A hybrid OT-DM model:
Support from a morphological conspiracy in Degema

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1 Proposal
‘Incompatibility’ of DM with OT

• Limited cross-pollination between the OT and DM frameworks despite parallel emergence in same (generative) linguistic period

• (e.g. Noyer 1992, 1993, 1994; Bonet 1994; see Wolf 2008:141)

• DM framework and the OT framework often accepted as having conflicting assumptions

• Embick (2010:ix): ‘[DM] is incompatible with the dominant view in phonological theory, Optimality Theory (OT), which posits competition among infinite sets of complex objects’

• In general, any discussion of OT or constraints plays no role in the majority of recent work in DM, largely due to not being pertinent to the phenomenon at hand

• (e.g. Matushansky & Marantz eds. 2013; Salzmann 2013; Haugen & Siddiqi 2013; Harley 2014; Gribanova 2015; Watanabe 2015; Moskal 2015; Moskal & Smith 2016; Deal 2016; Kinjo & Oseki 2016; Saab & Lipták 2016; Martinović 2017; Baier 2017; a.o.).
Optimality Theoretic Distributed Morphology (OT-DM)

- Main Proposal is supporting *Optimality Theoretic Distributed Morphology (OT-DM)*: All components of Classic Distributed Morphology are retained except rules replaced by constraints
- Growing body of work overtly adopts OT-DM, or provides evidence for it
- **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 (Niger-Congo: Nigeria) involving distribution of verbal clitics in serial verb constructions
2 Distributed Morphology
DM – The core architecture

• Distributed Morphology (DM)


• The core analytic move of DM is traditional ‘morphemes’ are decomposed across several components of grammar
DM tenets
DM tenets

In Syntax - Morphosyntactic feature bundles, i.e. roots and functional heads from the Feature Lexicon

DM tenets

• **Module Order** - syntax precedes/feeds ‘morphology’

• Cf. Other theories in which morphological component is independent of syntax

• “Lexicalist Morphology is generative in that morphology builds phonologically and semantically interpreted words” - Kiparsky (2016)
DM tenets

Internal Complexity - internally complex words result from concatenation of morphosyntactic objects, i.e. affixes are objects not processes

cf. inferential models e.g. Anderson’s *A-Morphous Morphology* (discussion Inkelas 2014)
DM tenets

At a certain point, syntactic structures are ‘spelled-out’

On the PF branch - **Vocabulary Items** from the **Vocabulary** insert phonological information

**Realizational** model - realize syntactic features rather than introduce them (cf. **Incremental Models** – Stump 2001)
**DM tenets**

**Bundle Manipulation** - the output of syntax able to be manipulated via **Morphological Operations**

- Vocabulary Insertion
- Feature insertion (Dissociated Node Insertion)
- Feature deletion (Impoverishment)
- Linearization
- Local Dislocation

**Diagram:**
- Feature Lexicon: $[\sqrt{X}], [\sqrt{DOG}], ..., [+x], [+pl], ...
- Numeration
- Syntactic Operations
- Spell-Out
- Morphological Operations
- Phonological Operations

**Diagram Notes:**
- LF operations
**DM tenets**

**Derivational implementation:**
In classic DM, post-syntactic operations apply **serially**, formalized as ordered **rules** which can feed/bleed/counterfeed/counterbleed.
**DM tenets**

Derivational implementation: in classic DM, post-syntactic operations apply **serially**, formalized as ordered **rules** which can feed/bleed/counterfeed/counterbleed

It is this last tenet **only** which the OT-DM model challenges
3 A morphological conspiracy with Degema clitics
Degema language

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

- Data for this paper comes from the extensive publications on Degema by native speaker-linguist Ethelbert E. Kari, joint collaboration, and my own data collection

Degema - Obligatory inflectional clitics

Ohoso ọ=sá=n  ⱳnám
Ohoso 3SG.SET2=shoot=FAC animal
‘Ohoso shot an animal’ (Kari 2004: 270)
Cf. *Ohoso Ø sá=n ⱳnám / *Ohoso ọ=sá Ø ⱳnám

mị=ɗé=té  ⱳsama
1SG.SET2=buy=PRF dress
‘I have bought a dress’ (Kari 2004: 293)
Cf. *Ø ɗé=té ⱳsama / *mị=ɗé Ø ⱳsama
Degema - Obligatory inflectional clitics

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mị=dé=té  ósama
1SG.SET2=buy=PRF  dress
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Cf.  *Ø ɗé=té ósama /  *mị=dé Ø ósama
Clitics & Serial Verb Constructions (SVCs)

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

- Double-marking SVC pattern with intervening DP
  
  \[
  \text{o=sóm=n} \quad \text{úšǐ} \quad \text{o=túl} \quad \text{wó=ōn}
  \]

  \[
  \text{3SG.SET2=be.good=FAC} \quad \text{beauty} \quad \text{3SG.SET2=reach} \quad \text{you=FAC}
  \]

  ‘He is as handsome as you.’ (Kari 2004:157)

- Single-marking SVC pattern when there is no intervening DP
  
  \[
  \text{Ohoso} \quad \text{o=sóm} \quad \text{túl=n} \quad \text{ǒyi}
  \]

  \[
  \text{Ohoso} \quad \text{3SG.SET2=be.good} \quad \text{Ø} \quad \text{reach=FAC} \quad \text{him}
  \]

  ‘Ohoso is as handsome as him.’ (Kari 2004:156)
Clitics & Serial Verb Constructions (SVCs)

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- Single-marking SVC pattern when there is no intervening DP
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Clitics & Serial Verb Constructions (SVCs)

• Double-marking pattern with bisyllabic pronoun

\[ mi=\ddot{d}úw=n \quad \text{óyi} \quad \text{mi=tá=ān} \]

1SG.SET2=follow=FAC \quad \text{her/him} \quad 1SG.SET2=go=FAC

‘I went with her/him’ (Kari 2004: 201)

• Single-marking pattern with monosyllabic pronoun

\[ Breno \quad o=\ddot{d}úw \quad \text{mé} \quad \text{tá=ān} \]

