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.

SVC	V_1 _ V_2	DOUBLE-MARKED		SINGLE-MARKED	
INTER-VENERS	**Ø**	?*~*	CL=[V_1]=CL **Ø** CL=[V_2]=CL	√	CL=[V_1 **Ø** V_2]=CL
	PRON$_{\sigma}$	?~*	CL=[V_1 **P$_{\sigma}$**]=CL CL=[V_2]=CL	√	CL=[V_1 **P$_{\sigma}$** V_2]=CL
	PRON$_{\sigma\sigma}$	√	CL=[V_1]=CL **P$_{\sigma\sigma}$** CL=[V_2]=CL	*	CL=[V_1 **P$_{\sigma\sigma}$** V_2]=CL
	DP	√	CL=[V_1]=CL **DP** CL=[V_2]=CL	*	CL=[V_1 **DP** V_2]=CL

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 V_2 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_MWD(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).

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1 OVERVIEW[1]

[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

[3] Growing body of work overtly adopts OT-DM (Trommer 2001a, 2001b, 2002; Dawson *in press*; Foley *to appear*; a.o.)

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

2 DISCUSSION OF DM

[5] **Distributed Morphology (DM)** (Halle & Marantz 1993, 1994,…)

[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** (=*narrow 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)

[1] This paper would not be possible without the expertise, insight, and generosity of collaborator Prof. Ethelbert E. Kari. Further thanks go to Ohoso Kari who checked crucial Degema data with me in summer 2017 in Port Harcourt, Nigeria. At Berkeley, thanks go to Peter Jenks, Line Mikkelsen, Larry Hyman, and Sharon Inkelas for reading drafts of this paper, and colleagues Nico Baier, Zach O'Hagan, Virginia Dawson, and Emily Clem. I am also thankful for discussions with Steven Foley, Jonathan Bobaljik, Ruth Kramer, and the audience of the 46th ACAL at the University of Oregon. Some consultation was paid for through an Oswalt Grant for Endangered Languages from UC Berkeley.

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

e. 5) **Feature Realization** - vocabulary items (VIs) expone 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

g. 7) **Derivation Architecture** - in standard DM, post-syntactic operations apply serially, formalized as ordered rules which can feed or bleed

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

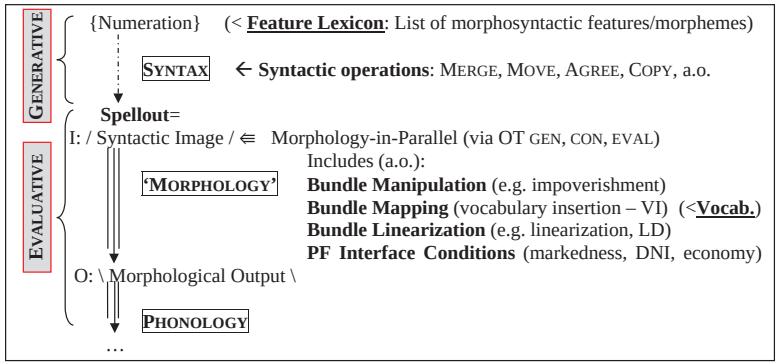


Figure 1: OT-DM model (PF branch only)

[10] Mapping between Syntax and Phonology

a. What does Spellout spell out? ← Claim: A 'Syntactic Image'(~ 'Mold' ~ 'Impression' ~ 'Cast' ~ …)

b. What happens? ← Claim: Image mapped to Morph. Output

c. How many parts? ← Claim: Syn.→Morph.→Phon.

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

[11] Ramifications for modular theory:

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

[12] Concept of a **conspiracy** - Kisseberth (1970) using data from Yokuts [yok] (=Yowlumne/Yawelmani; California, USA – Newman 1944)

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

[13] Conspiracy of phonological rules in the Yokuts avoiding *CC

a. i-Epenthesis: Ø → i / C_CC

b. C-Deletion: C → Ø / CC+_

c. Final V-Deletion: V → Ø / VC_# (^{x}… / VCC_#)

[14] Catalysts in the development of parallelist 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 → (V=Aux=Foc)
($_{\omega}$ **lí=thái**-do=sê)
lí thái-do =sê
go AUX-IPFV =FOC
'he is *still* going'

b. *Focus Drift: Cliticization of focus onto a verb*
V Aux Foc → (V=Foc) (Aux)
($_{\omega}$ **lí=sê**) ($_{\omega}$ thái-do)
lí =sê thái-do
go =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° 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*)

c. Insertion of an epenthetic dummy morpheme before T° (*L-Support*)

3.2 DM RESPONSE

[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…]

[20] Directly parallel to the events in pre-OT phonology, such as Paradis' (1987) *Constraints and Repair Strategies* (for further discussion see, Prince & Smolensky 2004 [1993]: 247-252 and Kiparsky 2017:396)

[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

b. Literature growing (Bonet 1994; Grimshaw 1997; Gerlach 1998; Trommer 2001a, 2001b, 2002; Don & Blom 2006; Opitz 2008; Haugen 2008, 2011; Wolf 2008; Lahne 2010; Tucker 2011; Sande 2017; Brown 2017; Dawson in press; Foley to appear – see also Wolf 2008 for early history)

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 Ạtala (also called 'Degema Town'). The current paper is based on the Usokun variety

