

# Object shift in ASL and Libras

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← slides, paper

joint work with  
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# The two languages

ASL =

US-American Sign Language

Libras =

Língua Brasileira de Sinais  
(Brazilian Sign Language)

# In this talk

## 1. What is object shift?

- SVO → SOV

## 2. When does it happen?

- three triggers: two syntactic, one phonological

## 3. Why is this interesting?

- architecture of the grammar
- a unified model

# Object shift in spoken languages

- Icelandic (Thráinsson 2001)

	Subject	Verb	Object	Neg	Object
(1) a.	Nemandinn	las		ekki	bókina.
	student.the	read.past		not	book.the
b.	Nemandinn	las	bókina	ekki.	
	student.the	read.past	book.the	not	
	“The student didn’t read the book.”				

- Scandinavian object shift:

- Which position of O is the **underlying** one, and which is the **derived** one?
- comparing Scandinavian languages, there are restrictions on when O can/must move to the left (*Holmberg’s Generalization*) (1b)
- whenever the restrictions don’t apply, O is on the right (1a) → default position
- cf. Holmberg 1986 and much work since; see e.g. Thráinsson 2001 and Vikner 2006/2017 for an overview

# Object shift in sign languages

- The basic order in ASL and Libras is Subject-Verb-Object.
- In “object shift” constructions, the order is Subject-Object-Verb.
- Object shift is not topicalization
  - no prosodic break after O in SOV
  - no topicalization-nonmanuals during O in SOV
- We only look at transitive (“buy”) and ditransitive verbs (“give”), but not movement verbs (“put”), which often have Ground-Figure word order.

# ASL is SVO

1. without topicalization: only SVO and SOV (Fischer 1975)
  2. when O is an embedded clause: only SVO (Fischer 1975)
  3. in yes/no questions: only SVO (Liddell 1980)
- SVO is the default order.  
Other word orders have restrictions.

# Libras is SVO

1. without topicalization: SVO, SOV, OSV
  2. plain verbs: only SVO (Quadros 1999; Neidle et al. 2000)
  3. when O is an embedded clause: only SVO and OSV (Quadros 1999)
    - \*S [SV] V
    - \*S [SVAdv] V
- SVO is the default order.  
Other word orders have restrictions.

# Deriving SOV from SVO

## 1. Movement of O to the left

- Quadros et al. 2004
- Quadros & Lillo-Martin 2010
- Gökgöz 2013
- Laszakovits et al. 2022 = **this talk**



## 2. Movement of V to the right

- Fischer & Janis 1992
- Matsuoka 1997
- Braze 2004





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# Triggers for SOV

No marking    Locus-marking    Classifier-marking    Aspect-marking

ASL    ~~SOV~~    ✓SOV    ✓SOV    ✓SOV

Libras    ~~SOV~~    ✓SOV    ✓SOV    ✓SOV

# 1. Plain verbs

- ASL (Liddell 1980: 89):
  - (2a) MAN FORGET NUMBER.
  - (2b) \*MAN NUMBER FORGET. XSOV
- Libras (Quadros 1999: 61):
  - (3a) IX JOHN LIKE SOCCER.
  - (3b) \*IX JOHN SOCCER LIKE. XSOV

# Triggers for SOV

No marking   Locus-marking   Classifier-marking   Aspect-marking   }

ASL   ✓ SVO  
✗ SOV

Libras   ✓ SVO  
✗ SOV

# 2. Locus agreement

- What is locus?
  - locations in signing space
  - each associated with a referent
  - similar to pronouns
- We subsume under “locus agreement”
  - changes to V’s movement’s endpoint/origin (Kuhn 2016; Pfau et al. 2018)
  - V’s location in the signing space
  - the auxiliary’s movement’s endpoint (Pfau et al. 2018)
  - nonmanual markers: eyegaze, head-tilt (Neidle et al. 2000)

# Changing V's direction

- Adding path movement: endpoint (or origin) is the object's locus.
- ASL and Libras:
  - (4a) IX-a MARIA-a **IX-b ANA-b** a-HELP-b. ✓ SOV
  - (4b) IX-a MARIA-a a-HELP-b **IX-b ANA-b**.

# Spatialization

- The verb is signed in the locus associated with the object.
- ASL and Libras:
  - (5a) MAN **BICYCLE-a** BUY-a. ✓ SOV
  - (5b) MAN BUY-a **BICYCLE-a**.
- Terminology:
  - “locationality” (Fischer & Gough 1978)
  - “spatialization” (Quadros et al. 2004)
  - “co-localization” (Lourenço & Wilbur 2018)
- see also Bergman 1980; Liddell 1980; Costello 2015; Smith 1990, i.a.

# Agreement auxiliary

- Libras has an agreement auxiliary for when V can't agree (e.g. body-anchored). The agreement agrees in its direction endpoint with O. (Quadros 1999, Quadros et al. 2004)
  - cf. also DGS “PAM”
- Libras
  - (6a) IX-a JOAO-a **IX-b MARIA-b** a-AUX-b SUPPORT ✓ SOV
  - (6b) IX-a JOAO-a SUPPORT **IX-b MARIA-b**.



# Early observations

- SOV only if non-reversible (Fischer 1975)
  - reversible: DOG CAT CHASE (who chased who?)
  - non-reversible: BOY **BOOK** READ
  - locus-agreement makes it non-reversible
- SOV only if some relationship between O and V (Liddell 1980)
  - locus-agr't via path and/or eyegaze
  - “iconic” relationship between O and V

# Triggers for SOV

No marking    Locus-marking    Classifier-marking    Aspect-marking

ASL    ✓ SVO  
      ✗ SOV

✓ SVO  
✓ SOV

Libras    ✓ SVO  
          ✗ SOV

✓ SVO  
✓ SOV

# 3. Classifier agreement

- V's handshape agrees with O's noun class.

- ASL

- (7a) SALLY **APPLE** GIVE[].

✓ SOV

- (7b) \*SALLY GIVE[] **APPLE**.

~~X~~ SVO

- Libras

- (8a) SALLY **APPLE** GIVE[].

