Beyond 'double contact':
Arguments for a new prosodic type in sign languages

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THE PROBLEM

Current phonological models do not adequately account for all features of signs with two distinct syllables that repeat in two locations.

DATASETS

LANGUAGE	TOTAL SIGNS	ALL SIGNS THAT REPEAT IN 2 LOCATIONS	HOW MANY 'DOUBLE CONTACT'?
Kenyan Sign Language [4]	1,880	135 (**7.2%** of dataset)	55 / 135 (**41%**)
Israeli Sign Language [3]	805	28 (**3.4%** of dataset)	7 / 28 (**25%**)

SUMMARY POINTS

1. *Within an entire lexicon, there are more types of signs that repeat in two locations than only 'double contact'*

2. *Taken as a group, these signs have 2 types of unpredictable phonological information that should be included in a phonological representation:*
   - (a.) **syllable level:** *movement type, direction of path*
   - (b.) **word level:** *axis & directionality of sub-locations (not all locations)*

syllable type: *path, parallel to body* — DIRTY (KSL), ZEBRA (KSL)

'double contact' signs
syllable type: path, approach to contact (usually midsagittal axis) — SIAYA (KSL), TO-SCORE (ISL)

syllable type: *handshape change* — COURIER (ISL), TEACHER (KSL)

syllable type: *ulnar rotation* — CAN-OPENER (ISL), ENUMERATE-POINTS (KSL)

What about the locations of each repeated syllable?
(i.e., "sub-locations")
Is the placement of sub-locations within a location predictable?

(a.) **Syllable type is unpredictable;** *therefore, syllable features should be included in the phonological representation*

Table 1. *Types of syllables repeated in two locations*

SYLLABLE TYPE:	IN KSL	IN ISL
Path mov.	✓	✓
HS mov.	✓	✓
Orient. mov	✓	✓
Path + HS	✓	
Path + Ori	✓	
Path+HS+Ori	✓	

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1. **Axis** of sub-locations are largely, but not fully predictable on the basis of location

location: nose — horizontal axis, vertical axis — RENDILLE (KSL; tribe name), AGA-KHAN (KSL; school name)

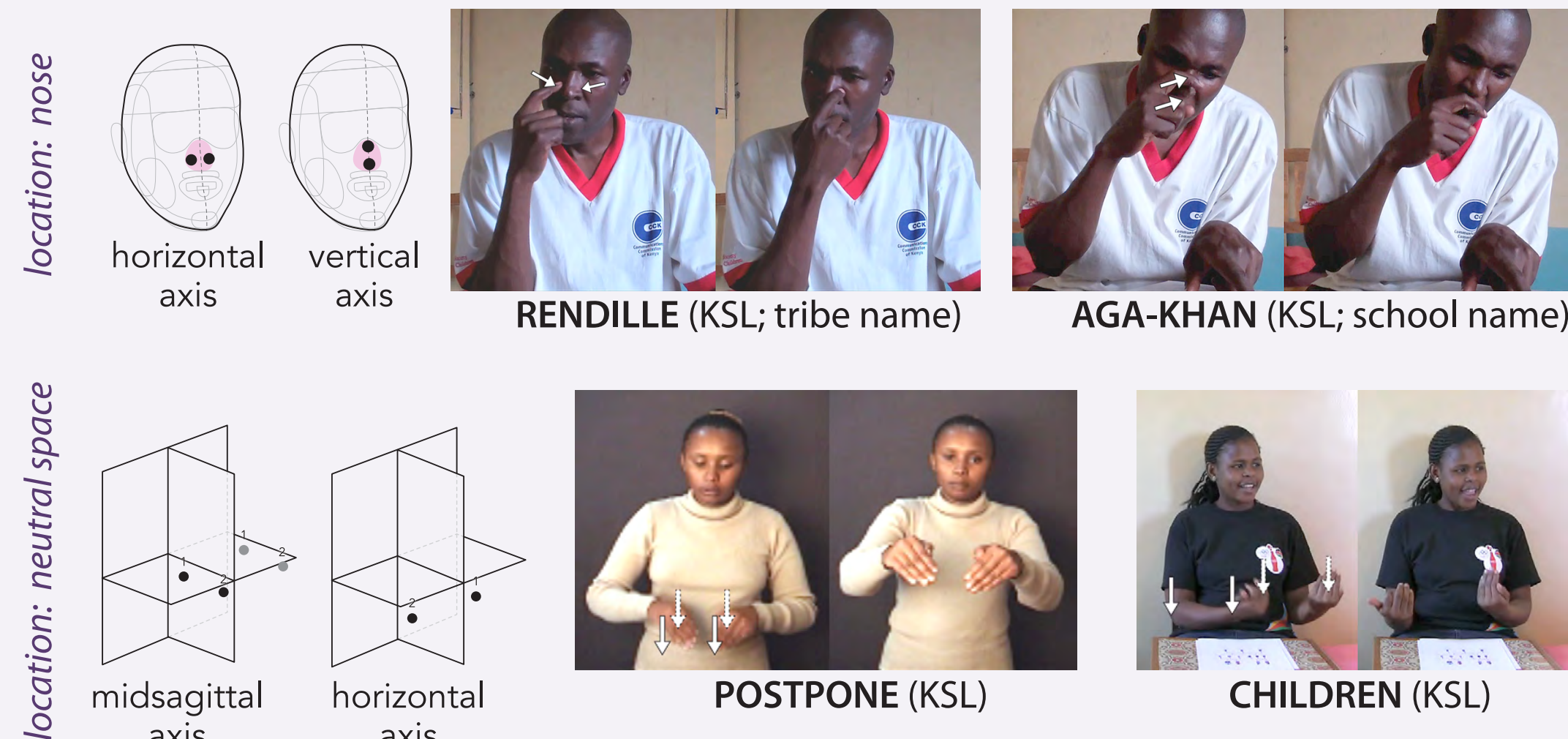location: neutral space — midsagittal axis, horizontal axis — POSTPONE (KSL), CHILDREN (KSL)

