



Scope and Structure Hierarchy in Hong Kong Sign Language: Exploring ditransitives

Linghui Eva Gan
University of Connecticut

2022/01/25 ConSOLE 30

Introduction

About Hong Kong Sign Language (HKSL)

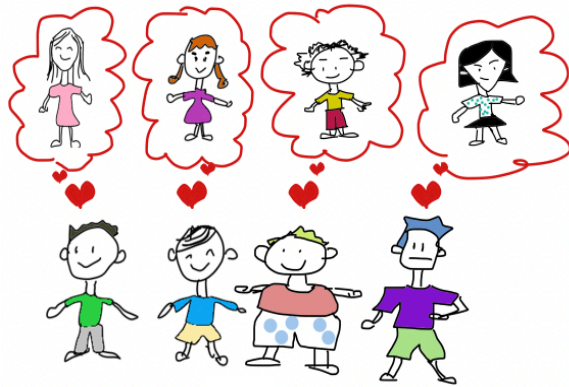
- Used by the Deaf community in Hong Kong
- Canonical word order: **SVO** (Sze, 2000), **SOV**, **OSV** are attested.
- Word order puzzles in double object construction.
 - Two patterns of word order are possible: [S-DO-V-IO] & [S-V-IO-DO].

(1) AARON BOOK GIVE BRENDA. 'Aaron gave a book to Brenda.' [S-DO-V-IO]

(2) (?)AARON GIVE BRENDA BOOK. [S-V-IO-DO]

Scope relation reflects c-commanding relation

- May (1978, 1985)
 - Quantifier Raising (QR) at LF: (3) *Every man loves a woman.*



(a)



(b)

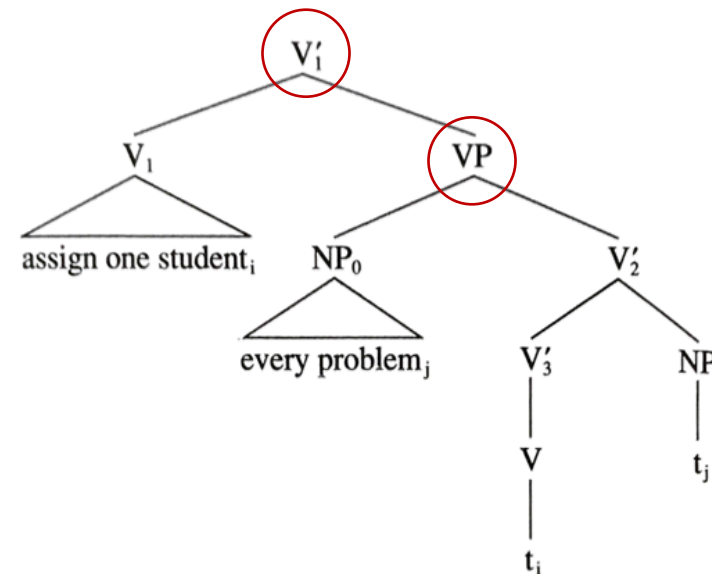
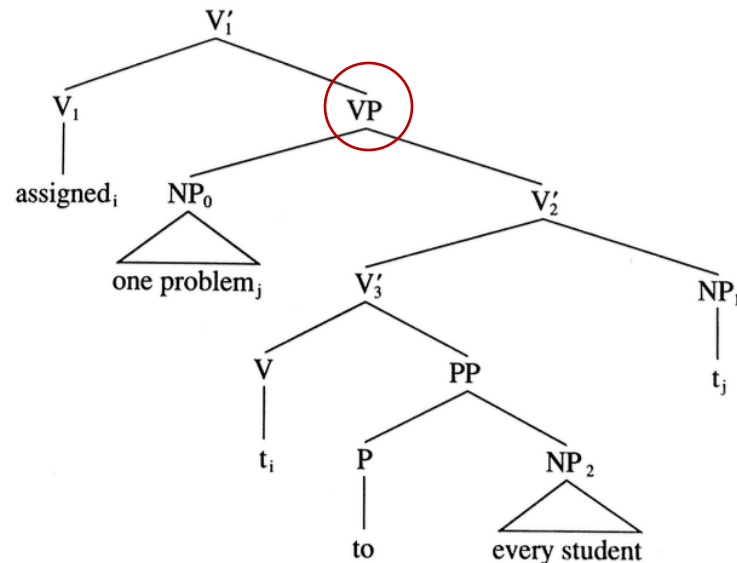
(a) $\forall > \exists$: $[_S [_{NP} \text{every man}]_2 [_S [_{NP} \text{a woman}]_1 [_S e_2 \text{ loves } e_1]]]$