✓ SOV

- (8b) SALLY GIVE[] **APPLE**.

# What is a classifier?

- Types:
  - Whole-entity
  - **Handling**, instrument
  - Body-part, limb
- Functions:
  - Relative location
  - Path
  - Manner of movement
- **Handling classifier** = modifies the handshape of a (di)transitive verb.
  - cf. Benedicto & Brentari 2004; Pfau et al. 2018, a.o.

# Triggers for SOV

No marking    Locus-marking    Classifier-marking    Aspect-marking

ASL    ✓ SVO    ✓ SVO    ✗ SVO  
         ✗ SOV    ✓ SOV    ✓ SOV

Libras    ✓ SVO    ✓ SVO    ✓ SVO  
         ✗ SOV    ✓ SOV    ✓ SOV

# 4. Durative aspect

- Reduplication movement (Klima & Bellugi 1979)
- Libras and ASL:
  - (9a) IX1 **WINE** DRINK[+].
  - (9b) MY SISTER **LETTER** SEND[+].
  - (10a) \*IX1 DRINK[+] **WINE**.
  - (10b) \*MY SISTER SEND[+] **LETTER**.

# Triggers for SOV

No marking    Locus-marking    Classifier-marking    Aspect-marking

ASL	✓ SVO ✗ SOV	✓ SVO ✓ SOV	✗ SVO ✓ SOV	✗ SVO ✓ SOV
Libras	✓ SVO ✗ SOV	✓ SVO ✓ SOV	✓ SVO ✓ SOV	✗ SVO ✓ SOV

# In this talk

## 1. What is object shift?

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- architecture of the grammar
- a unified model



# Triggers for SOV

No marking    Locus-marking    Classifier-marking    Aspect-marking

ASL	✓SVO <del>XSOV</del>	✓SVO ✓SOV	<del>XSVO</del> ✓SOV	<del>XSVO</del> ✓SOV
Libras	✓SVO <del>XSOV</del>	✓SVO ✓SOV	✓SVO ✓SOV	<del>XSVO</del> ✓SOV

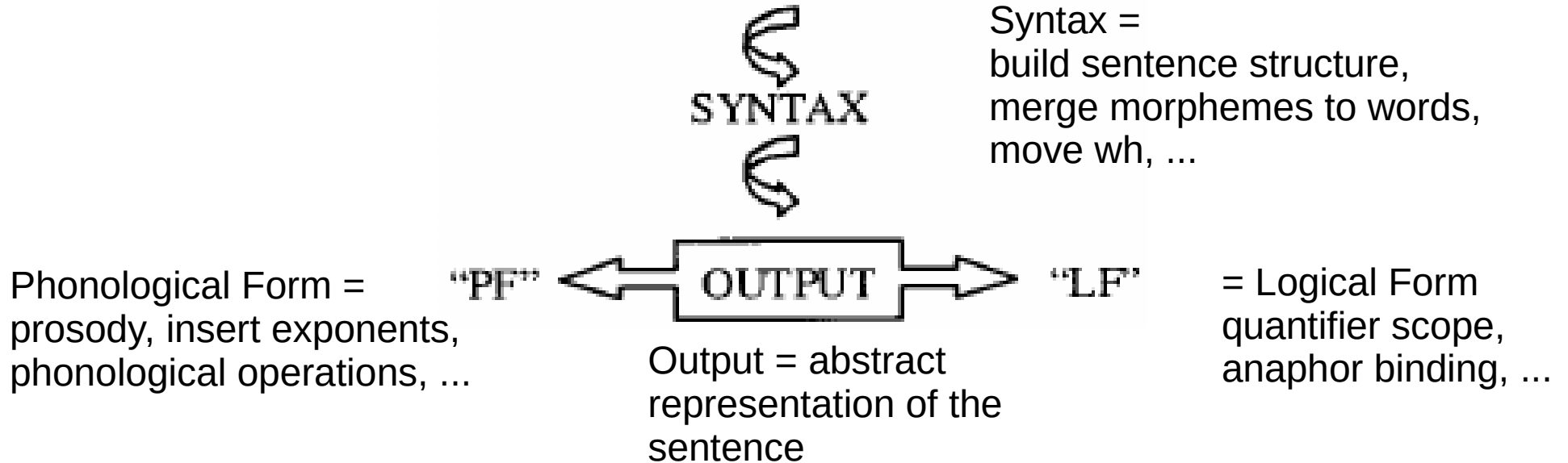
- Q1: What is special about locus-, classf-, and aspect-marking s.t. ✓SOV?
- Q2: What is special about aspect- and ASL classif-marking s.t. ~~XSVO~~?
- Q3: Why is classif-marking different in ASL and Libras?

# Generative grammar

- Model of **competence**, i.e., what you know when you know a language
- “Generative” = with finite means (words + rules), generate an infinite number of distinct sentences
- Goal: specify the **rules** such that all acceptable sentences can be generated by the grammar, and all unacceptable sentences cannot be generated by the grammar

# Components of grammar

“Inverted T” model, or “Single Output Syntax”  
(Bobaljik 1995, Brody 1995, Bobaljik & Wurmbrand 2012)



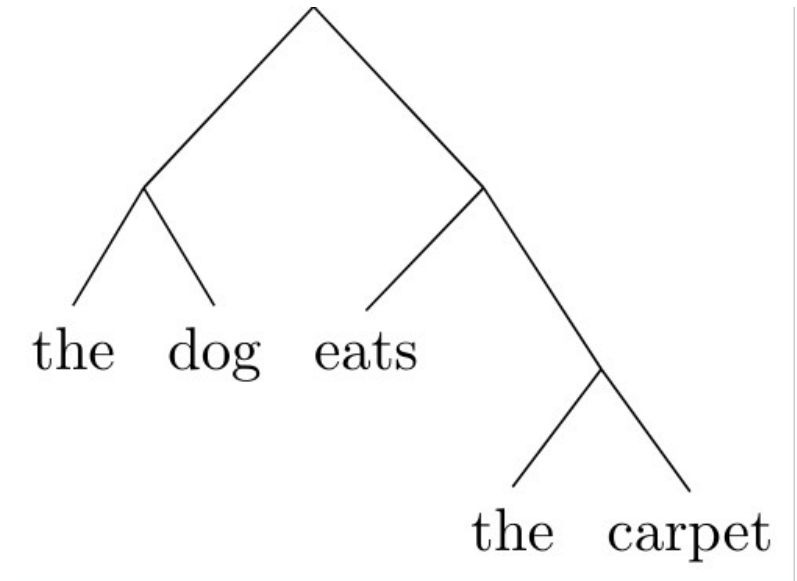
# Q1: Whence SOV?

