

## The Prosody of Paths

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The goal of this talk is to articulate and defend an output-oriented phonological analysis of a restriction that is traditionally situated in the syntax: Path Containment (Pesetsky 1982). By studying the optimal application of processes in the phrasal phonology of Mandarin (AN), I will argue that the prosody must be leveraged in a transparent and surface-oriented way **to reflect the paths of certain types of syntactic movements.**

Our results will ultimately fit into the interface paradigm of Match Theory (Selkirk 2009), but they will seem at first blush to demand a deep rethinking of syntax-prosody mapping. So to start from the preliminaries:

- **Prosodic Structure:** (Nespor & Vogel 1986, Itô & Mester 1992, 2007)
  - Phonological strings are parsed into hierarchical constituent structures, built from abstract constituents along the prosodic hierarchy ( $\sigma > FT > \omega > \phi > \iota$ ).
  - Prosodic structure is built in a parallel/global phonological evaluation, where it is subjected to ranked and violable output-oriented phonological constraints.
- **Syntax-Prosody Mapping:** (Selkirk 1984, 2009, Truckenbrodt 1999)
  - When phonological strings are produced with broad-focus/regular speech rate, we can identify a “default/optimal” pattern of prosodic phrasing by studying introspective judgments about the distribution of phonological processes.
  - This optimal pattern of phrasing is partially shaped by interface constraints that force the preservation of specific kinds of syntactic information.

My first goal today will be to argue for a new kind of interface constraint: WRAP(CHAIN). Our ultimate target here: to connect this constraint with independent output restrictions to explain a ban on crossing paths of movement in Mandarin—which looks a bit like this:

- (1) a.  $[\text{OUTER WHAT SUBJECT}]$  do you know  $[\text{INNER WHO}]$  to talk to  $\text{---}_I$  about  $\text{---}_O$ ?
- b.  $[\text{INNER WHO}]$  do you know  $[\text{OUTER WHAT SUBJECT}]$  to talk to  $\text{---}_I$  about  $\text{---}_O$ ?
- 

### Map:

1. Background
2. WRAP(CHAIN)
3. Path Containment

## 1. Background

Mandar is a language of the South Sulawesi subfamily, spoken by roughly 500,000 people in Central Indonesia. The basic word order is vso; the verb shows alternations in *voice*; there's ERG-ABS agreement. Brodtkin (to appear A) shows that vso strings  $\rightarrow$  xps.

- (2) [<sub>voiceP</sub> **Mam**-baca a'      yau   buku ]  
           ANTIP-read 1ABS      1SG   book  
 'I'm reading a book.'

The focus of this talk is the way that Mandar clauses are parsed into prosodic structures. This investigation begins from the building blocks of suprametrical prosody:

- Prosodic word ( $\omega$ ): regular penultimate stress in Mandar.
- Phonological phrase ( $\phi$ ): final H-tone in Mandar.

A complex DP:

- (3) [<sub>DP/ $\phi$</sub>  búku t̂jennirrára mándar<sup>H</sup> ]  
           book love spell mandar  
 'A book of Mandar love spells'

In vso clauses, these diagnostics reveal the following parse:

the v forms a  $\omega$  and a minimal  $\phi$ , so does the s, and so does the o.

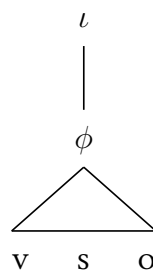
- (4) { $\phi$  v $\omega$  }      { $\phi$  s $\omega$  }      { $\phi$  o $\omega$  }      { $\phi$  x $\omega$  }  
       nawát̂ja<sup>H</sup>    i      imína<sup>H</sup>      wúku<sup>H</sup>      diyéna?<sup>H</sup>  
       3ERG-read 3ABS    NAME      book      earlier  
 'Mina read the book earlier.'

What we're really interested in is a higher level of clause-internal prosodic constituency. Match Theory sets us up with some basic expectations: if all xps  $\rightarrow$   $\phi$ s and some cps  $\rightarrow$   $\iota$ s,

(5) *Mandar Syntax*



(6) *Plausible Prosody*



## Clause-Internal Prosodic Organization

To detect higher structure, we'll rely on a classical methodology (Nespor & Vogel 1986):

- Prosodic constituents define the domains of application for segmental processes.
- Introspective judgments about these processes → reveal higher-level constituency.

**Between the v + o:**

(Brodtkin to appear A,B):

1. COALESCENCE: /ai ae, ao au/ → [e, o]

(7)	{ $\pi$ v	o }	{ $\pi$ x	}
	néte <sup>H</sup>	i	kandáo <sup>H</sup>	di wangáe <sup>H</sup>
	na-itai	i	kandao	di bangae
	3ERG- <i>seek</i>	3ABS	<i>scythe</i>	in PLACE
	‘She’s looking for the scythe in Banggae.’			

2. GLOTTAL DELETION: intervocalic /ɲ ʔ/ → [∅]

(8)	{ $\pi$ v	o }	{ $\pi$ x	}
	nakáros <sup>H</sup>	i	iripáʔi <sup>H</sup>	di rewatáʔa <sup>H</sup>
	na-karaʔus	i	iripaʔi	di rebataʔa
	3ERG- <i>scratch</i>	3ABS	NAME	in PLACE
	‘She scratched Ripa’i in Rebata’a.’			

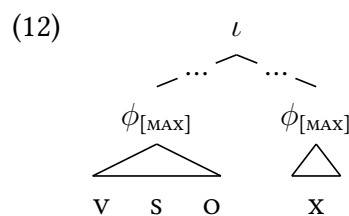
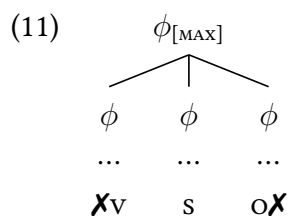
3. VOICED STOP LENITION: intervocalic /b d d̃ g/ → [w ɹ j ʎ]

(9)	{ $\pi$ v	o }	{ $\pi$ x	}	{ $\pi$ x	}
	nasáka <sup>H</sup>	i	waláo <sup>H</sup>	do álla <sup>H</sup>	ó <sup>H</sup>	
	na-saka	i	balao	do allo	o	
	3ERG- <i>catch</i>	3ABS	<i>mouse</i>	that day	PRT	
	‘They caught the mouse on that day.’					

**Between the v, s, + o:**

(10)	{ $\phi_{[MAX]}$ v	s	o }	{ $\phi_{[MAX]}$ x	}
	néte <sup>H</sup>	i	irípe <sup>H</sup>	waláo <sup>H</sup>	díon <sup>H</sup>
	na-itai	i	iripaʔi	balao	dion
	3ERG- <i>seek</i>	3ABS	NAME	<i>mouse</i>	there
	‘Ripa’i is looking for the mouse there.’				

These processes = blocked at edges of the  $\phi_{[MAX]}$  (Itô & Mester 2007, Brodtkin to appear A)



## 2. Wh-Movement

Mandar has a process of WH-movement that raises WH-words into the left periphery.

- DP WH-movement only targets ABS DPS; triggers the loss of ABS AGR;
- DP WH-words always form  $\phi$ s; usually monosyllabic (Brodtkin to appear B).

WH-movement of the O:

(13)	$\downarrow$ $\{ \phi_{[MAX]} \text{ WH}_O \quad \text{V} \quad \text{S} \quad t_O \}$	$\{ \phi_{[MAX]} \text{ X} \}$
	$\text{né} \quad \text{na}^H \text{túme}^H \quad \text{iripá?i}^H \quad \text{---} \quad \text{díon}^H$ $\text{nai} \quad \text{na-tumae} \quad \text{ripa?i} \quad t_{nai} \quad \text{dion}$ $\text{who} \quad \text{3ERG-propose} \quad \text{NAME} \quad t_{who} \quad \text{there}$	
	‘Who did Ripa’i propose to ___ there?’	

WH-movement affects the distribution of  $\phi_{[MAX]}$ s.

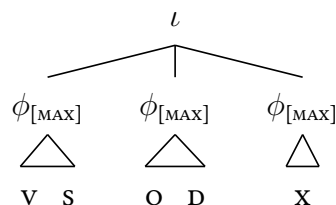
- When the *voiceP* contains four  $\omega$ s, it is typically split up into two maximal  $\phi$ s (14). (Brodtkin to appear A: the maximum number of  $\omega$ s in the Mandar  $\phi_{[MAX]} = \text{three}$ .)
- When WH-movement targets the last word of a vsOD string: the parse changes (15).

(14)	$\{ \phi_{[MAX]} \text{ V} \quad \text{S} \}$	$\{ \phi_{[MAX]} \text{ O} \quad \text{D} \}$	$\{ \phi_{[MAX]} \text{ X} \}$
	$\text{natappása}^H \quad \text{ĩ} \quad \text{iripá?i}^H \quad \text{báju}^H \quad \text{yúru}^H \quad \text{díon}^H$ $\text{na-tappasaj} \quad \text{i} \quad \text{iripa?i} \quad \text{bad}^H \text{zu} \quad \text{guru} \quad \text{dio}$ $\text{3ERG-wash for} \quad \text{3ABS} \quad \text{NAME} \quad \text{shirt} \quad \text{teacher} \quad \text{there}$		
	‘Ripa’i washed a shirt for the teacher there.’		

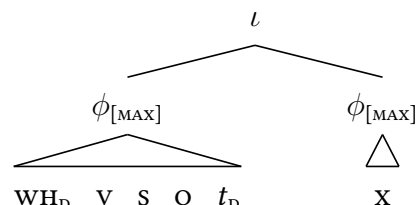
(15)	$\downarrow$ $\{ \phi_{[MAX]} \text{ WH}_D \quad \text{V} \quad \text{S} \quad \text{O} \quad t_D \}$	$\{ \phi_{[MAX]} \text{ X} \}$
	$\text{né} \quad \text{na}^H \text{tappása}^H \quad \text{ĩrípe}^H \quad \text{wáju}^H \quad \text{---} \quad \text{díon}^H$ $\text{nai} \quad \text{na-tappasaj} \quad \text{iripa?i} \quad \text{bad}^H \text{zu} \quad t_{nai} \quad \text{dio}$ $\text{who} \quad \text{3ERG-wash for} \quad \text{NAME} \quad \text{shirt} \quad t_{who} \quad \text{there}$	
	‘Who did Ripa’i wash a shirt for ___ there?’	

### Summary:

(16) a. *Without WhM*



b. *WhM of the D*



## A Change in Prosody

WH-movement always triggers the same pattern of prosodic restructuring in Mandarin:

The path from a WH-word to its trace is parsed into a single  $\phi$ .

This is distinct from the phonology of contrastive focus in the language (Appendix A).

### WH-movement in embedded clauses:

- (17)  $\{\phi_{[MAX]}$  }  $\{\phi_{[MAX]}$  }  $\{\phi_{[MAX]}$  }
- |                      |                      |      |                         |    |                   |                    |                    |
|----------------------|----------------------|------|-------------------------|----|-------------------|--------------------|--------------------|
| néssa <sup>H</sup> ĭ | iripá?i <sup>H</sup> | mwa? | nalattǰári <sup>H</sup> | ĭ  | yúru <sup>H</sup> | dǰála <sup>H</sup> | waláo <sup>H</sup> |
| naissan ĭ            | iripa?i              | mua? | na-lattǰari             | i  | guru              | dǰala              | balao              |
| knows                | 3ABS NAME            | C    | 3ERG-throw              | at | 3ABS teacher      | net                | mouse              |
- ‘Ripa’i knows that the teacher threw a net at the mouse.’

- (18)  $\{\phi_{[MAX]}$  }  $\{\phi_{[MAX]}$  }
- |                      |                      |     |                                       |                   |                   |                        |
|----------------------|----------------------|-----|---------------------------------------|-------------------|-------------------|------------------------|
| néssa <sup>H</sup> ĭ | iripá?i <sup>H</sup> | né  | na <sup>H</sup> lattǰári <sup>H</sup> | yúru <sup>H</sup> | jála <sup>H</sup> | _____                  |
| naissan ĭ            | iripa?i              | nai | na-lattǰari                           | guru              | dǰala             | <i>t<sub>nai</sub></i> |
| knows                | 3ABS NAME            | who | 3ERG-throw                            | at                | teacher           | <i>t<sub>who</sub></i> |
- ‘Ripa’i knows who the teacher threw a net at \_\_\_\_.’

### WH-movement from embedded clauses:

- (19)  $\{\phi_{[MAX]}$  }  $\{\phi_{[MAX]}$  }  $\{\phi_{[MAX]}$  }
- |                       |                      |                       |                    |                      |                      |
|-----------------------|----------------------|-----------------------|--------------------|----------------------|----------------------|
| nahára <sup>H</sup> i | iripá?i <sup>H</sup> | gumóra <sup>H</sup> i | imína <sup>H</sup> | ditánna <sup>H</sup> | lo?dían <sup>H</sup> |
| nahara? i             | iripa?i              | gumora i              | imina              | ditanna              | lo?dian              |
| 3ERG-hope             | 3ABS NAME            | scream                | 3ABS NAME          | when                 | seeing the ring      |
- ‘Ripa’i hopes that Mina will scream when she sees the ring.’

- (20)  $\{\phi_{[MAX]}$  }  $\{\phi_{[MAX]}$  }
- |     |                                   |                    |                     |                        |                      |                      |
|-----|-----------------------------------|--------------------|---------------------|------------------------|----------------------|----------------------|
| né  | na <sup>H</sup> hára <sup>H</sup> | irípe <sup>H</sup> | yumóra <sup>H</sup> | _____                  | ditánna <sup>H</sup> | lo?dían <sup>H</sup> |
| nai | na-hara?                          | ripa?i             | gumora              | <i>t<sub>nai</sub></i> | ditanna              | lo?dian              |
| who | 3ERG-hope                         | NAME               | scream              | <i>t<sub>who</sub></i> | when                 | seeing the ring      |
- ‘Who does Ripa’i hope \_\_\_\_ will scream when they see the ring?’

### WH-movement of adjuncts:

- (21)  $\{\phi_{[MAX]}$  }
- |                     |                        |                    |                   |                   |                          |
|---------------------|------------------------|--------------------|-------------------|-------------------|--------------------------|
| píra <sup>H</sup> ĭ | natappása <sup>H</sup> | ĩrípe <sup>H</sup> | wáju <sup>H</sup> | yúru <sup>H</sup> | _____                    |
| piran ĭ             | na-tappasan            | iripa?i            | badǰu             | guru              | <i>t<sub>piran</sub></i> |
| when                | 3ABS 3ERG-wash for     | NAME               | shirt             | teacher           | <i>t<sub>when</sub></i>  |
- ‘When did Ripa’i wash the shirts for the teacher \_\_\_\_?’



### 3. Path Containment

Our results raise questions on the “P” side of things:

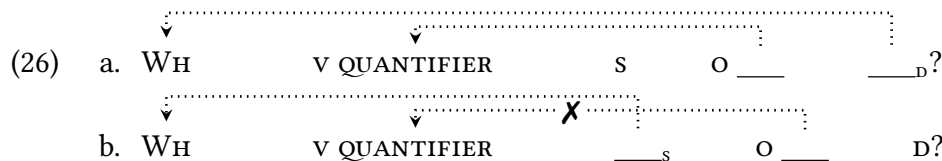
- PHONOLOGY: how does WRAP(CHAIN) interact with output constraints (BINARITY)? Increasing the weight of fronted WH-phrases affects our patterns in complex ways.
- PRODUCTION: the surface prosody of natural speech can deviate from the optimal prosody that emerges from introspective judgments. What of WRAP(CHAIN) then?

But our results also open up the path toward a separate possibility:

- If certain syntactic relationships are reinstated in output prosodic constituency,
- Then how many “restrictions on syntax” can be reduced to output-oriented effects?

**Our final goal:** to leverage WRAP(CHAIN) to build a completely output-oriented account of one restriction on syntactic displacement: a ban on crossing paths.

The issue:



Mandar has six adnominal quantifiers that follow their associated DPS in non-finite clauses: *nasang* “all,” *pira* “some,” *le’ba’* “exactly,” *tappa’* “only,” *to’o* “too,” and *tia* “even.”

- (27) Mau    napelambi                    sola-u    nasang                    digena’,  
 Though 3ERG-visit                    friend-1GEN all                    earlier  
 ‘Though all my friends visited [–FIN] earlier,’

These quantifiers have no special influence on prosodic phrasing when they’re adnominal. Adding a quantifier after a DP has the same effect as adding any other  $\omega$  there.

- (28)  $\{\phi_{[MAX]}$                      $\}$                      $\{\phi_{[MAX]}$                      $\}$                      $\{\phi_{[MAX]}$                      $\}$   
 mo    néte<sup>H</sup>    iripáʔi<sup>H</sup>                    gúru    násaŋ<sup>H</sup>                    állo sáttu<sup>H</sup>,  
 mau    na-itai    iripaʔi                    guru    nasəŋ                    allo sattu  
 though 3ERG-seek NAME                    teacher all                    day saturday  
 ‘Though Ripa’i looked for [–FIN] all the teachers on saturday,’

- (29)  $\{\phi_{[MAX]}$                      $\}$                      $\{\phi_{[MAX]}$                      $\}$                      $\{\phi_{[MAX]}$                      $\}$   
 mo    néte<sup>H</sup>    iripáʔi<sup>H</sup>                    gúru    malingáo<sup>H</sup>                    állo sáttu<sup>H</sup>,  
 mau    na-itai    iripaʔi                    guru    malingao                    allo sattu  
 though 3ERG-seek NAME                    teacher tall                    day saturday  
 ‘Though Ripa’i looked for [–FIN] the tall teachers on saturday,’

## The Ban on Crossing Paths

In finite clauses, these quantifiers raise out of their associated nominals to adjoin to the v (forming minimal  $\phi$ s with the v).

When *nasang* “all” raises out of the s:

- (30)  $\{\phi_{[MAX]}\}$   $\{\phi_{[MAX]}\}$   $\{\phi_{[MAX]}\}$
- |                  |                           |                        |                           |                   |                     |                      |
|------------------|---------------------------|------------------------|---------------------------|-------------------|---------------------|----------------------|
| nálljan          | <b>nása<sup>H</sup></b> ĩ | yúru <sup>H</sup>      | _____                     | búku <sup>H</sup> | ıóttor <sup>H</sup> | diyéna? <sup>H</sup> |
| na-allian        | nasan i                   | guru                   | <i>t<sub>nasang</sub></i> | buku              | dottor              | digena?              |
| 3ERG-buy for all | 3ABS teacher              | <i>t<sub>all</sub></i> |                           | book              | doctor              | earlier              |
- ‘All the teachers bought [+FIN] books for the doctors earlier.’

Quantifier Movement also triggers the Wrapping Effect (though the wrapping  $\phi$ s are slightly misaligned).

When *nasang* “all” raises out of the D:

- (31)  $\{\phi_{[MAX]}\}$   $\{\phi_{[MAX]}\}$
- |                  |                           |                   |                   |                        |                           |                      |
|------------------|---------------------------|-------------------|-------------------|------------------------|---------------------------|----------------------|
| nálljan          | <b>nása<sup>H</sup></b> ĩ | yúru <sup>H</sup> | wúku <sup>H</sup> | ıóttor <sup>H</sup>    | _____                     | diyéna? <sup>H</sup> |
| na-allian        | nasan i                   | guru              | buku              | dottor                 | <i>t<sub>nasang</sub></i> | digena?              |
| 3ERG-buy for all | 3ABS teacher              | book              | doctor            | <i>t<sub>all</sub></i> |                           | earlier              |
- ‘The teacher bought [+FIN] books for all the doctors earlier.’

Quantifier Movement can occur within the path of WH-movement:

- (32)  $\{\phi_{[MAX]}\}$   $\{\phi_{[MAX]}\}$
- |           |                          |                          |                    |                            |                           |                        |                         |
|-----------|--------------------------|--------------------------|--------------------|----------------------------|---------------------------|------------------------|-------------------------|
| <b>né</b> | na <sup>H</sup> tappásal | <b>lé?ba<sup>H</sup></b> | irípe <sup>H</sup> | sandzúta <sup>H</sup>      | _____                     | _____                  | tón djólo? <sup>H</sup> |
| nai       | na-tappasan              | le?ba?                   | iripa?i            | sandzuta                   | <i>t<sub>le?ba?</sub></i> | <i>t<sub>nai</sub></i> | taun diolo?             |
| who       | 3ERG-wash for exactly    | NAME                     | a million          | <i>t<sub>exactly</sub></i> | <i>t<sub>who</sub></i>    |                        | year last               |
- ‘Who did Ripa’i launder [+FIN] exactly \$1,000,000 for \_\_\_\_\_ last year?’

But Quantifier Movement cannot cross the path of WH-movement:

- (33)  $\{\phi_{[MAX]}\}$   $\{\phi_{[MAX]}\}$   $\times$
- |            |                          |                        |       |           |                            |         |         |
|------------|--------------------------|------------------------|-------|-----------|----------------------------|---------|---------|
| <b>nai</b> | na-mat-tappasal          | <b>le’ba’</b>          | _____ | sanjuta   | _____                      | iripa’i | manini? |
| who        | will-AF-wash for exactly | <i>t<sub>who</sub></i> |       | a million | <i>t<sub>exactly</sub></i> | NAME    | later   |
- INTENDED: ‘Who will launder [+FIN] exactly \$1,000,000 for Ripa’i later?’

