

The Morphosyntax of Subject Pronouns in Gã

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Introduction

- Piece-based syntactic morphological frameworks differ with respect to whether or not morphological operations are sensitive to linearity.
 - Spanning (Svenonius 2012): Limited to no PF processes; Lexical Insertion is sensitive to syntax only.
 - Distributed Morphology (DM) (Halle & Marantz 1993): Includes PF processes, some of which are sensitive to linear order.
- These frameworks make different typological predictions about portmanteaux.
- Data from STAMP morphology (Anderson 2011) in Gã (Kwa, Ghana) provides testing ground for these predictions.

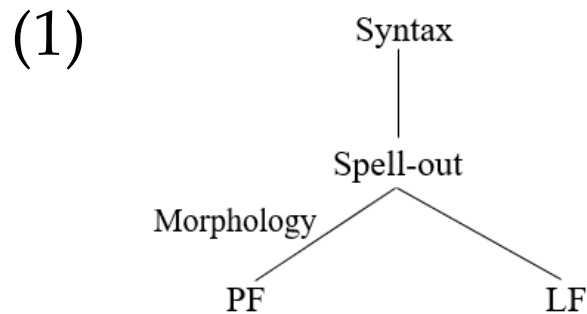
Road Map

- Background
 - Portmanteaux
 - DM approach to portmanteaux
 - Spanning approach to portmanteaux
- Data: Gã subject pronouns and STAMP morphs
- Two potential analyses
 - A Spanning analysis
 - A DM analysis
- Additional Evidence for Linearity
- Conclusion

THEORETICAL BACKGROUND

Morphology Background

- Many piece-based morphological frameworks assume the Y-model (1)...



- ...And propose a process of vocabulary insertion which maps phonological content to syntactic features (Halle & Marantz 1993 and subsequent work).
- Models differ with respect to how much complexity should be allotted to the interface between syntax and phonology.

Portmanteaux

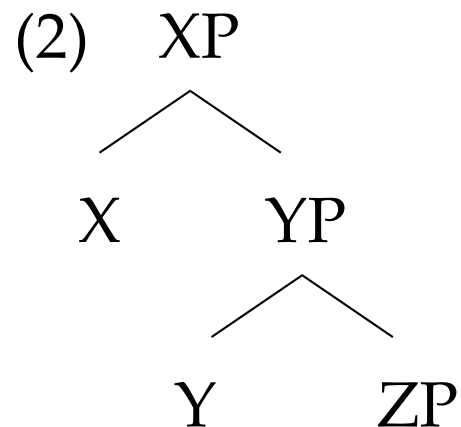
- Portmanteaux: “Morphs which belong simultaneously to two (or theoretically, more) morphemes, and have simultaneously the meaning of both” (Ostrove 2018: 1246).
- Portmanteaux are modeled as a single lexical entry which expones multiple syntactic terminals with a single phonological form (Williams 2003, Svenonius 2012, Embick 2015, i.a.)

Portmanteaux in DM

- In DM, vocabulary insertion targets terminal nodes.
- Mismatches between nodes and morphemes, like portmanteaux, are the result of PF operations which mediate between syntax and phonology.
 - Fusion: A PF operation which combines multiple terminals into a single position of exponence.
 - Sensitive to linear order (Embick 2015)

Portmanteaux in DM

- Syntactic structure:

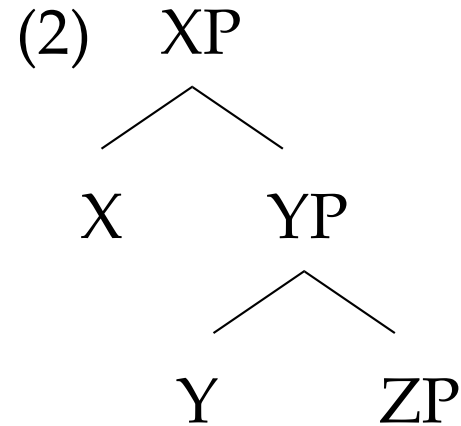


- Concatenation:

(3) [X]^[Y]

Portmanteaux in DM

- Syntactic structure:



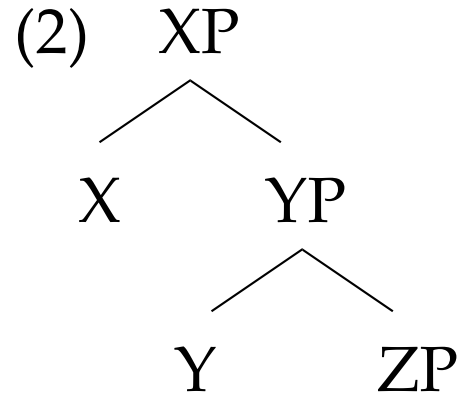
- Concatenation:
- Given a Fusion rule (4):

$$(4) \quad [X]^{\wedge}[Y] \rightarrow [X,Y]$$

(3) $[X]^{\wedge}[Y]$

Portmanteaux in DM

- Syntactic structure:



- Concatenation:
- Given a Fusion rule (4):

(4) $[X] \wedge [Y] \rightarrow [X, Y]$

- Fusion:

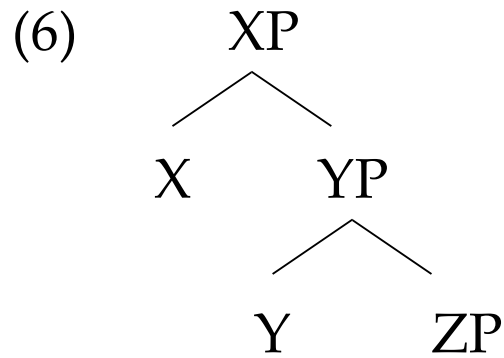
(3) $[X] \wedge [Y]$

(5) $[X, Y]$

Portmanteaux in Spanning

- Spell-out targets spans, meaning that a single morpheme can spell-out multiple heads if they are members of the same span.
- “A span is a contiguous sequence of heads in a head-complement relation” (Svenonius 2016:6)

Lexical Insertion targets Spans



- “A span is a contiguous sequence of heads in a head-complement relation” (Svenonius 2016: 6)
- Spans:
- (7) a. [X]
b. [Y]
c. [X, Y]

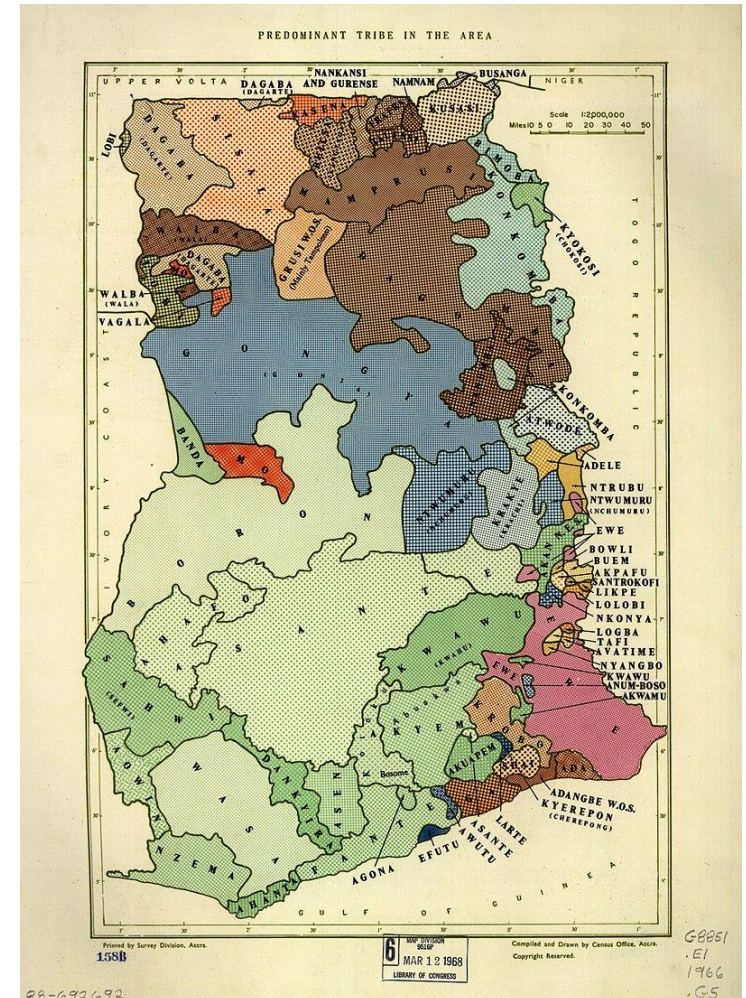
Key Differences and Empirical Predictions