- Q1a: What is special about locus-, classifier-, and aspect-marking such that ✓SOV?
- The 3 triggers are in different components of the grammar:
  - Locus-agreement is in **syntax** (Kuhn 2016, a.o.)
  - Classifier-agreement is in **syntax** (Benedicto & Brentari 2004, a.o.)
  - Aspect-marking is in **phonology** (Liddell 1980, Brentari 1998, a.o.)
- Q1b: Can we state a rule for ✓SOV that is in a single component, i.e. a unified model?

# Preliminaries 1/2:

## Phrase structure

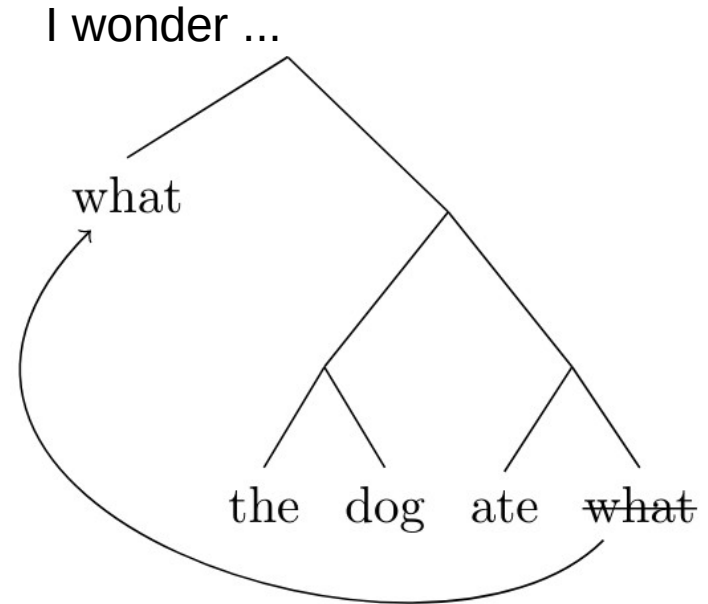
- Syntax creates hierarchical structure (“trees”)
- Binary branching



# Preliminaries 2/2:

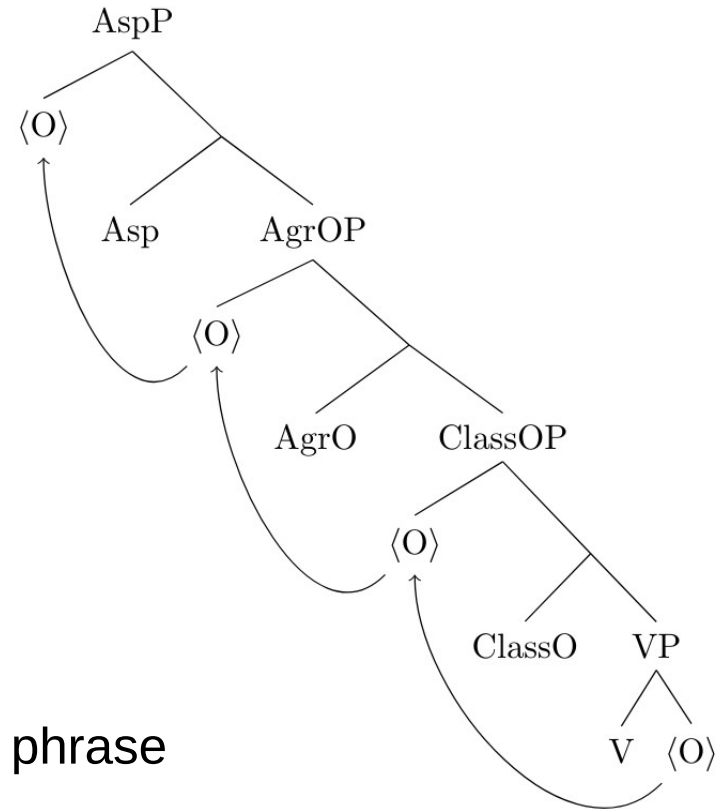
## Syntactic movement

- Movement is always “up” and mostly “left”
- E.g. wh-words in English and German
- Leaves a copy behind
- PF decides which copy to realize



# Assumptions 1/2: Verbal projections

- Asp = V gets aspectual marking  
(O moves there for theory-internal reasons)
- AgrO = V agrees in locus with O  
if O moves there
- ClassO = V agrees in classifier with O  
if O moves there
- V = verb's lexical information      O = object noun phrase



# Assumptions 2/2: PF-constraints

- When syntax moves a phrase or a single morpheme, it leaves a copy behind  
=> more than one occurrence!
- A sentence has multiple theoretically possible realizations.
- PF decides which copy to realize, using **constraints**:
  - No ranking between constraints
  - Some constraints are inviolable => derivation fails if constraint is violated
  - Some constraints are violable => minimize the number of violations
- Realization(s) with least number of violations  
=> predicted to be judged acceptable.