Breno 3SG.SET2=follow me go=FAC

‘Breno went with me’ (Kari 2004: 115)
Clitics & Serial Verb Constructions (SVCs)

• **Double-marking** pattern with bisyllabic pronoun

  \[ mi=\ddw=n \quad \ddw=\ddw=\ddw \quad mi=t=\ddw \]
  \[ 1SG.SELT2=\text{follow}=\text{FAC} \quad \text{her/him} \quad 1SG.SELT2=\text{go}=\text{FAC} \]

  ‘I went with her/him’ (Kari 2004: 201)

• **Single-marking** pattern with monosyllabic pronoun

  \[ o=\ddw \quad \ddw=m \quad t=\ddw \]
  \[ 3SG.SELT2=\text{follow} \quad \text{me} \quad \text{go}=\text{FAC} \]

  ‘Breno went with me’ (Kari 2004: 115)
Clitics & Serial Verb Constructions (SVCs)

• Double-marking pattern with bisyllabic pronoun ← Prosodically heavy object
  mi=ðúw=n  óyi  mi=tá=ān
  1SG.SET2=follow=FAC  her/him  1SG.SET2=go=FAC
  ‘I went with her/him’ (Kari 2004: 201)

• Single-marking pattern with monosyllabic pronoun ← Prosodically light object
  Breno  o=ðúw  mé  tá=ān
  Breno  3SG.SET2=follow  me  go=FAC
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# Prosodically light vs. heavy pronouns

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>XP {NP/CP/PP/etc.}</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SG</strong>&lt;br&gt;meē/meē</td>
<td>wōō</td>
<td>ọyị</td>
<td><strong>V=CL pron</strong></td>
<td></td>
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<tr>
<td><strong>V pron=CL</strong></td>
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<td>V=CL XP</td>
<td></td>
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<tr>
<td><strong>PL</strong>&lt;br&gt;ení</td>
<td>máāny/máāny</td>
<td>ḫāāw/_halāw</td>
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Complementarity of clitics patterns

• Ungrammatical single-marking in presence of intervening object
  Tatane o=kótú=*(té) éni *(o)=kpérí=tē ínúm
  Tatane 3SG.SET2=call=*(PRF) us *(3SG.SET2)=tell=PRF something
  ‘Tatane has called us and told (us) something’ (Kari 2003a: 285)

• Ungrammatical double-marking in the single-marking context
  Ohoso o=tá(?/*=n) (?/*o=)dé=n isen
  Ohoso 3SG.SET2=go(*=FAC) (*3SG.SET2=)buy=FAC fish
  ‘Ohoso went and bought fish’ [ohk_201707]
Complementarity of clitics patterns

• **Ungrammatical single-marking** in presence of intervening object

  Tatane  o=kótú=*tě*  éni  *(ọ)=kpérí=tē  ínúṁ
  Tatane  3SG.SET2=call=*(PRF)  us  *(3SG.SET2)=tell=PRF  something

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

• **Ungrammatical double-marking in the single-marking context**

  Ohoso  ọ=tá(ʔ/=n)  (?/ʃ=)đé=n  isen
  Ohoso  3SG.SET2=go(=*FAC)  (*3SG.SET2=)buy=FAC  fish

  ‘Ohoso went and bought fish’ [ohk_201707]
Complementarity of clitics patterns

• **Ungrammatical single-marking in presence of intervening object**
  Tatane  o=kótú=*(té) èní *(ŋ)=kpérí=tē ínúm
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• **Ungrammatical double-marking** in the single-marking context
  Ohoso  ō=tá(ʔ/*=n) (ʔ/*ŋ=)dé=n isen
  Ohoso  3SG.SET2=go(*=FAC) (*3SG.SET2=)buy=FAC fish
  ‘Ohoso went and bought fish’ [ohk_201707]
All verbs complexes need inflection

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<td>(?<em>\sim</em> cl=[V_1]=cl cl=[V_2]=cl)</td>
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- **Non-formal characterization**: All verbs need to be marked with inflection
  - If verbs are sufficiently local, they can ‘share’ the same inflection
  - If verbs are not sufficiently local, they each get their own set of inflection
All verbs complexes need inflection

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<td>?<em>~</em></td>
<td>√ cl=[V₁ V₂]=cl</td>
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<tr>
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<td></td>
<td>~*</td>
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4 Against a syntactic account
(a brief aside)
Against a strictly syntactic analysis

- Adopt a modified version of Collins’ (1997, 2002) analysis of SVCs involving nested vP shells where V1 selects v2P as its complement

- Asp > v1 > V1 > v2 > V2

- We cannot appeal purely to syntax to account for the Single vs. Double marking pattern
Against a strictly syntactic analysis

- Adopt a modified version of Collins’ (1997, 2002) analysis of SVCs involving nested vP shells where V1 selects v2P as its complement

- Asp > v1 > V1 > v2 > V2

- We cannot appeal purely to syntax to account for the Single vs. Double marking pattern

- i.e. Single-Marking is not the result of head movement
Against a strictly syntactic analysis

- Clitic marking is insensitive to selectional properties of verbs, e.g. transitive vs. intransitive verb roots, or syntactic features of pronouns.
- If single-marking were the result of head movement, then head movement would be **blocked** when there is a **phonologically overt** DP in an intervening Spec position.
- If movement is triggered by a (strong) feature of a higher functional head, it is predicted that intervening Specs should be **orthogonal** to checking this feature.
5 In support of an OT-DM model
Dissociated Node Insertion of AGR

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

• Not exponing terminal syntactic heads

• An example of Dissociated Node Insertion is Agreement Markers
Dissociated Node Insertion of AGR

- I propose that in Degema, (1) subject agreement proclitics are inserted postsyntactically, and (2) the second aspect enclitic is an aspectual agreement marker which is also inserted postsyntactically (= aspectual concord)

{Tatane} o=kótú=té éni ọ=kpérí=tê ínúm
{Tatane} 3SG.SET2=call=PRF us 3SG.SET2=tell=PRF something

