O]] X] S]

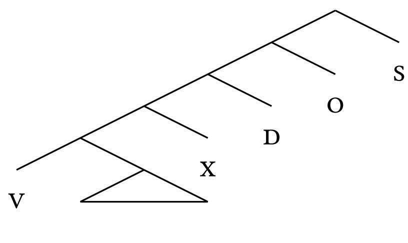
Second, this analysis allows us to explain every attested order of arguments in the postverbal space. The order VOS arises from rightward scrambling of the S. All other strings with one misordered argument, like VSXO, are derived by rightward scrambling of the misordered argument in the same way (71a). All strings that contain multiple misordered arguments, like VXDOS, are derived by the scrambling of multiple arguments (71b).

(71) *Deviations from VSOD*

a.



b.



Third, this analysis makes correct predictions about constituency. If scrambled arguments sit outside the *voice*P, then we should predict that they should escape unscathed when the *voice*P is targeted by Predicate Clefting and VPE. For instance, we should predict that Predicate Clefting cannot target a string of the order VDO, in which the final O has been scrambled to the right. Example (72) shows that this prediction is correct.

(72) *Scrambled Arguments cannot be Carried Along by Predicate Clefting*

[$_{FP}$ *Na-alli-ang posa-na iting [$_{voiceP}$ na-pogau' iCicci' __]].
3ERG-buy-APPL cat-3GEN that 3ERG-work NAME

'The thing that Chichi' does is buy that stuff for her cat.'

The same prediction extends to the domain of ellipsis. In a string of the order VODS, the final S should sit outside the *voice*P and may also sit above the head that licenses VPE (likely ASP^0). As a result, we should expect that a scrambled S should be able to survive when the *voice*P is suppressed by VPE. This prediction is correct as well (73).

(73) *Scrambled Arguments survive VPE*

a. Usanga di ruambongi ndangi rua maccoro iKaco'.
'I used to think that Kacho' had never stolen anything.'

b. Mane u-issang [$_{CP}$ mua' [$_{PERFP}$ rua i...
just now 1ERG-know that have 3ABS
[$_{voiceP}$ ~~mac-coro~~ __] di duambongi **do asu**]] o.
ANTIP-steal in the past that dog there

'Now I know that that jerk has ~~stolen~~ in the past.'

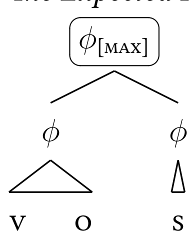
As a result, I conclude that there is a process of scrambling that places its targets outside of the *voice*P in positions that are linearized to the right. This process underlies all of the unmarked ordering alternations from Section 2: it is the sole mechanism that gives rise to unmarked postverbal orders beyond VSOD. This initial result suggests that apparent cases of rightward scrambling cannot be universally derived from conspiracies of movement to the left (Bhatt & Dayal 2007; Manetta 2012; Simpson & Choudhury 2014; Polinsky & Potsdam 2021; *pace* Mahajan 1997). In other words, these facts of postverbal constituency deliver an argument that the language faculty allows movement to positions that are linearized to the right. This conclusion, in turn, suggests that rightward movement may be implicated in the derivation of other types of ordering alternations in the extended VP: for instance, in the derivation of VOS orders in languages beyond Mandar.[10]

5.1 The Prosody of Scrambling

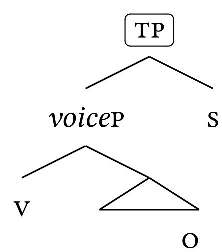
The syntactic results of the preceding section set up a prosodic prediction about strings with orders like VOS. If the misordered arguments in these strings are scrambled out of the *voice*P, then we should expect the prosodic parse in (80b): a ϕ should be built around the *voice*P and then a higher ϕ should be built around the *voice*P and the arguments that have been scrambled out, corresponding to a higher functional projection like the TP (80a).

(74) *The Expected Prosody of Scrambling*

a. *The Expected Prosody*



b. *The Expected Syntax*



[10]Many Western Austronesian languages show VSO-VOS alternations that are conditioned by the voice of the verb and the Case of the S and O (e.g., Malagasy (Keenan, 1976), Toba Batak (Cole & Hermon, 2008), and Seediq (Aldridge, 2002, 2004)). Other languages outside of this area show VSO-VOS alternations that are conditioned by the definiteness of the O (Massam, 2001b,a; Coon, 2010). But there are other ordering alternations in this region that seem amenable to a scrambling account. Beyond Mandar, for instance, many other languages of the South Sulawesi subfamily have been noted to show VSO-VOS alternations that are not conditioned by voice or Case (Basri & Finer, 1987; Friberg, 1996; Jukes, 2006; Laskowske, 2016; Finer, 1997; Béjar, 1999). The regional literature is consequently divided over which word order is basic and how each order is derived. It is thus instructive to note that Bugis, Makassarese, and Konjo pattern with Mandar in two respects: (*i*) they allow transitive V-NP-NP strings to receive either of the interpretations VSO and VOS, and (*ii*) they require transitive V-NP-NP-X strings to receive the interpretation VSOX. It thus seems natural to posit that, in the clauses that contain transitive verbs in these languages, VSO is the unmarked order, VSO strings can form intact *voice*Ps, and VOS order is derived through rightward scrambling of the S.

This prediction is incorrect: when a V-NP-NP string forms a single maximal ϕ under default prosodic conditions, it cannot receive an interpretation like VOS. Instead, the only possible interpretations are those that conform to the order VSOD: namely, VSO, VSD, or VOD. The following example illustrates with a transitive V-NP-NP string: under the parse $\{_{\phi[\text{MAX}]}$ V NP NP $\}$, this clause must receive the semantic interpretation VSO.