# Triggers for SOV

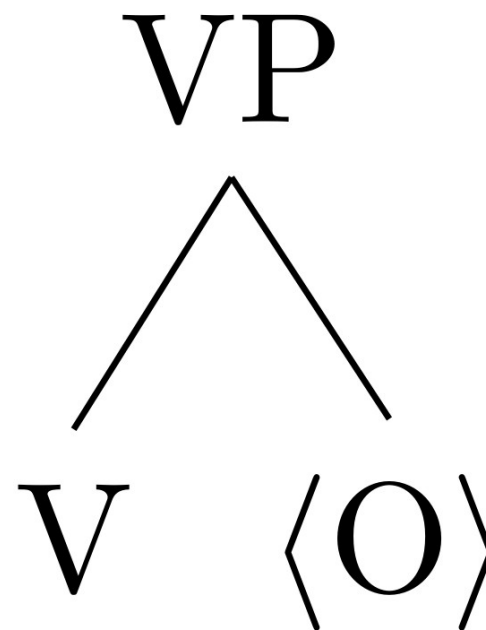
No marking   Locus-marking   Classifier-marking   Aspect-marking

ASL

Libras

# 1. Plain verbs

- No higher verbal projections
- Only one copy of O
- Prediction:  $\checkmark$  SVO  
~~XSOV~~



# Triggers for SOV

No marking    Locus-marking    Classifier-marking    Aspect-marking

ASL    ✓ SVO  
      ✗ SOV

Libras    ✓ SVO  
          ✗ SOV



# Constraint 1: “Highest copy”

- Syntactic movement → multiple copies
- PF: which copy gets realized = signed/pronounced ?
  - “Prefer to realize **the same copy that LF interprets.**” (violable)
    - Bobaljik & Wurmbrand 2012: “Scope Transparency”
- LF: which copy gets interpreted?
  - if quantifiers etc., can be either copy
  - but typically it’s **the highest copy**
- “Prefer to realize the highest copy of O.”

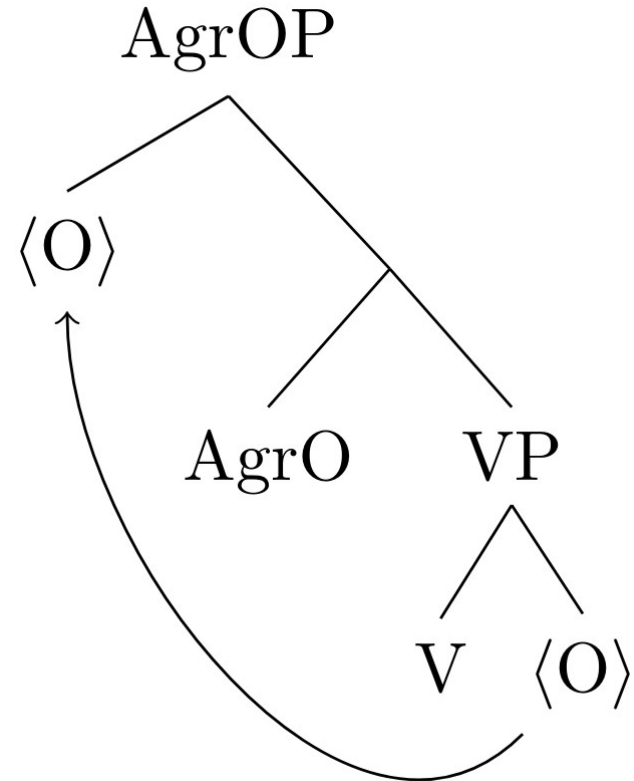
# Constraint 2: “Prefer VO”

- “Prefer the basic order of constituents.”
  - “basic” = before movement
- Here, in practice: “prefer VO over OV”
- Terminology:
  - Bobaljik & Wurmbrand 2012: “canonical complement order” (**CCO**)
  - Early GB models: “case adjacency”

## 2. Locus-agr't in ASL & Libras

- Low copy of O (SVO):
  - “High copy” ✗
  - “Prefer VO” ✓
- High copy of O (SOV):
  - “High copy” ✓
  - “Prefer VO” ✗
- Prediction:

✓ SVO  
✓ SOV



# Triggers for SOV

No marking    Locus-marking    Classifier-marking    Aspect-marking

ASL  
✓ SVO  
~~XSOV~~

✓ SVO  
✓ SOV

Libras  
✓ SVO  
~~XSOV~~

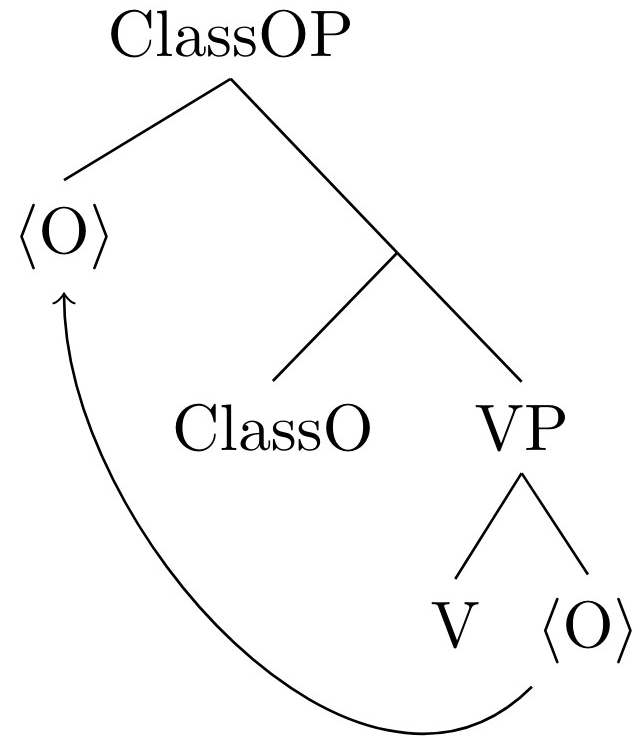
✓ SVO  
✓ SOV



# 3. Classifier-agr't in Libras

- Low copy of O (SVO):
  - “High copy” ✗
  - “Prefer VO” ✓
- High copy of O (SOV):
  - “High copy” ✓
  - “Prefer VO” ✗
- Prediction

✓ SVO  
✓ SOV





# Triggers for SOV

No marking    Locus-marking    Classifier-marking    Aspect-marking

ASL  
✓ SVO  
~~XSOV~~

✓ SVO  
✓ SOV

Libras  
✓ SVO  
~~XSOV~~

✓ SVO  
✓ SOV

✓ SVO  
✓ SOV



# Constraint 3: “OV if O values V”

- Cross-sign-linguistic generalization:
  - “If an argument affects the phonological shape of V, it precedes V.”  
(Napoli & Sutton-Spence 2014)
- Here: applies to locus-agr’t and classifier-agr’t
- Only a generalization!
  - Q2: difference between classifier-agr’t and locus-agr’t in ASL
  - Q3: difference between ASL and Libras

