

Sign Language Phonetic Annotator-Analyzer

Supplementary Material

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<https://github.com/PhonologicalCorpusTools/SLPA>

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Overview of the Annotator Component

- [Sign-level information](#)
- [Sign Type](#)
- [Temporal relation \(x-slots\)](#)

- [Modules:](#)
 1. [Movement](#)
 2. [Handpart](#)
 3. [Location](#)
 4. [Contact](#)
 5. [Orientation](#)
 6. [Hand Configuration](#)
 7. (Non-manual components to be added)

- [Automation](#)
- [Customization \(global settings\)](#)
- [Metadata](#)

Sample transcriptions

Signs from Bailey & Dolby (2002): the
Canadian Dictionary of ASL:

- ADOPT
- APPLE
- COFFEE
- DINE
- JUSTIFY
- MEET
- ROCKING CHAIR
- ROOM
- STOP

Also see [the comparison](#) between JUSTIFY and STOP.

Sign-level information

Sign-level information

Entry ID:
0002

Gloss:
Enter gloss here...(Cannot be empty)

Lemma:

Source:

Signer:

Frequency:
1.0

Coder:
KCH

Last updated:
2022-06-20

Notes:
Enter note here...

Hand dominance
 Left Right

Restore Defaults Cancel Save

Sign-level information

- Note that elements like Source, Signer, and Coder can all be selected from user-specified entries; see [‘Metadata’](#)
- Potential additions:
 - Links to other entries in the corpus
 - Labels:
 - Compounds, initialized signs, lexicalized finger spelling, classifiers, etc.
 - General ‘surprising/unexpected’ label + a comment
 - ‘Clipped’ sign (i.e., video cut off, signer interrupting themselves)

Sign type

Sign Language Phonetic Annotator and Analyzer

Sign type

Unspecified

1 hand

The hand moves

The hand doesn't move

2 hands

Handshape relation

H1 and H2 use same set(s) of handshapes

H1 and H2 use different set(s) of handshapes

Contact relation

H1 and H2 maintain contact throughout sign

H1 and H2 do not maintain contact

Movement relation

Neither hand moves

Only 1 hand moves

Only H1 moves

Only H2 moves

Both hands move

H1 and H2 move differently

H1 and H2 move similarly

Movement direction relation

H1 and H2's directions of movement are:

Same

Different

Not relevant

Movement timing relation

Sequential

Simultaneous

Everything is mirrored / in phase

Everything is mirrored / in phase except:

Location

Handshape

Orientation

Restore Defaults

Save

Cancel

Sign type: Examples

Number of Hands:

- () 1 hand
 - () the hand moves [[APPLE](#)]
 - () the hand does not move [some productions of [ONE](#)]
- () 2 hands [see below]

Handshape relation:

- () H1 and H2 involve the same set(s) of handshapes [[SICK](#)]
- () H1 and H2 involve different set(s) of handshapes [[CULTURE](#)]

Contact relation:

- () H2 maintains contact with H1 throughout the sign [[RUN](#)]
- () H1 and H2 do not maintain contact with each other [[SICK](#), [SUPPORT](#)]

Movement relation:

- () Neither H1 nor H2 moves [e.g. [SICK](#)]
- () Only one hand moves
 - () Only H1 moves [e.g. [CULTURE](#)]
 - () Only H2 moves [e.g. some productions of [SUPPORT](#)]
- () Both hands move
 - () H1 and H2 move differently from each other [[STALK](#), [RUN](#)]
 - () H1 and H2 move similarly to each other [see next slide]

Sign type: Examples

Movement direction relation [for perceptual shape movements only]:

() H1 and H2 have the same direction of movement.

[Non-circle movement: [FREE](#), [HANDS](#);

Circle movement: [BICYCLE](#), [WHEELCHAIR](#)]

() H1 and H2 have different directions of movement.

[Non-circle movement: [COMMUNICATION](#);

Circle movement: [PHOTOGRAPHY](#), [SOCIAL](#)]

() Not relevant [e.g., [COMPARE](#)]

Movement timing relation:

() Sequential (i.e., When one hand is moving, the other is not.)
[\[HANDS\]](#)

() Simultaneous (i.e., When one hand is moving (in any way), the other is too.) [see below]

() Everything is mirrored / in phase

[Non-circle: [FREE](#);

Circle: [WHEELCHAIR](#), [PHOTOGRAPHY](#)]

() Everything is mirrored / in phase except (check as many or as few apply):

[] Location

[Non-circle: [COMMUNICATION](#);

Circle: [BICYCLE](#), [SOCIAL](#)]

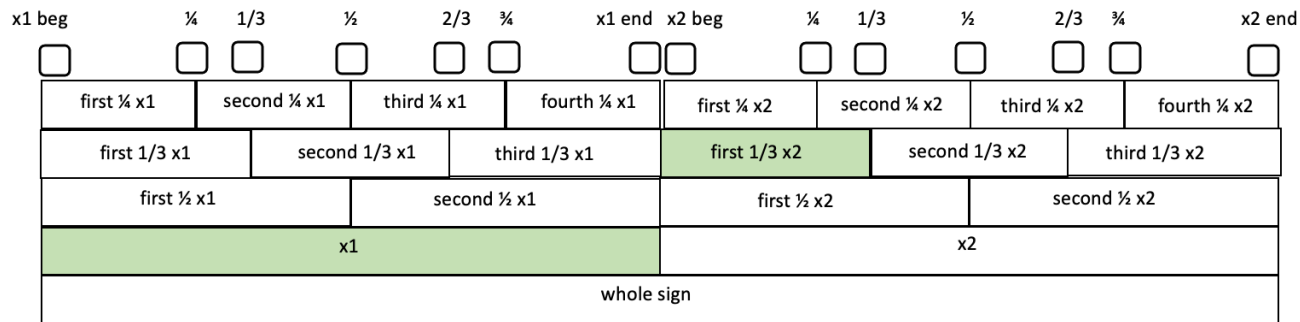
[] Handshape [\[MILK 2\]](#)

[] Orientation [\[COMPARE\]](#)

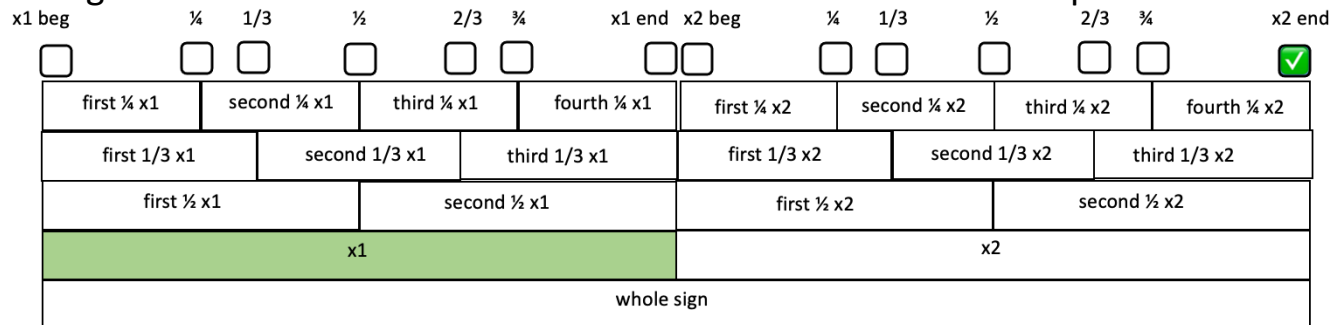
Temporal relations (x-slots)

- To encode temporal relations between different components of the sign, each module can be (optionally) tied to generic x-slots.
- One module can be tied to multiple (dis)contiguous time points and/or intervals, as long as they don't overlap.
- Divisions of x-slots can be customized (see '[Customization](#)'). The figure below shows the maximal divisions available as a preset.

E.g.1: A module is linked to the interval from the beginning of x1 to the 1/3 point of x2.



E.g.2: A module is linked to the entire interval of x1 and the end point of x2.



Modules

- Modules are phonetic and descriptive in nature (i.e., they don't necessarily correspond to phonological parameters).
- Each instance of a module is tied to Hand 1 (H1), Hand 2 (H2), or both.
- The same module can be invoked multiple times.
 - For some characteristics, multiple modules can be invoked even simultaneously.
 - E.g., Two simultaneous instances of a movement module encoding 'path' and 'local' movements (see [sample transcription of ADOPT](#))

Perceptual movement

- Roughly corresponds to 'path/major' movement, but the idea is that it can be articulated by any joint (e.g, in case of proximalization/distalization).

() Straight

() Interacts with the subsequent straight movement (e.g., X, 7, V, Z, etc.)