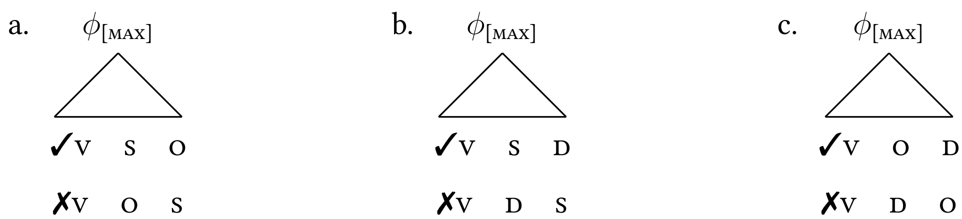
(75) *Phrasing and Interpretation*

$\{_{\phi[\text{MAX}]}$				$\}$	$\{_{\phi[\text{MAX}]}$ $\}$
néte$^{\text{H}}$	i	irípe$^{\text{H}}$	ɹo	áli$^{\text{H}}$	ó$^{\text{H}}$
na-itai	i	iripaʔi	do	ali	o
3ERG-look for	3ABS	NAME	that NAME		there

ONLY VSO: 'Ripa'i is looking for that Ali there.'

The following diagram shows this constraint: when a three-word V-NP-NP string is parsed into a maximal ϕ, it must be interpreted as VSO, VSD, or VOD (76).

(76) *Prosodic Constituency to Interpretation*



Scrambled arguments always form maximal ϕs of their own. The following example illustrates: in a three-ω VOS string, the V and O must form a ϕ_{MAX} that excludes the final S.

(77) *Misordered S $\rightarrow$ Maximal ϕ*

$\{_{\phi[\text{MAX}]}$		$\}$	$\{_{\phi[\text{MAX}]}$	$\}$	$\{_{\phi[\text{MAX}]}$ $\}$
néte$^{\text{H}}$	i	iripá**ʔi**$^{\text{H}}$	do	ali$^{\text{H}}$	ó$^{\text{H}}$
na-itai	i	iripaʔi	do	ali	o
3ERG-look for	3ABS	NAME	that NAME		there

'That Ali there is looking for Ripa'i.'

The same parse extends to scrambled arguments of every type. Example (78a) shows the same effect in a VDS clause, where the S is scrambled to the right and is once again forced to form its own ϕ_{MAX}. Example (78b) shows an analogous pattern in a VDO clause, where the final O has been scrambled and is thus forced to form a ϕ_{MAX} of its own as well.

(78) *Misordered Arguments → Maximal ϕs*

a. {ϕ[MAX] } {ϕ[MAX] } {ϕ[MAX] }

najolóa[H]	ã	iripá**ʔi**[H]	do áli[H]	ó[H]
na-d͡ʒolo-aŋ	aʔ	iripaʔi	do ali	o
3ERG-point-APPL	1ABS	NAME	that NAME	there

'That Ali there showed me to Ripa'i.'

b. {ϕ[MAX] } {ϕ[MAX] } {ϕ[MAX] }

ujolóa[H]	ĩ	iripá**ʔi**[H]	do áli[H]	ó[H]
u-d͡ʒolo-aŋ	i	iripaʔi	do ali	o
1ERG-point-APPL	3ABS	NAME	that NAME	there

'I showed that Ali there to Ripa'i.'

The following example shows that the same parse emerges when multiple arguments are scrambled to the right. In a VDOS clause where both the O and the S are scrambled to the right, each argument is forced to form its own maximal ϕ.

(79) *Multiple Misordered Arguments → Individual Maximal ϕs*

{ϕ[MAX] } {ϕ[MAX] } {ϕ[MAX] } {ϕ[MAX] }

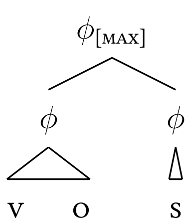
nalatt͡ʃári[H]	i	iripá**ʔi**[H]	talaɣ**áe**	**do** áli[H]	ó[H]
na-latt͡ʃari	i	iripaʔi	talagae	do ali	o
3ERG-throw	3ABS	NAME	tomato	that NAME	there

'That Ali there threw the tomato at Ripa'i.'

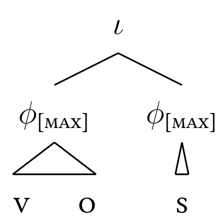
We thus arrive at a final prosodic puzzle: the mapping constraints of Match Theory predict that scrambled arguments should form ϕs with the *voice*P (80a), but instead, scrambled arguments always form maximal ϕs of their own (80b).

(80) *The Prosodic Result of Scrambling*

a. *The Expected Parse*



b. *The Attested Parse*

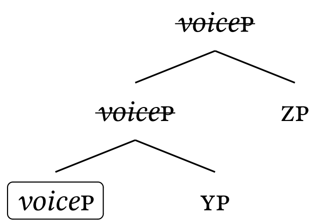


5.2 Scrambling and Adjunction

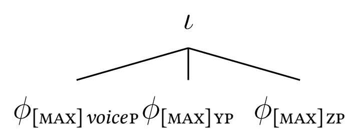
I propose that the solution to this puzzle lies in a connection to adjunction. In Section 2, we saw that VP-level adjuncts also form maximal ϕs even when the postverbal domain contains multiple elements of this type. We can begin to understand this pattern by drawing a connection to a particular proposal from Truckenbrodt 1999: in adjunction structures of the shape $[_{XP}\ [_{XP}\ \text{XP}\ ]\ \text{YP}\ ]$, where YP is an adjunct adjoined to XP, the mapping algorithm maps the lower segment of XP to a ϕ and ignores higher segment of the XP that is created by adjunction (May, 1985). This proposal yields the mapping in (81): if two xs are adjoined to the *voice*P, then only a ϕ will be built around the lowest segment of the *voice*P (which is boxed below) and the following VP-level adjuncts will each form independent ϕs.