# Q2: Locus- vs. classifier-agreement in ASL

	Locus-marking	Classifier-marking
--	---------------	--------------------

ASL

✓ SVO

~~X~~ SVO

✓ SOV

✓ SOV

- How are they different?
- Direction of agreement!
  - Classifier: O's noun class determines the handshape.  $O \rightarrow V$
  - Locus: either O or V can establish the locus first.  $O \rightarrow V$  or  $V \rightarrow O$ 
    - (11) BOOK, FATHER a-GIVE-b MOTHER.
    - V introduces the locus **b** that is from now on associated with “mother”.
    - “MOTHER” does not use IX, eyegaze, head-tilt, shoulder-shift, nor spatialization to establish a locus.

# 3. Classifier-agr't in ASL

- Low copy of O (SVO):

- “High copy” ✗
- “Prefer VO” ✓
- “OV if O values V” ✗

1 ✓

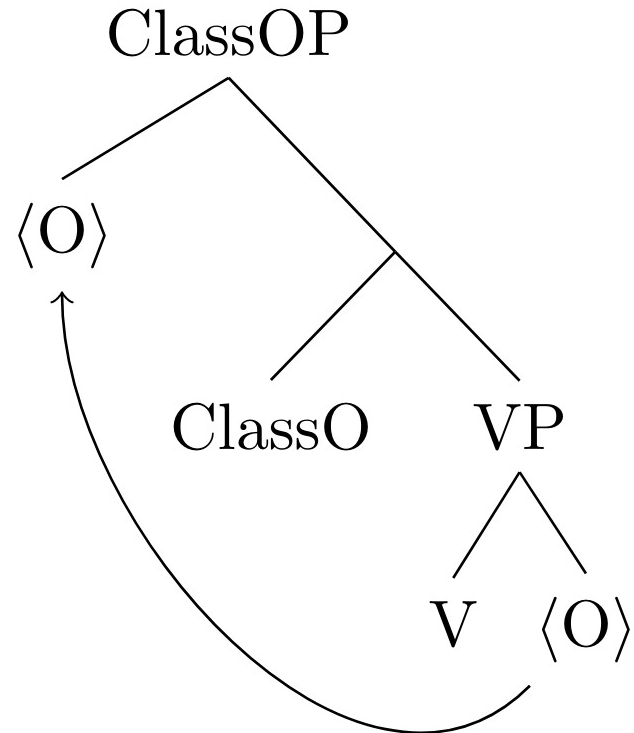
~~XSVO~~

✓SOV

- High copy of O (SOV):

- “High copy” ✓
- “Prefer VO” ✗
- “OV if O values V” ✓

2 ✓



# Triggers for SOV

No marking    Locus-marking    Classifier-marking    Aspect-marking

ASL  
✓ SVO  
~~XSOV~~

✓ SVO  
✓ SOV

~~XSVO~~  
✓ SOV

Libras  
✓ SVO  
~~XSOV~~

✓ SVO  
✓ SOV

✓ SVO  
✓ SOV



# Reduplication is “heavy”

- Durative/continuative aspect: add a slow large circular motion, several repetitions (Klima & Bellugi 1979: 243-271)
- simultaneous type of movement = weight unit (Brentari 1998)
  - ASL: “SIT” vs. “THROW”
  - ASL: GIVE[dir] vs. GIVE[dir,trill] vs. GIVE[dir,trill,arc]
- “The greater the number of weight units in a verb form, the more strongly it will gravitate to sentence-final position.” (Brentari 1998: 243)
- => V with durative aspect marking has more weight units than the same V without aspect marking

# Constraint 4: “Light before heavy”

- Phonologically heavy elements tend to appear late in a sentence
  - Extraposition, heavy-NP shift, ...
- “Prefer a word order where phonologically heavy signs appear late in the sentence.” (Brentari 1998)

# 4. Aspect marking

- Low copy of O (SVO):

- “High copy” ✗

- “Prefer VO” ✓

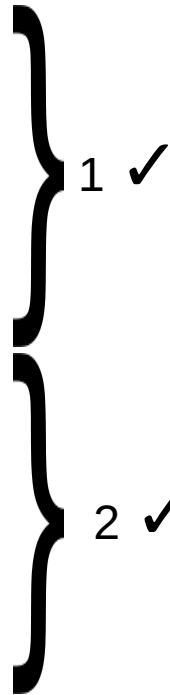
- “Light before heavy” ✗

- High copy of O (SOV):

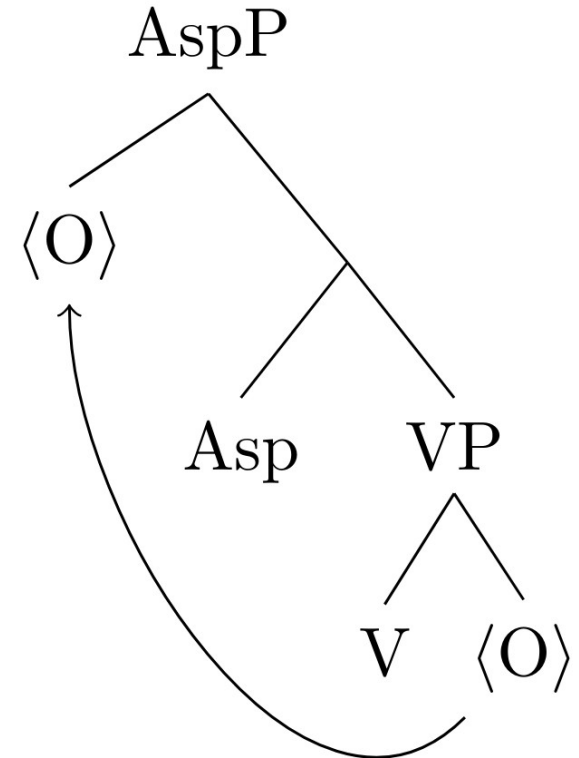
- “High copy” ✓

- “Prefer VO” ✗

- “Light before heavy” ✓



~~X~~SVO  
✓SOV





# Triggers for SOV

No marking    Locus-marking    Classifier-marking    Aspect-marking

ASL	✓ SVO ✗ SOV	✓ SVO ✓ SOV	✗ SVO ✓ SOV	✗ SVO ✓ SOV
Libras	✓ SVO ✗ SOV	✓ SVO ✓ SOV	✓ SVO ✓ SOV	✗ SVO ✓ SOV



# Adverb placement

- Adverbs can in principle go left or right
- Adverbs of manner and frequency
  - (12a) MY SISTER *SOMETIMES* **LETTER** SEND-1.
  - (12b) MY SISTER **LETTER** SEND-1 *SOMETIMES*.