- Spanning: Insertion targets spans, which are read directly from the syntax.
 - Prediction: Portmanteaux will consist of heads which are syntactically local (in a head-complement relationship)
 - **Specifiers and adjuncts may not be included in portmanteaux.**
- DM: PF operations, which may be sensitive to linear adjacency, mediate between syntax and insertion.
 - Prediction: Portmanteaux will consist of heads which are linearly local (linearly adjacent, or concatenated), regardless of their structural relationship.
 - **Specifiers and adjuncts may be included in portmanteaux.**

STAMP MORPHS IN GÃ

Linguistic Background: Gã

- Spoken in and around Accra, Ghana
 - ~6 million speakers
- SVO word order
- Vowel length and tone are contrastive



Ghana census office (1966)

Linguistic Background: Gã

- Overt subjects are obligatory.

(8) a. e naa loflo b. loflo-o naa le
 3SG see.HAB bird bird-DEF see.HAB 3SG.ACC
 ‘He/She/It sees the bird.’ ‘The bird sees him/her/it.’

- The subject marker is a pronoun.

– Binds an anaphor

(9) e_i dʒu e-he_i
 3SG.NOM wash 3SG-rflx
 ‘She/he/it washed herself/himself/itself.’

– In complementary distribution with a lexical DP subject

(10) *loflo-o e naa le
 bird-DEF 3SG see 3SG.ACC
 ‘The bird sees him/her/it.’

STAMP Morphs

- Anderson (2011, 2016): STAMP morphs are portmanteau subject-tense-aspect-mood-polarity morphs exhibiting functional and formal properties of both pronominals and auxiliary verbs.
 - Characteristic of languages in the Macro-Sudan Belt, regardless of genetic unit.
- The data is puzzling and typologically unique because insensitivity to inflectional features is a proposed characteristic which distinguishes pronominal clitics from agreement affixes (Nevins 2011, Corbett 2005).

Puzzle: STAMP Morphs

- Progressive aspect is generally marked by the prefix *n-* (11)

(11) *ɲε n-na wɔ*

2PL PROG-see 1PL

‘You are seeing us.’

- When the pronoun is singular, progressive aspect and phi-features are marked by a single morpheme (12a).

(12) a. *míí na bo*

1SG.PROG see 2SG.ACC

‘I am seeing you.’

b. *í na bo*

1SG see 2SG.ACC

‘I saw you’

Puzzle: STAMP Morphs

- A similar pattern occurs with irrealis mood.
- Default irrealis mood marking:

(13) e bàá ho ñíí
3SG IRR cook thing
'He will cook.'

- When the subject is a first person singular pronoun...

(14) má jé' duadé soo / *í bàá jé' duadé soo
1SG.IRR eat cassava Thursday
'I will eat cassava on Thursday.'

Table 1: Nominative Pronominal Paradigm

	Default	Progressive ([PROG])	Irrealis ([IRR])
[+1, -PL]	í	míí	má
[+2, -PL]	o	oo	(o bàá)
[-1, -2, -PL]	e	ee	(e bàá)
[+1, +PL]	wo	(wo n-V)	(wo bàá)
[+2, +PL]	ɲi	(ɲi n-V)	(ɲi bàá)
[-1, -2, +PL]	amɛ	(amɛ n-V)	(amɛ bàá)

Against a Purely Phonological Analysis

- It is unclear how a purely phonological analysis could account for the full paradigm of STAMP morphs, particularly the first person singular/
- It is not the case that the phonological environment [pronoun]+/b/ or [pronoun]+CV triggers this alternation.

(15) a. í bà (*má)

1sg come.pfv

'I came' (Campbell 2017: 290)

b. má jé duadé / *í bàá jé duadé soo

1SG.IRR eat cassava

'I will eat cassava on Thursday.'

- [m] and [b] do not alternate elsewhere in the language.

In Morphological Terms...

- The Puzzle: How do phi-features and aspect features come to be realized on one portmanteau morpheme?
- Spanning: The nodes hosting these features comprise a span.
- DM: The nodes hosting these features are linearly adjacent, and thus may be targeted by Fusion.