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

- (see a similar DM proposal for Amharic definiteness concord - Kramer 2010)
Dissociated Node Insertion of AGR

- I propose that in Degema, (1) subject agreement proclitics are inserted post-syntactically, and (2) the second aspect enclitic is an aspectual agreement marker which is also inserted post-syntactically (= aspectual concord)

- Not exponing terminal syntactic heads

\[
\begin{align*}
\text{Input:} & \quad \left[ \text{Asp}_P \right] \quad \text{Subject}_i \left[ \begin{array}{c}
\text{Asp}^\circ \left[ v_P \right] \\
\sqrt{\text{PRF}}
\end{array} \right] \quad \text{Subject}_i \left[ \begin{array}{c}
v_1^\circ + V_1^\circ \\
v_1^\circ + \sqrt{\text{KOTU}}
\end{array} \right] \\
\text{Output:} & \quad /\text{Subject}/ \quad /\text{PRF}/ \\
& \quad /\text{Tatane}/ \quad /=\text{te}/ \\
& \quad /\text{AGR}_{\text{Sbj}}+/+\text{Verb}_1/ \\
& \quad /\text{o}=+/+\text{kotu}/ \\
& \quad /\text{AGR}_{\text{Sbj}}+/+\text{Verb}_2/+/\text{AGR}_{\text{Asp}}/ \\
& \quad /\text{o}=+/+\text{kperi}/+/=\text{te}/
\end{align*}
\]
Local dislocation (LD)

- **Local Dislocation (LD)** converts two linearly adjacent constituents (2 MWds) into a single constituent (1 MWd with 2 SbWds) (Embick & Noyer 2001: 561)

- \((a)*(β) \rightarrow (a+β \sim β+a)\) [With or without inversion]

- Morphemes which would otherwise be expected to be independent words by other criteria (i.e. expone syntactic terminal heads) are converted into having an affixal relationship
## Local dislocation in Degema

<table>
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<tr>
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<th>Single-marking</th>
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<tbody>
<tr>
<td>$\emptyset$</td>
<td>$\overset{?\sim*}{\overset{?\sim*}{cl=\left[V_1\right]=cl\atop cl=\left[V_2\right]=cl}}$</td>
<td>$\overset{\sqrt{\text{som}+\text{tul}}}{\overset{\sqrt{\text{som}+\text{n}}}{cl=\left[V_1\atop \text{cl}\right]=cl\atop cl=\left[V_2\atop \text{cl}\right]=cl}}$</td>
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### Local dislocation in Degema

- $(/V1/)*(/V2/) \rightarrow (V1+V2)$
- $(/\text{asp}/)*(/V/) \rightarrow (V+\text{asp})$
- $(/V/)*(/D_\sigma/) \rightarrow (V+D_\sigma)$
- $(/\text{som}/)*(/\text{tul}/) \rightarrow (\text{som}+\text{tul})$
- $(/\text{som}/)*(/\text{n}/) \rightarrow (\text{som}+\text{n})$
- $(/\text{tul}/)*(/w_\varnothing/) \rightarrow (\text{tul}+w_\varnothing)$

### Iterative local dislocation in Degema

- $(/\text{asp}/)*(/V1/)*(/D_\sigma/)*(/V2/) \rightarrow (V1+D_\sigma+V2+\text{asp})$
Local dislocation in Degema

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<td>cl=[V₁]=cl Dσ cl=[V₂]=cl</td>
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<td>∗ cl=[V₁ DP V₂]=cl</td>
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- Local dislocation in Degema

(/V₁/)*/(V₂/) → (V₁+V₂) (/som/)*/(tul/) → (som+tul)
(/asp/)*/(V/) → (V+asp) (/=n/)*/(som/) → (som+n)
(/V/)*/(Dσ/) → (V+Dσ) (/tul/)*/(wọ/) → (tul+wọ)

Iterative local dislocation in Degema

(/asp/)*/(V₁)/*(Dσ/)*(V₂/) → (V₁+Dσ+V₂+asp)
Local dislocation in Degema

<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>?<em>~</em></td>
<td>cl=[V₁]=cl cl=[V₂]=cl</td>
<td>√ cl=[V₁ V₂]=cl</td>
</tr>
<tr>
<td>Pronₐ</td>
<td>?~*</td>
<td>cl=[V₁ Dₐ]=cl cl=[V₂]=cl</td>
<td>√ cl=[V₁ Dₐ V₂]=cl</td>
</tr>
<tr>
<td>Pronₐ₉</td>
<td>√</td>
<td>cl=[V₁]=cl D₉ cl=[V₂]=cl</td>
<td>* cl=[V₁ D₉ V₂]=cl</td>
</tr>
<tr>
<td>DP</td>
<td>√</td>
<td>cl=[V₁]=cl DP cl=[V₂]=cl</td>
<td>* cl=[V₁ DP V₂]=cl</td>
</tr>
</tbody>
</table>

• Local dislocation in Degema

(/V₁/)*/(V₂/) → (V₁+V₂) (/som/)*/(tul/) → (som+tul)

(/asp/)*/(V/) → (V+asp) (/=n/)*/(/som/) → (som+n)

(/V/)*/(D₉/) → (V+D₉) (/tul/)*/(/wọ/) → (tul+wọ)

Iterative local dislocation in Degema

(/asp/)*/(V₁)*/(D₉)*/(V₂/) → (V₁D₉+V₂+asp)
## Local dislocation in Degema

<table>
<thead>
<tr>
<th>V₁</th>
<th>V₂</th>
<th>Double-marking</th>
<th>Single-marking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø</td>
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<td>cl=[V₁]=cl cl=[V₂]=cl</td>
<td>√ cl=[V₁ V₂]=cl</td>
</tr>
<tr>
<td>Pronₗₗ</td>
<td>?~*</td>
<td>cl=[V₁ Dₗ]=cl cl=[V₂]=cl</td>
<td>√ cl=[V₁ Dₗ V₂]=cl</td>
</tr>
<tr>
<td>Pronₗₗ</td>
<td>√</td>
<td>cl=[V₁]=cl Dₗ cl=[V₂]=cl</td>
<td>* cl=[V₁ Dₗ V₂]=cl</td>
</tr>
<tr>
<td>DP</td>
<td>√</td>
<td>cl=[V₁]=cl DP cl=[V₂]=cl</td>
<td>* cl=[V₁ DP V₂]=cl</td>
</tr>
</tbody>
</table>