(81) *The Mapping of Adjunction Structures*

a. *Voice*P*: Input*



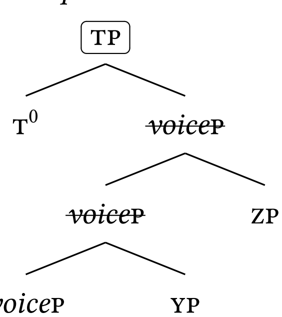
b. *Voice*P*: Output*



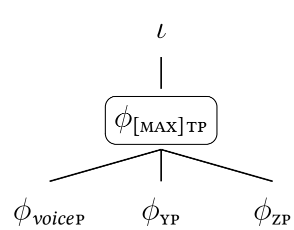
It is natural that adjunction should be singled out in the prosody in such a way, as the argument-adjunct distinction is fundamental to the syntax and preserved at the interface with LF (Lebeaux, 1988). As such, Selkirk (2011)*(483, fn. 38)* introduces the same proposal into Match Theory. But the default hypothesis of Match Theory is that all XPs should form ϕs when phonological conditions allow. As a result, the *voice*P and all following x should still be parsed into a larger ϕ if these elements are dominated by any higher functional projection that contained three ωs or fewer, like the boxed TP in tree (82a).

(82) *A Problem for Match Theory*

a. *T*P*: Input*



b. *Unattested Output*



To derive the parse of these adjuncts, we must specifically force them to form maximal ϕs. Most versions of Match Theory do not contain constraints that force specific XPs to form relational subtypes of ϕs like the $\phi_{[\text{MAX}]}$ (though cf. Ishihara 2014, and see Van Handel *et al.* 2024 for discussion). As a result, I propose that this restriction must be forced at the interface by the constraint in (83): one which demands that XP-level adjuncts be excluded from every higher ϕs that contains the constituent to which they adjoin.[11,12]

(83) *On the Prosodic Mapping of Phrasal Adjuncts*
REPEL: Let SX be an input syntactic representation and PR its corresponding output representation. Assign one violation for every adjunction structure of the shape $[_{\text{XP}}\ [_{\text{XP}}\ \text{XP}\ ]\ \text{YP}\ ]$ in SX, YP a phrasal adjunct, for which the output correspondents of XP and YP are contained within a single ϕ in PR.

Ranked above MATCH(ϕ,XP), this constraint forces VP-level adjuncts to be parsed into separate maximal ϕs from the *voice*P. The following tableau illustrates this effect.

(84) *Deriving the Prosodic Parse of Adjuncts*

$[_{\text{TP}}\ [_{voiceP}\ [_{voiceP}\ \text{V}\ ]\ [_{\text{YP}}\ \text{HERE}\ ]\ ]\ ]$	REPEL	MATCH(ϕ,XP)
a. $\{_{\phi[\text{MAX}]\text{TP}}\ \text{V HERE}\ \}$	*!	
☞ b. $\{_{\phi[\text{MAX}]\text{TP}}\ \text{V}\ \}\ \{_{\phi[\text{MAX}]\text{YP}}\ \text{HERE}\ \}$		*

In clauses that contain multiple VP-level adjuncts, each adjunct can be forced into an independent maximal ϕ through the ranking of Minimal Binarity beneath DEP-ϕ, which bans the construction of ϕs that do not correspond to XPs (Itô & Mester, 2019a).

[11] X^0-level adjunction is subject to a similar constraint. There is a prosodic difference between the complex X^0s that are built through Amalgamation (word-building head-movement; Harizanov & Gribanova 2019) and those which are built by adjoining X^0s to X^0s (for instance, N^0-ADJ^0 sequences): in general, the former are parsed into single ωs and the latter are parsed into two. This suggests that adjunct X^0s are parsed in line with an X^0-level version of REPEL, which demands that structures with the shape $[_{\text{X}}\ [_{\text{X}}\ \text{X}\ ]\ \text{Y}\ ]$, Y a head-level adjunct, not be parsed into a single ω. Naturally, the resultant structure must be parsed into an intact ϕ (just as the result of XP-adjunction must be parsed into an intact ι); see Bellik & Kalivoda 2016 on this point.

[12] REPEL must be a violable constraint, as its effects can be overridden by the phonology of focus (ϕs can be built around strings like VSX in Mandar when the X is contrastively focused). There may also be XP-level adjuncts that evade this constraint, like the VP-final adverbs that carry nuclear stress in English (e.g. *well*; see Cinque 1993 for discussion). Much further work in both syntax and phonology is required.

(85) *Deriving the Parse of Multiple Adjuncts*

a. Dep-ϕ: Let sx be an input syntactic representation and pr its corresponding output representation. Assign one violation for every ϕ in pr which does not correspond to an xp in sx.

b.

