A hybrid OT-DM model: Support from a morphological conspiracy in Degema
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This paper supports a hybrid model of Distributed Morphology (DM) termed **OT-DM**, using data from the Nigerian language Degema [ISO: deg]. In OT-DM, the spell-out from the syntactic module is a candidate set which are all potentially subject to DM operations, themselves decomposed into a series of violable OT constraints. OT-DM is superior in accounting for a morphological **conspiracy** in Degema (in the sense of Kisseberth 1970, Prince & Smolensky 2004), involving the distribution of agreement clitics in serial verb constructions. A **double-marked clitic pattern** is found when a prosodically heavy pronoun (>1σ) or DP appears between the verbs in the serial verb construction. In contrast, a **single-marked clitic pattern** is found when no object or only a light pronoun intervenes, forming a verb cluster. These patterns are in complementary distribution, shown below.

I present a series of arguments against two competitive alternatives accounting for this complementarity, namely single-marking as the result of (1) syntactic head movement of V₂ or (2) ellipsis of medial clitics.

Instead, I argue that agreement clitics are inserted via the DM operation **Dissociated Node Insertion (DNI)** and that the single-marked pattern emerges due to the DM operation **Local Dislocation (LD)** which combines separate Morphological Words (MWds) into one Morphological Word / Prosodic Word. In my OT-DM analysis, I attribute both of these patterns to a highly-ranked morphological markedness constraint **V=WF_MW D(INFL) (VERBS ARE INFLECTED)**, mediated by lower ranked constraints, e.g. **DEP-IO(AGR.CL)** penalizing DNI and **MAP(WD_TYPE) (TERMINAL NODES MAP TO PROSODIC WORDS)** penalizing LD. Further, I automatically generate a set of output candidates which systematically vary along a number of dimensions, and show how a constraint ranking correctly predicts the Degema system. A factorial typology reveals no pathological predictions. Finally, I support the constituency of these verb clusters from evidence from grammatical tone.

This paper dovetails with a growing body of work supporting an OT-DM model (Noyer 1992; Trommer 2001, 2002; Lahne 2010; Tucker 2011; Sande 2017; Foley to appear; Dawson to appear), and directly contrasts with a classic rule-based DM (Embick & Noyer 2001, a.o.) and the modified Rule & Repair model of DM (Arregi & Nevins 2012).
1 OVERVIEW

[1] Support for Optimality Theoretic Distributed Morphology (OT-DM)

[2] Morphology-in-Parallel Hypothesis (MPH): the strongest form of this model is that all morphological operations take place in parallel


[4] Evidence from a morphological conspiracy in Degema involving distribution of verbal clitics in serial verb constructions

2 DISCUSSION OF DM


[6] The core analytic move of DM is that morphology is distributed across several components of Grammar

[7] Traditional ‘morphemes’ are decomposed into

a. In Syntax - Morphosyntactic feature bundles, i.e. roots and functional heads from the Feature Lexicon (\textit{snarrow lexicon} – Marantz 1997:204)

b. On the PF branch - Vocabulary Items from the Vocabulary insert phonological information

c. On the LF branch - idiosyncratic meaning comes from the Encyclopedia

[8] Tenets of DM

a. 1) Module Order - syntax precedes ‘morphology’

b. 2) Internal Complexity - internally complex words result from concatenation of morphosyntactic feature bundles (cf. inferential models e.g. Anderson’s 1992 A-Morphous Morphology - discussion Inkelas 2014)

c. 3) Uniform Concatenation - morphologically complex words are formed via the same operations concatenating words in clauses, namely MERGE (‘syntax-all-the-way-down’ - Bobaljik 2017)

d. 4) Phonology-Free – syntax lacks the presence of and sensitivity to phonological features

e. 5) Feature Realization - vocabulary items (VIs) expose syntactic feature bundles and thereby realize syntactic features rather than introduce them (Late Insertion in DM terminology)

f. 6) Bundle Manipulation - the output of syntax able to be manipulated via morphological operations e.g. adding or deleting features

[9] Post-syntax (adapted from Harley’s 2014:228 DM schema and Broekhuis & Vogel’s 2013:10 interface schema)