Figure 1. *Examples of signs that require specifying the position of sub-locations to produce correctly*

2. **Directionality** of sub-locations are also mostly predictable, but with some exceptions

Table 2. *Is there a default order in the location?*

MAJOR AREA, AXIS	KSL	ISL	ASL[1]	NGT[2]
Head, horizontal	✓ ipsi > contra	✓ ipsi > contra	✓ ipsi > contra	?
Head, vertical	✓ high > low	✓ high > low	✓ high > low	✓ high > low
Torso, horizontal	✓ ipsi > contra	✓ contra > ipsi	✓ contra > ipsi	✓ contra > ipsi
Torso, vertical	✓ high > low	✓ high > low	✓ high > low	✓ high > low
NS, horizontal	✓ contra > ipsi	✓ contra > ipsi	?	?
NS, midsagittal	no prox>dist dist>prox	no prox>dist dist>prox	?	?
NS, vertical	no high>low low>high	no high>low low>high	?	?

(b.) **The axis and directionality of sub-locations can be unpredictable;** *thus, word level axis & direction should be included in the phonological representation*

PROPOSED SOLUTION

(1) New manner feature:
Displaced iteration*

(2) Modify the Dependency Model (van der Kooij 2002) to accomodate the following featural information:
   - **a.** movement in syllable
   - **b.** axis & direction of sub-locations

* Based on Newkirk et al.'s phrase "displaced iteration frame" (1980: 195) referring to what slips-of-the-hand reveal about double contact signs like FLOWER in ASL.

(Note: this manner feature was previously referred to as "dispersed" in Morgan 2017)

IMPLEMENTATION

- Dependency Model[2] (DPM) has high flexibility, while still capturing phonological generalizations

- **Manner** features on a separate tier dictate how core articulatory movements (changes in location, handshape, &/or orientation) are realized

- Borrow idea from Prosodic Model:[1] specify how many X-slots per manner feature; e.g., [—, —]