$[_{TP}\ [_{voiceP}\ [_{voiceP}\ [_{voiceP}$ V] $[_{YP}$ HERE]] $[_{ZP}$ TODAY]]]	Dep-ϕ	Min-Bin
a. $\{_{\phi[MAX]TP}$ V $\}\ \{_{\phi[MAX]\_\_}$ HERE TODAY $\}$	*!	*
☞ b. $\{_{\phi[MAX]TP}$ V $\}\ \{_{\phi[MAX]YP}$ HERE $\}\ \{_{\phi[MAX]ZP}$ TODAY $\}$		***

This analysis opens up a path to derive the attested parse of scrambled arguments: we can force these constituents to form maximal ϕs by subjecting them to Repel. On this analysis, the aberrant prosody of scrambled arguments follows from a fact about their syntax: scrambled arguments occupy adjunct positions in the surface syntax. The following trees illustrate: in a clause that contains a scrambled dps, like a clause of the order vos, the scrambled dp forms a maximal ϕs because it is adjoined to the tp.

(86) *Scrambling → Adjunction*

a. *Tp: Prosody* b. *Tp: Syntax*

The following tableau illustrates the derivation of this effect: in a vos clause, the scrambled s is forced to form its own maximal ϕ by the ranking of Repel over Match(ϕ,xp).

(87) *Deriving the Parse of Scrambled Arguments*

$[_{TP}\ [_{TP}$ V O] $[_{DP}$ S]]	Repel	Match(ϕ,xp)
☞ a. $\{_{\phi[MAX]TP}$ V O $\}\ \{_{\phi[MAX]DP}$ S $\}$		*
b. $\{_{\phi[MAX]TP}\ \{_{\phi TP}$ V O $\}\ \{_{\phi_{DP}}$ S $\}\ \}$	*!	

This result takes on syntactic importance in tandem with a second fact: this type of scrambling shows the binding profile of Ā-movement. The following examples illustrate. Example (88a) presents a baseline fact about Condition c of the Binding Theory (Chomsky, 1981; Reinhart, 1983): in Mandar, the ditransitive o cannot contain an r-expression that is coindexed with a pronominal s. Example (88b) then shows that scrambling has no effect on this constraint: a ditransitive O still cannot contain an R-expression that is coindexed with a pronominal S when it is scrambled to the right and placed outside the *voice*P.

(88) *Scrambling forces Reconstruction*

a. Na-na-bengang o [$_{S}$ *pro*] [$_{O.ACC}$ buku [$_{RC}$ na-alli iNina]] marondong.
will-3ERG-give 2ABS *pro* book 3ERG-buy NAME tomorrow
'Tomorrow she$_{*i,j}$ will give you the book that Nina$_{i}$ bought.'

b. Na-na-bengang o [$_{S}$ *pro*] t_{O} marondong [$_{O.ACC}$ buku [$_{RC}$ na-alli iNina]].
will-3ERG-give 2ABS *pro* tomorrow book 3ERG-buy NAME
'Tomorrow she$_{*i,j}$ will give you the book that Nina$_{i}$ bought.'

In this respect, scrambling contrasts with movement of the absolutive argument to its high clause-internal A-position. This second process does affect in the enforcement of Condition C: in a transitive clause where the O is absolutive and raises to this A-position covertly, the O can contain an R-expression that is coindexed with a pronominal S (89).

(89) Na-na-baca i [$_{S}$ *pro*] [$_{O.ABS}$ buku [$_{RC}$ na-alli iNina]] marondong.
will-3ERG-read 3ABS *pro* book 3ERG-buy NAME tomorrow
TRANSITIVE: 'Tomorrow she$_{i,j}$ will read the book that Nina$_{i}$ bought.'

This asymmetry suggests a syntactic distinction between scrambling and absolutive movement to SPEC,TP. Absolutive movement must be able to avoid reconstruction, as it can license new patterns of variable binding and coreference. But as scrambling cannot ameliorate violations of Condition C, it must reconstruct. This asymmetry is shown in the following diagram, where copies that are not interpreted are struck through.

(90) *Two Types of Movement*

a. SCRAMBLING: [$_{TP}$ [$_{TP}$ [$_{voiceP}$ V [$_{vP}$ S [$_{VP}$ O]]]] ~~O~~].
b. ABSOLUTIVE MOVEMENT: [$_{TP}$ O [$_{voiceP}$ V [$_{vP}$ S [$_{VP}$ ~~O~~]]]].

These observations suggest that the relevant process of rightward scrambling is a case of Ā-movement. From this position, we can leverage the prosodic parse of scrambled arguments to make a phonological case that Ā-scrambling results in adjunction in Mandar—in keeping with the classical hypothesis that Ā-scrambling places its targets in adjunct positions much more widely (Chomsky, 1993; Müller & Sternefeld, 1994, 1996).

We can now address the specific syntax of this operation. If scrambling is driven by EPP features on an attracting X^0, as is widely hypothesized in Minimalism (e.g., Ko 2005, 2007), then it should not place its targets in adjunct positions. This is because EPP features are essentially selectional and should thus place their targets in selected specifiers (Chomsky, 2001). As a result, rightward scrambling in Mandar cannot be driven by an attracting X^0. I thus propose that it is driven by the needs of the scrambling elements themselves: in other words, it is driven by the principle of Greed (Lasnik, 1995; Bošković, 1995).

I propose that this operation of rightward Ā-scrambling is driven by a feature on a null definite D^0: a selectional feature that forces the DP to move to a position where this feature can be checked through adjunction to the TP (on the hypothesis that adjuncts select for their hosts: Bruening 2013). This feature is presented in (91a), using the ring notation (○) of Zyman 2023. When this D^0 combines with a complement, the resultant DP will be forced to move out of the *voice*P. The same movement is not forced by the second null definite D^0 in the language, which lacks this feature (91b).