[10] Mapping between Syntax and Phonology

a. What does Spellout spell out? \(\Leftrightarrow\) \textbf{Claim}: A ‘Syntactic Image’ (~ ‘Mold’ ~ ‘Impression’ ~ ‘Cast’ ~ …)


c. How many parts? \(\Leftrightarrow\) \textbf{Claim}: Syn. \(\rightarrow\) Morph. \(\rightarrow\) Phon.

d. How many times? \(\Leftrightarrow\) I make no claim (see Phase literature)


a. Syntax: generative - contains only syntactic operations (e.g. MERGE)

b. Post-syntax: strictly evaluative - consists of familiar OT components (EVAL, GEN, CON, etc.).
3 CONSPIRACIES

  a. Distinct inputs/outputs/environments showing surface structure convergence or avoidance

[13] Conspiracies of phonological rules in the Yokuts avoiding *CC
  a. i-Epenthesis: \( \emptyset \rightarrow i / CC \)
  b. C-Deletion: \( C \rightarrow \emptyset / CC+_{-} \)
  c. Final V-Deletion: \( V \rightarrow \emptyset / VC_#, \) (\( \ldots / VCC_# \))

[14] Catalysts in the development of parallelism constraint-based evaluation in Optimality Theory (Prince & Smolensky 2004 [1993]; Kager 1999:Sec. 2.1.1.2; McCarthy 2002:Sec.3.1.4.3; 2008:1-12; Bermúdez-Otero & Korjärs 2006:720; Kisseberth 2011; a.o.)

3.1 MORPHOLOGICAL CONSPIRACY

[15] Morphological conspiracy – convergence or avoidance involving morphological inputs, outputs, and environments

[16] Post-syntactic morphological repairs for *BARE-V in Tiwa [lax] (Dawson in press)
  a. Verb Cliticization: Complex phonological word formation
    \( V \) Aux Foc \( \rightarrow (V=\text{Aux}=\text{Foc}) \)
    lii \( \text{thái-do}=\text{sê} \)
    go \( \text{AUX-IPFV} =\text{FOC} \)
    ‘he is still going’
  b. Focus Drift: Cliticization of focus onto a verb
    \( V \) Aux Foc \( \rightarrow (V=\text{Foc}) (\text{Aux}) \)
    \( \text{li} =\text{sê} \) (\( \text{li, thái-do} \))
    go \( =\text{FOC} \) AUX-IPFV
    ‘he is still going’

[17] T-NONINITIALITY (Arregi & Nevins 2012: 276) – a number of surface patterns across Basque dialects conspire to avoid \( T^0 \) auxiliary initially
  a. Cliticization of an absolutive marker (Absolutive Cliticization)
  b. Metathesis and doubling of an ergative marker whose application depends on the dialect (Ergative Metathesis and Doubling)

[18] Rules & Constraints DM (R&C DM) – employ both rules and constraints

[19] Ordered morphological modules (Arregi & Nevins 2012:4)
  a. […]syntactic operations…]
    i. 1) Exponence Conversion (e.g. agree-copy, fission)
    ii. 2) Feature Markedness (e.g. participant dissimilation)
    iii. 3) Morphological Concord (e.g. complementizer agreement)
    iv. 4) Linearization
    v. 5) Linear Operations (e.g. clitic metathesis/doubling)
    vi. 6) Vocabulary Insertion
  b. […]phonological operations…]


[21] Optimality Theoretic DM (OT-DM) – employ only constraints, thereby avoids the duplication problem

[22] Limited cross-pollination between the OT and DM frameworks
  a. Remarkable given emerged in the same (generative) linguistic period

4 CORE DATA

[23] Degema [deg] – Benue-Congo language of the Niger-Congo phylum spoken in southern Nigeria

[24] Data for this paper comes from the extensive publications on Degema by native speaker-linguist Ethelbert E. Kari, and my own data collection\(^2\)

\(^2\) Data for this paper comes from the extensive publications on Degema by native speaker-linguist Ethelbert E. Kari (Kari 1997, 2002a, 2002b, 2002c, 2002d, 2003a, 2003b, 2004, 2005a, 2005b, 2006, 2008, 2015), as well as ongoing joint collaboration. Additional consultation with a native Degema speaker was done by the author, summer 2017 in Port Harcourt, Nigeria. Degema has two dialects: Usokun and Atala (also called ‘Degema Town’). The current paper is based on the Usokun variety
It is a head-initial language, and maintains a fairly strict SVO word order. Auxiliaries precede the verb and adjuncts follow the object.