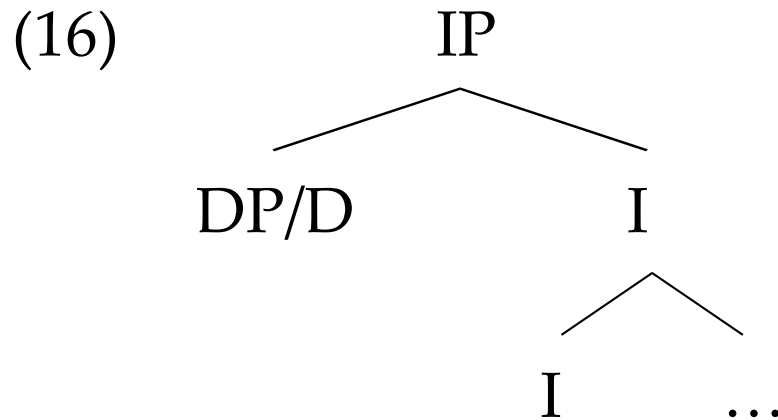
TWO POTENTIAL ANALYSES

Syntactic Structure

- Dakubu (2008): $G\tilde{a}$ morphologically marks aspect and mood.
- Dakubu assumes that aspect and mood morphemes in $G\tilde{a}$ compete for a single position of exponence (Infl), proposing a set of binary features to capture aspect and mood distinctions.
- Following this work, and for simplicity, I assume that this position of exponence corresponds to a single syntactic head I.
 - ...Pending further investigation.

Syntax

- I propose, following Allotey (2020), that the subject in Gã occupies Spec,IP.
 - Negation intervenes between the subject and verb.
- Structure:



A Spanning Analysis: Building Blocks

- Lexical Insertion targets spans.
- A span is defined as a head-complement sequence (Svenonius 2012).

A Spanning Analysis: 1sg Progressive Derivation

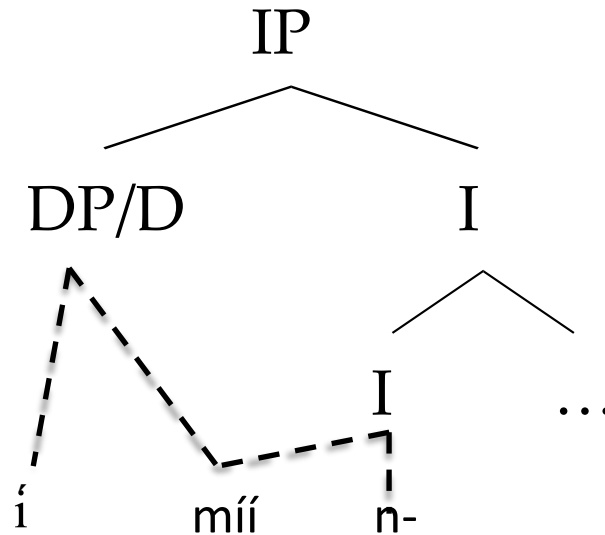
- Lexical Items:

(17) Lexical Items:

- a. [+1, -PL] $\boxed{\leftrightarrow}$ /i'/ *default 1sg pronoun*
- b. [PROG] $\boxed{\leftrightarrow}$ /n-/ *default progressive*
- c. [+1, -PL, PROG] $\boxed{\leftrightarrow}$ /míi'/ *portmanteau*

A Spanning Analysis: 1Sg Progressive Derivation

(18)

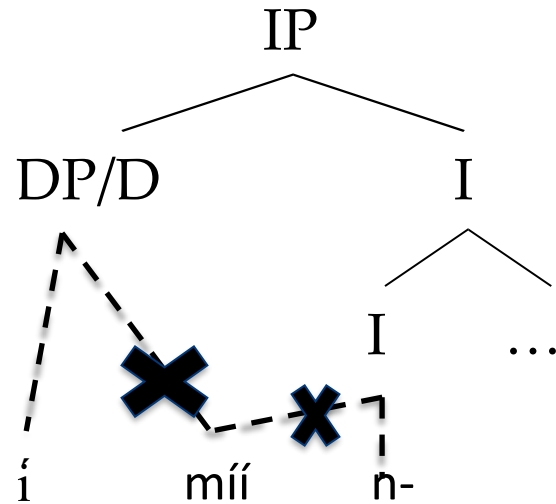


(19) Lexical Items:

- a. [+1, -PL] $\boxed{\leftrightarrow}$ /í/
- b. [PROG] $\boxed{\leftrightarrow}$ /n-/
- c. [+1, -PL, PROG] $\boxed{\leftrightarrow}$ /míí/

A Spanning Analysis: 1Sg Progressive Derivation

(20)



- D and I do not meet the structural criteria for a span.
 - Predicts default morphemes, not portmanteau.
- **Current syntax-only formulations of Spanning (and other constituency-based frameworks) do not account for this data.**

A DM Analysis: Building Blocks

- VI targets terminal nodes.
- The PF operation Fusion combines features on linearly adjacent (concatenated) nodes into a single bundle.