[25] It is a head-initial language, and maintains a fairly strict SVO word order

[26] Auxiliaries precede the verb and adjuncts follow the object

4.1 CLITICS

Infl proclitics	1st Person		2nd		3rd			
	Set 1	Set 2	Set 1	Set 2	Set 1		Set 2	
SG	*me*	*mi*	*mu*	*u*	*mo*		*o*	
PL	*me*	*e*	*ma*	*a*	+H	-H	+H	-H
					me	*mi*	*e*	*i*

Table 1: Degema subject agreement proclitics

[27] Proclitic sets

a. Set 1 are used in positive polarity, non-past tense, begin with /m/

b. Set 2 appear elsewhere and are vowel initial other than first person singular

[28] Aspectual enclitics

a. Factative aspect ◌́=*V̄n* FAC express perfective aspect / past tense with eventive verbs, and present tense with stative verbs

b. Perfect aspect marker is ◌́=*tē* PRF

[29] Degema inflectional clitics[3]

a. Ohoso **ǫ**=sá=**n** ẹ̄nám Cf. *Ohoso **Ø** sạ́=**n** ẹ̄nám /
Ohoso **3SG.SET2**=shoot=**FAC** animal *Ohoso **ǫ**=sá **Ø** ẹ̄nám
'Ohoso shot an animal' (Kari 2004: 270)

b. **mị**=ḍé=**té** ǫ́sama Cf. ***Ø** ḍé=**té** ǫ́sama /
1SG.SET2=buy=**PRF** dress ***mị**=ḍé **Ø** ǫ́sama
'I have bought a dress' (Kari 2004: 293)

[30] Surface position of enclitics with monosyllabic object pronoun

a. Osoabo o=kótú**=n** ǫ́yi Cf. *Osoabo o=kótú ǫ́yi**=n**
Osoabo 3SG.SET2=call=**FAC** him/her
'Osoabo called him/her' (Kari 2004: 113)

only. Information on the Ạtala 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).

[3] Degema orthography is consistent with the IPA, with the following language-specific conventions: <ƀ> = /ɓ/, <ɖ> = /ɗ/, <nw> = /ŋʷ/, <ny> = /ɲ/, <y> = /j/, <ñ> = /ŋ/, and <v>=/β/. 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 <V́>, a downstepped high is indicated by a macron <V̄>, and a low tone is not marked.

b. o=kótú wǫ́=**ōn** Cf. *o=kótú**=n** wǭ
3SG.SET2=call you=**FAC**
'(s)he called you' (Kari 2004: 276)

c. o=gídí ƀáw=**tē** Cf. *o=gídí**=té** ƀāw
3SG.SET2=look.for them=**PRF**
'(s)he has looked for them' (Kari 2004: 282)

	1	2	3	XP {NP/CP/PP/etc.}
SG	méē/mẹ́ē V pron=**CL**	wǫ́ō V pron=**CL**	ǫyí V=**CL** pron	V=**CL** XP
PL	ení V=**CL** pron	máāny/mạ́āny V pron=**CL**	ƀáāw/ƀạ́āw V pron=**CL**	

Table 2: Attachment of enclitic with object pronouns

4.2 SVCs

[31] **Serial verb constructions (SVCs)** - a sequence of more than one verb in a single clause which share verbal arguments and functional categories

[32] Inflectional clitics in SVCs - two patterns in complementary distribution

a. **Double-marking pattern** - each verb in series is marked with an identical proclitic and enclitic respectively

b. **Single-marking pattern** - the first verb is marked with a proclitic while the last verb is marked with an enclitic **('bookending' pattern**)

[33] **Clitic patterns**

a. **Double-marking SVC pattern**
o=sóm**=n** ụ́sī **o**=túl wǫ́**=ōn**
3SG.SET2=be.good=**FAC** beauty **3SG.SET2**=reach you=**FAC**
'He is as handsome as you.' (Kari 2004:157)

b. **Single-marking SVC pattern**
Ohoso **o**=sóm túl=**n** ǫ́yi
Ohoso **3SG.SET2**=be.good reach=**FAC** him
'Ohoso is as handsome as him.' (Kari 2004:156)

[34]

a. **Double**-marking pattern with bisyllabic pronoun
mi=ḍúw**=n** ǫ́yi **mị**=tá**=ān**
1SG.SET2=follow=**FAC** her/him **1SG.SET2=**go=**FAC**
'I went with her/him' (Kari 2004: 201)

b. **Single**-marking pattern with monosyllabic pronoun
Breno **o**=ḍúw mé tá=**ān**
Breno **3SG.SET2**=follow me go=**FAC**
'Breno went with me' (Kari 2004: 115)

[35]

a. **Ungrammatical single**-marking in presence of intervening object
Tatane o=kótú=***(té)** éni ***(ǫ)**=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)

b. **Ungrammatical double**-marking in the single-marking context
Ohoso ǫ=tá(?/***=n**) (?/***ǫ=**)ḍé=n isen
Ohoso 3SG.SET2=go(***=FAC**) (***3SG.SET2=**)buy=FAC fish
'Ohoso went and bought fish' [ohk_201707]