### 4.1 CLITICS

<table>
<thead>
<tr>
<th>Infl proclitics</th>
<th>1st Person</th>
<th>2nd Person</th>
<th>3rd Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set 1</td>
<td>me</td>
<td>mi</td>
<td>ma</td>
</tr>
<tr>
<td>Set 2</td>
<td>mo</td>
<td>o</td>
<td></td>
</tr>
<tr>
<td>SG</td>
<td>me</td>
<td>mi</td>
<td>ma</td>
</tr>
<tr>
<td>PL</td>
<td>e</td>
<td>ma</td>
<td>a</td>
</tr>
</tbody>
</table>

Table 1: Degema subject agreement proclitics

#### Proclitic sets

- Set 1 are used in positive polarity, non-past tense, begin with /m/
- Set 2 appear elsewhere and are vowel initial other than first person singular

#### Aspectual enclitics

- Perfect aspect marker is ꜌=tędzi

#### Degema inflectional clitics

a. Ohoso ꜌=sá=n ꜌námb
   - Ohoso 3SG.SET2=shoot=FAC animal ‘Ohoso shot an animal’ (Kari 2004: 270)

b. ꜌=dê=té ꜌sáma
   - ꜌=të ꜌sáma ‘I have bought a dress’ (Kari 2004: 293)

#### Surface position of enclitics with monosyllabic object pronoun

a. Osoabo ꜌=kótú ꜌yì ꜌ô
   - Osoabo 3SG.SET2=call=FAC him/her ‘Osoabo called him/her’ (Kari 2004: 113)

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only. Information on the Atala dialect is found in Offah (2000), which reveals a different distribution of clitics (see especially pps. 7,30,33,46-48,57,66-70,79; email me for a copy).

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Degema orthography is consistent with the IPA, with the following language-specific conventions: <i>k>=/ɪ/; <i>t>=/t/; <i>n>=/ŋ/; <i>n>=/ŋi/; <i>e>=/i/; <i>e>=/i/; <i>e>=/ŋ/; and <i>e>=/j/. A dot under a vowel indicates retracted tongue root [–ATR], and no dot under the vowel indicates advanced tongue root [+ATR]. ATR is only marked on the first vowel of the word, though ATR harmony applies to all vowels within the word. A high tone is indicated by an acute accent <!>, a downstepped high is indicated by a macron <!>, and a low tone is not marked.

### 4.2 SVCs

#### Serial verb constructions (SVCs)

- a sequence of more than one verb in a single clause which share verbal arguments and functional categories

#### Inflectional clitics in SVCs - two patterns in complementary distribution

- **Double-marking pattern** - each verb in series is marked with an identical proclitic and enclitic respectively
- **Single-marking pattern** - the first verb is marked with a proclitic while the last verb is marked with an enclitic (‘bookending’ pattern)

#### Clitic patterns

a. **Double-marking SVC pattern**
   - ꜌=sóm ꜌túl
   - ꜌=të ꜌sáma ‘He is as handsome as you.’ (Kari 2004:157)

b. **Single-marking SVC pattern**
   - ꜌=sóm ꜌túl
   - ꜌=të ꜌sáma ‘Ohoso is as handsome as him.’ (Kari 2004:156)
b. **Single-marking pattern with monosyllabic pronoun**

Breno 3SG.SET2=follow me go=FAC

‘Breno went with me’ (Kari 2004: 115)

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[35] a. **Ungrammatical single-marking in presence of intervening object**

Tatane 3SG.SET2=call=PRF us *(3SG.SET2)=tell=PRF something

‘Tatane has called us and told (us) something’ (Kari 2003a: 285)

b. **Ungrammatical double-marking in the single-marking context**

Ohoso 3SG.SET2=go=PRF *(3SG.SET2)=buy=FAC fish

‘Ohoso went and bought fish’ [ohk_201707]

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Table 3: Complementary distribution of clitic marking in SVCs