(91) *Two Definite Determiners in Mandar*

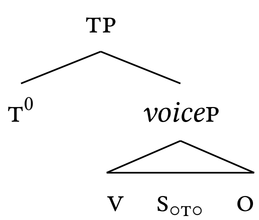
a. ${D^0}_{+DEF1}$: $[< \circ T \circ >]$

b. ${D^0}_{+DEF2}$: [ ]

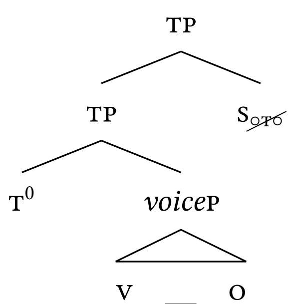
I assume that all definite arguments can combine with either of the two null definite D^0s in (91) in a free lexical choice. When the S merges with the regular D^0, it will stay in the *voice*P, yielding an eventual linearization of VSO. When it merges with the scrambling D^0, as in (92a), it will scramble to satisfy the selectional feature on that D^0 and eventually be linearized to the right of its host, yielding the order VOS (92b).

(92) *The Alternation Again*

a.



b.



The result is an analysis that captures the defining properties of this process in Mandar: it is always optional, it is always able to target any number of arguments in a clause, and it can place them in any order after the *voice*P. In tandem with this syntactic success, this analysis fits naturally with the prosodic signature of this operation, explains how it might place its targets in adjunct positions, and falls in line with the larger hypothesis, advanced by Chomsky *et al.* 2019, that scrambling is "not head-oriented in any plausible sense."

6 Conclusion

This investigation of syntax and prosody has led us to the understanding that VSOD strings in Mandar typically form syntactic constituents that are built from a series of functional projections, with their linear order derived from word-building head-movement of the V and lower-copy spell-out of absolutive arguments that raise to SPEC,TP. Our syntactic results have also led us to posit a process of rightward Ā-scrambling to derive deviant orders like VOS, and the prosody has suggested that this process places its targets in adjunct positions. To the extent that this analysis is successful, it reinforces four architectural points. First, the extended VP must contain an internal sequence of functional projections, even when head-movement carries the V along its spine. Second, A-chains must be reduced in a calculus that does not mandate higher-copy spell-out. Third, adjuncts and specifiers must be able to be linearized to the right of their hosts. Fourth and finally, one case of Ā-scrambling must place its targets in adjunct positions and may thus be driven by Greed.

At the interface of syntax and prosody, our results add to the emerging consensus that prosodic phrasing can be leveraged to preserve functional constituency. Our results also reinforce the hypothesis that adjunction structures are phonologized in a specific and regular way, yielding a prosodic distinction between the structures built by MERGE and ADJOIN. The narrow force of this result is to deliver a surface-oriented diagnostic for the argument-adjunct distinction; the larger implication is that the interface may leverage prosodic phrasing to preserve other syntactic relationships in similarly distinctive ways.

In service of this final point, we can conclude our investigation with a final note on the prosody of selection. In Section 4, we leveraged a weight constraint to prosodically split the V from its arguments and study the prosodic organization of the postverbal space. But when a one-ω V is followed by three one-ω arguments, this constraint forces a parse that does not reflect any known pattern of syntactic constituency: $\{_{\phi[\text{MAX}]}$ VS $\}$ $\{_{\phi[\text{MAX}]}$ OD $\}$.

(93) *The Aberrant Parse of VSOD*

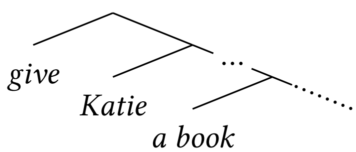
$\{_{\phi[\text{MAX}]}$			$\}$ $\{_{\phi[\text{MAX}]}$			$\}$ $\{_{\phi[\text{MAX}]}$ $\}$
nawéŋa[H]	ĩ	iripá**ʔi**[H]	**d**o	wúku[H]	ɣúru[H]	ó[H]
na-be-ŋaŋ	i	iripaʔi	do	buku	guru	o
3ERG-give-APPL	3ABS	NAME	that	book	teacher	there

'Ripa'i gave the teacher that book there.'

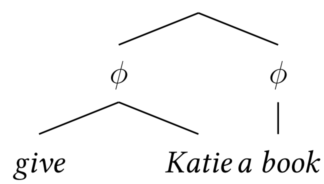
The emergence of this parse reflects a larger tendency at the syntax-prosody interface that was discovered by Kalivoda (2018): when weight constraints block the construction of a ϕ around a selecting x^0 and its arguments, but do not force the selecting x^0 to form a maximal ϕ of its own, then the selecting x^0 is parsed into a ϕ with the closest argument alone. I will refer to this pattern as Kalivoda's Effect. Kalivoda 2018 observes that it can be seen at least in three-ω VSO strings in Irish (Elfner, 2015) and in V-DP-DP ditransitives in a much wider range of languages. Kalivoda 2018 also notes that it yields a syntax-prosody mismatch in the English VP: the DP-DP ditransitive shows the descending syntax in (94a) (Barss & Lasnik 1986) but the ascending prosody in (94b) (Hayes 1989; Elfner 2014).