- **Local dislocation in Degema**

\[
\begin{align*}
(V1+V2) & \quad \rightarrow \quad (V1+V2) \\
(V+asp) & \quad \rightarrow \quad (V+asp) \\
(V+Dₗ) & \quad \rightarrow \quad (V+Dₗ) \\
\end{align*}
\]

\[
\begin{align*}
(som+tul) & \quad \rightarrow \quad (som+tul) \\
(som+n) & \quad \rightarrow \quad (som+n) \\
(tul+wọ) & \quad \rightarrow \quad (tul+wọ) \\
\end{align*}
\]

**Iterative local dislocation in Degema**

\[
(V1+Dₗ+V2+asp) \quad \rightarrow \quad (V1+Dₗ+V2+asp)
\]

47
The Degema Morphological Conspiracy

• A morphological conspiracy (in the sense of Kisseberth 1970) - surface structure convergence or avoidance involving morphological (i.e. non-phonological) inputs, outputs, and environments

• Degema morphological conspiracy – all surface structures ultimately result in verb (complexes) marked with a full set of clitics
  • verbs must appear with inflection, i.e. cl=[_v ]=cl

• Adhere to a morphological well-formedness/markedness condition
  • V=WF(INFL)
The Degema Morphological Conspiracy

- $V = WF(INFL)$

1) Constituency formation of sufficiently local verbs $V1 V2 \rightarrow [V1+V2]$
2) Insertion of subject agreement $V \rightarrow cl=[V]$
3) Lowering of aspectual enclitic to $V1$ $asp V \rightarrow [V=asp]$
4) Copying of aspectual enclitic to $V2$ $V \rightarrow [V]=cl$
Two responses to conspiracies in DM

• **1 Rules & Constraints DM (R&C DM)** – e.g. Arregi & Nevins (2012) on Basque
  - **Modify** DM’s rule-based architecture by including both rules and constraints

• **T-NonInitiality Conspiracy** (Arregi & Nevins 2012: 276) - Several processes ‘conspire to make T surface in second position’

• **2 Optimality Theoretic DM (OT-DM)** - which only uses morphological constraints and does not employ morphological rules
Two responses to conspiracies in DM

1 Rules & Constraints DM (R&C DM) – e.g. Arregi & Nevins (2012) on Basque

Modify DM’s rule-based architecture by including both rules and constraints

T-NonInitiality Conspiracy (Arregi & Nevins 2012: 276) - Several processes ‘conspire to make T surface in second position’ \( \iff \) Posit a constraint against it


2 Optimality Theoretic DM (OT-DM) - which only uses morphological constraints and does not employ morphological rules
Two responses to conspiracies in DM

1 Rules & Constraints DM (R&C DM) – e.g. Arregi & Nevins (2012) on Basque

- Modify DM’s rule-based architecture by including both rules and constraints

- T-NonInitiality Conspiracy (Arregi & Nevins 2012: 276) - Several processes ‘conspire to make T surface in second position’


2 Optimality Theoretic DM (OT-DM) - which only uses morphological constraints and does not employ morphological rules
Problems with Rules & Constraints DM

• In DM literature, it is claimed/assumed that Dissociated Node Insertion takes place before Vocabulary Insertion (VI), which takes place before Local Dislocation (Embick & Noyer 2001, 2007; Embick 2007b)

• Common evidence justifying this ordering involves bleeding and feeding

• Embick & Noyer (2001) - DM order of operations
  DNI  >  VI  >  LD
Problems with Rules & Constraints DM

Double-marking context:

Syntax $\left[ _{ASP} ASP^\circ \left[ _{v1P} v_1^\circ + V_1^\circ \left[ DP \ V_+^\circ \left[ _{v2P} v_2^\circ + V_2^\circ \left[ V_2^\circ \right] \right] \right] \right] \right]$

[DNI] $(asp^\circ) \left( agr_{sbj} + v_1^\circ + V_1^\circ \right) \left( DP \ agr_{sbj} + v_2^\circ + V_2^\circ + agr_{asp} \right)$

VI $(n) \ast (mi + ðuw) \ast (ọyi) \ast (mi + ta + n)$

LD $(mi + ðuw + n) \ast (ọyi) \ast (mi + ta + n)$

Predicted: $mi = ðuw = n \ ọyi \ mi = ta = n$ ☺ Attested: $mi = ðuw = n \ ọyi \ mi = ta = n$

Single-marking context:

Syntax $\left[ _{ASP} ASP^\circ \left[ _P v_1^\circ + V_1^\circ \left[ \emptyset \ V_+^\circ \left[ _P v_2^\circ + V_2^\circ \left[ V_2^\circ \right] \right] \right] \right] \right]$

[DNI] $(asp^\circ) \left( agr_{sbj} + v_1^\circ + V_1^\circ \right) \left( agr_{sbj} + v_2^\circ + V_2^\circ + agr_{asp} \right)$

VI $(n) \ast (ọ + ta) \ast (ọ + ðe + n)$

LD $(ọ + ta + n) \ (ọ + ðe + n)$

♦ Predicted: $*ọ = ta = n \ ọ = ðe = n$ ☹ Attested: $ọ = ta \ ọ = ðe = n$
# Problems with Rules & Constraints DM