<table>
<thead>
<tr>
<th>V1</th>
<th>V2</th>
<th>Double-marking</th>
<th>Single-marking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø</td>
<td>a.</td>
<td>cl=[V1]=cl cl=[V2]=cl</td>
<td>cl=[V1 V2]=cl</td>
</tr>
<tr>
<td>Pron</td>
<td>a.</td>
<td>cl=[V1 D1]=cl cl=[V2]=cl</td>
<td>cl=[V1 D1 V2]=cl</td>
</tr>
<tr>
<td>Pron</td>
<td>a.</td>
<td>cl=[V1]=cl DP cl=[V2]=cl</td>
<td>cl=[V1 DP V2]=cl</td>
</tr>
</tbody>
</table>

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[36] **Non-formal characterization:** All verbs need to be marked with inflection

a. If verbs are sufficiently local, they can ‘share’ the same inflection

b. If verbs are *not* sufficiently local, they each get their own set of infl.

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5 **DM ANALYSIS: A FIRST PASS**

5.1 **Syntactic assumptions**

[37] I adopt a modified version of Collins’ (1997, 2002) analysis of SVCs involving nested vP shells where V1 selects V2 as its complement: 

\[ \text{Asp}^+ \text{Asp}^+ \text{Asp}^+ \]

[38] Figure 2: vP complementation structure

Asp > v1 > v2 > v3

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[39] Syntax-equivuvalency of double-marking and single-marking

a. mi=dùw=n óvó n mi=tá=an?

1SG.SET2=follow=FAC who 1SG.SET2=go=FAC

‘I went with who?’

---

5.2 **The morphological conspiracy**

[40] **Degema morphological conspiracy** – all surface structures ultimately result in verb (complexes) marked with a full set of clitics, i.e. cl=[V]=cl

a. Insertion of subject agreement V → cl=[V]

b. Lowering of aspectual enclitic to V1 asp V → [V=asp]

c. Copying of aspectual enclitic to V2 V → [V]=cl

d. Constituency formation of sufficiently local verbs V1 V2 → [V1 V2]

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[41] Adhere to a **morphological well-formedness condition**

Markedness constraint V=WF(INFL): verbs must appear with inflection

5.3 **DM OPERATIONS**

[42] **Dissociated Node Insertion (DNI)** - insertion of morphological nodes (or features) post-syntactically (Embick & Noyer 2007: 305-310)

a. Not exponing terminal syntactic heads

[43] Capture **ornamental morphology** - Latin thematic vowels and agreement morphs

[44] **DM of subject and aspect agreement in Degema**

Input: [AspP Subject [Asp° V1° [V1+ V2+ ...]]]

Output: /Subject/ /PRF/ /AGRvP/ /Verb1/ ...

Tatane PRF v1+V1+KOTU ... v2+V2+KPERI

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[45] Compare aspectual concord with Amharic definiteness concord (Kramer 2010)

a. tìllìk-ù ‘big-def’ house

‘the big black house’ (Kramer 2010: 229)

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[46] **Definite marker –ú:**

a. #1 is exponent of D°, and appears right-adjacent via local dislocation

b. #2 is post-syntactically inserted Agr node (optional)
**[47]** Local Dislocation (LD) converts two linearly adjacent constituents (2 MWds) into a single constituent (1 MWd with 2 SbWds) (Embick & Noyer 2001: 561)

a. \((a')^\beta(b) \rightarrow (a+\beta \sim b+\alpha)\)

b. Morphemes which would otherwise be expected to be independent words by other criteria (i.e. exponents haptic terminal heads) are converted into having an affixal relationship

**[48]** Grammatical /H/ tone spread across toneless constituent \((V_1+V_2+V_3)\)

\(\text{NEG\3SG.SET2=take} \) leave

\('(s)he will take (it) and leave', '(s)he will leave with (it)' [ohk_20170806]

**[49]** Syntax [ASPP ASP\° [\(v\_1P\) \(1°+V1° [ DP V1° [ \(v\_2P\) \(2°+V2°+agrasp)]\]] \(v\)] 

**[50]** With these aspects, grammatical /H/ tone is assigned between clitics

**a.** \(\text{mi}(=\text{d\'e})=\text{y} \, \text{\'I bought a chair'}\)

**b.** Tatane \(\text{o}(=\text{k\'ot\'u})=\text{t\'e} \, \text{\'I called you'}\)

**c.** \(\text{Osoabo} \, \text{\'I didn't use a knife (to do it)'}\]

**[51]** Linguistic /L/ tone expressing negation

\((\text{NEG\3SG=know me}) \, \text{\'I don't know you'}\]

**[52]** Grammatical /H/ tone marking between clitics in a SVC

**a.** Bruno \(\text{\'I went with me'}\)

**b.** Bruno \(\text{\'I bought fish'}\)

**c.** Bruno \(\text{\'I bought fish (to do it)'}\]

**[53]** With these aspects, grammatical /H/ tone is assigned between clitics

**[54]** Grammatical /H/ tone spread across toneless constituent \((V_1+V_2)\)

\(\text{NEG\3SG.SET2=know me} \, \text{\'I didn't use a knife (to do it)'}\]

**[55]** Grammatical /L/ tone expressing negation

\((\text{NEG\3SG=agree eat}) \, \text{\'I didn't use a knife (to do it)'}\]

**[56]** Grammatical /L/ tone marking between clitics

**a.** Bruno \(\text{\'I went with me'}\)

**b.** Bruno \(\text{\'I bought fish'}\)

**c.** Bruno \(\text{\'I bought fish (to do it)'}\]

**[57]** Grammatical /L/ tone marking between clitics

**[58]** Claimed or assumed that feature copying/disassociated node insertion takes place before vocabulary insertion (VI), which takes place before local dislocation (Embick & Noyer 2001, 2007; Embick 2007b)

**[59]** Embick & Noyer (2001) - DM order of operations

**Table 4:** Correct prediction in double-marking context with intervening DP object.
Table 5: Incorrect prediction in single-marking context with standard rule order

VI (n)º(ºta+n)(ºta+ºn)  Ø Attested:  ºta=ºn  Øºta=ºn

[60] One possibility is parameterized DM operations:

VI  >  LD  >  DNI  ( >  VI )

[61] mò=tá  (*mò)=gcn  ёнám
3SG.SET1=go (*3SG.SET1)=look.at  animal
‘(s)he will go look at an animal’  [ohk_20170806]

[62] Problem

a. Verb clusters are derived via LD if sufficiently local
b. At the stage when VI and LD apply, there are no overt agreement clitics present, as these are introduced only later via DNI
c. If morphological repairs take place due to markedness constraints (under R&C), then what is LD repairing here? What is its motivation?
d. Look-ahead problem?: LD is not directly motivated as a repair for the markedness constraint V=WF_MWd(app)

Table 6: R&C Analysis

6 OT-DM

6.1 THE CANDIDATE SET

[63] Candidate set was generated systematically along a number of dimensions

a. IncD: Did the verb and the pronominal object form one MWd or two?
i.e.  (/V+/D/)  vs.  (/V/)  *  (/D/)
b. IncV: In SVCs, did the verbs form one MWd or two?
i.e.  (/V1+/V2/)  vs.  (/V1/)  *  (/V2/)

c. IncAsp: Did the aspect marker and the verb form one MWd or two?
i.e.  (/asp+/V/)  vs.  (/asp/)  *  (/V/)
d. LinAsp: What is the linear position of the aspect marker?
i.e.  (/V/)  vs.  (/V+/asp/)  vs.  (/V+/asgasp)
e. SbjAgr: Did the verb appear with subject agreement in the same MWd?
i.e.  (/V/)  vs.  (/agr sbj+/V/)
f. AspAgr: Did the verb appear with aspect marking in the same MWd?
i.e.  (/V/)  vs.  (/V+/asp)~(/V+/agr asp/)
g. Label: Does the label of the MWd reflect a prosodically strong morpheme?
i.e.  (/V+/Dıı/){V} vs.  (/V+/Dıı/){D}

[64] Every value of every dimension was combined to produce a set of candidates

Simplex inputs - /V/ type (n=14)  vs.  Complex inputs - /V Dııı/ type (n=214)

6.2 THE CONSTRAINT STRATA

[65] Constraints are split into three constraint-strata (C-Strata) - crucially ordered

[66] Constraints within each C-Stratum are not crucially ordered

[67] Complete constraint set with definitions is in Sec. 9 Appendix

C-Stratum 1      >>  C-Stratum 2   >>  C-Stratum 3
Mark 1         Align/Map 1   >>  Faith/Mark 2  >>  Map 2

C-Stratum 1  >>  C-Stratum 2  >>  C-Stratum 3

Mark 1         Align/Map 1   >>  Faith/Mark 2  >>  Map 2

[69] Four different types of constraints

a. Faithfulness (Faith) – Input-Output faithfulness
b. Mapping (Map) – Cross-modular Input-Output mapping  e.g. VI
c. Markedness (Mark) – Output evaluation only – no reference to input
d. Alignment (Align) – Output evaluation (w/r/t position)

[70] This constraint ranking was determined using OTSoft v2.5 (Hayes et. al 2013)
Emergence of DM operations LD and DNI

a. DNI: Insertion of morphological nodes not present in input

\[ V = WF_{-MWd(asp)} \] >> \[ \text{Dep-IO(Node)} \]
\[ V = WF_{-MWd(agr_{sb})} \] >> \[ \text{agr_{asp}} \]

b. LD (dislocating): Dislocating MWd/ShWd

[Align-/asp/R] >> \[ \text{[LinearityMap-IO-Fnc]} \]

\[ V = WF_{-MWd(agr_{sb})} \] >> \[ \text{[Map(Wd_Type)]} \]

c. LD (typing): MWd to ShWd morphological type-shifting

\[ MWd = Pr_{Wd} \]
\[ V = WF_{-MWd(agr_{sb})} \] >> \[ \text{[Map(Wd_Type)]} \]

<table>
<thead>
<tr>
<th>I: ( /V_1 V_2/ )</th>
<th>C-S 1</th>
<th>C-S 2</th>
<th>C-S 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>O: None ( V_1 V_2 )</td>
<td>( \text{MARK SET 1} )</td>
<td>( \text{MAP SET 1} )</td>
<td>( \text{FAITH} )</td>
</tr>
<tr>
<td>O: Single ( \text{cl} = [V_1 V_2] = \text{cl} )</td>
<td>1 !</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O: Double ( \text{cl} = [V_1 V_2] = \text{cl} )</td>
<td></td>
<td></td>
<td>3 !</td>
</tr>
</tbody>
</table>

Table 1: Emergence of single and double-marking patterns

\[ /V_{D_{as}} V/ \] (n=206) Table 2 on p. 14
\[ /V_{D_{as}} V/ \] (n=214) Table 3 on p. 15

An innovation - Morphological Labeling \( (\text{MWd})_{M1} \)

a. MWds are labeled with a category reflecting a prosodically strong morpheme within that morphological word e.g. \( (V/V_1) \), \( /D_{as}/(D) \), etc.

Sufficiently local verbs incorporate and form a single MWd

a. A morphological compound \( (V/V_1)_{SWd} + (V/V_2)_{SWd} \) \( h_{MWd(V)} \)

Morphological labeling counteracts potential ‘mass local dislocation’

Cf. \( /V_{D_{as}} V/ \) type does not become \( (V/V_1)_{SWd} + (D_{as})_{SWd} + (V/V_2)_{SWd} \) \( h_{MWd(V)} \)

a. Conflict with the incorporated \( /D/ \) labeling this MWd with a label \( \{D\} \)
An OT-DM model

   a. **Nouns:** secondary stress assigned R→L from primary-stress
      i. /nim‘akilakil/ \ [ni.m‘a.ki.la.kil]  
         ‘beach’ (Lynch 1978:19)
      ii. /kam-lomhanteni/ \ [ka.m‘a.ri.m.a.n.dé.ni]  
           ‘for Lomhanteni’ (Lynch 1974:83)
      iii. /kam-ti-ti-na/ \ [ka.m‘a.ri.ti.ti.na]  
            ‘for Ti-ti’ (Lynch 1974:183)
   b. **Verbs:** secondary stress assigned L→R from initial syllable
      i. /n-im-ausito/ \ [ni.maw.si.do]  
         ‘you (sg.) told a story’ (Lynch 1974:66)
      ii. /n-im-ai-ausito/ \ [ni.ma.yu.si.do]  
         ‘you (pl.) told a story’ (Lynch 1974:66)
      iii. /t-n-ak-am-ar-olkeikei/ \ [ti.na.gu.ma.rí.la.gy.ë]  
         ‘you (pl.) told a story’ (Lynch 1978:19)

6.3 **Against an alternative syntactic movement analysis**

[79] If single-marking were the result of syntactic head movement, movement of the lower V2 head upwards would be triggered by a feature of a higher fnct head

[80] By default, when the syntactic structural condition is met, movement takes place

[81] The presence or absence of an intervening object in a specifier position is orthogonal to the presence of a strong feature on the functional head

[82] This therefore predicts uniform double or single marking, contrary to fact

[83] **Phonologically null objects between verbs result in single-marking**

[84] Q - In situ – **Double**-marking pattern
   mi=ðúw=n óvo mj=tä=än?  
   1SG.SET2=follow=FAC who 1SG.SET2=go=FAC  
   ‘I went with who?’ (E.E. Kari p.c., 2015 Aug 24)

[85] Q - Ex situ – **Single**-marking pattern
   ovó, nù mi=ðúw ti tä=än?  
   [Cf. Ungram. *Ovó, nù who that 1SG.SET2=follow who go=FAC mi=ðúw ti mj=tä=än?]  
   ‘Who did I go with?’

Table 3: V D, V input type (Condensed tableau)
An OT-DM model

b. [V₁] & [aux V₂]
Tatane o₃=kpéény q=kiří wάąy
Tatane 3SG.SET2=washFAC 3SG.SET2=also.AUX spreadFAC
‘Tatane washed and also spread (something)’
c. [V₁] but [V₂]
ō=kú dį bįaw dō q=rékérėkė dį=in
3SG.SET2=did.AUX eat 3SG.SET2=be.slow  eat=FAC
‘She did eat them but she ate them rather slowly’
cf. *o₃=kú dį bįaw dō q=rékérėkė dį=in

cf. *ō=kų dį bįaw Ø rékérėkė dį=in

Particularly expected under a Copy Theory of Movement (Nunes 1995), where ‘traces’ are simply lower copies of moved constituents, and therefore present in the syntax and only later deleted post-syntactically

Unmotivated ‘blocking’ of head movement by an overt object

a. Grammatical cl=V O cl=V
Jzakume ō=tam ģidýom q=ŋóny
Jzakume NEG3SG.SET1=chew  food 3SG=swallow
‘Jzakume did not chew food and swallow’ (Kari 2003a: 278)
b. Ungrammatical *cl=V+V₁ O t₁
*Jzakume ō=tam+šůny t₁
Jzakume NEG3SG.SET1=chew+swallow food swallow
Intended: ‘Jzakume did not chew food and swallow’

6.4 AGAINST AN ALTERNATIVE ELLIPSIS ANALYSIS

Deletion-under-identity (DUI) alternative - a type of ellipsis

Single-marking pattern  Double-marking pattern
Uniform clitic marking  agr₁p,V=asp Ø agr₁p,V=agrsbj V₃=agrsbj
Deletion-under-identity agr₁p,V=asp Ø agr₁p,V=agrsbj V₃=agrsbj
Surface pattern agr₁p,V=asp Ø agr₁p,V=agrsbj V₃=agrsbj

Lack of DUI in conjoined clauses - Double-marking pattern obligatory

a. [V₁] & [V₂]
Ivioso o₃=kótú mě=ën q=kpéí=n mům
Ivioso 3SG.SET2=call me=FAC 3SG.SET2=tell=FAC something
‘Ivioso called me and told (me) something’ (Kari 2003a:274)

Further, under the DUI analysis the Degema single-marking pattern involves simultaneous backward deletion (deletion of material in the first conjunct) and forward deletion (deletion of material in the second conjunct) (Wilder 1995, 1997)

a. They are distinct operations subject to different phonological, syntactic, and semantic conditions
b. However, in Degema backward and forward deletion must take place simultaneously, and do not occur without each other
c. Example below: proclitics share featural identity and the second proclitic appears at a conjunct boundary, identified as a common condition for DUI
Ungrammatical forward deletion in the absence of backward deletion

a. Mi=ðäw=n òyi *(mi)=tä=ðn
1SG.SET2=follow=FAC her/him *(1SG.SET2)=go=FAC
‘I went with her/him’ (E.E. Kari p.c., 2015 Nov 02)

b. Tatane o=kötü=n òyi *(q)=kpérti=n ñüm
Tatane 3SG.SET2=call=FAC him *(3SG.SET2)=tell=FAC something
‘Tatane called him and told (him) something’ (E.E. Kari p.c., 2015 Nov 02)

7 SUMMARY
Support for Optimality Theoretic Distributed Morphology (OT-DM)

Morphology-in-Parallel Hypothesis (MPH): the strongest form of this model is that all morphological operations take place in parallel

Evidence from a morphological conspiracy in Degema involving distribution of verbal clitics in serial verb constructions

8 REFERENCES
[100] See full paper draft on my website: linguistics.berkeley.edu/~nicholasrolle/

APPENDIX – CONSTRAINT SET DEFINITIONS (SOLID LINES = ORDERED CONSTRAINT STRATA)

<table>
<thead>
<tr>
<th>Set #</th>
<th>Definition</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>V=WF_MWD(AGRSBJ)</td>
<td>For a MWd marked with label {Verb} ({V}), assign a violation if it is not marked with subject agreement</td>
</tr>
<tr>
<td>2</td>
<td>V=WF_MWD(ASP)</td>
<td>For a MWd marked with label {Verb} ({V}), assign a violation if it is not marked with aspect</td>
</tr>
<tr>
<td>3</td>
<td>V=WF_MWD(AGRSBJ)</td>
<td>Under competition, the first MWd marked with label {Verb} ({V}) (defined linearly) bears inflection over the second MWd marked {V} to the left</td>
</tr>
<tr>
<td>4</td>
<td>MWD=PRWD</td>
<td>A morphological word is a well-formed prosodic word</td>
</tr>
<tr>
<td>5</td>
<td>MWD={LABEL}</td>
<td>For a MWd, assign a violation if a prosodically strong morpheme of category M does not project a morphological label {M}</td>
</tr>
<tr>
<td>6</td>
<td>*COMPLEXMWD={LABEL}</td>
<td>Words containing a verb are labeled {V}, prosodically strong pronouns/nouns as {D}, etc.</td>
</tr>
<tr>
<td>7</td>
<td>ALIGN-/AGRSBJ/-L</td>
<td>The left edge of an /agrsbj/ morpheme coincides with the left edge of a MWd</td>
</tr>
<tr>
<td>8</td>
<td>ALIGN-/ASP/-R</td>
<td>The right edge of an /asp/ morpheme coincides with the right edge of a MWd</td>
</tr>
<tr>
<td>9</td>
<td>LINEARITYMAP-IO:LEX</td>
<td>The hierarchical order of lexical constituents x° and y° in the input is reflected in the linear order of counterparts /x/ and /y/ in the output</td>
</tr>
<tr>
<td>10</td>
<td>DEP-IO(NODE)</td>
<td>Morphemes in the output correspond to syntactic heads in the input</td>
</tr>
<tr>
<td>11</td>
<td>AGRASP</td>
<td>Assign a violation for every instance of aspect agreement</td>
</tr>
<tr>
<td>12</td>
<td>AGRSBJ</td>
<td>Assign a violation for every instance of subject agreement</td>
</tr>
<tr>
<td>13</td>
<td>LINK/HYPER/Morphology</td>
<td>The hierarchical order of morphological heads x° and y° in the input is reflected in the linear order of counterparts /x/ and /y/ in the output</td>
</tr>
<tr>
<td>14</td>
<td>TMorphology</td>
<td>Maps syntactic head x°, which is not dominated by a head y°, to a morphological word</td>
</tr>
<tr>
<td>15</td>
<td>LINK/HYPER-Morphology-IO:LEX</td>
<td>The hierarchical order of functional heads x° and y° in the input is reflected in the linear order of counterparts /x/ and /y/ in the output</td>
</tr>
</tbody>
</table>

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