- Fusion Operation: Progressive Aspect

(21) $D[\alpha, -PL]^{\wedge}I[PROG] \rightarrow [\alpha, -PL, PROG]$

- Vocabulary Items: 1Sg Pronoun, Progressive, and Portmanteau

(22) a. $[+1, -PL, PROG]$ $\boxed{\leftrightarrow}$ míř

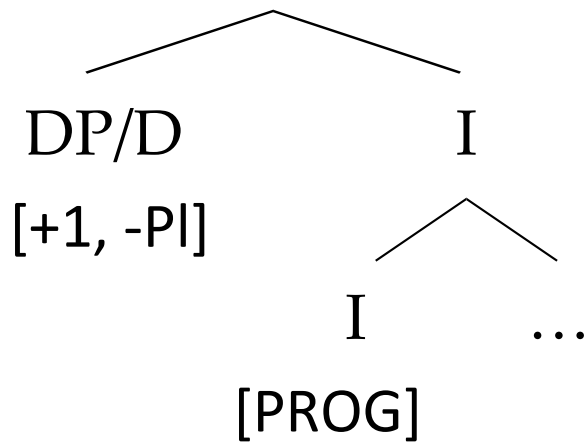
b. $[+1, -PL]$ $\boxed{\leftrightarrow}$ ě

c. $[PROG]$ $\boxed{\leftrightarrow}$ n-

A DM Analysis: 1Sg Progressive Derivation

- D and I are concatenated, so can be targeted by Fusion.

(23) a. IP *spell-out*



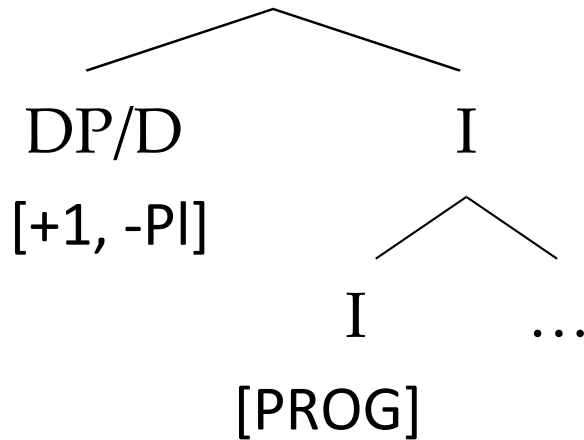
b. D[+1, -PL]^I[PROG], ...

concatenation

A DM Analysis: 1Sg Progressive Derivation

- D and I are concatenated, so can be targeted by Fusion.

(23) a. IP *spell-out*



b. D[+1, -PL]^I[PROG], ...

concatenation

c. D[+1, -PL]^I[PROG] → [+1, -PL, PROG] *Fusion*

A DM Analysis: 1Sg Progressive Derivation

- Output of Fusion:

(24) [+1, -PL, PROG]

- Vocabulary Items

(25) a. [+1, -PL, PROG] $\boxed{\leftrightarrow}$ míí

b. [+1, -PL] $\boxed{\leftrightarrow}$ í

c. [PROG] $\boxed{\leftrightarrow}$ n-

- A DM analysis does generate Gã STAMP portmanteau.

Interim Summary

- STAMP morphs in $G\tilde{a}$ demonstrate that linearly adjacent nodes may participate in portmanteaux, regardless of their structural relationship.
- Supports a framework like DM which includes PF operations that may be sensitive to linear order.
- Poses a problem for syntax-only morphological frameworks like Spanning, where portmanteaux are read directly from the syntactic structure.

FURTHER SUPPORT OF PF OPERATIONS AND LINEARITY

An Additional Prediction of Linearity-Sensitive PF Operations

- If the input to Fusion is a linear string, then an adjunct which intervenes between two nodes in a portmanteaux may prevent the formulation of the portmanteaux.
- DM: An intervening adjunct will block Fusion, thus preventing the formulation of a portmanteaux.
- Spanning: An intervening adjunct will not affect the calculation of a span.

A Further Prediction

- An instrumental may intervene between the subject and the verbal complex.