## Double-marking context:

<table>
<thead>
<tr>
<th>Syntax</th>
<th>[ASP $^\circ$] $[v_1 P \ v_1^\circ + V_1^\circ \ [DP V_1^\circ \ [v_2 P \ v_2^\circ + V_2^\circ \ [V_2^\circ]]]]$</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNI</td>
<td>(asp$^\circ$) $[agr_{sbj}^\circ + v_1^\circ + V_1^\circ]$ (DP) $[agr_{sbj}^\circ + v_2^\circ + V_2^\circ + agr_{asp}^\circ]$</td>
</tr>
<tr>
<td>VI</td>
<td>(n)<em>(mi+ðuw)</em>(ọyi)* (mi+ta+n)</td>
</tr>
<tr>
<td>LD</td>
<td>(mi+ðuw+n)<em>(ọyi)</em> (mi+ta+n)</td>
</tr>
<tr>
<td><strong>Predicted:</strong></td>
<td>mi=ðuw=n ọyi mi=ta=n</td>
</tr>
</tbody>
</table>

## Single-marking context:

<table>
<thead>
<tr>
<th>Syntax</th>
<th>[ASP $^\circ$] $[v_1 P \ v_1^\circ + V_1^\circ \ [\emptyset V_1^\circ \ [v_2 P \ v_2^\circ + V_2^\circ \ [V_2^\circ]]]]$</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNI</td>
<td>(asp$^\circ$) $[agr_{sbj}^\circ + v_1^\circ + V_1^\circ]$ (agr$^\circ$) $[v_2^\circ + V_2^\circ + agr_{asp}^\circ]$</td>
</tr>
<tr>
<td>VI</td>
<td>(n)<em>(ọ+ta)</em> (ọ+đe+n)</td>
</tr>
<tr>
<td>LD</td>
<td>(ọ+ta+n) (ọ+đe+n)</td>
</tr>
<tr>
<td><strong>Predicted:</strong></td>
<td>*ọ=ta=n ọ=đe=n</td>
</tr>
</tbody>
</table>

Double-marking overapplies here
Makes wrong prediction!
Problems with Rules & Constraints DM

• Embick & Noyer (2001) - DM order of operations
  \[ \text{DNI} \quad > \quad \text{VI} \quad > \quad \text{LD} \]

• One possibility is parameterized DM operations:
  \[ \text{DEGEMA:} \quad \text{VI} \quad > \quad \text{LD} \quad > \quad \text{DNI} \quad ( \quad > \quad \text{VI} ) \]
Problems with Rules & Constraints DM

• Embick & Noyer (2001) - DM order of operations
  \[ DNI \ > \ VI \ > \ LD \]

• One possibility is parameterized DM operations:
  \[ \text{DEGEMA:} \]
  \[ VI \ > \ LD \ > \ DNI \ (\ > \ VI ) \]

• Problem: SVCs which only appear with proclitics
  \[ mọ=tá \quad (*mọ)=gēn \quad ěnám \]
  \[ 3\text{SG.SET1}=go \quad (*3\text{SG.SET1})=\text{look.at} \quad \text{animal} \]
  ‘(s)he will go look at an animal’ [ohk_20170806]
### Problem

1. Verb clusters are derived via LD if sufficiently local
2. At the stage when VI and LD apply, there are no overt agreement clitics present, as these are introduced only later via DNI
3. If morphological repairs take place due to an inviolable markedness constraint – namely $V=WF(INFL)$ - then what is LD repairing here? **What is its motivation?**
An OT-DM analysis

- Any theory must capture the following Input-to-Output mappings, which shows the correct distribution of clitic marking in SVCs

<table>
<thead>
<tr>
<th>Type</th>
<th>Syntactic input</th>
<th>Correct morphological output</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>[aspP \text{ asp}^o \left[ v_{1P} v_1^o + V_1^o \left[ \emptyset \text{ \textit{V}}_+^o \right] \right] ]</td>
<td>[\left( /agr_{sbj}/+/V/+/\text{asp}/ \right)_{{V}} ]</td>
</tr>
<tr>
<td>V V</td>
<td>[aspP \text{ asp}^o \left[ v_{1P} v_1^o + V_1^o \left[ \emptyset \text{ \textit{V}}<em>+^o \left[ v</em>{2P} \right. \left. v_2^o + \text{\textit{V}}_2^o \right] \right] \right] ]</td>
<td>[\left( /agr_{sbj}/+/V1/+/V2/+/\text{asp}/ \right)_{{V}} ]</td>
</tr>
<tr>
<td>V D_0</td>
<td>[aspP \text{ asp}^o \left[ v_{1P} v_1^o + V_1^o \left[ DP \text{ \textit{V}}_+^o \right] \right] ]</td>
<td>[\left( /agr_{sbj}/+/V/+/D_0/+/\text{asp}/ \right)_{{V}} ]</td>
</tr>
<tr>
<td>V D_σ V</td>
<td>[aspP \text{ asp}^o \left[ v_{1P} v_1^o + V_1^o \left[ DP \text{ \textit{V}}<em>+^o \left[ v</em>{2P} \right. \left. v_2^o + \text{\textit{V}}_2^o \right] \right] \right] ]</td>
<td>[\left( /agr_{sbj}/+/V1/+/D_\sigma/+/V2/+/\text{asp}/ \right)_{{V}} ]</td>
</tr>
<tr>
<td>V D_σσ</td>
<td>[aspP \text{ asp}^o \left[ v_{1P} v_1^o + V_1^o \left[ DP \text{ \textit{V}}_+^o \right] \right] ]</td>
<td>[\left( /agr_{sbj}/+/V/+/\text{asp}/ \right)<em>{{V}} \ast \left( /D</em>\sigma/ \right)_{{D}} ]</td>
</tr>
<tr>
<td>V D_σσ V</td>
<td>[aspP \text{ asp}^o \left[ v_{1P} v_1^o + V_1^o \left[ DP \text{ \textit{V}}<em>+^o \left[ v</em>{2P} \right. \left. v_2^o + \text{\textit{V}}_2^o \right] \right] \right] ]</td>
<td>[\left( /agr_{sbj}/+/V1/+/\text{asp}/ \right)<em>{{V}} \ast \left( /D</em>\sigma/ \right)<em>{{D}} \ast \left( /agr</em>{asp}/2/+/V2/+/agr_{asp}/2/ \right)_{{V}} ]</td>
</tr>
</tbody>
</table>