### Questions:

- (34) a. Why are nested paths ok?  
 b. Why are crossing paths banned?  
 c. How does the language rescue “crossing-path” derivations?



### Covert Movement

**Part 3:** “how are crossing derivations really handled?”

Answer: when Quantifier Movement should cross the path of WHM, it “fails to occur.”

(40)  $\{\phi_{[MAX]}\}$  .....  $\{\phi_{[MAX]}\}$  }  $\{\phi_{[MAX]}\}$  }  $\{\phi_{[MAX]}\}$  }

<b>né</b>	na <sup>H</sup> mattappásas	_____	_____	sandžúta <sup>H</sup>	<b>lé?ba<sup>H</sup></b>	iripá?i <sup>H}</sup>	maníni <sup>H}</sup>
nai	na-man-tappasaj	<i>t<sub>nai</sub></i>		sandžuta	le?ba?	iripa?i	manini
who	will-AF-wash for	<i>t<sub>who</sub></i>		a million	exactly	NAME	later

‘Who will launder [+FIN] exactly \$1,000,000 for Ripa’i later?’

First impression: a crisis of modularity:

- Syntactic movement (= QM) should not be constrained by output phonology.
- If QM really “fails to occur” in this context: crossing must be blocked in the syntax.

**But:** the movement still seems to occur.

In the non-finite clauses that lack Quantifier Movement, quantifiers scope beneath NEG.

(41) Mau **ndang** napelambi sola-u **nasang**,  
 Though NEG 3ERG-visit friend-1GEN all  
 ‘Though all my friends didn’t visit [–FIN],’ → ✓NOT > ALL, ✗ALL > NOT

In finite clauses, Quantifier Movement opens up a second scopal possibility:

(42) **Ndang** i napelambi **nasas** sola-u \_\_\_\_\_,  
 NEG 3ABS 3ERG-visit all friend-1GEN *t<sub>all</sub>*  
 ‘All my friends didn’t visit [+FIN].’ → ✓NOT > ALL, ✓ALL > NOT

The high-scope reading persists when Quantifier Movement is “blocked” by WH-movement:

(43) Nai mu-sanga **ndang** map-pelambi \_\_\_\_\_ sola-na **nasang**?  
 who 2ERG-think NEG AF-visit *t<sub>who</sub>* friend-3GEN all  
 ‘Who do you think didn’t visit [+FIN] all of their friends?’ → ✓ALL > NOT

**Analysis:** Quantifier Movement occurs in the syntax even when it crosses paths w/ WHM. Movement creates copies, and phonology chooses which copies to realize (Bošković 2001). Pronouncing the lower copy of QM → an output-optimizing strategy to avoid crossing  $\phi$ s.

(44) Who do they think **NEG** visited **all** who their friends **all**?

**Result:** an output analysis of suspended movement—and the ban on Crossing Paths.





## Appendix B: Toward a Typology of Movements

The real case for our analysis emerges from two further generalizations about movement.

**First:** the remaining movements are parameterized for wrapping in Mandar.

1. Weak quantifiers preferentially move to preverbal positions + trigger wrapping:

(51)  $\{\phi_{[MAX]}$   $\}$   $\{\phi_{[MAX]}$   $\}$   $\{\phi_{[MAX]}$   $\}$   
 mánde<sup>H</sup> i waláo<sup>H</sup> mé?di wáta?<sup>H</sup> diyena?<sup>H</sup>,  
 maŋ-ande i balao mai?di bata? digena?  
 ANTIP-eat 3ABS mouse a lot of corn earlier  
 ‘The mouse ate a lot of corn earlier’ (contact register)

(52)  $\{\phi_{[MAX]}$   $\}$   $\{\phi_{[MAX]}$   $\}$   
 mé?di nánde<sup>H</sup> wálo<sup>H</sup> — wáta?<sup>H</sup> diyena?<sup>H</sup>  
 mai?di na-ande balao *t<sub>mai?di</sub>* bata? digena?  
 a lot of 3ERG-eat mouse *t<sub>a lot of</sub>* corn earlier  
 ‘The mouse ate a lot of corn earlier’ (natural Mandar)

2. Scrambling: definite arguments can scramble to the right, yielding orders like vos. Brodtkin (to appear A) shows that (i) this is movement + (ii) scrambled DPS  $\rightarrow \phi_{[MAX]}$ s.

(53)  $\{\phi_{[MAX]}$   $\}$   $\{\phi_{[MAX]}$   $\}$   
 nasáka<sup>H</sup> i — waláo<sup>H</sup> iripá?i<sup>H</sup>  
 na-saka i *t<sub>iripa?i</sub>* balao iripa?i  
 3ERG-catch 3ABS *t<sub>NAME</sub>* mouse NAME  
 ‘Ripa’i caught the mouse.’

3. Topicalization: referential xPs can be topicalized to the left. Brodtkin (submitted) shows that (i) this is movement + (ii) topicalized xPs  $\rightarrow \iota$ s. (Test: nasal assimilation)

(54)  $\{\iota$   $\}$   $\{\iota$   $\}$   
 itim búlaŋ,<sup>H</sup> póle<sup>H</sup> i irámas<sup>H</sup> sola wenéna<sup>H</sup> —  
 itij bulaŋ pole i iramaŋ sola baine-na  
 that month come 3ABS NAME with wife-3GEN  
 ‘That month, Ramang came with his wife.’

4. Pivot Raising: under specific prosodic circumstances, ABS DPS shift to a position that falls between auxiliaries and the verb. No wrapping.

(55)  $\{\phi_{[MAX]}$   $\}$   $\{\phi_{[MAX]}$   $\}$   
 púra<sup>H</sup> i iripá?i<sup>H</sup> mánde állo<sup>H</sup> —  
 pura i iripa?i maŋ-ande allo  
 finished 3ABS NAME ANTIP-eat midday  
 ‘Ripa’i is finished having lunch.’

5. Pronoun Raising: unstressed pronouns move through a series of positions in finite clauses, ultimately ending up in 2P. No wrapping.

(56)  $\{\phi_{[MAX]}$   $\downarrow$   $\}$   $\{\phi_{[MAX]}$   $\downarrow$   $\}$   
 púra<sup>H</sup> ma jáu<sup>H</sup> mánde<sup>H</sup> \_\_\_\_\_ jépa?<sup>H</sup>  
 pura ma? iau maŋ-ande  $t_{iau}$  džepa?  
 finished PFV.1ABS 1SG ANTIP-eat  $t_{1SG}$  tortilla  
 ‘I’m done eating tortillas.’

6. Preposition Raising: unstressed stranded prepositions move left in the *voicer*. No wrapping.

(57)  $\{\phi_{[MAX]}$   $\}$   $\{\phi_{[MAX]}$   $\}$   
 naláttjar<sup>H</sup> i iripá?i<sup>H</sup> báta?<sup>H</sup> lo ri jáli<sup>H</sup>  
 na-láttjar i iripa?i bata? lao di iali  
 3ERG-throw 3ABS NAME corn toward to NAME  
 ‘Ripa’i threw the corn at Ali.’

(58)  $\{\phi_{[MAX]}$   $\downarrow$   $\}$   $\{\phi_{[MAX]}$   $\downarrow$   $\}$   
 naláttjar<sup>H</sup> i láo<sup>H</sup> irípe<sup>H</sup> wáta?<sup>H</sup> \_\_\_\_\_  
 na-láttjar i lao iripa?i bata?  $t_{lao}$   
 3ERG-throw 3ABS toward NAME corn  $t_{toward}$   
 ‘Ripa’i threw the corn at him.’

**Second:** the correlation between wrapping effects and crossing constraints = perfect.

- The movements that force wrapping → unable to cross paths with each other.  
(WH-movement, Focus-Fronting, Amount Movement, Quantifier Movement)
- The movements that don’t force wrapping → can cross each other/everything else  
(Scrambling, Topicalization, Pivot Raising, Pronoun Raising, Preposition Raising)

	MOVEMENT	WRAPPED BY $\phi$ ?	CROSSING CONSTRAINT?
	WH-Movement	✓	✓
	Quantifier Movement	✓	✓
	Amount Movement	✓	✓
(59)	Scrambling	✗	✗
	Topicalization	✗	✗
	Pivot Raising	✗	✗
	Pronoun Raising	✗	✗
	Preposition Raising	✗	✗

**References:** find them online at: <https://tinyurl.com/brodtkinberkeleydomains>