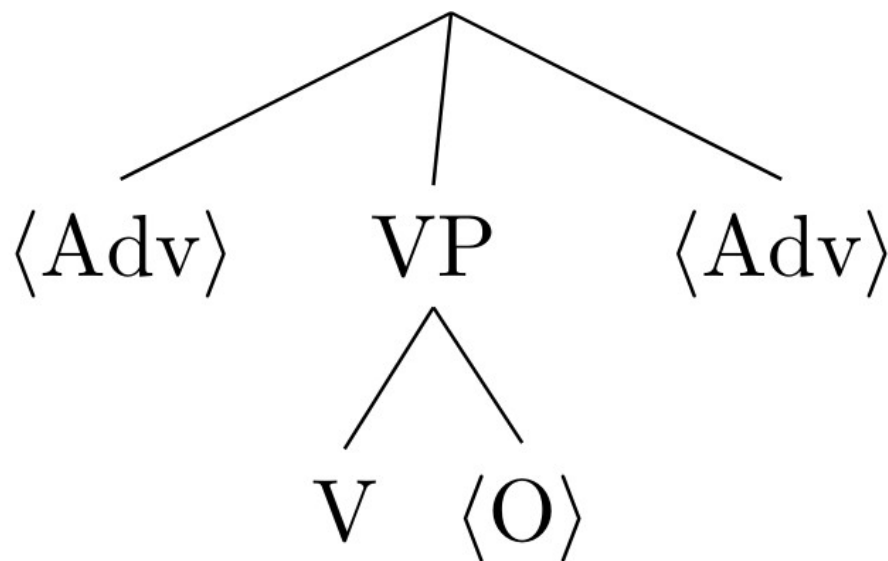
# Adverb placement 1/3

- Adverbs go before or after VO when V is plain:
  - (13a) MY SISTER *SOMETIMES* SEND **LETTER**.
  - (13b) MY SISTER SEND **LETTER** *SOMETIMES*.

# Adverb placement with plain V

- S Adv V O
  - “High copy” ✓
  - “Prefer VO” ✓
  - “OV if O values V” ✓
  - “Light before heavy” ✓
- S V O Adv
  - “High copy” ✓
  - “Prefer VO” ✓
  - “OV if O values V” ✓
  - “Light before heavy” ✓

} 4 ✓  
} 4 ✓



✓ S Adv V O

✓ S V O Adv



# Adverb placement 2/3

- Adverbs must go before OV if V has durative aspect:
  - (14a) MY SISTER *SOMETIMES* **LETTER** SEND+.
  - (14b) \*MY SISTER **LETTER** SEND+ *SOMETIMES*.

# Adverb placement with V[+]

- S Adv V+ O

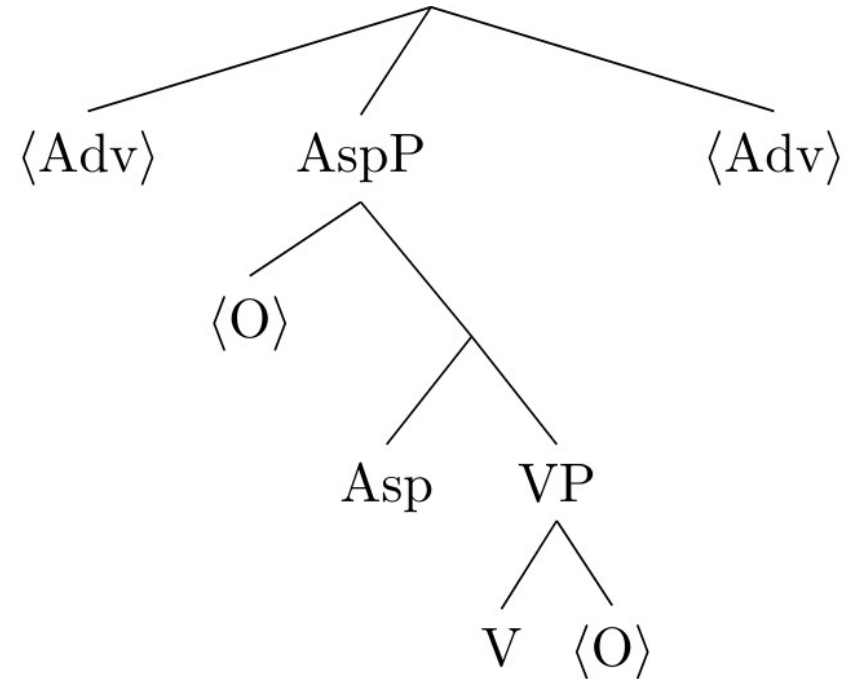
- “High copy” ✗
- “Prefer VO” ✓
- “OV if O values V” ✓
- “Light before heavy” ✗