Table 11: Input-output mappings in Degema
An OT-DM analysis

- Any theory must capture the following Input-to-Output mappings, which shows the correct distribution of clitic marking in SVCs

<table>
<thead>
<tr>
<th>Type</th>
<th>Syntactic input</th>
<th>Correct morphological output</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>[aspP asp°[v1P v1°+V1°[∅ V+°]]]</td>
<td>(/agr°subj/)V+/V+/asp/_{V}</td>
</tr>
<tr>
<td>V V</td>
<td>[aspP asp°[v1P v1°+V1°[∅ V+°]v2P v2°+V2°[∅ V_2°]]]</td>
<td>(/agr°subj)/V1+/V2+/asp/_{V}</td>
</tr>
<tr>
<td>V D_0</td>
<td>[aspP asp°[v1P v1°+V1°[DP V+°]]]</td>
<td>(/agr°subj)/V+/D_0+/asp/_{V}</td>
</tr>
<tr>
<td>V D_σ V</td>
<td>[aspP asp°[v1P v1°+V1°[DP V+°]v2P v2°+V2°[∅ V_2°]]]</td>
<td>(/agr°subj)/V1+/D_σ+/V2+/asp/_{V}</td>
</tr>
<tr>
<td>V D_σσ</td>
<td>[aspP asp°[v1P v1°+V1°[DP V+°]]]</td>
<td>(/agr°subj)/V+/asp/<em>{V} * (D_σσ)</em>{D}</td>
</tr>
<tr>
<td>V D_σσ V</td>
<td>[aspP asp°[v1P v1°+V1°[DP V+°]v2P v2°+V2°[∅ V_2°]]]</td>
<td>(/agr°subj)/V1+/asp/<em>{V} * (D_σσ)</em>{D} * (/agr°subj)/V2+/agr°asp2/_{V}</td>
</tr>
</tbody>
</table>

Table 11: Input-output mappings in Degema

- Morphological components GEN & CON & EVAL
OT-DM - GEN component

• Candidate set was generated systemically along a number of dimensions

1) IncD: Did the verb and the pronominal object form one MWd or two?
   i.e. (/V/+/D/) vs. (/V/) * (/D/)

2) IncV: In SVCs, did the verbs form one MWd or two?
   i.e. (/V1+/V2/) vs. (/V1/) * (/V2/)

3) IncAsp: Did the aspect marker and the verb form one MWd or two?
   i.e. (/asp+/V/) vs. (/asp/) * (/V/)

4) LinAsp: What is the linear position of the aspect marker?
   i.e. (/asp+/V/) vs. (/V+/asp/)

5) SbjAgr: Did the verb appear with subject agreement in the same MWd?
   i.e. (/V/) vs. (/agr_sbj+/V/)

6) AspAgr: Did the verb appear with aspect marking in the same MWd?
   i.e. (/V/) vs. (/V+/asp/)~(/V+/agr_asp/) etc...
OT-DM – CON component

- Constraints are split into three constraint-strata (C-Strata)
- Constraints within each C-Stratum are not crucially ordered
- This constraint ranking was determined using OTSoft v2.5 (Hayes et. al 2013)
- See manuscript version for formal definitions
### OT-DM – EVAL

<table>
<thead>
<tr>
<th>Input: [asp] asp° [(\text{V}_1)°+V₁° (\cap) V₂° [(\text{V}_3)°+V₃° (\cap) V₄°]]</th>
<th>Constraint stratum (CS) 1</th>
<th>CS 2</th>
<th>CS 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (agr_arg1+/+V1+/+V2+/+asp/)_{(V)}</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 (agr_arg1+/+V1+/+asp/)<em>{(V)} * (agr_arg2+/+V2+/+agr_asp1/)</em>{(V)}</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 (agr_arg1+/+asp+/+V1+/+V2/)_{(V)}</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... [Cand 4-9]</td>
<td>1!</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>10 (agr_arg1+/+V1+/+agr_asp1+/+V2+/+asp+/+agr_asp2/)_{(V)}</td>
<td>2!</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>11 (V1+/+agr_arg1+/+V2+/+asp/)_{(V)}</td>
<td>1!</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>... [Cand 12-21]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 (agr_arg1+/+V1+/+agr_asp1+/+agr_arg2+/+V2+/+asp+/+agr_asp2/)_{(V)}</td>
<td>1!</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>23 (asp)<em>{(Asp)} * (agr_arg1+/+V1+/+V2+/+agr_asp1/)</em>{(V)}</td>
<td>1!</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>... [Cand 24-28]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29 (asp)<em>{(Asp)} * (agr_arg1+/+V1+/+agr_asp1+/+agr_arg2+/+V2+/+agr_asp2/)</em>{(V)}</td>
<td>1!</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>30 (agr_arg1+/+V1+/+asp/)<em>{(V)} * (agr_arg2+/+V2/)</em>{(V)}</td>
<td>1!</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>... [Cand 31-39]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39 (asp)<em>{(Asp)} * (agr_arg1+/+V1+/+V2/)</em>{(V)} * (agr_arg2+/+V2/)_{(V)}</td>
<td>2!</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>40 (V1+/+V2+/+asp/)_{(V)}</td>
<td>1!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41 (agr_arg1+/+V1+/+asp/)<em>{(V)} * (V2+/+agr_asp1/)</em>{(V)}</td>
<td>1!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>... [Cand 42-85]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>86 (asp)<em>{(Asp)} * (V1/)</em>{(V)} * (V2/)_{(V)}</td>
<td>2!</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Tableau 5: /V V/ input type (Condensed tableau)
Tableau 1: Emergence of single and double-marking patterns (numbers = number of violations)
Emergence of DM operations LD and DNI

**DNI:** Insertion of morphological nodes not present in input

\[
\begin{align*}
V &= WF\_MWd(asp) \\
V &= WF\_MWd(agr\_sbj)
\end{align*}
\]

\[
\begin{align*}
\text{Dep-I}O(\text{Node}) \\
\ast agr_{asp} \\
\ast agr_{sbj}
\end{align*}
\]

**LD (dislocating):** Dislocating MWd/SbWd with respect to local MWd/SbWd

\[
\text{Align-/asp/-R} \Rightarrow \text{LinearityMap-I}O:Fnc
\]

**LD (typing):** MWd to SbWd morphological type-shifting

\[
\begin{align*}
\text{MWd=PrWd} \\
V &= WF\_MWd(asp)
\end{align*}
\]

\[
\Rightarrow \text{Map(Wd_Type)}
\]
6 Summary
Summary

• Optimality Theoretic Distributed Morphology (OT-DM): All components of Classic Distributed Morphology are retained except rules replaced by constraints.