V_1 ____ V_2	Double-marking		Single-marking	
Ø	?*~*	cl=[V_1]=cl cl=[V_2]=cl	√	cl=[V_1 V_2]=cl
$Pron_{\sigma}$	?~*	cl=[V_1 D_{σ}]=cl cl=[V_2]=cl	√	cl=[V_1 D_{σ} V_2]=cl
$Pron_{\sigma\sigma}$	√	cl=[V_1]=cl $D_{\sigma\sigma}$ cl=[V_2]=cl	*	cl=[V_1 $D_{\sigma\sigma}$ V_2]=cl
DP	√	cl=[V_1]=cl DP cl=[V_2]=cl	*	cl=[V_1 DP V_2]=cl

Table 3: Complementary distribution of clitic marking in SVCs

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

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

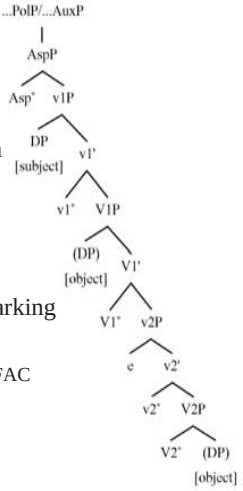
b. If verbs are *not* sufficiently local, they each get their own set of infl.

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 *v*P shells where V_1 selects v_2P as its complement:
[$_{ASPP}$ ASP° [$_{vP}$ v_1° [V_1° [$_{vP}$ v_2° [V_2°]]]]]

[38] Figure 2: *v*P complementation structure
Asp > v_1 > V_1 > v_2 > V_2



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

a. mi=ḍúw=**n** **óvo** **mi**=tá=an ?
1SG.SET2=follow=**FAC** **who** **1SG.SET2**=go=FAC
'I went with who?'

b. **ovó$_i$** nú mi=ḍúw ~~**ovó$_i$**~~ tá=an?
who that 1SG.SET2=follow ~~**who**~~ go=FAC
'who did I go with?'

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 V_1	asp V	→	[V=asp]
c.	Copying of aspectual enclitic to V_2	V	→	[V]=cl
d.	Constituency formation of sufficiently local verbs	V_1 V_2	→	[V_1=V_2]

[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] DNI of subject and aspect agreement in Degema

Input: [$_{AspP}$ Subject$_i$ [Asp° [$_{v1P}$ ~~Subject$_i$~~ [v_1°+V_1° … [v_2°+V_2° …
Tatane PRF v_1°+√KOTU … v_2°+√KPḘRI
| | | |

Output: /Subject/ /PRF/ /**AGR$_{SBJ}$**/+/Verb$_1$ / /**AGR$_{SBJ}$**/+/Verb$_2$/+/**AGR$_{ASP}$**/
/Tatane/ /=te/ /**o=**/ + /kotu/ /**ǫ=**/ + /kperi/ + /**=te**/

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

a. ṫilliḳ'**-u** t'ɨḳ'ur(**-u**) bet
big-**DEF** black(**-DEF**) house
'the big black house' (Kramer 2010: 229)

[46] Definite marker *–u:*

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. (α)*(β) → (α+β ~ β+α)

[48] 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

[49] Local dislocation in Degema

a. (/**asp**/)*(/V/) → (/V+asp/) (/=**n**/)*(/som/) → (/som+**n**/) [Ex. [33]a]

b. (/V/)*(/**D$_\sigma$**/) → (/V+**D$_\sigma$**/) (/tul/)*(/**wọ**/) → (/tul+**wọ**/) [Ex. [33]a]

c. (/V$_1$/)*(/**V$_2$**/) → (/V$_1$+**V$_2$**/) (/som/)*(/**tul**/) → (/som+**tul**/) [Ex. [33]b]

[50] Iterative local dislocation in Degema

a. (/asp/)*(/V/)*(/D$_\sigma$/) → (/V/+/D$_\sigma$/+/asp/)
(/=te/)*(/gidi/)*(/ḅaw/) → (/gidi/+/ḅaw/+/te/) [Ex. [30]c]

5.4 CONSTITUENCY SUPPORTED FROM TONE

[51] Tone on verbs is predictable from grammatical context

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

a. mị́=(**ḍé**)=n ą́gada
1SG.SET2=**buy**=FAC chair
'I bought a chair'

b. Tatane o=(**kótú**)=té éni ọ=(**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)

c. o=(**kótú** **wọ́**)=ōn
3SG.SET2=**call** **you**=FAC
'(s)he called you' (Kari 2004: 276)

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

a. Breno o=(**ḍúw** **mé** **tą́**)=ān
Breno 3SG.SET2=**follow** **me** **go**=FAC
'Breno went with me' (Kari 2004: 115)

b. ọ=(**tá** **ḍḛ́**)=n isen
3SG.SET2=**go** **buy**=FAC fish
'(s)he went and bought fish' (Kari 2004: 311)

c. Ohoso ọ=(**tá** **ḍḛ́** **vọ́** **yị́** **kị́yé**)=n ọ́yi
Ohoso 3SG.SET2=**go** **buy** **take** **come** **give**=FAC her/him
'Ohoso went and bought (s/t) and brought (it) to her/her' (Kari 2004: 121)

[54] Gram. /H/ tone spread across toneless constituent (V$_1$+V$_2$+V$_3$)
mọ́=(vón vọ́ **yọ́kúró**) **[… jɔ́kórɔ́]** (cf. *...yọ́kuro *[jɔ́kòrɔ̀])
3SG.SET1=take take **leave**
'(s)he will take (it) and leave', '(s)he will leave with (it)' [ohk_20170806]