} 2 ✓

- S V+ O Adv

- “High copy” ✗
- “Prefer VO” ✓
- “OV if O values V” ✓
- “Light before heavy” ✗

} 2 ✓

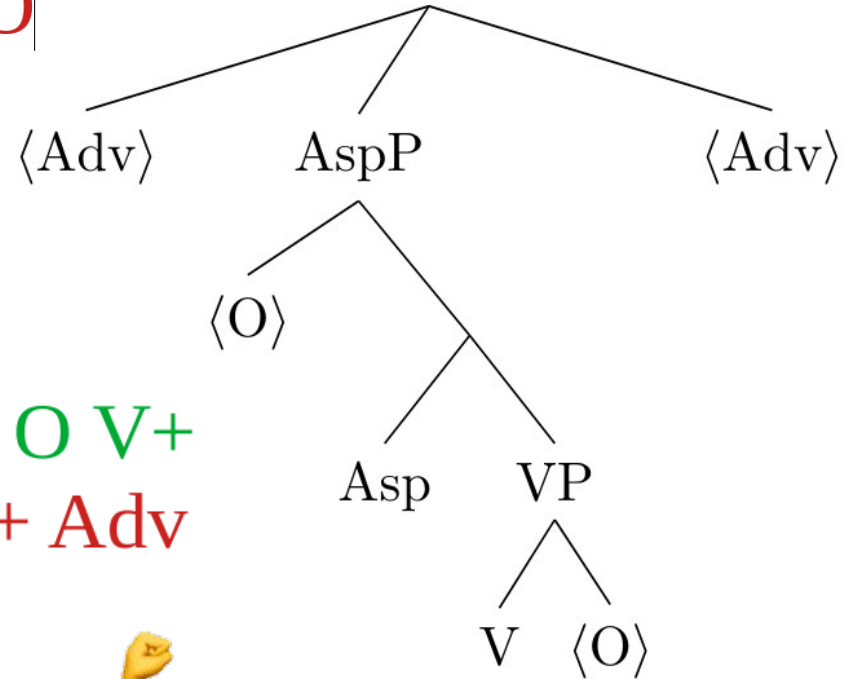


# Adverb placement with V[+]


- S Adv V+ O      2 ✓
- S V+ O Adv      2 ✓
- S Adv O V+
  - “High copy” ✓
  - “Prefer VO” ✗
  - “OV if O values V” ✓
  - “Light before heavy” ✓
 3 ✓
- S O V+ Adv
  - “High copy” ✓
  - “Prefer VO” ✗
  - “OV if O values V” ✓
  - “Light before heavy” ✗
 2 ✓

~~XS~~ V+ O

✓ S Adv O V+  
~~XS~~ O V+ Adv



# Adverb placement

- When V has handshape- or locus-modification, adverb after OV is fine.
  - (15) IX1 **WINE** DRINK *SOMETIMES*.
  - (16) IX1 **HOUSE-a** 1-BUY-a *SOMETIMES*.



# Adverb placement with locus-agr't

- S Adv V O

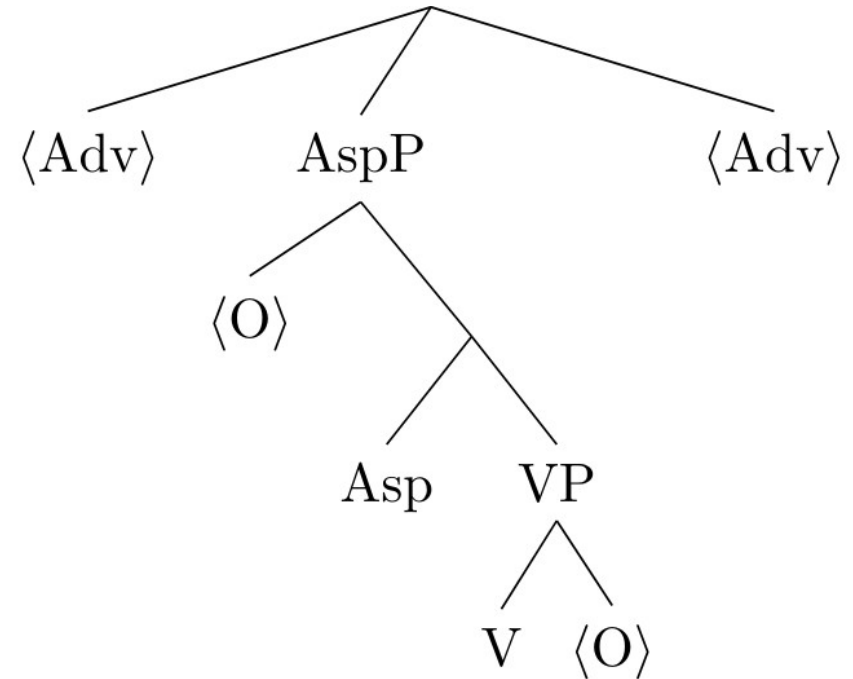
- “High copy” ✗
- “Prefer VO” ✓
- “OV if O values V” ✓
- “Light before heavy” ✓