• 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.
Extended OT-DM Model
Acknowledgments

• This paper would not be possible without the expertise, insight, and generosity of Degema speakers Prof. Ethelbert E. Kari and Ohoso Kari

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Please go to my website for a manuscript version of this talk (Rolle under review), complete with references
Appendix 1 - Prosodically heavy vs. light pronouns
Prosodically light vs. heavy pronouns

- Prosodically heavy pronoun (2σ) – Clitic attaches to verb
  Osoabo o=kótú=n óyi Cf. *Osoabo o=kótú óyi=n
  Osoabo 3SG.SET2=call=FAC him/her
  ‘Osoabo called him/her’ (Kari 2004: 113)

- Prosodically light pronoun (1σ) – Clitic attaches to light pronoun
  o=kótú wọ=ōn Cf. *o=kótú=n wọ
  3SG.SET2=call you=FAC
  ‘(s)he called you’ (Kari 2004: 276)
Prosodically light vs. heavy pronouns

• **Prosodically heavy pronoun (2σ)** – Clitic attaches to verb
  Osoabo  o=kótú=n ĭyi  
  Osoabo  3SG.SET2=call=FAC him/her  
  ‘Osoabo called him/her’ (Kari 2004: 113)

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Prosodically light vs. heavy pronouns

• Prosodically heavy pronoun (2σ) – **Clitic attaches to verb**
  Osoabo  o=kótú=n  óyí  
  Osoabo  3SG.SET2=call=FAC  him/her
  ‘Osoabo called him/her’ (Kari 2004: 113)

  Cf. *Osoabo  o=kótú  óyí=n

• Prosodically light pronoun (1σ) – **Clitic attaches to light pronoun**
  o=kótú  wó=ðn  
  3SG.SET2=call  you=FAC
  ‘(s)he called you’ (Kari 2004: 276)
Prosodically light vs. heavy pronouns

- **Prosodically heavy pronoun (2σ)** – Clitic attaches to verb
  Osoabo  o=kótú=n  ọyi  Cf. *Osoabo  o=kótú  ọyi=n
  Osoabo  3SG.SET2=call=FAC  him/her
  ‘Osoabo called him/her’ (Kari 2004: 113)

- **Prosodically light pronoun (1σ)** – Clitic attaches to light pronoun
  o=kótú  wọ=śnie  Cf. *o=kótú=n  wọ
  3SG.SET2=call  you=FAC
  ‘(s)he called you’ (Kari 2004: 276)
Prosodically light vs. heavy pronouns

- Prosodically heavy pronoun (2σ) – Clitic attaches to verb
  Osoabo  o=kótú=n  óyi  Cf. *Osoabo  o=kótú  óyi=n
  Osoabo  3SG.SET2=call=FAC  him/her
  ‘Osoabo called him/her’ (Kari 2004: 113)

- Prosodically light pronoun (1σ) – Clitic attaches to light pronoun
  o=kótú  wọ=ôn  Cf. *o=kótú=n  wọ
  3SG.SET2=call  you=FAC
  ‘(s)he called you’ (Kari 2004: 276)
Prosodically light vs. heavy pronouns

- **Prosodically heavy pronoun (2σ)** – Clitic attaches to verb
  Osoabo o=kótú=n ọyi
  ‘Osoabo called him/her’ (Kari 2004: 113)

- **Prosodically light pronoun (1σ)** – Clitic attaches to light pronoun
  o=kótú wọ=ōn
  ‘(s)he called you’ (Kari 2004: 276)

Cf. *Osoabo o=kótú ọyi=n
Cf. *o=kótú=n wọ
Appendix 2 - Against a strictly syntactic analysis
Against a strictly syntactic analysis

- Clitic marking is insensitive to selectional properties of verbs, e.g. transitive vs. intransitive verb roots, or syntactic features of pronouns.
- If single-marking were the result of head movement, then head movement would be **blocked** when there is a **phonologically overt** DP in an intervening Spec position.
- If movement is triggered by a (strong) feature of a higher functional head, it is predicted that intervening Specs should be **orthogonal** to checking this feature.
Syntax-equivalency of double-marking and single-marking

- Obligatory double-marking with in-situ wh-word
  
  \[
  \begin{align*}
  \text{mi}=\text{qúw}=\text{n} & \quad \text{óvo} \quad \text{mị}=\text{tá}=\text{an} \quad ? \\
  1\text{SG.SET2}=\text{follow}=\text{FAC} & \quad \text{who} \quad 1\text{SG.SET2}=\text{go}=\text{FAC}
  \end{align*}
  \]

  ‘I went with who?’

- Obligatory single-marking with ex-situ wh-word
  
  \[
  \begin{align*}
  \text{ovó} \quad \text{ nú} \quad \text{mi}=\text{qúw} & \quad \text{tá}=\text{an} \quad ? \\
  \text{who} \quad \text{that} \quad 1\text{SG.SET2}=\text{follow } \emptyset & \quad \text{go}=\text{FAC}
  \end{align*}
  \]

  ‘who did I go with?’
Syntax-equivalency of double-marking and single-marking

- Obligatory double-marking with in-situ wh-word
  \[\text{mi} = \text{\(\ddot{d}u\)w} = \text{n} \quad \text{óvo} \quad \text{mï} = \text{tá} = \text{an} \quad ?\]
  1SG.SET2=\textit{follow}=FAC who 1SG.SET2=\textit{go}=FAC
  ‘I went with who?’