[55] Gram. /H/ tone spread across toneless constituent (V$_1$+V$_2$) - excludes following toneless object, here /agada/ 'chair'
Bréno mọ́=(tá gḛ́n) **(ą́gada)** **[… ágàdà]** (cf. *...ą́gádá)
Breno 3SG.SET1=go look.at **chair**
'Breno will look at a chair' [ohk_20170806]

[56] Grammatical /L/ tone expressing negation
ó=(**ḍeri** **me**) kąbuló ó=(**meme** **ḍị**) ịdíyóm yọ
NEG\3SG.SET2=**know** **me** because NEG\3SG=**agree** **eat** food the
'(s)he refused to eat the food b/c (s)he doesn't know me' (Kari 2004: 45)

[57] Grammatical /L/ tone scopes over second verb *only* if linearly adjacent
Osoabo **ọ́=(von)** ẹ́lege **ọ=(fíyá)**
Osoabo **NEG\3SG.SET2=take** knife **3SG.SET2=cut**
'Osoabo did not use a knife to cut something' (Kari 2004: 111)
[*Not* 'Osoabo cut something but didn't use a knife (to do it)']

5.5 PROBLEMS WITH RULES & CONSTRAINTS DM

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

a. Common evidence justifying this ordering involves bleeding and feeding

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

Syntax	[$_{\text{ASP}P}$ ASP° [$_{v1P}$ v_1°+V$_1$° [DP ~~V$_1$~~° [$_{v2P}$ v_2°+V$_2$° [~~V$_2$~~°]]]]]
DNI	(asp°) (agr$_{sbj}$+v_1°+V$_1$°) (DP) (agr$_{sbj}$+v_2°+V$_2$°+agr$_{asp}$)
VI	(n)*(mi+ḍuw)*(ọyi)*(mị+ta+n)
LD	(mi+ḍuw+*n*)*(ọyi)*(mị+ta+n)
Predicted:	mi=ḍuw=n ọyi mị=ta=n ☺ Attested: mi=ḍuw=n ọyi mị=ta=n

Table 4: **Correct** prediction in double-marking context with intervening DP object

Syntax	[ASPP ASP° [vP v1°+V1° [Ø ~~V1~~° [vP v2°+V2° [~~V2~~°]]]]]
DNI	(asp°) (agrsbj+v1°+V1°) (agrsbj+v2°+V2°+agrasp)
VI	(n)*(ọ+ta)*(ọ+ḍe+n)
LD	(ọ+ta+*n*) (ọ+ḍe+n)
💣 Predicted: *ọ=ta=n ọ=ḍe=n	☹ Attested: ọ=ta ḍe=n

Table 5: **Incorrect** prediction in single-marking context with standard rule order

[60] One possibility is parameterized DM operations:
VI > LD > DNI (> VI)

[61] mọ́=**tá** (*mọ́)=**gẹ̄n** ẹ́nám
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(INFL)

Syntax	[ASPP ASP° [vP v1°+V1° [Ø ~~V1~~° [vP v2°+V2° [~~V2~~°]]]]]
VI	Ø*(tạ)*(ḍẹ)
LD	(tạ+*ḍẹ*) ← Not (directly) motivated by markedness constraint
DNI	(mọ+ta+ḍẹ)
Attested: mọ=ta ḍẹ	

Table 6: R&C Analysis

6 OT-DM

6.1 THE CANDIDATE SET

[63] Candidate set was generated systemically 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. (/asp/+/V/) vs. (/V/+/asp/)

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

f. **AspAgr**: Did the verb appear with aspect marking in the same MWd?
i.e. (/V/) vs. (/V/+/asp/)~(/V/+/agrasp/)

g. **Label**: Does the label of the MWd reflect a prosodically strong morpheme?
i.e. (/V/+/Dσ/){V} vs. (/V/+/Dσ/){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 $D_{\sigma\sigma}$ V/ 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

[68]

C-Stratum 1		**>> C-Stratum 2 >>**	**C-Stratum 3**
Mark 1	**Align/Map 1**	**>> Faith/Mark 2 >>**	**Map 2**
V=WF_MWd(agrsbj) V=WF_MWd(asp) V1>V2 MWd=PrWd MWd{label} *ComplexMWd{label} {V}>{D}	Align-/agrsbj/-L Align-/asp/-R Linearity-IO:Lex-to-Lex	DEP-IO(Node) *agrasp *agrsbj	Map(Wd_Type) Linearity-IO:Fnc

[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)

[71] **Emergence of DM operations LD and DNI**

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

$$\begin{bmatrix} \text{V=WF\_MWd(asp)} \\ \text{V=WF\_MWd}(\text{agr}_{\text{sbj}}) \end{bmatrix} >> \begin{bmatrix} \text{Dep-IO(Node)} \\ *\text{agr}_{\text{asp}} \\ *\text{agr}_{\text{sbj}} \end{bmatrix}$$

b. **LD (dislocating):** Dislocating MWd/SbWd
[Align-/asp/-R] >> [LinearityMap-IO:Fnc]

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

$$\begin{bmatrix} \text{MWd=PrWd} \\ \text{V=WF\_MWd(asp)} \end{bmatrix} >> [\text{Map(Wd\_Type)}]$$