(26) \tilde{i} $k\varepsilon$ $sp\vacute{e}s$ $n\acute{a}a`$ $n\ddot{i}$
1SG with glasses see.H A B thing
'I see with glasses.'

The Syntax of the Instrumental

- Although the instrumental construction is an SVC in related languages (see ex. Baker 1991), and historically was an SVC in Ga (Campbell 2017), the instrumental is not an SVC in synchronic grammar.
- Unlike other SVCs in Gã...
 - The instrumental does not exhibit “resumptive serialization” (Dakubu 2004)

40 a. àkpòtró lè jò fòì è tèè`
toad DEF dance race 3SG go
'The toad ran away.' (Campbell 2017: 400)

b. ǐ †ké awalé jio duadé
1SG with spoon eat.HAB cassava
'I eat cassava with a spoon.'

The Syntax of the Instrumental

- Although the instrumental construction is an SVC in related languages (see [xx] on [xx]), and historically was an SVC in Ga ([cite]), the instrumental is not an SVC in synchronic grammar.
- Unlike other SVCs in Ga...
 - The instrumental does not exhibit “resumptive serialization” (Dakubu 2004)
 - *ke* does not bear inflectional morphology
- (41) a. *má* *ɲε* *má* *je* *amadã-ĩ*
 1SG.IRR can 1SG.IRR eat plantain-PL
 ‘I will be able to eat plantains.’
- b. *ĩ* *ke* *pɛ̃ɲ* *bàá* *ɲma* *léta*
 1SG with pen IRR write letter
 ‘I will write a letter with a pen.’

The Syntax of the Instrumental

- The instrumental may be a PP adjunct.
 - Can undergo A'-movement
 - (43) ke meni o tfumo jíáa?
with what 2SG clean house
'With what did you clean a house?'
 - Gã allows p-stranding, and ke may also be stranded.
- Key takeaway: The instrumental intervenes linearly between the subject and verbal complex, but as an adjunct, does not intervene syntactically.

The Syntax of the Instrumental

- The instrumental may be a PP adjunct.

- Can undergo A'-movement

- *Gã* allows p-stranding, and *ke* may also be stranded.

(45) a. *négbe má dʒo foi kɛja?*

where 1SG.IRR dance race to

‘Where will I run to?’

b. *mení o kɛ tʃumo jíáa?*

what 2SG with clean house

‘What did you clean a house with?’

- Key takeaway: The instrumental intervenes linearly between the subject and verbal complex, but as an adjunct, does not intervene syntactically.

The Syntax of the Instrumental

- The instrumental may be a PP adjunct.
 - Can undergo A'-movement
 - $G\tilde{a}$ allows p-stranding, and ke may also be stranded.
- **Key takeaway: The instrumental intervenes linearly between the subject and verbal complex, but as an adjunct, does not intervene syntactically.**

STAMP Morphs and Instrumentals

- When an instrumental PP adjunct intervenes between the subject and auxiliary, the STAMP portmanteau does not surface.

- (26) a. *í* *kε* *awalé* *bàa'* *ho* *amada-í'*
1SG with spoon IRR cook plantain-PL
'I will cook plantains with a spoon.'
- b. *má'* *ho* *amada-í'* *kε* *awalé*
1SG.IRR cook plantain-PL with spoon
'I will cook plantains with a spoon.'

- Linear intervention blocks the formation of portmanteau.
 - The DM prediction is borne out.

DISCUSSION AND CONCLUSION

Discussion

- Does Morphology include postsyntactic operations?
 - Empirical evidence points to yes! Portmanteaux cannot always be read directly from syntactic structure.
- Is locality defined strictly hierarchically, or is linear locality relevant?
 - Linear locality must be relevant to account for STAMP morphs. In this case, morphs which are not structurally related may participate in portmanteaux only if they are linearly local.
- Empirical Contribution: This is one of the first formal analyses of STAMP morphs that I am aware of.

Future Directions

- There is a group of DM analyses which proposes that VI targets linearly adjacent ‘stretches’ (Ostrove 2018 and subsequent work). STAMP morphs are not stretches as defined in Ostrove (2018). Could the definition of a stretch be modified to account for the data? How would such an analysis compare to a Fusion approach?
- Extending the analysis horizontally to include STAMP morphology in other languages (Anderson 2016): Can the analysis proposed here account for the full inventory of STAMP portmanteaux? How does a Spanning analysis fare?
- Solidifying a syntactic analysis of Gã clausal structure: Structurally, where is the instrumental adjunct?

Selected References

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