() The two movement contours cross (e.g. X) [[CANCELLATION](#)]

() Subsequent movement starts at the end of the first movement (e.g. ↘↗) [[SEMESTER](#)]

() Subsequent movement starts in the same location as the start of the first movement (e.g. ↖↗)

() Subsequent movement ends in the same location as the end of the first movement (e.g. ↘↙)

() Doesn't interact with a subsequent straight movement [[FREE](#)]

() Arc [[CULTURE](#)]

() Circle [[BICYCLE](#)]

() Zigzag [[SNAKE](#)]

() Loop (traveling circles, [CLOUD 1](#))

() None of these [we intend to allow people to edit this list / add their own]

Perceptual movement: Additional Specifications

- Axis direction

- Expected for all perceptual movement types.
- Multiple options can be selected to encode intermediate directions.

Up Distal Ipsilateral*
 Down Proximal Contralateral

*Choice to code by 'ipsi' / 'contra' or 'right' / 'left' is done in ['Customization'](#)

- Plane

- Expected for all perceptual movement types except Straight.
- Multiple options can be selected to encode intermediate planes.

Vertical

- Ipsilateral from top of the circle (top = up by default; see other options in ['Customization'](#))
- Contralateral from top of the circle

Mid-Sagittal

- Clockwise (from signer's right by default; see other options in ['Customization'](#))
- Counterclockwise

Horizontal

- Ipsilateral from top of the circle (top = distal by default; see other options in ['Customization'](#))
- Contralateral from top of the circle

Joint-specific movement

- Roughly corresponds to 'local/minor' movement, but the idea is that it is tied to a particular joint.
 - If selected, the system auto-fills the corresponding [joint activities](#) (e.g, Nodding auto-fills to flexion of wrist)
- Movements of the same kind in opposing directions are presented as a pair (e.g., Pronation and Supination paired under Twisting).

Nodding/Un-nodding

Nodding [[YES](#)]

Un-nodding [[GIVE UP](#)]

Pivoting

To ulnar [[COOKIE](#)]

To radial

Twisting

Pronation [H2 in [DIE](#)]

Supination [H1 in [DIE](#)]

Closing/Opening

Closing [[MILK_2](#)]

Opening [[BOWTIE](#), [MANY](#)]

Pinching/unpinching

Pinching (Morgan 2017) [[TURTLE](#)]

Unpinching [[DELETE](#)]

Flattening/Straightening

Flattening [[HORSE](#)]

Straightening

Hooking/Unhooking

Hooking (Clawing) [[CLAUSE](#)]

Unhooking [[UPLOAD](#)]

Spreading/unspreading

Spreading

Unspreading [[SCISSORS](#)]

Rubbing

Thumb to ulnar side [[FEW](#)]

Thumb to radial side [[DOG](#)]

Wiggling or Fluttering [[DIRTY](#)]

None of these [we intend to allow people to edit this list / add their own]

Handshape change

- This option is intended for a complete change of handshape that cannot be reduced to a single joint-specific movement, e.g. the change from one letter of a manual alphabet to another in (lexicalized) finger spelling.
- No further distinctions; specific changes are captured through multiple instances of [the Hand Configuration module](#).
- E.g.: [HIGH SCHOOL](#)

Joint activity

- Joint movements involved in articulating a movement specified earlier. Multiple options can be selected e.g., if a single perceptual movement is articulated by multiple joints (or the movement can simply be labelled as 'complex').

Complex (no further elaboration expected)

Shoulder

Flexion

Extension

Abduction

Adduction

Posterior rotation

Anterior rotation

Protraction

Retraction

Depression

Elevation

Circumduction

Elbow

Flexion

Extension

Circumduction

Radio-ulnar

Pronation

Supination

Wrist

Flexion

Extension

Radial deviation

Ulnar deviation

Circumduction

Thumb Base/Metacarpophalangeal

Flexion

Extension

Abduction

Adduction

Circumduction

Opposition

Thumb Non-base/Interphalangeal

Flexion

Extension

Finger Base/Metacarpophalangeal

Flexion

Extension

Abduction

Adduction

Circumduction

Finger Non-base/Interphalangeal

Flexion

Extension

Movement characteristics

1. Repetition

Single

Repeated

Specify total number of cycles: _____

This number is a minimum (for e.g., movement repeated “at least twice” in dictionary entry)

Specify location of repetition:

Same location

Different locations (for e.g. “dispersed” signs (Morgan 2017))

Specify direction (choose up to one from each column as needed):

Up

Distal

Ipsilateral

Down

Proximal

Contralateral

2. Trill

Not trilled

Trilled

3. Directionality

Unidirectional

Bidirectional

Additional movement characteristics

- These characteristics are optional (see [‘Customization’](#))
- Select max. one option from each column.

1. Size:	2. Speed:	3. Force:	4. Tension:
<input type="checkbox"/> Big	<input type="checkbox"/> Fast	<input type="checkbox"/> Strong	<input type="checkbox"/> Tense
<input type="checkbox"/> Normal	<input type="checkbox"/> Normal	<input type="checkbox"/> Normal	<input type="checkbox"/> Normal
<input type="checkbox"/> Small	<input type="checkbox"/> Slow	<input type="checkbox"/> Weak	<input type="checkbox"/> Lax
<input type="checkbox"/> Varies morphologically	<input type="checkbox"/> Varies morphologically	<input type="checkbox"/> Varies morphologically	<input type="checkbox"/> Varies morphologically

“Varies morphologically” is for e.g. coding lemmas where there is standard variability about the production of the sign, e.g. *SOMETIMES* in the *Canadian Dictionary of ASL*:



sometimes: *adv.* once in a while; now and then. *Sometimes I really feel tired.*

SIGN: As right forearm slowly circles clockwise, tip of forefinger of horizontal right **‘ONE’** hand strikes upward/rightward facing palm of horizontal left **‘EXTENDED B’** hand each time it goes past. (The speed of movement and height of the arcs depends on the *frequency* implied. The *more frequent*, the smaller and faster the arcs; the less *frequent*, the higher and slower the arcs.)

2. Handpart module

- Intended to capture relative orientation.
- Encodes the part of the hand touching the contact location and/or facing final setting (e.g., Brentari 1998; Crasborn 2001; van der Kooij 2002).
- Hand part options shared with the Location and Hand Configurations modules

General schema (following e.g., Johnson & Liddell 2021):

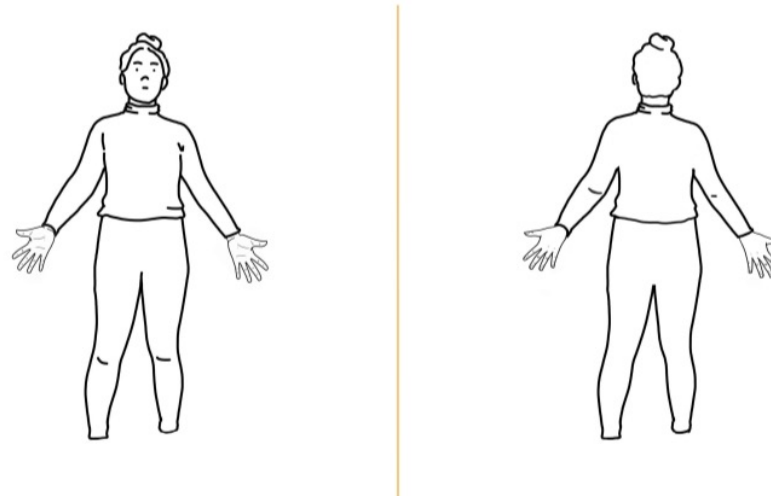
1. [surface][bone][finger(s) or handpart]

- E.g., the friction surface of the distal bone of the middle finger: [fr][d][2]
- E.g., the ulnar surface of the whole hand: [u][][whole hand]

2. Link to any of the location or movement modules already coded.

3. Location module: Body Locations

- Prose labels are tied to locations on an interactive visual interface



- Our pre-defined list of locations are phonetic in nature, with lists of phonological locations proposed in theoretical models highlighted for easy reference.
- Each location module can be optionally tagged as:
 - () Phonological location
 - () Major location
 - () Minor location

3. Location module: Signing Space

2 coding options

Using body location as a reference point:

1. Choose from the list of body locations.

2. Code relation to the location:

- Choose max. one from each column:

Vertical:	Midsagittal:	Horizontal:
<input type="checkbox"/> Above	<input type="checkbox"/> In front of	<input type="checkbox"/> Ipsilateral to
<input type="checkbox"/> Below	<input type="checkbox"/> Behind	<input type="checkbox"/> Contralateral to

3. Distance from body location:

- Specify for the columns chosen above:

Vertical:	Midsagittal:	Horizontal:
<input type="checkbox"/> Far	<input type="checkbox"/> Far	<input type="checkbox"/> Far
<input type="checkbox"/> Medium	<input type="checkbox"/> Medium	<input type="checkbox"/> Medium
<input type="checkbox"/> Close	<input type="checkbox"/> Close	<input type="checkbox"/> Close