				C-S 1		C-S 2	C-S 3
I:		/ V_1 V_2 /		MARK SET 1	MAP SET 1	FAITH	MAP SET 2
O_1:		None	V_1 V_2	1 !			
O_2:	☞	**Single**	**cl=[V_1 V_2]=cl**			**1**	**4**
O_3:		Double	cl=[V_1]=cl cl=[V_2]=cl			3 !	2
I:		/ V_1 D_σ V_2 /		MARK SET 1	MAP SET 1	FAITH	MAP SET 2
O_1:		None	V_1 D_σ V_2	1 !			
O_2:	☞	**Single**	**cl=[V_1 D_σ V_2]=cl**			**1**	**6**
O_3:		Double	cl=[V_1 D_σ]=cl cl=[V_2]=cl			3 !	4
I:		/ V_1 $D_{\sigma\sigma}$ V_2 /		MARK SET 1	MAP SET 1	FAITH	MAP SET 2
O_1:		None	V_1 $D_{\sigma\sigma}$ V_2	1 !			
O_2:		Single 1	cl=[V_1 $D_{\sigma\sigma}$ V_2]=cl	1 !		1	6
O_3:		Single 2	cl=[V_1 V_2]=cl $D_{\sigma\sigma}$		2 !	1	4
O_4:	☞	**Double**	**cl=[V_1]=cl $D_{\sigma\sigma}$ cl=[V_2]=cl**			**3**	**2**

Tableau 1: Emergence of single and double-marking patterns

[72] /V D_σ V/ (n=206) Tableau 2 on p. 14

[73] /V $D_{\sigma\sigma}$ V/ (n=214) Tableau 3 on p. 15

[74] An innovation - **Morphological Labeling** $(\text{MWd})_{\{M\}}$

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

[75] Sufficiently local verbs incorporate and form a single MWd

a. A morphological compound ($(/V1/)_{\text{SbWd}}$+$(/V2/)_{\text{SbWd}}$)$_{\text{MWd}\{V\}}$

[76] Morphological labeling counteracts potential 'mass local dislocation'

[77] Cf. /V $D_{\sigma\sigma}$ V/ type does not become ^{x}($(/V1/)_{\text{SbWd}}$+$(/D_{\sigma\sigma}/)_{\text{SbWd}}$+$(/V2/)_{\text{SbWd}}$)$_{\text{MWd}\{V\}}$

a. Conflict with the incorporated /D/ labeling this MWd with a label {D}

An OT-DM model

		Input: / ASP V D_σ V /	CONSTRAINT STRATUM 1: V=WF_MWD(AGR$_{SBJ}$)	V=WF_MWD(ASP)	V1>V2	MWD=PRWD	MWD$_{\{LABEL\}}$	*COMPLEXMWD$_{\{LABEL\}}$	{V}>{D}	ALIGN-/AGR$_{SBJ}$/-L	ALIGN-/ASP/-R	LINEARITYMAP-IO:LEX	C-S 2: DEP-IO(NODE)	*AGR$_{ASP}$	*AGR$_{SBJ}$	C-S 3: MAP(WD_TYPE)	LINEARITYMAP-IO:FNC
1	☞	[$_{aspP}$ asp° [$_{v1P}$ v_1°+V_1° [DP ~~V_1~~]] [$_{v2P}$ v_2°+V_2° [~~V_2~~°]]]]]											1		1	3	3
		(/agr$_{sbj}$1/+/V1/+/D$_\sigma$/+/V2/+/asp/)$_{\{V\}}$ **SINGLE MARKING**											3!	1	2	2	2
2		(/agr$_{sbj}$1/+/V1/+/D$_\sigma$/+/asp/)$_{\{V\}}$ * (/agr$_{sbj}$2/+/V2/+/agr$_{asp}$1/)$_{\{V\}}$									1!		1		3		
3		(/agr$_{sbj}$1/+/asp/+/V1/+/D$_\sigma$/+/V2/)$_{\{V\}}$									1!		1		1		
…		[Cand 4-15]															
16		(/V1/+/D$_\sigma$/+/agr$_{sbj}$1/+/V2/+/asp/)$_{\{V\}}$								1!			1		3	3	
…		[Cand 17-33]								1!							
34		(/agr$_{sbj}$1/+/V1/+/D$_\sigma$/+/V2/+/asp/)$_{\{V1+\{D\}\}\{Asp\}}$						1!					1		3	3	
…		[Cand 35-36]						1!									
37		(/asp/)$_{\{Asp\}}$ * (/agr$_{sbj}$1/+/V1/+/D$_\sigma$/+/V2/+/agr$_{asp}$1/)$_{\{V\}}$				1!							2	1	2		
…		[Cand 38-71]				1!											
72		(/asp/)$_{\{Asp\}}$ * (/agr$_{sbj}$1/+/V1/+/agr$_{asp}$1/+ /agr$_{sbj}$2/+/V2/+/agr$_{asp}$2/)$_{\{V\}}$ * (/D$_\sigma$/)$_{\{D\}}$				2!				1	1	2	4	2	2	1	
73		(/agr$_{sbj}$1/+/V1/+/D$_\sigma$/+/asp/)$_{\{V\}}$ * (/agr$_{sbj}$2/+/V2/)$_{\{V\}}$		1!									2		2	2	2
…		[Cand 74-94]		1!													
95		(/asp/)$_{\{Asp\}}$ * (/agr$_{sbj}$1/+/V1/)$_{\{V\}}$ * (/D$_\sigma$/)$_{\{D\}}$ * (/agr$_{sbj}$2/+/V2/)$_{\{V\}}$		2!		2							2		2		
96		(/V1/+/D$_\sigma$/+/V2/+/asp/)$_{\{V\}}$														3	3
…		[Cand 97-205]		1!													
206		(/asp/)$_{\{Asp\}}$ * (/V1/)$_{\{V\}}$ * (/D$_\sigma$/)$_{\{D\}}$ * (/V2/)$_{\{V\}}$		2!		2											