(b) $\exists > \forall$: $[_S [_{NP} \text{a woman}]_2 [_S [_{NP} \text{every man}]_1 [_S e_1 \text{ loves } e_2]]]$

Scope relation reflects c-commanding relation

- Barss & Lasnik (1986), Larson (1988), Aoun & Li (1989)
 - Asymmetry between Direct Object (DO) and Indirect Object (IO):

- (4) (a) John assigned one problem to every student (ambiguous)
(b) John assigned one student every problem. (unambiguous, $\exists > \forall$ only)



In this study, I use **scope relation** to investigate the **structural hierarchy** in Hong Kong Sign Language (HKSL)

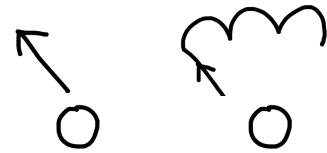
asymmetrical hierarchical relations \leftrightarrow scope relation

- | | | | |
|-----|----------------------------|--------------------------------|-------------|
| (1) | AARON BOOK GIVE BRENDA. | 'Aaron gave a book to Brenda.' | [S-DO-V-IO] |
| (2) | (?)AARON GIVE BRENDA BOOK. | | [S-V-IO-DO] |

Methodology

Stimuli design

- Quantifier NPs containing **ALL** and **ONE** are tested.
- Transitives as the baseline. Plain verbs (Padden, 1988) are used, e.g. **LIKE** and **EAT**.
- Ditransitives:
 - **GIVE** with single movement (c.f. Quer & Steinbach 2015).
 - For a better control, 2 arguments contain QNPs at a time.



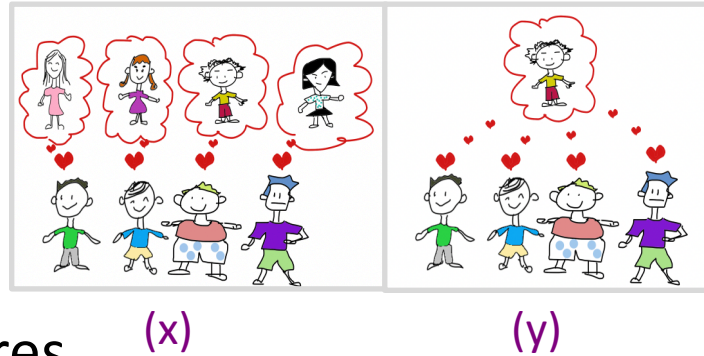
	Subject	DO	IO
A1	proper name	ALL	ONE
A2	proper name	ONE	ALL
B1	ALL	proper name	ONE
B2	ONE	proper name	ALL
C1	ALL	ONE	proper name
C2	ONE	ALL	proper name

Table 1. The paradigm for double object constructions with QNPs

Data collection

- Judgement test

- Step 1: Describe pictures
- Step 2: Judge the given word order
- Step 3: Judge the interpretation of grammatical sentences



- a. MAN ALL LIKE WOMAN ONE. (SVO)
- b. MAN ALL WOMAN ONE LIKE. (SOV)
- c. WOMEN ONE, MAN ALL LIKE. (OSV)

Can (a), (b) and (c) represent Figure x & y, respectively?