Coding points on spatial axes:

- Choose one from each column:

Vertical axis:	Midsagittal axis:	Horizontal axis:
<input type="checkbox"/> High	<input type="checkbox"/> In front far	<input type="checkbox"/> Ipsi far
<input type="checkbox"/> Mid	<input type="checkbox"/> In front med.	<input type="checkbox"/> Ipsi med.
<input type="checkbox"/> Low	<input type="checkbox"/> In front close	<input type="checkbox"/> Ipsi close
	<input type="checkbox"/> Behind close	<input type="checkbox"/> Contra close
	<input type="checkbox"/> Behind med.	<input type="checkbox"/> Contra med.
	<input type="checkbox"/> Behind far	<input type="checkbox"/> Contra far

3. Location module: Signing Space

2 coding options – updated in July/August 2022

1. Using body location as a reference point:

1. Choose from the list of body locations.

2. Code relation to the location:

- Choose max. one from each column:

Vertical:	Midsagittal:	Horizontal:
<input type="checkbox"/> Above	<input type="checkbox"/> In front of	<input type="checkbox"/> Ipsilateral to
<input type="checkbox"/> far	<input type="checkbox"/> far	<input type="checkbox"/> far
<input type="checkbox"/> med	<input type="checkbox"/> med	<input type="checkbox"/> med
<input type="checkbox"/> close	<input type="checkbox"/> close	<input type="checkbox"/> close
<input type="checkbox"/> Below	<input type="checkbox"/> Behind	<input type="checkbox"/> Contralateral to
<input type="checkbox"/> far	<input type="checkbox"/> far	<input type="checkbox"/> far
<input type="checkbox"/> med	<input type="checkbox"/> med	<input type="checkbox"/> med
<input type="checkbox"/> close	<input type="checkbox"/> close	<input type="checkbox"/> close

2. Coding points on spatial axes:

- Choose one from each column:

Vertical axis:	Midsagittal axis:	Horizontal axis:
<input type="checkbox"/> High	<input type="checkbox"/> In front	<input type="checkbox"/> Ipsi
<input type="checkbox"/> Mid	<input type="checkbox"/> far.	<input type="checkbox"/> far
<input type="checkbox"/> Low	<input type="checkbox"/> med	<input type="checkbox"/> med
	<input type="checkbox"/> close	<input type="checkbox"/> close
		<input type="checkbox"/> Central
	<input type="checkbox"/> Behind	<input type="checkbox"/> Contra
	<input type="checkbox"/> far.	<input type="checkbox"/> far
	<input type="checkbox"/> med	<input type="checkbox"/> med
	<input type="checkbox"/> close	<input type="checkbox"/> close

4. Contact module

- Encodes the presence or absence of contact for any given specified location.
 1. Choose the relevant location from the list of location modules coded so far.
 2. Contact options
 - Contact
 - No contactOptional distance specification:
 - Far
 - Medium
 - Close
 3. Contact manner (if there is a contact linked to an interval on the x-slots (see below))
 - Holding (e.g., [APPLE](#))
 - Continuous (e.g., [NICE](#))
 - Intermittent (e.g., [SALT](#))

5. Orientation module

- Encodes absolute orientation.

1. Palm direction

- max one from each column:

<input type="checkbox"/> Up	<input type="checkbox"/> Distal	<input type="checkbox"/> Ipsilateral
<input type="checkbox"/> Down	<input type="checkbox"/> Proximal	<input type="checkbox"/> Contralateral

2. Finger root direction (i.e., finger tip direction if fingers were extended)

- max one from each column:

<input type="checkbox"/> Up	<input type="checkbox"/> Distal	<input type="checkbox"/> Ipsilateral
<input type="checkbox"/> Down	<input type="checkbox"/> Proximal	<input type="checkbox"/> Contralateral

6. Hand Configuration module

- Phonetic transcription following Johnson & Liddell (2011, 2012).
- A drop down menu provides predefined values for each slot, with a visual interface indicating what the current slot encodes.

This module applies to: Hand 1 Hand 2 Both hands

Click on the relevant point(s) or interval(s) to link this module.

[x1] 1/2 x1]

1st 1/2 x1 | x1 | 2nd 1/2 x1

whole sign

Hand Configuration

Forearm]1

Load predefined handshape

[O [E E] 2 [fr d t d 1 2 - -] 3 [1 F i i] 4 [= 2 F i i] 5 [= 3 F i i] 6 [= 4 F i i] 7 modified O Clear

Estimated Uncertain Incon

- [no contact]
t [tip]
fr [friction surface]
b [back surface]
r [radial surface]
u [ulnar surface]
? [unestimatable]

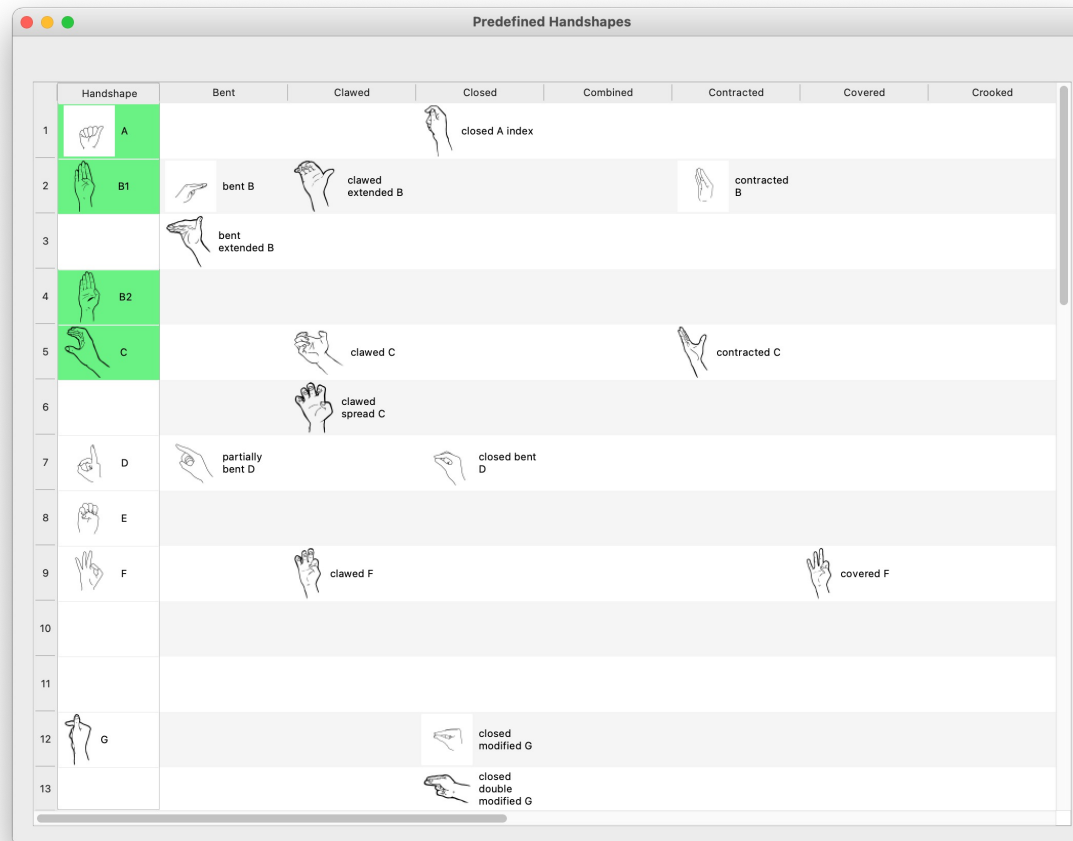
Field type: thumb/finger contact; Slot number: 10; Slot type: finger surface options

tip, back, radial, friction, DIP, PIP, MOP, MCP, CH

Restore Defaults Save and close Cancel Save and add another

6. Hand Configuration module: Predefined Handshapes

- For efficient coding, users can select one of the pre-defined handshapes, which then prompts the system to auto-fill the module accordingly; it can still be manually modified.



- We intend to allow users to also add their own pre-defined handshapes to the set.

Automation

- For efficient and consistent coding, we intend to provide a few options for automation.
- X-slots can be auto-generated based on the movement modules for H1.
- Location, Orientation, and Hand Configuration modules can be auto-generated and linked to x-slots based on the movement modules; they will then be manually filled in by the user.
- In two-handed signs, some modules for H2 can be auto-filled based on the sign type specification and the already coded modules for H1.

Customization (global settings)

- Offered to meet the potential needs of various users.