} 3 ✓

- S V O Adv

- “High copy” ✗
- “Prefer VO” ✓
- “OV if O values V” ✓
- “Light before heavy” ✓

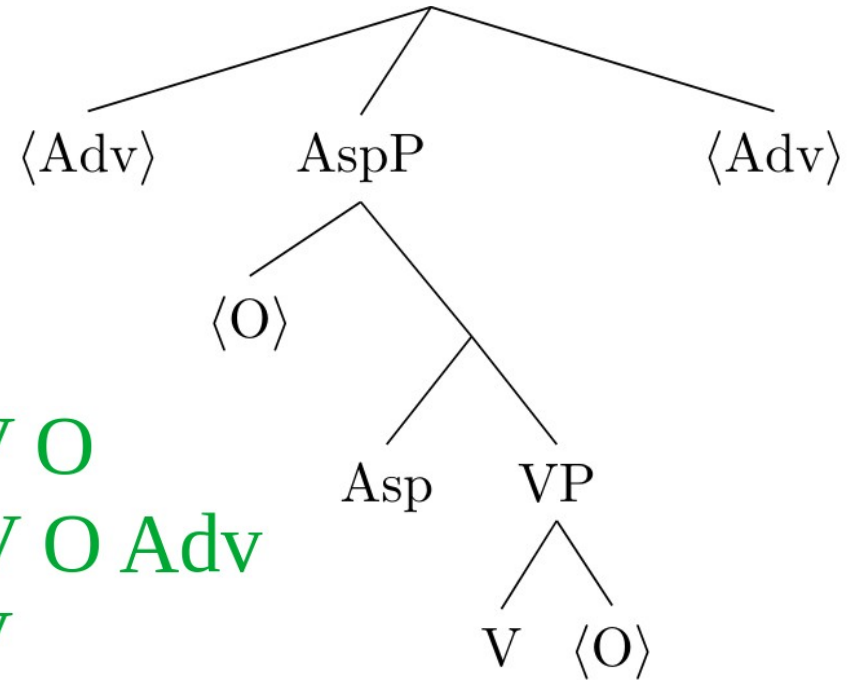
} 3 ✓



# Adverb placement with locus-agr't

- S Adv V O 3 ✓
- S V O Adv 3 ✓
- S Adv O V 3 ✓
  - “High copy” ✓
  - “Prefer VO” ✗
  - “OV if O values V” ✓
  - “Light before heavy” ✓
- S O V Adv 3 ✓
  - “High copy” ✓
  - “Prefer VO” ✗
  - “OV if O values V” ✓
  - “Light before heavy” ✓

✓ S Adv V O  
✓ S V O Adv  
✓ S Adv O V  
✓ S O V Adv



# The three ???

- Q1: What is special about locus-, classifier-, and aspect-marking such that ✓ SOV?
  - functional projections, O moves
  - 4 constraints at PF that decide which copy of O to realize
- Q2: What is special about durative-aspect- and ASL-classifier-marking such that X SVO?
  - classifier: O values V, thus O precedes V (C3)
  - aspect: V+ “takes longer to articulate”, thus last (C4)
- Q3: Why is classifier-marking different in ASL and Libras?
  - different languages are different
  - open for future research

# Thanks

- Rosie Noschese for additional judgments for ASL
- Kadir Gökgöz and 2 anonymous reviewers for discussion
- Everyone here for your attention :)

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# Appendix

- Object shift  $\neq$  scrambling
- AspP is right-headed

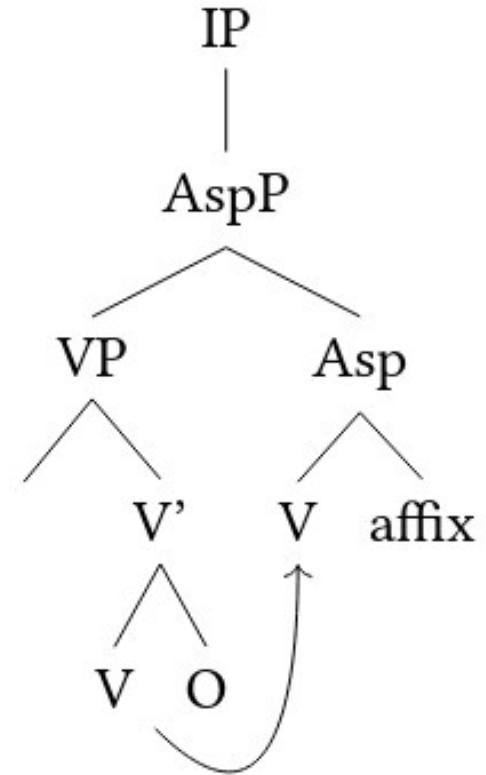


# Scrambling is not object shift

- Vikner 2006:
  - OS depends on V movement (HG); scrambling does not
  - PPs can be scrambled, but not shifted
  - Scrambling licenses parasitic gaps; OS doesn't
  - Scrambling can cross prepositions, particles, indirect objects; OS cannot
  - It has been suggested that scrambling is A'-movement, while OS is A-movement.

# AspP is right-headed

- Fischer & Janis 1992  
Matsuoka 1997  
Braze 2004
- SVO → SOV  
for durative aspect  
via movement of V
- Two problems:
  - adverb placement
  - violates the FOFC universal



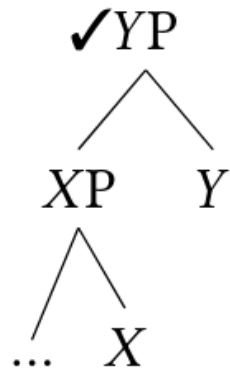
# Adverb placement

- Adverbs go before or after VO when V is plain:
  - (12a) MY SISTER SOMETIMES **SEND** LETTER. ASL
  - (12b) MY SISTER **SEND** LETTER SOMETIMES. ASL
- Adverbs must go before OV[+] when V has durative aspect:
  - (13a) MY SISTER SOMETIMES LETTER **SEND+**. ASL
  - (13b) \*MY SISTER LETTER **SEND+** SOMETIMES. ASL
- When V has handshape- or locus-modification, adverb after OV is fine.
  - (14a) IX1 WINE **DRINK[claw]** SOMETIMES. ASL
  - (14b) IX1 HOUSE-a **1-BUY-a** SOMETIMES. ASL

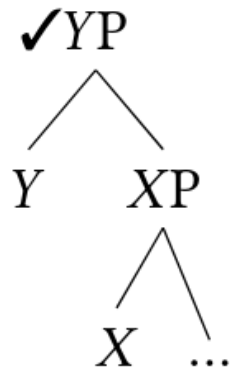
# Final-over-final constraint

Implicational universal

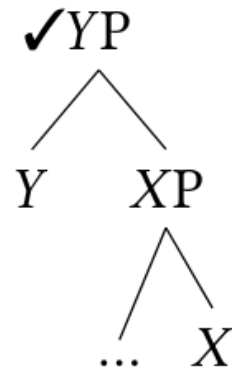
Biberauer et al. 2014; Sheehan et al. 2017; a.m.o.



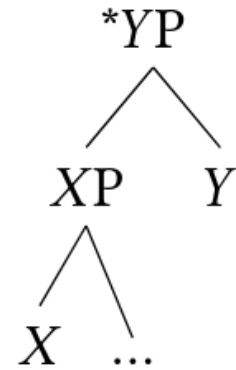
(a) Final over final



(b) Initial over initial



(c) Initial over final



(d) \*Final over initial<sup>18</sup>

Figure 3: Possible and impossible headedness combinations