- Consultants:

- two deaf native HKSL signers (M, 30s & 40s).
- 'native' defined as born to deaf parents and have been using HKSL as the primary language for communication since birth.

Data & analysis

- Transitives
- Ditransitives

Baseline: Transitives

- Subj-ONE, Obj-ALL:

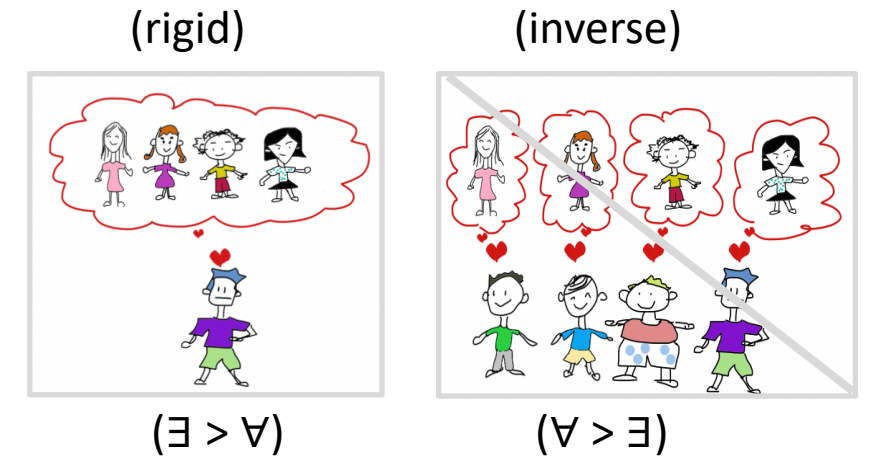
(5) Intended: 'A man likes all women.' (unambiguous)

- | | | |
|-----|--------------------------|--------------------------|
| (a) | MAN ONE LIKE WOMAN ALL. | $\exists > \forall$ only |
| (b) | MAN ONE WOMAN ALL LIKE. | $\exists > \forall$ only |
| (c) | WOMAN ALL, MAN ONE LIKE. | $\exists > \forall$ only |

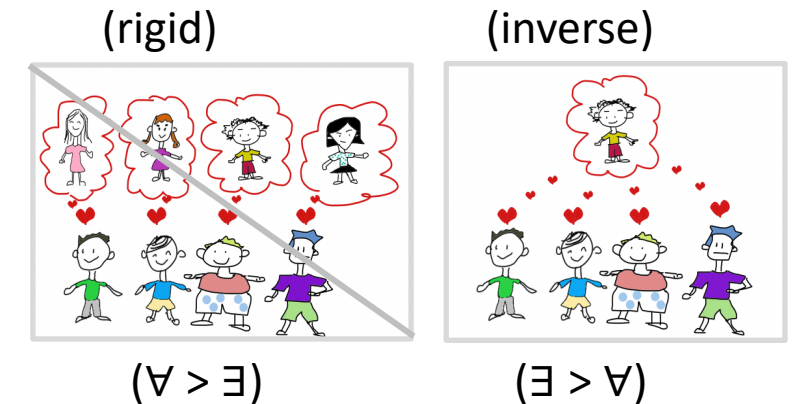
- Subj-ALL, Obj-ONE:

(6) Intended: 'All men like one woman.'

- | | | |
|-----|--------------------------|---|
| (a) | MAN ALL LIKE WOMAN ONE. | (ambiguous) |
| (b) | MAN ALL WOMAN ONE LIKE. | (unambiguous, $\exists > \forall$ only) |
| (c) | WOMAN ONE, MAN ALL LIKE. | (unambiguous, $\exists > \forall$ only) |



- No Quantifier Raising (QR) in HKSL
- However...



My proposal

1. The ambiguity in (6) is not syntactic but **semantic**.

2. Fodor & Sag (1982): Indefinites are **lexically ambiguous**.

- Quantifiers → It enters scope relation with other quantifiers (7a).
- Demonstratives → It entails an existential quantification of the *maximal scope* (7b).