1. Use of x-slots

- Don't use x-slots
- Manually generate x-slots
- Auto-generate x-slots

2. Points on the x-slots [Beginning and end are mandatory]

- quarters
- thirds (checked as default)
- halves (checked as default)

Customization (global settings)

3. For possible additional movement module options (i.e., size, speed, force, and tension):

Do you want to include these options?

No

Yes

[if yes] Do you want 'normal' to be marked by default?

No [a transcription is marked incomplete if nothing is selected]

Yes ['normal' is always selected unless changed]

Customization (global settings)

4. (Auto-generating) location modules [if x-slots are used]

- Manually generate the location modules
- Auto-generate the location modules based on the movement module(s)
- Code separate locations before and after a location-changing movement.
- Code only the starting location (before a location-changing movement).
- Code only the ending location (after a location-changing movement (i.e., perceptual movement other than full Circles))
- Code only the general location category (interval)

5. Signing space location

- Use (modified) body location as reference for locations on the vertical and horizontal axes and code distance from that location
- Code locations on the vertical, horizontal, and midsagittal axes.

Customization (global settings)

6. (Auto-generating) Orientation modules [if x-slots are used]

- Manually generate the orientation modules
- Auto-generate the orientation modules based on the movement module(s)
- Code orientation before and after an orientation-changing movement
- Code only the starting orientation (before an orientation-changing movement)
- Code only the ending orientation (after an orientation-changing movement)

7. (Auto-generating) Hand configuration modules [if x-slots are used]

- Manually generate the hand configuration modules
- Auto-generate the hand configuration modules based on the movement module(s)
- Code hand configuration after both handshape changes (e.g. [HIGH SCHOOL](#)) and handshape contours (e.g. [DROP](#))
- Code hand configuration after only handshape changes (e.g. [HIGH SCHOOL](#))

Customization (global settings)

8. Auto-linking [If x-slots and all of location, orientation, and hand configuration modules are auto-generated]

- Auto-link the location, orientation, and handshape modules to x-slots.
- No auto-linking

9. Auto-filling

- Auto-fill subordinate hand modules based on the sign type and the dominant hand.
- No auto-filling

10. Dominant hand is:

- right hand by default
- left hand by default
- always inherited from signer
- always specified for each sign

Customization (global settings)

11. Target and token coding for new signs

- new signs open as targets by default
- new signs open as tokens by default

12. Target and token coding for new modules

- new modules open as targets by default
- new modules open as tokens by default

13. Coding tokens

- new tokens copy their corresponding targets by default
- new tokens open as blank by default

Customization (global settings)

14. Definitions of directions on the horizontal axis

- () On the horizontal axis, define directions in terms of relative directions only (i.e., ipsilateral / contralateral)
- () On the horizontal axis, define directions in terms of absolute directions only (i.e., right / left; for planes that include the horizontal axis, clockwise / counterclockwise)

Customization (global settings)

15. Definitions for 'Clockwise'

Vertical plane = vertical axis + horizontal axis

- (*) Clockwise is from signer's perspective (from top of circle, starts to signer's right)
- () Clockwise is from viewer's perspective (from top of circle, starts to signer's left)

Horizontal Plane = horizontal axis + mid-sagittal axis

- (*) Clockwise is from above the signer (from top of circle, starts to signer's right)
- () Clockwise is from below the signer (from top of circle, starts to signer's left)

Mid-sagittal Plane = mid-sagittal axis + vertical axis

- (*) Clockwise is looking at mid-sagittal plane from signer's right (from top of circle, 'forward' away from signer)
- () Clockwise is looking at mid-sagittal plane from signer's left (from top of circle, 'backward' toward signer)

'*' indicates the default option.

Metadata Options: Entry ID

Auto-generate based on (type in the number of desired order):

current date

coder

- Name
- Initials
- Identifier
- Other; enter text:

signer

- Name
- Initials
- Identifier
- Gender
- Date of Birth
- Age
- Language
- Other; enter text:

source

- Name
- Initials
- Identifier
- Other; enter text:

recording

- Signer
- Location
- Source
- Date
- Age
- Language
- Other; enter text:

sequential number in corpus

- enter number of digits to include (system will add leading zeros): ____
- manually enter starting number: ____

additional text: enter _____

Select element delimiter:

- (hyphen)
- _ (underscore)
- . (period)
- (none)

Select date format:

- YYYY-MM-DD
- YYYYMMDD
- YYYY-MM
- YYYYMM
- YYYY

Metadata Options: Sources, etc.

Signer Information:

Name:
Initials:
Other identifier:
Personal description:
Ethnicity:
Hair description:
Clothing description:
Gender:
Pronouns:
Age:
Date of birth:
Languages:
Place of origin:
Deaf / hearing status:
Fluency:
Parents' use of sign language:
Parents' Deaf / hearing status:
Education:
Data sharing permission:
Other information:

Source Information:

Name:
Initials:
Other identifier:
Citation:
Data sharing permission:
Other information:

Recording information:

Signer:
Location:
Source:
Date:
Clothing description:
Hair description:
Age:
Language:
Data sharing permission:
Elicitation method:
Task:
Other information:

Coder information:

Name:
Initials:
Other identifier:
Languages:
Deaf / hearing status:
Fluency:
Other information:

Sample transcriptions

Signs from Bailey & Dolby (2002): the
Canadian Dictionary of ASL:

- ADOPT
- APPLE
- COFFEE
- DINE
- JUSTIFY
- MEET
- ROCKING CHAIR
- ROOM
- STOP

Also see [the comparison](#) between JUSTIFY and STOP.

ADOPT (ASL)

Key characteristics:

- 1H
- has both 'path' and 'local' movements simultaneously

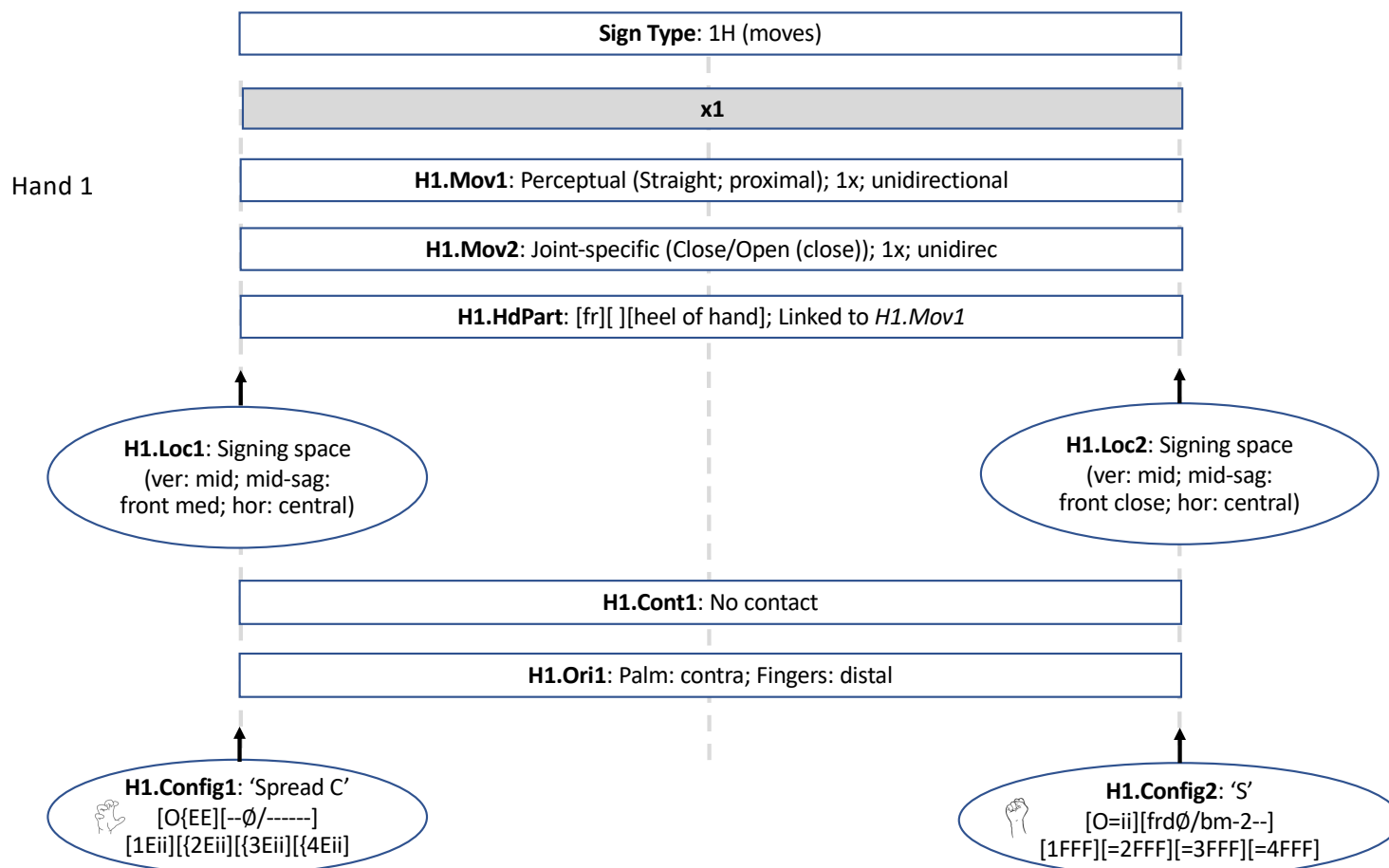


adopt: v. to take another's child as one's own by legal measures. *The couple waited for years to adopt a child.*

SIGN #1: Horizontal right 'SPREAD C' hand, palm facing left, is brought toward the body as it closes to form an 'S' hand. Alternatively, **ADOPT** is frequently fingerspelled. ❖

SAME SIGN—adoption, n., in this context.