- ***Displaced iteration**: licenses two syllables (4 X-slots) on the timing tier; requires specifying syllable type (core articulatory movement), plus axis & directionality unless predictable within the language; result is an identical sylalble repeated in two sub-locations within the same phonological location*
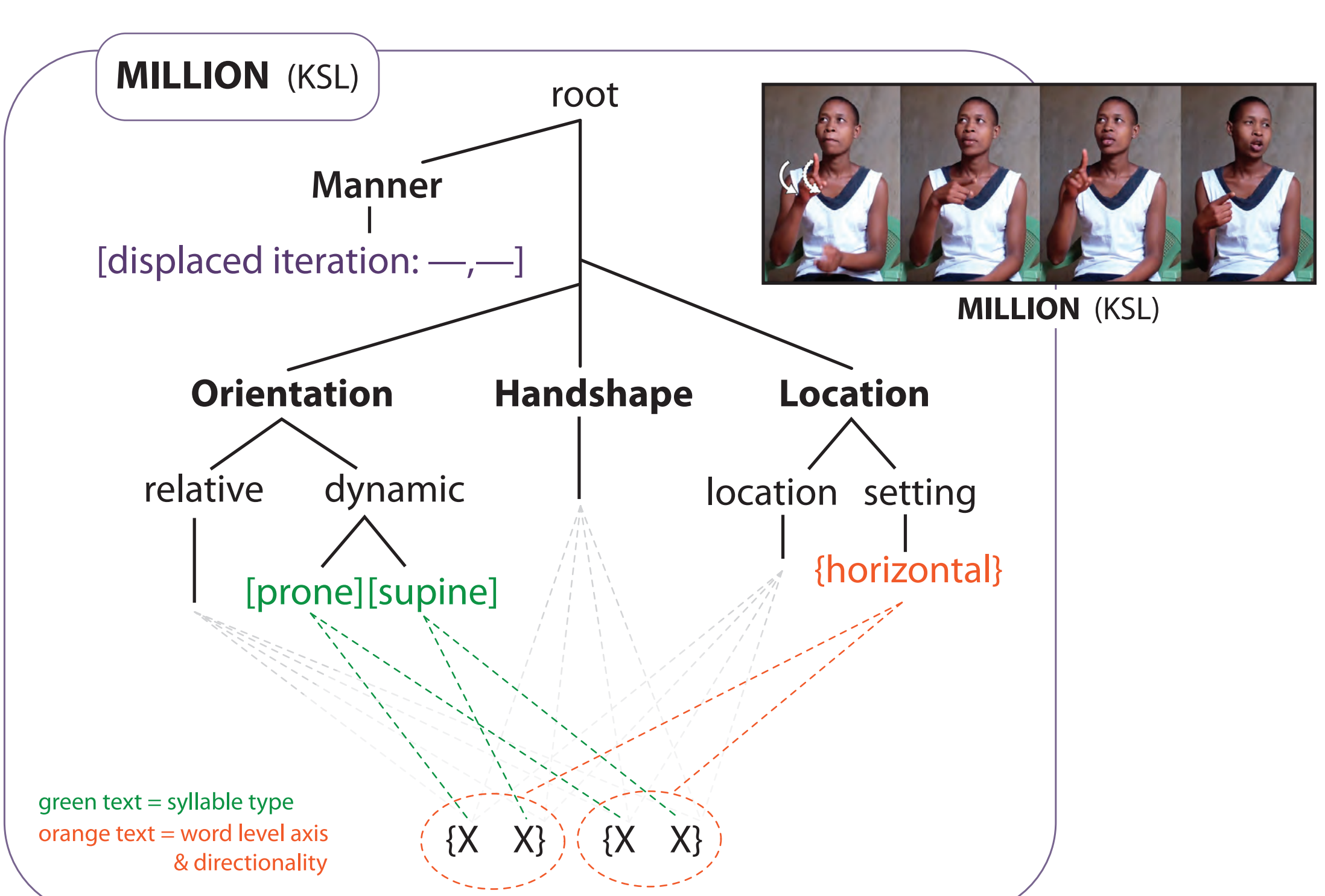

MILLION (KSL)

root — Manner — [displaced iteration: —, —] — Orientation (relative, dynamic [prone][supine]) — Handshape — Location (location, setting {horizontal})

green text = syllable type
orange text = word level axis & directionality

{X X} {X X}

Figure 2. *Representation of KSL sign MILLION in DPM[2] using Manner feature [displaced iteration] with syllable & word level features*

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