(7) (a) Every student admires *a professor* in college. (Quantifier)

(b) *A professor* that I admire, I had dinner with her in Boston last week. (DP)

(8) Many students admire *that professor*.

- A sentence with two 'pure' QNPs only has a rigid scope (9).

(9) MAN ALL LIKE WOMAN EACH ($\forall > \exists$ only)

(5)	Intended: 'A man likes all women.'	(unambiguous)
(a)	MAN ONE LIKE WOMAN ALL.	$\exists > \forall$ only
(b)	MAN ONE WOMAN ALL LIKE.	$\exists > \forall$ only
(c)	WOMAN ALL, MAN ONE LIKE.	$\exists > \forall$ only
(6)	Intended: 'All men like one woman.'	
(a)	MAN ALL LIKE WOMAN ONE.	(ambiguous)

My proposal

- (b) MAN ALL WOMAN ONE LIKE. (unambiguous, $\exists > \forall$ only)
(c) WOMAN ONE, MAN ALL LIKE. (unambiguous, $\exists > \forall$ only)

3. Topicalization forces indefinites to be interpreted as DPs only.

- Fodor & Sag (1982) have the same observation (c.f. 7b)

(7) (b) *A professor that I admire, I had dinner with her in Boston last week.* (DP)

• Interim summary

- No QR in HKSL (5).
- Indefinites containing ONE is lexically ambiguous (6a).
- Topicalization forces indefinites to be interpreted as DPs, yielding $\exists > \forall$ only (6b, c).

Ditransitives

- When involving multiple QNPs, [S-V-IO-DO] becomes unacceptable*.

(10) 'All women gave a student a book.'

(a) WOMAN ALL BOOK ONE GIVE STUDENT ONE

[S-DO-V-IO]

(b) *WOMAN ALL GIVE STUDENT ONE BOOK ONE

[S-V-IO-DO]

Ditransitives

Transitives	SUB-ALL; OBJ-ONE	SUB-ONE; OBJ-ALL
	$\forall > \exists$; $\exists > \forall$	$\exists > \forall$ only

- IO is underlyingly higher than DO, i.e., [S-DO-V-IO] is a derived order.

(11) (a) LAURA BOOK ONE GIVE STUDENT ALL.

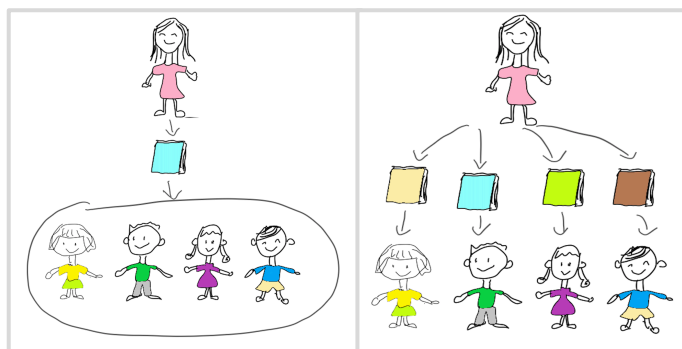
Intended: 'Laura gave a book to all students.'

(ambiguous)

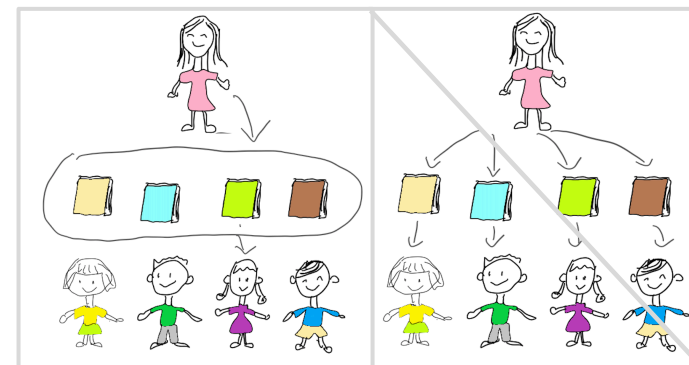
(b) LAURA BOOK ALL GIVE STUDENT ONE.

Intended: 'Laura gave all the books to a student.'

(unambiguous, $\exists > \forall$ only)



(11a)



(11b)

Ditransitives

- S>DO is also correctly predicted.

(12) (a) WOMAN ALL BOOK ONE GIVE LAURA. (ambiguous)

Intended: 'All women gave a book to Laura.'

(b) WOMAN ONE BOOK ALL GIVE LAURA (unambiguous, $\exists > \forall$ only)

Intended: 'A woman gave all book to Laura.'

Transitives	S vs. O	SUB-ALL; OBJ-ONE	SUB-ONE; OBJ-ALL
	possible readings	$\forall > \exists$; $\exists > \forall$	$\exists > \forall$ only
Ditransitives	IO vs. DO	IO-ALL; DO-ONE	IO-ONE; DO-ALL
	possible readings	$\forall > \exists$; $\exists > \forall$	$\exists > \forall$ only
	S vs. DO	SUB-ALL; DO-ONE	SUB-ONE; DO-ALL
	possible readings	$\forall > \exists$ *; $\exists > \forall$	$\exists > \forall$ only
	S vs. IO	SUB-ALL; IO-ONE	SUB-ONE; IO-ALL
	possible readings	$\exists > \forall$ only	$\exists > \forall$ only

Two exceptions with Subj-ALL Obj-ONE configuration

- Only the **inverse scope** is available for [S-DO-V-IO] order (13).

(13) WOMAN ALL HKSL-DICTIONARY GIVE STUDENT ONE $(\exists > \forall \text{ only})$
'There is a student x such that all women gave *HKSL Dictionary* to x.'

- [S-V-IO-DO] is possible in Subj-ALL DO-ONE combination (14).

(14) WOMAN ALL GIVE LAURA BOOK ONE. $(\exists > \forall \text{ only})$

(12a) WOMAN ALL BOOK ONE GIVE LAURA. (ambiguous)

What causes the missing $\forall > \exists$ reading (i.e., rigid scope)?

My proposal

- The **anti-reconstruction effect** caused by **focus** eliminates the $\forall > \exists$ reading.
 - Anti-reconstruction effect in Japanese (Shibata 2012).
 - Objects must move to a projection **above** negation in syntax. (Obj. $> \neg$ available).
 - Reconstruction of the original trace is possible in **semantics**.
 - **Focus** traps the objects scopally in their position in **LF**, triggering anti-reconstruction. (Obj. $> \neg$ only).

(15) (a) *Taroo-wa [zen'in gakusee]-o sikar-anakat-ta.*
Taro-TOP all student-ACC scold-NEG-PAST
'lit. Taro didn't scold all students.'

(Obj. $> \neg$; $\neg > \text{Obj.}$)

(b) *Taroo-wa pan-dake kaw-anat-ta.*
Taro-TOP bread-only buy-NEG-PAST
'lit. Taro didn't buy only bread.'

(Obj. $> \neg$; $*\neg > \text{Obj.}$)

My proposal

- In HKSL: (13) WOMAN ALL HKSL-DICTIONARY GIVE STUDENT ONE ($\exists > \forall$ only)
 - The right periphery in HKSL is a **focus position (FocP)**
- (16) JOHN LOVE WHO, MARY_F. ‘Who John loves is Mary.’ (Question-Answer Pair)
- (17) (a) AARON GO SCHOOL. ‘Aaron went to school.’
(b) GO SCHOOL AARON ONE-FINISH. ‘Only Aaron went to school.’
- ONE-phrase in [S-DO-V-IO] moves to **Foc** at the right periphery, i.e., structurally higher ($\exists > \forall$ available).
- When an existential quantifier occupies Foc, it triggers **anti-reconstruction** effect, it cannot be interpreted in its base position, but it must be interpreted at **LF** ($\exists > \forall$ only).

My proposal

(14) WOMAN ALL GIVE LAURA BOOK ONE. ($\exists > \forall$ only)

- **Modality factors** at play:

- [V-IO-DO] sequence adds burden to the processing of visual information (Napoli & Sutton-Spence, 2014), thus not preferred (2).

(2) (?)AARON GIVE BRENDA BOOK.

- When the objects involve multiple QNPs, the IO-DO sequence becomes **informationally too heavy**, which eliminates the [S-V-IO-DO] order (10b).

(10) (b) *WOMAN ALL GIVE STUDENT ONE BOOK ONE

- The exemption of (14) is due to the lexical ambiguity of ONE-phrase between a QNP and a DP.

Summary

- No QR in HKSL.
- IO > DO underlyingly.
- ONE-phrases are lexically ambiguous which yield scope ambiguity.
- ONE-phrases as focus at the right periphery triggers anti-reconstruction effect, forcing them to be interpreted at LF only.
- Modality factors interact with word order configuration.

Summary

- This study provides insights to bypass certain difficulties in sign language research on word order due to modality idiosyncrasies such as **simultaneity** (Leeson & Saeed, 2012) and the **frequent lack of overt functional elements**.

Acknowledgements

- I sincerely thank my deaf consultants, *Aaron Wong* & *Kenny Chu*, and *Adrian Stegovec*, *Željko Bošković* & *Diane Lillo-Martin* for suggestions on this project.

Thank you for your attention! 😊

References

- Bruening, Benjamin. 2008. *The Scope Fieldwork Project*. <http://udel.edu/~bruening/scopeproject/scopeproject.html>.
- Fodor, Janet Dean, and Ivan A. Sag. 1982. "Referential and quantificational indefinites." *Linguistics and Philosophy* 5 (3): 355–398. ISSN: 1573-0549. <https://doi.org/10.1007/BF00351459>.
- Frey, Werner. 2012. "Notes on the syntax and the pragmatics of German Left Dislocation." In *The Syntax and Semantics of the Left Periphery*, edited by Horst Lohnstein and Susanne Trissler, 203–234. Berlin, New York: De Gruyter Mouton. ISBN: 978-3-11-091211-1. <https://www.degruyter.com/document/doi/10.1515/9783110912111.203/html>.
- Leeson, Lorraine, and John Saeed. 2012. "Word Order." In *Sign Language: An International Handbook*, edited by Roland Pfau, Markus Steinbach, and Bencie Woll, 245–265. Berlin, Boston: Walter de Gruyter GmbH.
- May, Robert. 1978. "The Grammar of Quantification." Ph.D. Dissertation, Massachusetts Institute of Technology. <https://dspace.mit.edu/handle/1721.1/16287>.
- May, Robert. 1985. *Logical Form: Its Structure and Derivation*. MIT Press. ISBN: 978-0-262-63102-0.
- Napoli, Donna Jo, and Rachel Sutton-Spence. 2014. "Order of the major constituents in sign languages: implications for all language." *Frontiers in Psychology* 5. ISSN: 1664-1078. <https://doi.org/10.3389/fpsyg.2014.00376>. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4026690/>.
- Padden, Carol A. 1988. "Interaction of Morphology and Syntax in American Sign Language." Ph.D. Dissertation, University of California, San Diego.
- Shibata, Yoshiyuki. 2012. "Obligatory wide scope as anti-reconstruction effects." In *The Proceedings of GLOW in Asia IX*.
- Sze, Felix. 2000. "Word order of Hong Kong Sign Language." In *Cross-linguistic Perspectives in Sign Language Research. Selected Papers from TISLR 2000*, edited by Ann Baker, Beppie van den Bogaerde, and Onno Crasborn, 163–192. Hamburg: Signum.