Tableau 2: /V D_σ V/ input type (Condensed tableau)

Input:		/ ASP V $D_{\sigma\sigma}$ V / [$_{aspP}$ asp° [$_{v1P}$ v_1°+V_1° [DP ~~V_1~~° [$_{v2P}$ v_2°+V_2° [~~V_2~~°]]]]]	V=WF_MWd(AGR$_{SBJ}$)	V=WF_MWd(ASP)	V1>V2	MWd=PrWd	MWd$_{\{LABEL\}}$	*ComplexMWd$_{\{LABEL\}}$	{V}>{D}	Align-/AGR$_{SBJ}$/-L	Align-/ASP/-R	LinearityMap-IO:Lex	Dep-IO(Node)	*AGR$_{ASP}$	*AGR$_{SBJ}$	Map(Wd_Type)	LinearityMap-IO:Fnc
			Constraint Stratum 1										C-S 2			C-S 3	
1	☞	(/agr$_{sbj}$1/+/V1/+/asp/)$_{\{V\}}$ * (/$D_{\sigma\sigma}$/)$_{\{D\}}$ * (/agr$_{sbj}$2/+/V2/+/agr$_{asp}$1/)$_{\{V\}}$ **DOUBLE MARKING**											3	1	2	1	1
2		(/agr$_{sbj}$1/+/V1/+/V2/+/asp/)$_{\{V\}}$ * (/$D_{\sigma\sigma}$/)$_{\{D\}}$										2!	1		1	2	2
3		(/agr$_{sbj}$1/+/asp/+/V1/)$_{\{V\}}$ * (/$D_{\sigma\sigma}$/)$_{\{D\}}$ * (/agr$_{sbj}$2/+/V2/+/agr$_{asp}$1/)$_{\{V\}}$									1!		3	1	2	1	
…		[Cand 4-9]									1!						
10		(/agr$_{sbj}$1/+/V1/+/agr$_{asp}$1/+/V2/+/asp/+/agr$_{asp}$2/)$_{\{V\}}$ * (/$D_{\sigma\sigma}$/)$_{\{D\}}$									2!	2	3	2	1	2	2
11		(/V1/+/agr$_{sbj}$1/+/V2/+/asp/)$_{\{V\}}$ * (/$D_{\sigma\sigma}$/)$_{\{D\}}$								1!		2	1		1	2	2
…		[Cand 12-21]								1!							
22		(/agr$_{sbj}$1/+/V1/+/agr$_{asp}$1/+/agr$_{sbj}$2/+/V2/+/asp/+/agr$_{asp}$2/)$_{\{V\}}$ * (/$D_{\sigma\sigma}$/)$_{\{D\}}$								1!	2	2	4	2	2	2	2
23		(/agr$_{sbj}$1/+/V1/+/$D_{\sigma\sigma}$/+/V2/+/asp/)$_{\{V\},\{D\},\{Asp\}}$						1!					1		1	3	3
…		[Cand 24-25]						1!									
26		(/agr$_{sbj}$1/+/V1/+/$D_{\sigma\sigma}$/+/V2/+/asp/)$_{\{V\}}$					1!						1		1	3	3
…		[Cand 27-61]					1!										
62		(/agr$_{sbj}$1/+/V1/+/$D_{\sigma\sigma}$/+/agr$_{sbj}$2/+/V2/+/asp/)$_{\{D\}}$					2!		1	1			2		2	3	3
63		(/asp/)$_{\{Asp\}}$ * (/agr$_{sbj}$1/+/V1/+/agr$_{asp}$1/)$_{\{V\}}$ * (/$D_{\sigma\sigma}$/)$_{\{D\}}$ * (/agr$_{sbj}$2/+/V2/+/agr$_{asp}$2/)$_{\{V\}}$				1!							4	2	2		
…		[Cand 64-75]				1!											
76		(/asp/)$_{\{Asp\}}$ * (/agr$_{sbj}$1/+/V1/+/$D_{\sigma\sigma}$/+/agr$_{asp}$1/+/agr$_{sbj}$2/+/V2/+/agr$_{asp}$2/)$_{\{V\}}$				1!	1			1	1		4	2	2	2	
77		(/agr$_{sbj}$1/+/V1/+/asp/)$_{\{V\}}$ * (/$D_{\sigma\sigma}$/)$_{\{D\}}$ * (/agr$_{sbj}$2/+/V2/)$_{\{V\}}$		1!									2		2	1	1
…		[Cand 78-100]		1!													
101		(/asp/)$_{\{Asp\}}$ * (/agr$_{sbj}$1/+/V1/+/$D_{\sigma\sigma}$/)$_{\{V\}}$ * (/agr$_{sbj}$2/+/V2/)$_{\{V\}}$		2!		1	1						2		2	1	
102		(/agr$_{sbj}$1/+/V1/+/asp/)$_{\{V\}}$ * (/$D_{\sigma\sigma}$/)$_{\{D\}}$ * (/V2/+/agr$_{asp}$1/)$_{\{V\}}$	1!										2	1	1	1	1
…		[Cand 103-213]	1!														
214		(/asp/)$_{\{Asp\}}$ * (/V1/+/$D_{\sigma\sigma}$/)$_{\{V\}}$ * (/V2/)$_{\{V\}}$	2!	2		1	1									1	