← From Bailey & Dolby (2002): the *Canadian Dictionary of ASL*



APPLE (ASL)

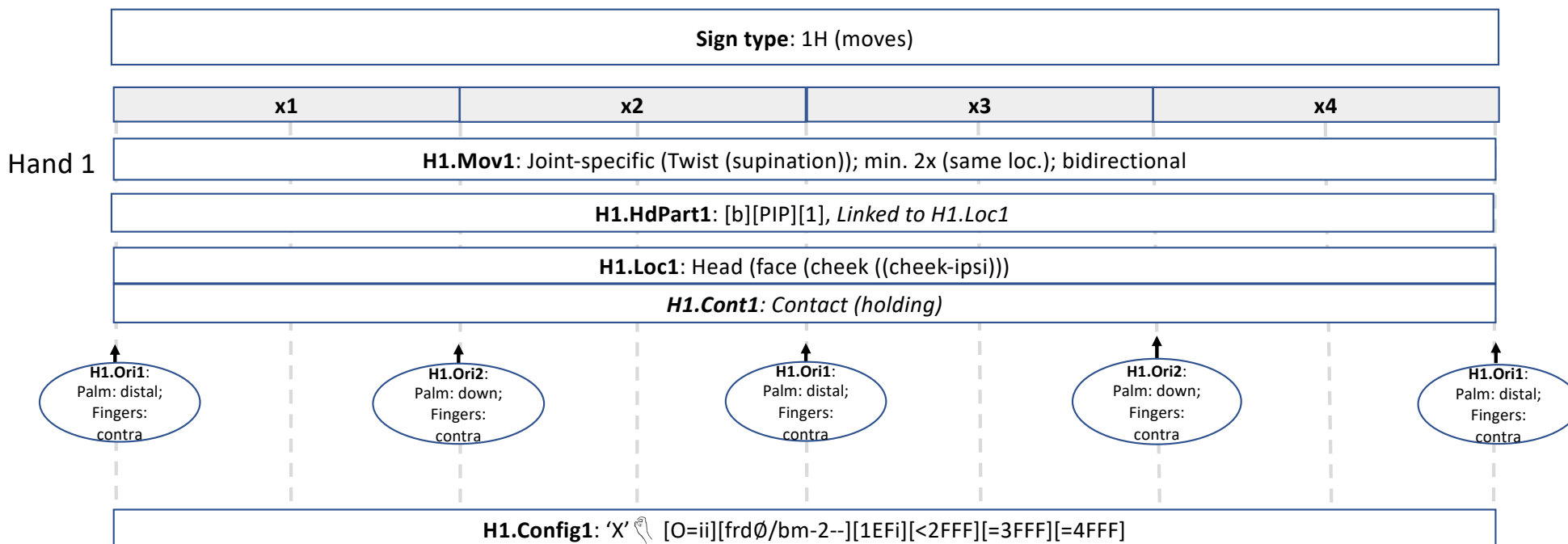
Key characteristics:

- 1H
- 'local' movement with orientation change
- repeated & bidirectional



apple: *n.* a round, firm, fleshy fruit. *British Columbia apples are delicious.*

SIGN #1: Right 'x' hand touches right cheek with knuckle of crooked forefinger, which is then twisted back and forth at least twice.



COFFEE (ASL)

Key characteristics:



- 2H
- circular 'path' movement
- location on H2 in the signing space (see note below)



coffee: *n.* a hot beverage made from ground roasted coffee beans. *Bring me a cup of black coffee, please.*

SIGN #1: Horizontal right 'S' hand, palm facing leftward but angled toward the body, is held on top of the horizontal left 'S' hand, of which the palm faces right. The right hand then makes small, circular, counter-clockwise motions, as if grinding coffee beans.

← From Bailey & Dolby (2002): the *Canadian Dictionary of ASL*

	Sign type: 2H (same HSs; maintain contact; only 1 moves (H1 moves))	
	x1	x1
Hand 1	H1.Mov1: Perceptual (Circle; proximal; hor. (counter-clockwise)); repeated (same loc.); unidirectional	
	H1.HdPart1: [u][][whole hand], <i>Linked to H1.Loc1</i>	
	H1.Loc1: H2 ([r][][whole hand])	
	H1.Cont1: <i>Contact (holding)</i>	
	H1.Ori1: Palm: contra + proximal; Fingers: distal + contra	
	H1.Config1: 'S'  [O=ii][frd∅/bm-2--][1FFF][=2FFF][=3FFF][=4FFF]	
Hand 2	H2.Loc1: Signing space (ver: mid; mid-sag: front med; hor: central)	
	H2.Ori1: Palm: contra; Fingers: distal	
	H2.Config1: 'S'  [O=ii][frd∅/bm-2--][1FFF][=2FFF][=3FFF][=4FFF]	

Note that our convention here for H2 locations in the signing space is to code H1's location as H2, and H2's location as the signing space. It is also possible in the system to add a signing space location for H1 and / or an H1 location for H2.

DINE (ASL)

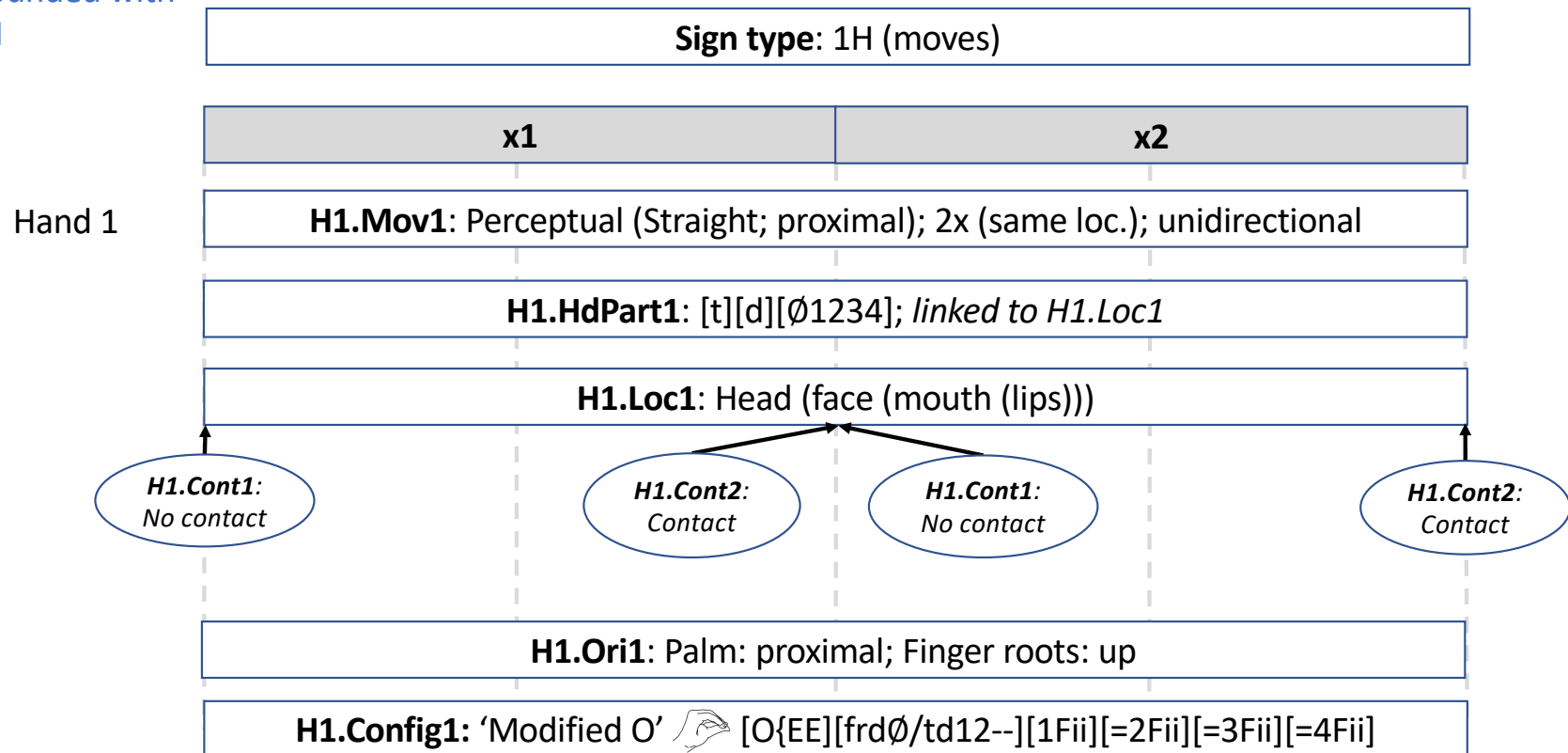


dine: v. to eat dinner. *We dine at a local restaurant every Sunday.*

← From Bailey & Dolby (2002):
the *Canadian Dictionary of ASL*

Key characteristics:

- 1H
- 'path' movement with contact change
- repeated
- could be compounded with ROOM



JUSTIFY (ASL)

Key characteristics:

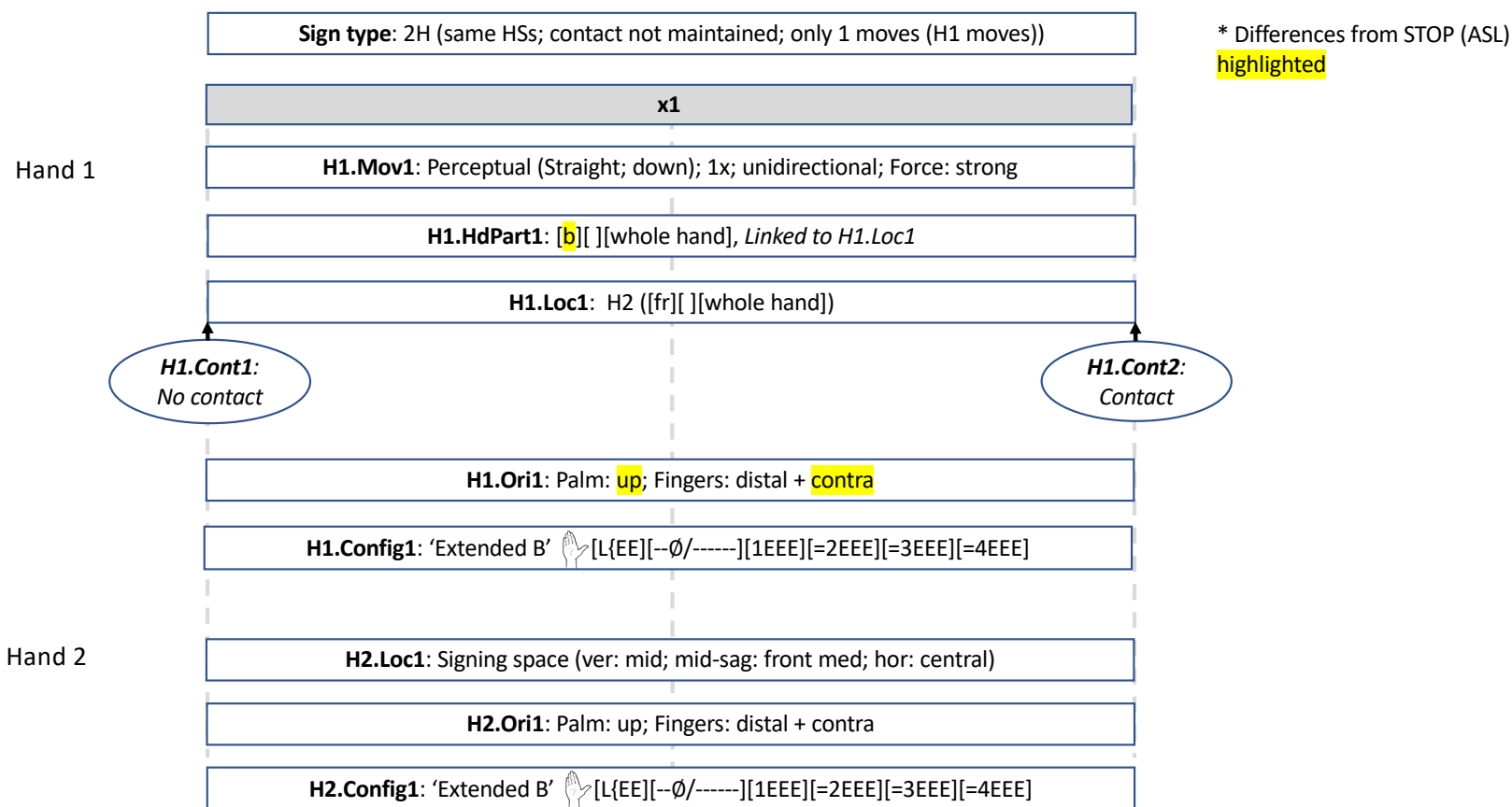
- 2H
- orientation “minimal pair” with STOP (see [comparison](#))
- location on H2 in the signing space (see note on COFFEE)



justify: v. to prove to be fair, reasonable or valid. *Can you justify your suspicions with solid evidence?*

SIGN #3: Horizontal left ‘**EXTENDED B**’ hand is held in a fixed position with palm up and fingers pointing forward/rightward. Horizontal right ‘**EXTENDED B**’ hand is held palm up with fingers pointing forward/leftward and is brought down sharply onto the left palm.

← From Bailey & Dolby (2002): the *Canadian Dictionary of ASL*



MEET (ASL)

Key characteristics:

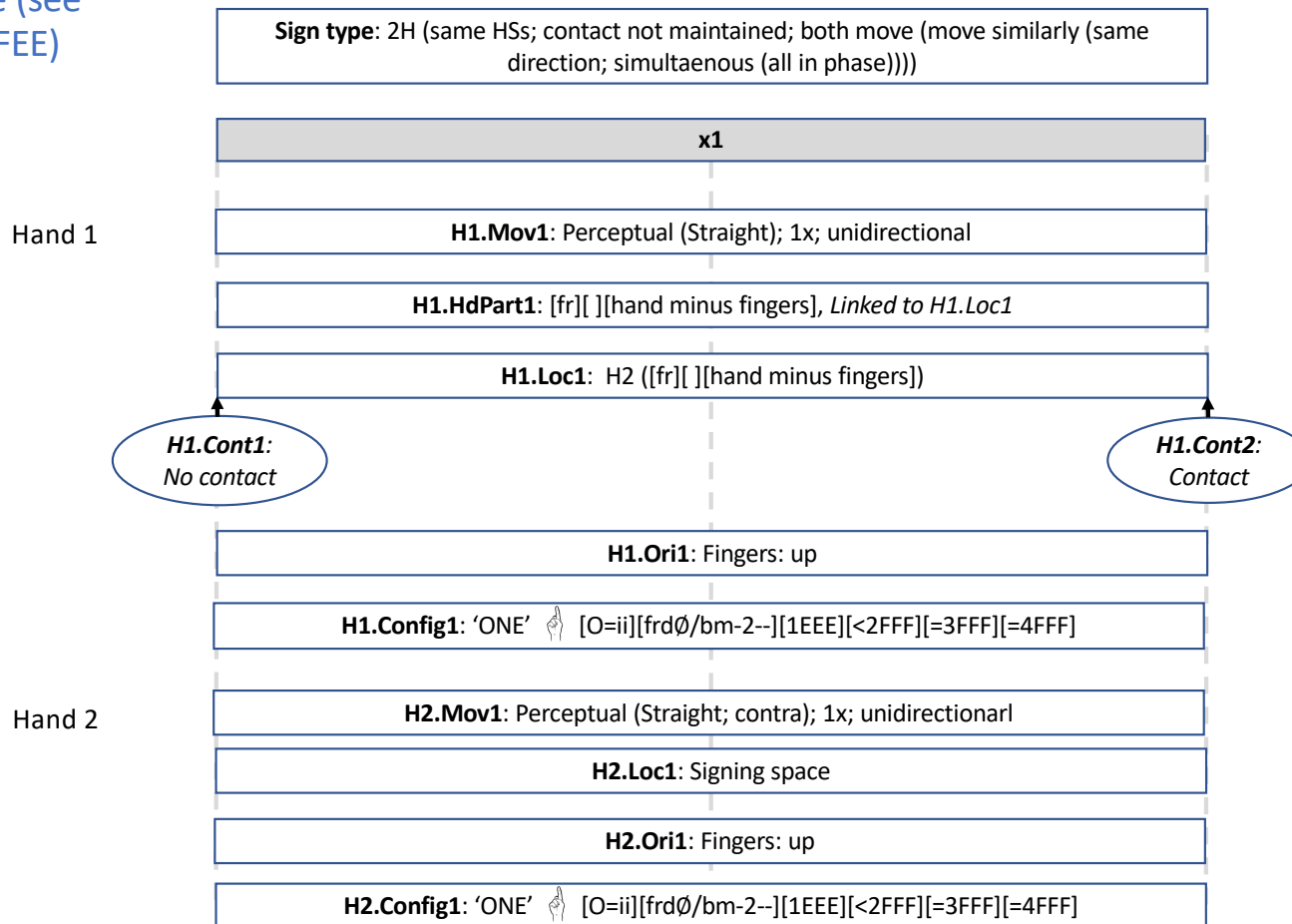
- 2H
- relative orientation crucial
- location on H2 in the signing space (see note on COFFEE)



meet: v. to encounter; come together; make the acquaintance of. *I will meet you in front of the bank at two o'clock.*

SIGN #1: Vertical 'ONE' hands are held slightly apart with palms facing and are then brought together so that they touch one another.

← From Bailey & Dolby (2002): the *Canadian Dictionary of ASL*



Note that the dictionary definition specifies only that the hands are 'vertical.' Here, we have left the direction of movement, absolute orientation of the palms, and the detailed location of H2 within the signing space unspecified in the coding. This makes the coding compatible with various productions of the sign with the two hands starting at different locations within the signing space as long as they face each other and end in a contact. Any particular token could of course be made more explicit.

ROCKING CHAIR (ASL)

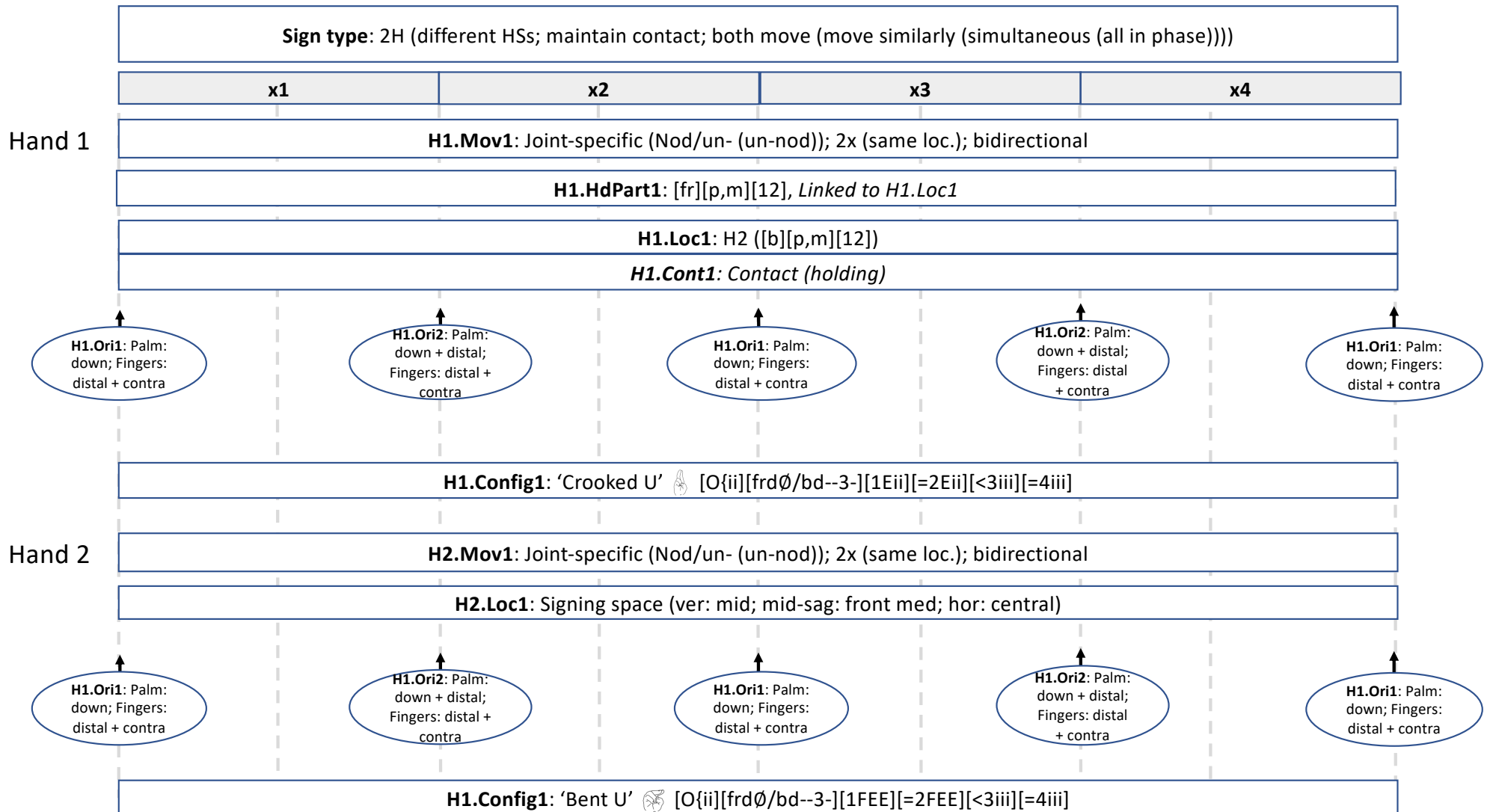
Key characteristics:

- 2H
- 'local' movement with orientation change
- repeated & bidirectional
- location on H2 in the signing space (see note on COFFEE)



SIGN #2: Left 'BENT U' hand is held with palm down and extended fingers pointing forward/rightward. Right 'CROOKED U' hand is held palm down with extended fingers resting at right angles across those of the left hand. Together the hands are tilted back toward the chest and moved forward again a couple of times to simulate a rocking motion. This is a wrist action.

← From Bailey & Dolby (2002): the *Canadian Dictionary of ASL*



ROOM (ASL)

Hand 1

Sign type: 2h (same HSs; contact not maintained; both move (move similarly (same directions; simultaneous (all in-phase))))	
x1	x2
H1.Mov1: Perceptual (Straight; down); 1x; unidirectional; Size: small; Force: strong	H1.Mov2: Perceptual (Straight; down); 1x; unidirectional; Size: small; Force: strong
H1.HdPart1: [u][][whole hand]; linked to H1.Mov1	H1.HdPart2: [u][][whole hand]; linked to H1.Mov2
H1.Loc1: Signing space (ver: mid; mid-sag: front close; hor: ipsi)	H1.Loc2: Signing space (ver: mid; mid-sag: front med; hor: central)
H1.Cont1: No contact	H1.Cont2: No contact

Hand 2

H2.Mov1: Perceptual (Straight; down); 1x; unidirectional; Size: small; Force: strong	
H2.Mov2: Perceptual (Straight; down); 1x; unidirectional; Size: small; Force: strong	
H2.HdPart1: [u][][whole hand]; linked to H2.Mov1	H2.HdPart2: [u][][whole hand]; linked to H2.Mov2
H2.Loc1: Signing space (ver: mid; mid-sag: front close; hor: ipsi)	H2.Loc2: Signing space (ver: mid; mid-sag: front close; hor: central)
H2.Cont1: No contact	H2.Cont2: No contact

ROOM: *n.* an area in a building enclosed by a floor, ceiling and walls. *His office is the third room on the left.*

SIGN: With a slight but deliberate downward thrust horizontal **'EXTENDED B'** hands are held parallel, with palms facing each other and fingers pointing forward. Then the hands take on a **'BENT EXTENDED B'** shape as they are swung inward with a slight downward thrust again, and the right hand positioned ahead of the left, both palms facing the body.



↑ From Bailey & Dolby (2002): the *Canadian Dictionary of ASL*

Key characteristics:

- 2H
- both 'path' and 'local' movements, with hand configuration and orientation changes
- could be compounded with DINE

STOP (ASL)

Key characteristics:

- 2H
- orientation “minimal pair” with JUSTIFY (see [comparison](#))
- location on H2 in the signing space (see note on COFFEE)

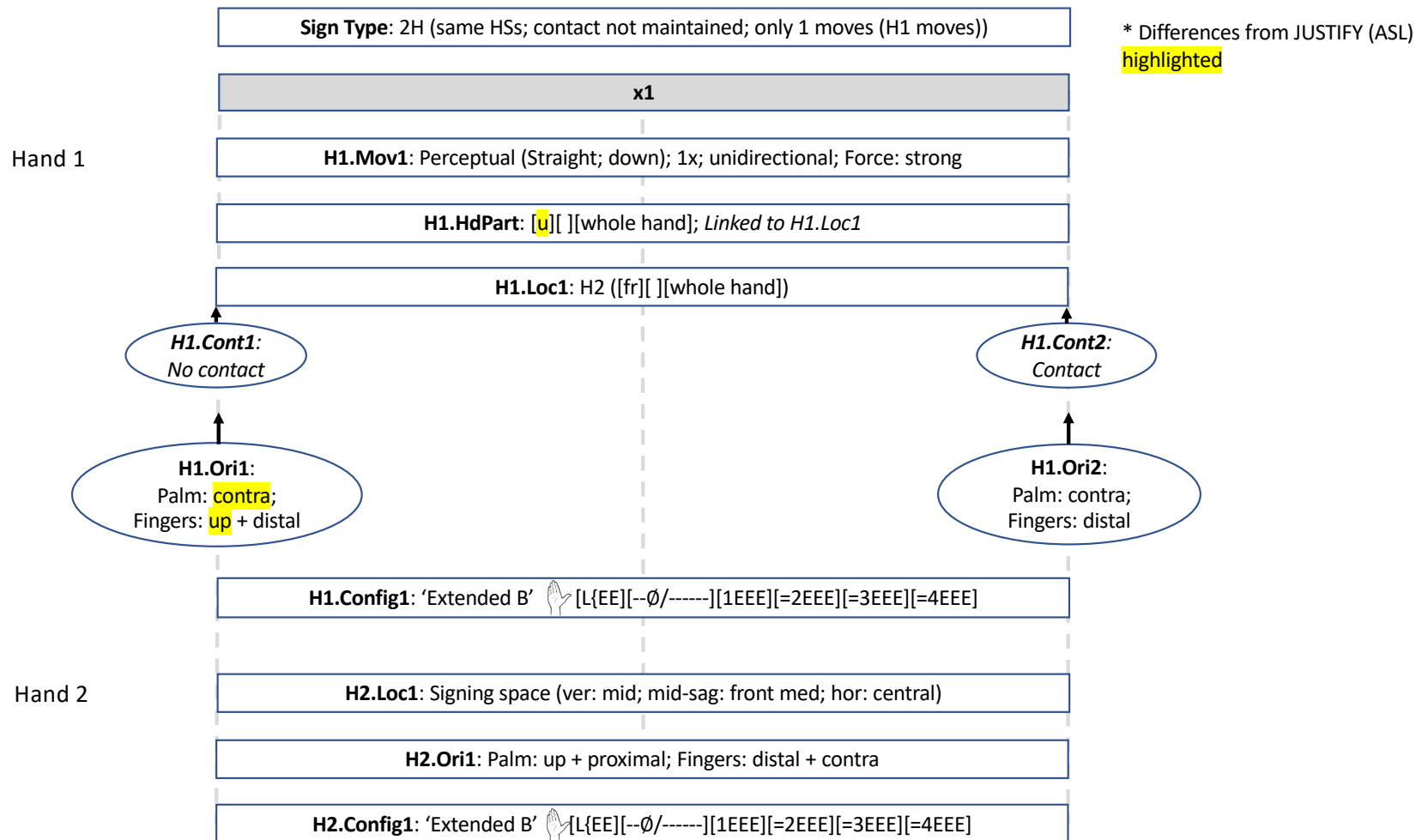


stop: v. to discontinue something.

Their father told them to stop shouting.

SIGN: Right ‘**EXTENDED B**’ hand, palm facing left, is brought down sharply from a semi-vertical position to strike the upward/backward facing palm of the rigidly held right ‘**EXTENDED B**’ hand, whose fingers point rightward/forward.

← From Bailey & Dolby (2002):
the *Canadian Dictionary of ASL*



Preview of “Analyzer” mode: Doing a comparison of a pair of signs

JUSTIFY (ASL) vs. STOP (ASL) – typically considered an orientation minimal pair



justify: v. to prove to be fair, reasonable or valid. *Can you justify your suspicions with solid evidence?*

SIGN #3: Horizontal left ‘EXTENDED B’ hand is held in a fixed position with palm up and fingers pointing forward/rightward. Horizontal right ‘EXTENDED B’ hand is held palm up with fingers pointing forward/leftward and is brought down sharply onto the left palm.



stop: v. to discontinue something. *Their father told them to stop shouting.*

SIGN: Right ‘EXTENDED B’ hand, palm facing left, is brought down sharply from a semi-vertical position to strike the upward/backward facing palm of the rigidly held right ‘EXTENDED B’ hand, whose fingers point rightward/forward.

← From Bailey & Dolby (2002): the *Canadian Dictionary of ASL*

Blue = orientation of H1

Yellow = orientation of H2

<i>The basic view, with all menus collapsed:</i>	
Sign 1:	Sign 2:
JUSTIFY	STOP
> Sign Type	> Sign Type
> Movement	> Movement
> Location	> Location
> Contact	> Contact
> Handpart	> Handpart
> Orientation	> Orientation
> Hand Configuration	> Hand configuration

Preview of “Analyzer” mode: Doing a comparison of a pair of signs

JUSTIFY (ASL) vs. STOP (ASL) – typically considered an orientation minimal pair

<i>With handpart and orientation fully expanded:</i>	
Sign 1:	Sign 2:
JUSTIFY	STOP
v Sign Type	v Sign Type
> Number of hands	> Number of hands
v Movement	v Movement
> H1.Mov1	> H1.Mov1
v Location	v Location
> H1.Loc1	> H1.Loc1
> H1.Loc2	> H1.Loc2
> H2.Loc1	> H2.Loc1
v Contact	v Contact
> H1.Cont1	> H1.Cont1
> H1.Cont2	> H1.Cont2
v Handpart	v Handpart
v H1.HdPart1	v H1.HdPart1
Surface: [b]	Surface: [u]
Bones: []	Bones: []
Part of hand: [whole hand]	Part of hand: [whole hand]
v Timing: linked to at least one full x-slot	v Timing: linked to at least one full x-slot
v Type of linking: linked to a single interval	v Type of linking: linked to a single interval
Which interval: x1-whole	Which interval: x1-whole
v Orientation	v Orientation
v H1.Ori1	v H1.Ori1
palm direction: up	palm direction: contra
finger root direction: distal + contra	finger root direction: up + distal
Timing: linked to at least one full x-slot	Timing: linked to a partial x-slot
(none)	H1.Ori2
v H2.Ori1	v H2.Ori1
palm direction: up	palm direction: up + proximal
finger root direction: distal + contra	finger root direction: distal + contra
v Timing: linked to at least one full x-slot	v Timing: linked to at least one full x-slot
v Type of linking: linked to a single interval	v Type of linking: linked to a single interval
Which interval: x1-whole	Which interval: x1-whole
v Hand Configuration	v Hand Configuration
> H1.Config1	> H1.Config1
> H2.Config1	> H2.Config1

Note that part of the reason this shows up as more than a ‘minimal’ difference is the level of detail in the coding – in STOP, the small change in absolute orientation is included (though it could have been omitted), and in JUSTIFY, it is not included (though it could have been). These differences make the signs seem more different. Note that this is true even though *both* signs were coded as described in the *CD-ASL*, rather than simply being a difference in the level of detail chosen from a video. If both signs were coded more analogously, with only one orientation specified per sign, then they would differ only in the two highlighted components, one of which is about relative orientation and one of which is about absolute orientation.

References

- ASL-LEX 2.0. (2020). Available at <https://asl-lex.org/index.html>
- Bailey, C. S., & Dolby, K. (Eds.). (2002). *The Canadian Dictionary of ASL*. Edmonton: The University of Alberta Press.
- Brentari, D. (1998). *A Prosodic Model of Sign Language Phonology*. Cambridge, MA: MIT Press.
- Crasborn, O. (2001). *Phonetic implementation of phonological categories in Sign Language of the Netherlands*. Doctoral dissertation. Universiteit Leiden.
- HandSpeak. (1995). *American Sign Language dictionary*. Available at www.handspeak.com
- Johnson, R. E. & Liddell, S. K. (2011). Toward a phonetic representation: The fingers. *Sign Language Studies*, 12(1), pp. 4-45.
- Johnson, R. E. & Liddell, S. K. (2012). Toward a phonetic representation of hand configuration: The thumb. *Sign Language Studies*, 12(2), pp. 316-33.
- Johnson, R. E. & Liddell, S. K. (2021). Toward a Phonetic Description of Hand Placement on Bearings. *Sign Language Studies*, 22(1), pp.131-180.
- Kooij, E. van der (2002). *Phonological categories in Sign Language of the Netherlands: The role of phonetic implementation and iconicity*. Doctoral dissertation. Netherlands Graduate School of Linguistics.
- Morgan, H. E. (2017). *The phonology of Kenyan Sign Language (southwestern dialect)*. Doctoral dissertation. University of California, San Diego.