- Obligatory single-marking with ex-situ wh-word
  \[\text{ovó} \quad \text{nú} \quad \text{mi} = \text{\(\ddot{d}u\)w} \quad \text{tá} = \text{an} \quad ?\]
  who that 1SG.SET2=\textit{follow} Ø \textit{go}=FAC
  ‘who did I go with?’
Syntax-equivalency of double-marking and single-marking

• Obligatory double-marking with *in-situ* wh-word

\[ \text{mi=ɖùw=n} \quad \text{óvo} \quad \text{mi=tá=an} \quad ? \]

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

‘I went with who?’

• Obligatory single-marking with *ex-situ* wh-word

\[ \text{ovó} \quad \text{nú} \quad \text{mi=ɖùw} \quad \text{tá=an} \quad ? \]

who  that  1SG.SET2=follow Ø  go=FAC

‘who did I go with?’
Prosodically heavy vs. light pronouns

- **Double-marking** pattern with *bisyllabic* pronoun
  
  \[ \text{mi}=\ddot{q}\acute{u}w=n \quad \text{óyi} \quad \text{mì}=\ddot{t}á=\ddot{a}n \]
  
  1SG.SET2=follow=FAC her/him 1SG.SET2=go=FAC
  
  ‘I went with her/him’ (Kari 2004: 201)

- **Single-marking** pattern with *monosyllabic* pronoun
  
  \[ \text{Breno} \quad \text{o}=\ddot{q}\acute{u}w \quad \text{mé} \quad \text{tâ}=\ddot{a}n \]
  
  3SG.SET2=follow me go=FAC
  
  ‘Breno went with me’ (Kari 2004: 115)
Appendix 3 - Against an ellipsis alternative
Against an ellipsis alternative

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

<table>
<thead>
<tr>
<th>Single-marking</th>
<th>Double-marking</th>
</tr>
</thead>
<tbody>
<tr>
<td>agr(<em>{sbj})(</em>{V1})=asp \ø agr(<em>{sbj})=V2=agr(</em>{asp})</td>
<td>agr(<em>{sbj})=V1=asp DP agr(</em>{sbj})=V2=agr(_{asp})</td>
</tr>
<tr>
<td>agr(<em>{sbj})=V1=asp \ø agr(</em>{sbj})=V2=agr(_{asp})</td>
<td>agr(<em>{sbj})=V1=asp DP agr(</em>{sbj})=V2=agr(_{asp})</td>
</tr>
<tr>
<td>agr(<em>{sbj})=V1 \ø V2=agr(</em>{asp})</td>
<td>agr(<em>{sbj})=V1=asp DP agr(</em>{sbj})=V2=agr(_{asp})</td>
</tr>
</tbody>
</table>

1. Uniform clitic marking
2. DUI
3. Surface pattern

- Coordinate reduction – German nouns

‘Friendship or hostility’ (Booij 1985: 144)

- Also, coordination/conjunction reduction (Merchant 2012), ‘suspended affixation’ (Kabak 2007), and certain cases of verbal ‘unbalanced coordination’ (Johannessen 1998)
Lack of DUI in conjoined clauses - Double-marking pattern obligatory

- [V1] & [V2]
  Ivioso  o=kótú  mé=en  ọ=kpérí=n  înúm
  Ivioso  3SG.SET2=call  me=FAC  3SG.SET2=tell=FAC  something
  ‘Ivioso called me and told (me) something’ (Kari 2003a:274)

- [V1] & [aux V2]
  Tatane  o=kpéēny  ọ=kírí  wáāy
  Tatane  3SG.SET2=wash\FAC  3SG.SET2=also.AUX  spread\FAC
  ‘Tatane washed and also spread (something)’
  cf. *...o=kpény Ọ kírí wáāy (E.E. Kari p.c., 2015 Oct 24)
Lack of DUI in conjoined clauses - Double-marking pattern obligatory

- [V1] but [V2]

\[ \text{ọ́} \quad \text{dí} \quad \text{ḥáaw} \quad \text{ḍọ́} \quad \text{o=}\text{rékéréké} \quad \text{ḍ́}=\text{ín} \]

3SG.SET2=did.AUX eat them\FAC but 3SG.SET2=be.slow eat=FAC

‘She did eat them but she ate them rather slowly’ (E.E. Kari p.c., 2015 Dec 09)

- Cf. Lack of both

\[ \text{ọ́}=\text{kú} \quad \text{d́} \quad \text{ḥáaw} \quad \text{Ø} \quad \text{Ø} \quad \text{o=}\text{rékéréké} \quad \text{ḍ́}=\text{ín} \]

- Cf. Lack of proclitic

\[ \text{ọ́}=\text{kú} \quad \text{dí} \quad \text{ḥáaw} \quad \text{d́} \quad \text{Ø} \quad \text{o=}\text{rékéréké} \quad \text{ḍ́}=\text{ín} \]

- Cf. Lack of enclitic

\[ \text{ọ́}=\text{kú} \quad \text{dí} \quad \text{ḥáaw} \quad \text{Ø} \quad \text{Ø} \quad \text{o=}\text{rékeréké} \quad \text{ḍ́}=\text{ín} \]
Appendix 4 - Factorial typology
OT-DM – EVAL component

• A factorial typology was determined using OTSoft v2.5 (Hayes et al. 2013)
• There were 15 constraints considered, making the logically possible number of grammars the factorial 15! (1307674368000)
• Restricting our inputs to the 6 input types presented above, the factorial typology resulted in 128 distinct grammars
• The factorial typology does not reveal pathological predictions, and therefore this constraint set is sufficiently restrictive
• Major parameters of output variation include:
  • (1) not incorporating /D₁₀/
  • (2) lacking subject agreement
  • (3) not incorporating /asp/ but having aspect agreement
  • (4) not dislocating /asp/ to the right edge
  • (5) dislocating /V2/ over a pronoun /D/
  • (6) not incorporating /V2/ resulting in /V1/ and /V2/ forming separate MWds,