Tableau 3: /V $D_{\sigma\sigma}$ V/ input type (Condensed tableau)

[78] Support from Lenakel secondary stress (Lynch 1974, 1978; Smith 2011)

a. **Nouns**: secondary stress assigned R→L from primary-stress

i. / nɨmʷakɨlakɨl / [nɨ.**mʷɔ̀**.gə.**lɑ́**.gəl]
'beach' (Lynch 1978:19)

ii. / kam-lomhanteni / [kam.**lɔ̀**.m̥an.**dɛ́**.ni]
'for Lomhanteni' (Lynch 1974:83)

iii. / kam-titoŋa / [**kàm**.dʸi.**dɔ́**.ŋa]
'for Titoŋa' (Lynch 1974:183)

b. **Verbs**: secondary stress assigned L→R from initial syllable

i. / n-ɨm-ausito / [**nɨ̀**.maw.**sí**.do]
'you (sg.) told a story' (Lynch 1974:66)

ii. / n-ɨm-ai-ausito / [**nɨ̀**.ma.yu.**sí**.do]
'you (pl.) told a story' (Lynch 1974:66)

iii. / t-n-ak-am-ar-olkeikei / [**tɨ̀**.nɑ.**gɑ̀**.mɑ.r̃ɔl.**gɛ́y**.gey]
'you (pl.) told a story' (Lynch 1978:19Against two alternatives

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 fnc 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=ḍúw=n **óvo** mị=tá=an ?
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$_i$ nụ́ mi=ḍúw t_i tạ́=ān ? [Cf. Ungram. *Ovó$_i$ nụ́ mi=ḍúūw t_i mị=tá=ān?]
who that 1SG.SET2=follow ~~**who**~~ go=FAC
'**Who** did I go with?'

[86] **Single**-marking under focus via clefting
kú **ǫ́yi$_i$** nṵ́ mi=ḍúw ***t$_i$*** tá=ān
not **her/him** that 1SG.SET2=follow ~~**her/him**~~ go=FAC
'It was not **her/him** that I went with' (E.E. Kari p.c., 2015.10.24)

[87] **Single**-marking under relativization
owéy$_i$ nṵ́ mi=ḍúw ***t$_i$*** tá=tē [Cf. Ungram. *owéy$_i$ nṵ́
person that 1SG.SET2=follow ~~**person**~~ go=PRF mi=ḍúw=**tē** ***t$_i$*** **mị**=tá=tē]
"the person whom I have gone with" (E.E. Kari p.c. 2015.10.24)

[88] **Single**-marking under object *pro*-drop (indicated by Ø)
Ohoso ọ=tá ḍẹ́ **Ø** vǫ́ **Ø** yį́ kíyé=n ǫ́yi
Ohoso 3SG.SET2=go buy **Ø** take **Ø** come give=FAC her/him
'Ohoso went and bought (something) and brought (it) to her/him.' (Kari 2004)

[89] 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

[90] **Unmotivated 'blocking' of head movement by an overt object**

a. Grammatical cl=V O cl=**V**
Jzakume ǫ́=tam íḍíyom ọ=**ḍóny**
Jzakume NEG\3SG.SET1=chew food 3SG=**swallow**
'Jzakume did not chew food and swallow' (Kari 2003a: 278)

b. Ungrammatical *cl=V+**V$_i$** O ***t$_i$***
*Jzakume ó=tam+**ḍọny$_i$** íḍíyom ***t$_i$***
Jzakume NEG\3SG.SET1=chew+**swallow** food ~~**swallow**~~
Intended: 'Jzakume did not chew food and swallow'

6.4 AGAINST AN ALTERNATIVE ELLIPSIS ANALYSIS

[91] *Deletion-under-identity* (*DUI*) *alternative* - a type of **ellipsis**

	Single-marking pattern		Double-marking pattern
Uniform clitic marking	agr_{sbj}=V_1=**asp Ø agr_{sbj}**=V_2=agr_{asp}		agr_{sbj}=V_1=**asp DP agr_{sbj}**=V_2=agr_{asp}
Deletion-under-identity	agr_{sbj}=V_1=~~**asp Ø agr_{sbj}**~~=V_2=agr_{asp}		agr_{sbj}=V_1=**asp DP agr_{sbj}**=V_2=agr_{asp}
Surface pattern	agr_{sbj}=V_1	V_2=agr_{asp}	agr_{sbj}=V_1=**asp DP agr_{sbj}**=V_2=agr_{asp}

[92] Lack of DUI in conjoined clauses - Double-marking pattern obligatory

a. [V_1] & [V_2]
Ivioso o=kótú mé=**ēn** **ọ**=kpérí=n īnúm
Ivioso 3SG.SET2=call me=**FAC** **3SG.SET2=**tell=FAC something
'Ivioso called me and told (me) something' (Kari 2003a:274)

b. [V_1] & [aux V_2]
Tatane o=kpé**ēny** **ọ**=kírí wą́ā̀y
Tatane 3SG.SET2=wash**FAC** **3SG.SET2=**also.AUX spread\FAC
'Tatane washed and also spread (something)'
cf. *…o=kpény **Ø** kịrí wą́ā̀y (E.E. Kari p.c., 2015 Oct 24)

c. [V_1] but [V_2]
ǫ́=kú ḍị́ bą́**aw** **dọ** **ọ**=rékéréké ḍị́=īn
3SG.SET2=did.AUX eat them**FAC** **but** **3SG.SET2** be.slow eat=FAC
'She did eat them but she ate them rather slowly'
cf. *ǫ́=kú ḍị́ bą́**aw dọ Ø** rẹ́kéréké ḍị́=īn
cf. *ǫ́=kú ḍị́ bą́w **Ø dọ ọ**=rékéréké ḍị́=īn
cf. *ǫ́=kú ḍị́ bą́w **Ø dọ Ø** rẹ́kéréké ḍị́=īn (E.E. Kari p.c., 2015 Dec 09)

[93]

*a. …Bą́nú Ipokuma, Ǫbonogina ọ=vón=n éwéey nǫ́onw ọ=wála pél Édá Sombreiro **ọ=ḍá réré fún ḍẹ́sí=īn ọ=tá jzá=n** m'úlúgbó-ẹ́jzi útóm ísen gbódia, oñañíná kúna, nụ ịnám są́a*

b. '…At Ipokuma, Obonogina left with his people and waded across the Sombreiro River, **moved and settled in the furthest part** of the wilderness for the purposes of fishing, farming, and hunting' (Kari 1997:64)

c. Single-marking *within* but not *between* SVCs
…ọ=ḍá réré fún ḍẹ́sí=īn ọ=tá jzá=n…
[3SG=AUX walk ascend go.far=FAC]$_{SVC1}$ [3SG=go stay=FAC]$_{SVC2}$
'…[moved]$_{SVC1}$ and [settled]$_{SVC2}$…'

[94] Overgenerates - Covert coordination and other conjoined clauses meet surface conditions (adjacency and featural identicality) but DUI is ungrammatical

[95] 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

[96] Ungrammatical forward deletion in the absence of backward deletion

a. Mi=ḍúw=n ọ́yi ***(mị)**=tá=ān
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=kótú=n ọ́yi ***(ọ)**=kpérí=n īnúm
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

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

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

[99] 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/

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

Set	#	Constraint	Definition	Function
Mark 1	1	V=WF_MWD(AGR$_{SBJ}$)	For a MWd marked with label {Verb} ({V}), assign a violation if it is not marked with subject agreement	Verbal words have a proclitic
	2	V=WF_MWD(ASP)	For a MWd marked with label {Verb} ({V}), assign a violation if it is not marked with aspect	Verbal words have a enclitic
	3	V1>V2	Under competition, the first MWd marked with label {Verb} ({V}) (defined linearly) bears inflection over the second MWd marked {V}	Mark the first verb with inflection over the second when you can't mark both
	4	MWD=PRWD	A morphological word is a well-formed prosodic word	Clitics and light object pronouns incorporate into a surrounding word
	5	MWD$_{\{LABEL\}}$	For a MWd, assign a violation if a prosodically strong morpheme of category M does not project a morphological label {M}	Words containing a verb are labeled {V}, prosodically strong pronouns/nouns as {D}, etc.
	6	*COMPLEXMWD$_{\{LABEL\}}$	For a MWd, assign a violation if it is marked with more than one morphological label	Words with more than one lexical item are not labeled with both, i.e. *{V},{D}
	7	{V}>{D}	Under competition, a MWd should be marked with label {Verb} ({V}) over a label {D}	Mark words with a verb with a {V} label over a {D} label when you can't have both
Align	8	ALIGN-/AGR$_{SBJ}$/-L	The left edge of an /agr$_{SBJ}$/ morpheme coincides with the left edge of a MWd	Agreement proclitics appear first in the word
	9	ALIGN-/ASP/-R	The right edge of an /asp/ morpheme coincides with the right edge of a MWd	Aspect enclitics appear last in the word
Map 1	10	LINEARITYMAP-IO:LEX	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	Limits manipulating the expected linear order of lexical exponents (e.g. Vs, Prons, Ns)
Faith	11	DEP-IO(NODE)	Morphemes in the output correspond to syntactic terminal heads in the input	Penalizes the insertion of dissociated nodes (e.g. Agr)
Mark 2	12	*AGR$_{ASP}$	Assign a violation for every instance of aspect agreement	Don't have aspect agreement
	13	*AGR$_{SBJ}$	Assign a violation for every instance of subject agreement	Don't have subject agreement
Map 2	14	MAP(WD_TYPE)	Map a syntactic head *x*° which is not dominated by a head *x*° to a morphological word (MWd)	By default, syntactic words should correspond to morphological words
	15	LINEARITYMAP-IO:FNC	The hierarchical order of a functional head *x*° with respect to any head *y*° in the input is reflected in the linear order of counterparts /x/ and /y/ in the output	Limits manipulating the expected linear order of functional head exponents (e.g. aspect)