(94) *Kalivoda's Effect: The English Ditransitive*

a. *Ditransitive Syntax*



b. *Ditransitive Prosody*



Kalivoda 2018 proposes that the pressure that underlies this effect is bound up with the phonologization of C-command. But as there is a regular phonological reflex to adjunction, it is natural to wonder whether Kalivoda's Effect may reveal a parallel phonological reflex to selection: more specifically, a phonological mirror to REPEL which demands that the V be parsed into a ϕ with every element that it selects (cf. Clemens 2016, 2019). The patterns of mismatch that emerge through Kalivoda's Effect, like $\{_{\phi[\text{MAX}]}$ VS $\}$ $\{_{\phi[\text{MAX}]}$ OD $\}$, would then be driven by the interaction of weight constraints with this specific constraint.

(95) *On the Mapping of Selected Arguments*
ATTRACT: Let SX be an input syntactic representation and PR its corresponding output representation. Assign one violation for every structure of the shape $[_{\text{XP}}$ x^0 $[_{\text{YP}}$ YP $]$ $]$ in SX, x^0 selecting YP, for which the output correspondents of x^0 and YP are not contained in a ϕ in PR.

Whatever the precise analysis of Kalivoda's effect, its existence suggests that the prosody of the extended VP must ultimately emerge from the interaction of three types of pressure: requirements for syntax-prosody isomorphism, output-oriented restrictions on prosodic well-formedness, and interface constraints that force particular syntactic relationships to be prosodified in regular ways. It will be essential to study each of these components as we advance on the prosody—and thus the syntax—of the extended VP.

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The Prosody of the Extended VP: Appendix

This appendix presents pitch tracks, spectrograms, and wave forms to show some of the possible phonetic forms of two types of Mandar clause: clauses that lack rightward scrambling (in which arguments take the order S-O-D) and clauses in which one postverbal argument is scrambled to the right. The following examples are provided:

(1) *List of Diagrams*:

1. VSO
2. VOS (rightward scrambling of S)
3. VOD
4. VDO (rightward scrambling of O)
5. VSD
6. VDS (rightward scrambling of S)

The recordings that are illustrated in the diagrams below were gathered at the end of the research process in a single recording session with Jupri Talib, the primary language consultant for this project. They reflect the specific type of pronunciation that has been the focus of this paper: namely, that which emerges when well-planned clauses are produced under broad focus at a regular speech rate in casual conversation. There is slight variation in these recordings in the identity of the tune that is overlaid upon the whole intonational phrase, yielding minor differences in the pitch contour that emerges at its right edge (where it will invariably fall here on the intonational phrase-final adverb *o* "there"). In each case, however, it is possible to identify the characteristic phonetic signatures of the Mandar prosodic word and phonological phrase (Section 2). More specifically:

(2) *Salient Prosodic Features*

a. The prosodic word always shows a low tone on the stressed syllable, falling on the penult in the verb and every following argument (it is also present, though overwritten or obscured by ι-level prosodic events, in the final adverb *o*)
b. The phonological phrase always hosts a high tone at its right edge, falling after the verb and each of its arguments (and also after the final adverb *o*, where it can again be overwritten or obscured by ι-level prosodic events).

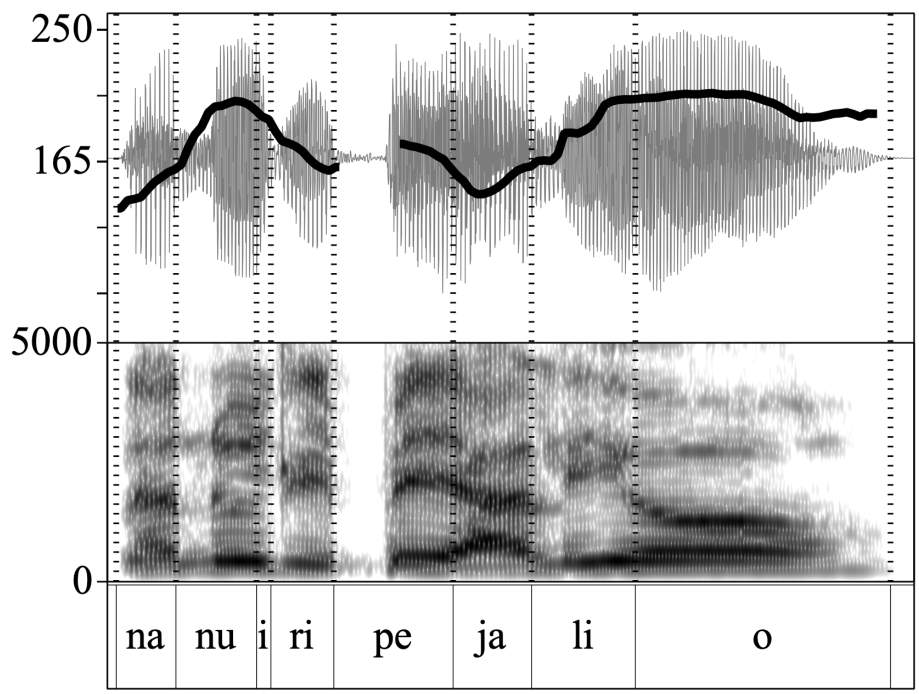
(3) *VSO*

a. {$_{\phi[\text{MAX}]}$ } {$_{\phi[\text{MAX}]}$ }

nánu$^{\text{H}}$	i	irípe**e**$^{\text{H}}$	jáli$^{\text{H}}$	ó$^{\text{H}}$
na-anu	i	iripaʔi	iali	o
3ERG-hit	3ABS	NAME	NAME	there

‘Ripa’i hit Ali over there.’

b. *Pitch track*:

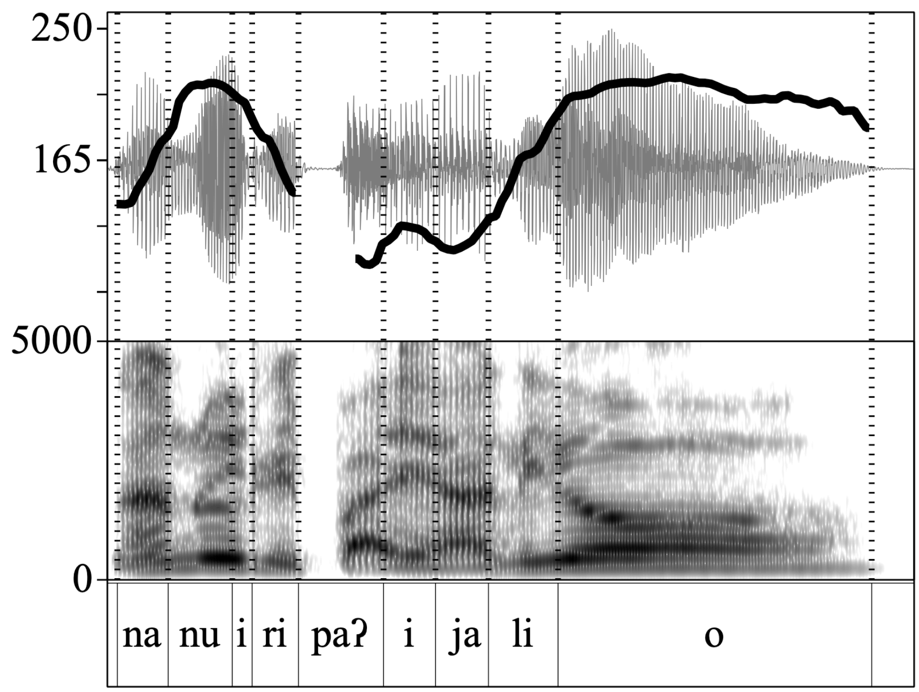


(4) *VOS (Rightward Scrambling of S)*

a. | {$_{\phi[\text{MAX}]}$ | | } | {$_{\phi[\text{MAX}]}$ } | {$_{\phi[\text{MAX}]}$ } |
|---|---|---|---|---|
| nánu^{H} | i | irip**áʔi**^{H} | jáli^{H} | ó^{H} |
| na-anu | i | iripaʔi | iali | o |
| 3ERG-hit | 3ABS | NAME | NAME | there |

'Ali hit Ripa'i over there.'

b. *Pitch track*:



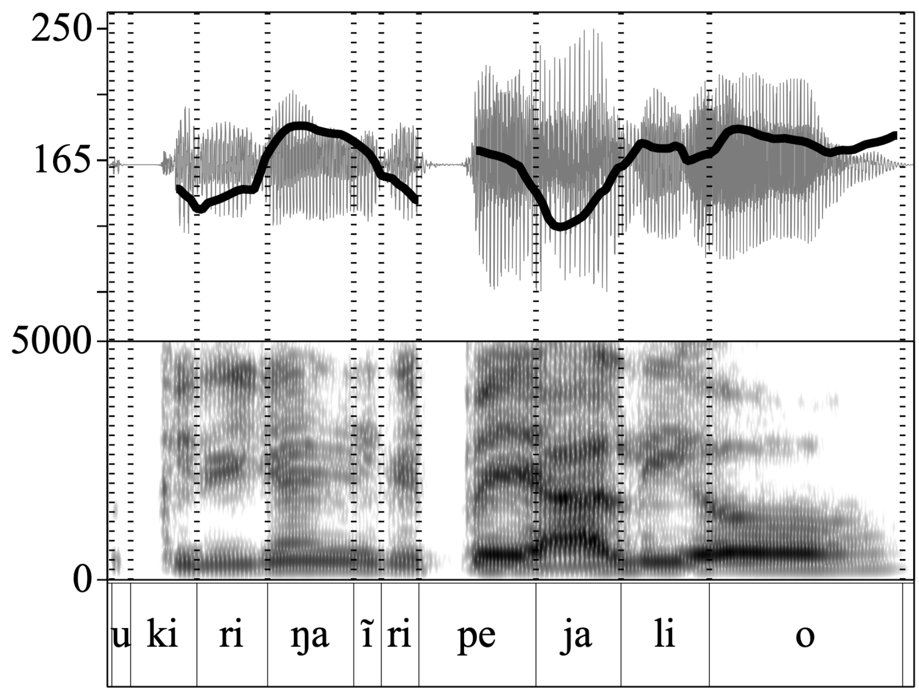
(5) *VOD*

a. $\{_{\phi[\text{MAX}]}$ $\}$ $\{_{\phi[\text{MAX}]}$ $\}$

ukiríŋ**a**$^{\text{H}}$	**ĩ**	irípe$^{\text{H}}$ with **e**	jáli$^{\text{H}}$	ó$^{\text{H}}$
u-kiriŋ-aŋ	i	iripaʔi	iali	o
1ERG-send-APPL	3ABS	NAME	NAME	there

'I sent Ripa'i to Ali over there.'

b. *Pitch track*:



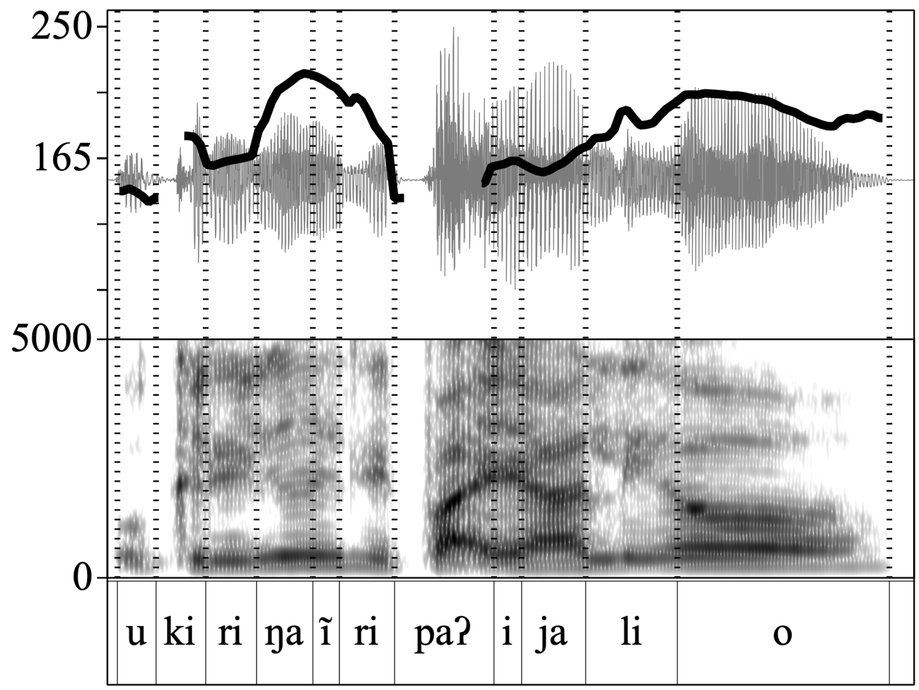
(6) *VDO (Rightward Scrambling of O)*

a. {$_{\phi[\text{MAX}]}$ } {$_{\phi[\text{MAX}]}$ } {$_{\phi[\text{MAX}]}$ }

ukiríŋ**a**$^{\text{H}}$	**ĩ**	irip**áʔi**$^{\text{H}}$	jáli$^{\text{H}}$	ó$^{\text{H}}$
u-kiriŋ-aŋ	i	iripaʔi	iali	o
1ERG-send-APPL	3ABS	NAME	NAME	there

'I sent Ali to Ripa'i over there.'

b. *Pitch track*:

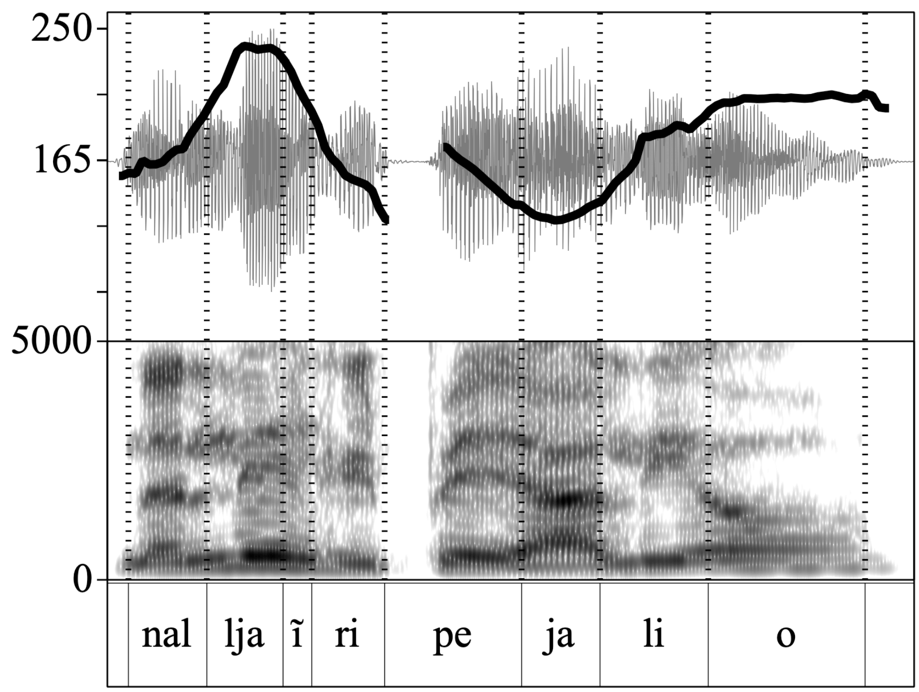


(7) *VSD*

a. | | | | | | |
|---|---|---|---|---|---|
| {$_{\phi[\text{MAX}]}$ | | | | } | {$_{\phi[\text{MAX}]}$ } |
| náll j**a**^{H} | **ĩ** | iríp**e**^{H} | jáli^{H} | | ó^{H} |
| na-alli-aŋ | i | iripaʔi | iali | | o |
| 3ERG-buy-APPL | 3ABS | NAME | NAME | | there |

‘Ripa’i bought it for Ali over there.’

b. *Pitch track*:



(8) *VDS (Rightward Scrambling of S)*

a.

{$_{\phi[\text{MAX}]}$		}	{$_{\phi[\text{MAX}]}$ }	{$_{\phi[\text{MAX}]}$ }
nállj**a**[H]	**ĩ**	irip**áʔi**[H]	jáli[H]	ó[H]
na-alli-aŋ	i	iripaʔi	iali	o
3ERG-buy-APPL	3ABS	NAME	NAME	there

'Ali bought it for Ripa'i over there.'

b. *Pitch track*: