Prosodic Greed in Mandar

Dan Brodkin; TripleAFLA; July 1, 2022

A longstanding question in generative theory:
What is responsible for determining the linear order of syntactic constituents in a string?

One answer: Direct Linearization  (Kayne 1994)
- The syntax encodes relationships of dominance between syntactic objects (c-command).
- As syntactic objects are converted into phonological strings, relationships of dominance (x c-commands y) are strictly converted into relationships of precedence (x precedes y).

An alternative: Indirect Linearization  (Berwick & Chomsky 2011)
- Linearization typically translates relationships of dominance to those of precedence, 
- ...but it can be altered by operations that sit outside of the syntax proper.

Much research has argued that Indirect Linearization is an analytical necessity:

But this raises theoretical questions that do not come up in a Direct Linearization world:
1. What type of structure does non-syntactic movement reference?
2. What motivates it?
3. How does it fit into the architecture of the theory of syntax?

Today’s talk will investigate a case of post-syntactic displacement in Mandar. I argue that:
1. There is a class of elements that undergo displacement in the phonology,
2. They move to a particular position within the prosodic structure of the clause, and
3. This movement is driven by prosodic constraints on phonologically minimal words.
Mandar: Quick Facts

Mandar is an Austronesian language that is spoken on the Indonesian island of Sulawesi.

The language shows a surface profile that is typical of South Sulawesi:  (Brodkin 2020, 2021...)
  - vso word order (but allows vos)
  - Voice system: AV, PV, LV, CV, PASS
  - Agreement: the pivot is indexed with an absolutive enclitic.

This talk will focus on something new in the language: the demonstrative system.

Data come from two sources: descriptive literature and ongoing work (2018-) with Jupri Talib, a young adult from the town of Ugibaru (occasionally supplemented with work with others).

Today’s Talk

The phenomenon: a **demonstrative-reinforcer construction** (Bernstein 1997, Roehrs 2010)

Mandar has two demonstratives that are invariably followed by locative “reinforcers.”

(1) a. *di’e ... e*
    this ... here

b. *di’o ... o*
    that ... there

The demonstrative and reinforcer typically bracket the associated DP:

(2) Apa sangan-na [dp *di’e kappung e*]?
    what name-3gen this village here
    ‘What’s the name of this village here?’ Friberg & Jerniati 2000; 207

But under some circumstances, the reinforcer surfaces **quite far away**:

(3) [dp *Di’e muane-na ma-kikkir sanna’ e*]
    This man-3gen stat-miserly very here
    ‘This husband of hers was truly a pinchpenny.’ Pelenkahu et al. 1983; 172

The Puzzle: How can we capture the dependency **and** the position of the reinforcers?

Roadmap:

1. The Basic Syntax
2. The Prosodic Generalization
3. The Phonological Solution
1: The Basic Syntax

This construction recruits a pair of locative adverbs that typically adjoin to the vp.

(4) a. \[ \text{Buai}=a' \text{ mating e } \] !
   \( \text{LV.open=1ABS for.me here} \)
   “Open up for me here!” Pelenkahu et al. 1983; 9

b. Apa=digena’ [\( \text{vp di-uwa o } \) ]?
   \( \text{what=just PASS-say there} \)
   “What was just said there?” Friberg & Jerniati 2000; 24

The reinforcers are obligatory in the presence of these two demonstratives.

(5)  *Di’e book
    This book
    “This book.” JT: 11.3, 27

The reinforcers are only obligatory with certain demonstratives.

(6) **Iting buku.**
    That book
    “That book.” JT: 11.3, 29

The reinforcers have to “match” the demonstratives that appear.

(7) *Di’e book
    This book there
    “This book.” JT: 11.3, 31

Proposal: this syntactic dependency involves Lexical Selection (Merchant 2019)
- The demonstrative originates in a specifier position in the DP (Brugé 2002)
- The demonstrative selects the reinforcer (Roehrs 2010)
- DP-Internal Word Order: linked to DP-internal movement (Paul & Potsdam 2022)

(8) Demonstratives select Reinforcers
1.5: Dealing with Separation

**Puzzle:** the reinforcer invariably appears at the right edge of the clause.

(9) Map-pesta=i toAmerika [dp di'o allo ] map-pake baracung o.
                AV-celebrate=3abs Americans that day AV-shoot fireworks there
            “Americans celebrate on that day by shooting fireworks.” JT: 9.13, 19

Within the syntax, we could try to capture this pattern in a number of ways:

1. **Rightward Movement** of the reinforcers:

   \[
   \begin{array}{c}
   \text{FP} \\
   \vdots \\
   \text{DP} \\
   \text{DEMP} \\
   \text{DEM}^0 \quad \text{ADV} \\
   \text{ADV} \\
   \text{NOUN} \\
   \end{array}
   \]

2. **Leftward Movement** of everything else:

   \[
   \begin{array}{c}
   \text{FP}_2 \\
   \text{FP}_1 \\
   \vdots \\
   \text{DP} \\
   \text{ADV} \\
   \text{DEMP} \\
   \text{DEM}^0 \quad \text{ADV} \\
   \text{ADV} \\
   \text{NOUN} \\
   \end{array}
   \]

3. **Base-Generation** of the reinforcers at the right edge:

   \[
   \begin{array}{c}
   \text{FP} \\
   \vdots \\
   \text{DP} \\
   \text{DEMP} \\
   \text{DEM}^0 \quad \text{ADV} \\
   \text{ADV} \\
   \text{NOUN} \\
   \end{array}
   \]
1.5: Dealing with Separation

Syntactic accounts face two empirical challenges.

Problem One: the domains that host the reinforcers are syntactically heterogeneous.

- They include matrix and embedded clauses, both finite and non-finite:

  (10) \([cp \ Mau \ \text{tanda}={i} \ \text{di’e} \ \text{paket} \ \text{e}] \), \(\text{ndappa}={i} \ \text{u-buai} \).  
  Though arrived=3ABS this package here not.yet=3ABS PV.1ERG-open
  ‘Though this package came, I haven’t opened it yet.’  
  JT; 11.12; 29.

- Clause-initial topics (but not foci):

  (11) \([dp \ \text{Di’o} \ \text{wattu} \ \text{o}] \), \(\text{na}=\text{mamba}={i} \ \text{S-um-obal} \). 
  that time there FUT=AV.go=3ABS AV-sail
  ‘At that time, he was going to sail.’  
  Pelenkahu et al. 1983; 2

- And fragment answers.

  (12) \([dp \ \text{Di’o} \ \text{kopi} \ \text{o}] \).
  that coffee there
  ‘That coffee.’  
  Heard in a coffee shop

Problem Two: when demonstratives compete, the winner is chosen without reference to height.

- When clauses contain two demonstratives, only the rightmost is matched.

  (13) \(\text{Na}=\text{alli}={i} \ [dp \ \text{di’e} \ \text{tau}] \ [dp \ \text{di’o} \ \text{buku}] \ \text{o} \).  
  PV.3ERG-buy=3ABS this person that book there
  ‘This person bought that book.’  
  JT; 3.5, 154

- … even when the rightmost DP is obviously lower in the syntax.

  (14) \(\text{Bemme}={i} \ [dp \ \text{di’o} \ \text{tau}] \ [pp \ \text{non} \ \text{di’e} \ \text{passauang}] \ \text{e} \).  
  fall=3ABS that person down this well here
  ‘That person fell down this well!’  
  JT; 3.5, 169

Result: the correct analysis...

1. Cannot take the reinforcers to sit in a consistent position (e.g., \(c^0\)),
2. Cannot take their associates to move to a consistent position (e.g., \(\text{SPEC,TP}\)),
3. And cannot treat the reinforcers as a type of (Locality-Sensitive) Agreement (e.g., in \(c^0\)).
2: The Prosodic Generalization

The key to understanding the distribution of the reinforcers lies in **prosodic organization**. Phonological strings have their own constituent structure (Selkirk 1984; Nespor & Vogel 1986)

1. Grounded in, but distinct from, syntax (Nespor & Vogel 1986, Selkirk & Elordieta 2011)
2. Made up of prosodic categories with distinct phonological properties (tones, lengthening...)
3. Assumed inventory: word, phrase, intonational phrase \((\omega, \phi, \iota)\) (Itô & Mester 2009)

**Illustration**: Prosodic Organization

(15) Mane mi’-oro=i di olo boyan-na.  
just AV-sit=3ABS in front house-3GEN

‘They just sat in front of his house.’

JT: 6.30, 1

(16) **Prosodic Structure**

\[
\begin{array}{ccccc}
\omega & \phi & \phi \\
\omega & \omega & \omega & \omega \\
mane & mi’oro & di olo & boyanna
\end{array}
\]

(17) **Pitch Track: Example (15)**

They just sat down in front of his house
2.5: The Prosodic Generalization

The crucial unit here: the intonational phrase.

- The largest constituent in the prosodic hierarchy.
- Prosodic Diagnostic: final lengthening at the right edge.

**Prosodic Generalization**: the reinforcers always surface at the right edge of an \( \iota P \).

(18) Reinforcer Placement: \( \{ \iota \ldots (\phi [\omega \text{DEM }] \ ... [\omega \text{DP }] ) \ ... \text{ADV} \} \)

This captures their surface distribution:

- Fragments \( \rightarrow \iota \)
- Clause-initial topics \( \rightarrow \iota \)
- Matrix clauses, preposed embedded clauses \( \rightarrow \iota \)

Illustration: the reinforcers surface in positions where they receive final lengthening.

(19) Mane u-saka=i di’o manu’ di boyang o.

Just \( \text{PV.1ERG-catch=3ABS that bird in house there} \)

'I just caught that bird in the house.' \( \text{JT: 6.30, 2} \)

(20) \( \{ \iota (\phi \text{Mane usakai}) (\phi \text{di’o manu’}) (\phi \text{di boyang}) \text{[O]} \} \)
3: The Phonological Account

Proposal: the reinforcers are positioned at the right edge of the intonational phrase.

\[ 21 \quad \text{Reinforcer Postposing: } \{ \iota \ldots (\varphi [\omega \text{ DEM }] \ldots [\omega \text{ DP }] ) \ldots \text{ADV} \} \]

This step must occur in a component of the grammar where prosodic information is available. This information is not available in the syntax, on standard assumptions (Zwicky & Pullum 1986)

Result: this is a case of post-syntactic displacement that occurs in the phonology.

The Next Question: why does it occur?

Starting Formalization: Prosodic Subcategorization (Inkelas 1990)

- Lexical items can be prespecified for the way in which they interact with prosodic structure.

\[ 22 \quad \text{a. } \sqrt{\text{NUH-UH}} \rightarrow \{ \iota \ldots \} ^{\text{HLH}} \]

b. “The lexical item nuh-uh has to be an \( \iota \) that bears the contour Rise-Fall-Rise.”

- Formalism: the reinforcers are lexically specified to surface at the right edge of the \( \iota \):

\[ 23 \quad \text{a. } \sqrt{\text{HERE}} \rightarrow \{ \iota \ldots \} \]

b. \( \sqrt{\text{THERE}} \rightarrow \{ \iota \ldots \} \)


- Constraint Set:
  1. SubCat: assign one violation (aov) for every input \( x^0 \) that does not satisfy its prosodic subcategorization frame in surface prosodic structure cf. Respect: Bonet 2006
  2. Linearity: aov for every relationship of precedence in the phonology that does not correspond to a relationship of dominance in the syntax. Grimshaw 1999

- Ranking: SubCat > Linearity

- Initial Tableau:

<table>
<thead>
<tr>
<th>[ \text{cp} \ldots \text{di’e e buku ...} ]</th>
<th>SubCat</th>
<th>Linearity</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. { \iota \ldots [\omega (\text{di’e})] \ldots [\omega (\text{buku})] \ldots [\omega (\text{e})] }</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. { \iota \ldots [\omega (\text{di’e})] \text{ e } [\omega (\text{buku})] \ldots }</td>
<td></td>
<td>*!</td>
</tr>
</tbody>
</table>
3.5: The Phonological Account

Proposal: Reinforcer postposing is deeper than static idiosyncracy: it is phonology.

The basic motivation lies in word minimality McCarthy & Prince 1993

- Mandar imposes a size constraint on the prosodic word ($\omega$): it must be disyllabic.
- This can be seen clearly in the system of functional elements:
  - Functional heads do not form independent $\omega$s before complements. (Selkirk 1995)
  - In that context: many functional elements in Mandar are monosyllabic.
  - When those functional heads surface in isolation, they become disyllabic.

(24) a. $\omega]\overline{\text{Sun}}=\text{di}=(\text{bo.yang})].$
    out=of=house
    ‘Out of the house.’

b. Pole=$\text{mi}$ $\omega]\overline{\text{(su.'ung)}}].$
    come=$\text{PFV.3ABS}$ out
    ‘He came out.’

JT: 8.15, 28-29

(25) Short-Long Alternations

<table>
<thead>
<tr>
<th>HEAD</th>
<th>SHORT</th>
<th>LONG</th>
<th>GLOSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>$P^0$</td>
<td>lo</td>
<td>lao</td>
<td>to</td>
</tr>
<tr>
<td></td>
<td>so</td>
<td>sau</td>
<td>over</td>
</tr>
<tr>
<td></td>
<td>nong</td>
<td>naung</td>
<td>down</td>
</tr>
<tr>
<td>$\Sigma^0$</td>
<td>sung</td>
<td>su’ung</td>
<td>out of</td>
</tr>
<tr>
<td></td>
<td>da</td>
<td>da’a</td>
<td>don’t</td>
</tr>
<tr>
<td></td>
<td>ndang</td>
<td>andiang</td>
<td>not</td>
</tr>
</tbody>
</table>

Key Pattern: this constraint is lifted at the right edge of the $\iota$.

- The right edge of the $\iota$ can optionally host a special type of focal accent
- This accent triggers a change in the $\omega$-level stress of its host: penultimate $\rightarrow$ final.

(26) $\iota$ $\overline{\text{Mel}=a’}$ $\omega]\overline{\text{mac-co(wa)}}].$
    AV.want=1ABS AV-try
    ‘I want to TRY.

(27) $\iota$ $\omega]\overline{\text{(Sung)!}}].$
    out
    ‘Out!’

Key Observation: the reinforcers “suck up” the focal accent at the right edge of the $\iota$.

- When they receive focal accent, functional words can remain monosyllabic:

(28) $\iota$ $\overline{\text{Basse=i}}$ di’o bayu $\omega]\overline{\text{mani(ni)}}].$
    wet=3ABS that shirt later there
    Impossible: “That shirt will get wet LATER.”

JT: 8.24, 376
3.5: The Phonological Account

These observations set up a deeper analysis of Reinforcer Postposing:

- The pattern targets a set of elements that violate a general constraint on Word Minimality,
- And it places them in a position where other monosyllables can satisfy that constraint.

This is displacement to resolve the prosodic needs of a reinforcer- a case of **Prosodic Greed**.

**Claim One**: monosyllabic words are licensed at the edge of the $\iota$ by a constraint on foot structure.

- **headedness**: aov for every $\omega$ that does not contain a metrical foot. Nespor & Vogel 1986
- **foot.binarity,$\sigma$**: aov for every metrical foot that is not disyllabic. Itô & Mester 1993
- **License($\sigma_{ft} \iota$)**: aov for every $\sigma_{ft}$ that is not at the right edge of the $\iota$. Kager 1996

**Claim Two**: the reinforcers undergo displacement to this edge in order to form licit words.

- **Match($x^0, \omega$)**: aov for every $x^0$ that does not correspond to a $\omega$. Selkirk 2009
- **Dep****: aov for every output segment that does not have a correspondent in the input.
- **Linearity**: aov for every relationship of precedence in the phonology that does not correspond to a relationship of dominance in the syntax. Grimshaw 1999

**Constraint Ranking**:

```
Match($x^0, \omega$)  Dep$_{seg}$  headedness  License($ft_{\sigma} \iota$)
| Linearity  | foot.binarity,$\sigma$ |
```

**Final Tableau**:

<table>
<thead>
<tr>
<th>$[\text{cp } \ldots \text{di'e} \ e \ \text{buku} \ldots]$</th>
<th>Match</th>
<th>Dep</th>
<th>Head</th>
<th>License</th>
<th>FtBin</th>
<th>Linearity</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ${ \iota \ldots [\omega (di'e)] [\omega (buku)] \ldots [\omega (e)] }$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. ${ \iota \ldots [\omega (di'e)] e [\omega (buku)] \ldots }$</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. ${ \iota \ldots [\omega (di'e)] [\omega (e'e)] [\omega (buku)] \ldots }$</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. ${ \iota \ldots [\omega (di'e)] \omega e [\omega (buku)] \ldots }$</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. ${ \iota \ldots [\omega (di'e)] [\omega (e)] [\omega (buku)] \ldots }$</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>
4: Conclusions

Summing up, we’ve made some progress on the patterns that we set out to explain:

- The dependency between reinforcers and demonstratives turns on syntactic selection.
- The position of the reinforcers is forced by a prosodic requirement at the interface:
  1. The reinforcers are too small to form licit words in-situ,
  2. Monosyllabic words are exceptionally licensed at the right edge of the ι,
  3. The reinforcers postpose to the edge of the ι to satisfy the pressure to form words.

These results provide evidence for the theory of Indirect Linearization:

1. The position of the reinforcers must be described in terms of prosodic structure:
   - Syntactic analyses inadequately characterize their domains of placement,
   - ...and they miss key generalizations about the relevance of prosodic phrasing.

2. And the motivation for displacement must be linked to ω-level phonology.
   - Phonological information about terminal nodes is not available within the syntax,
   - ...and the syntax has no way to link ω-minimality, footing, and the edge of the ι.

And they fit neatly into a parallel and global theory of phonological Spell-Out:

- This analysis requires the linearization of syntactic terminals to be determined in parallel with the resolution of ω-level phonology and the organization of the clause into ιs.
- This is ruled out by theories that assume a cyclic model of Phonological Spell-Out, where word-level phonology is worked out before the construction of clause-level prosodic constituency. (e.g., Dobashi 2004, Selkirk & Kratzer 2008, Embick 2010, a.o.)
- But it follows neatly on theories that allow this to occur. Prince & Smolensky 1993/2004

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