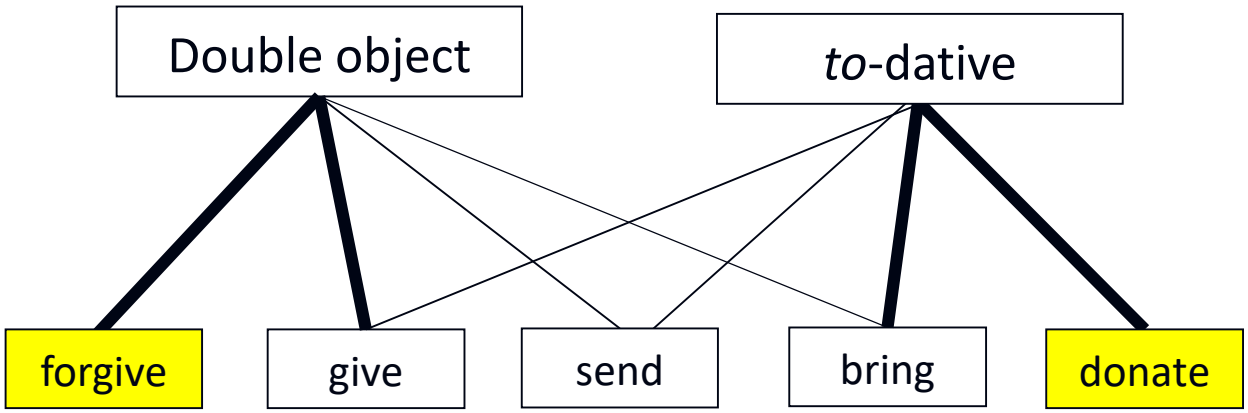
Filler-slot relations

A few remarks on yesterday‘s class



- The associtions are determined two factors: the **semantic fit** between lexemes and N/V-schemas + **experience** (= frequency)
- Experience is crucial because it explains the non-matching cases.
- Why are there any non-matching cases?

Phrase structure and word order

Holger Diessel

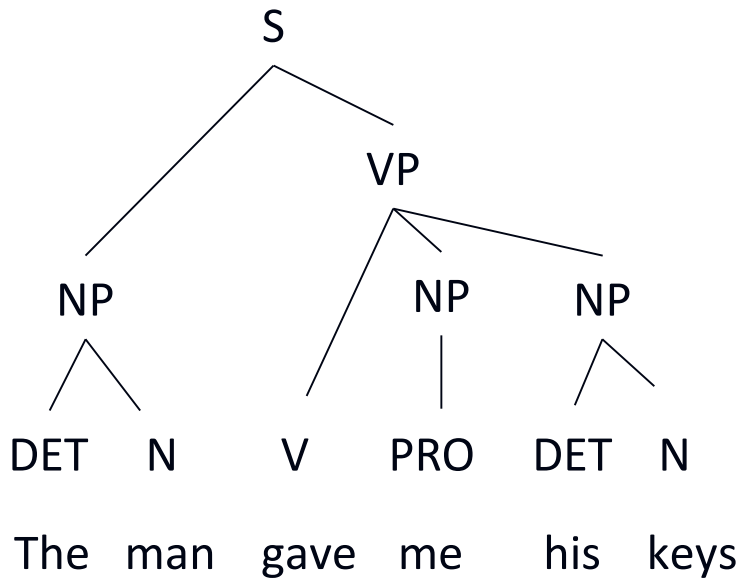
Lake Como Summer School 2019

Introduction

Today‘s topics:

- Hierarchical phrase structure
- Word order correlations

Introduction

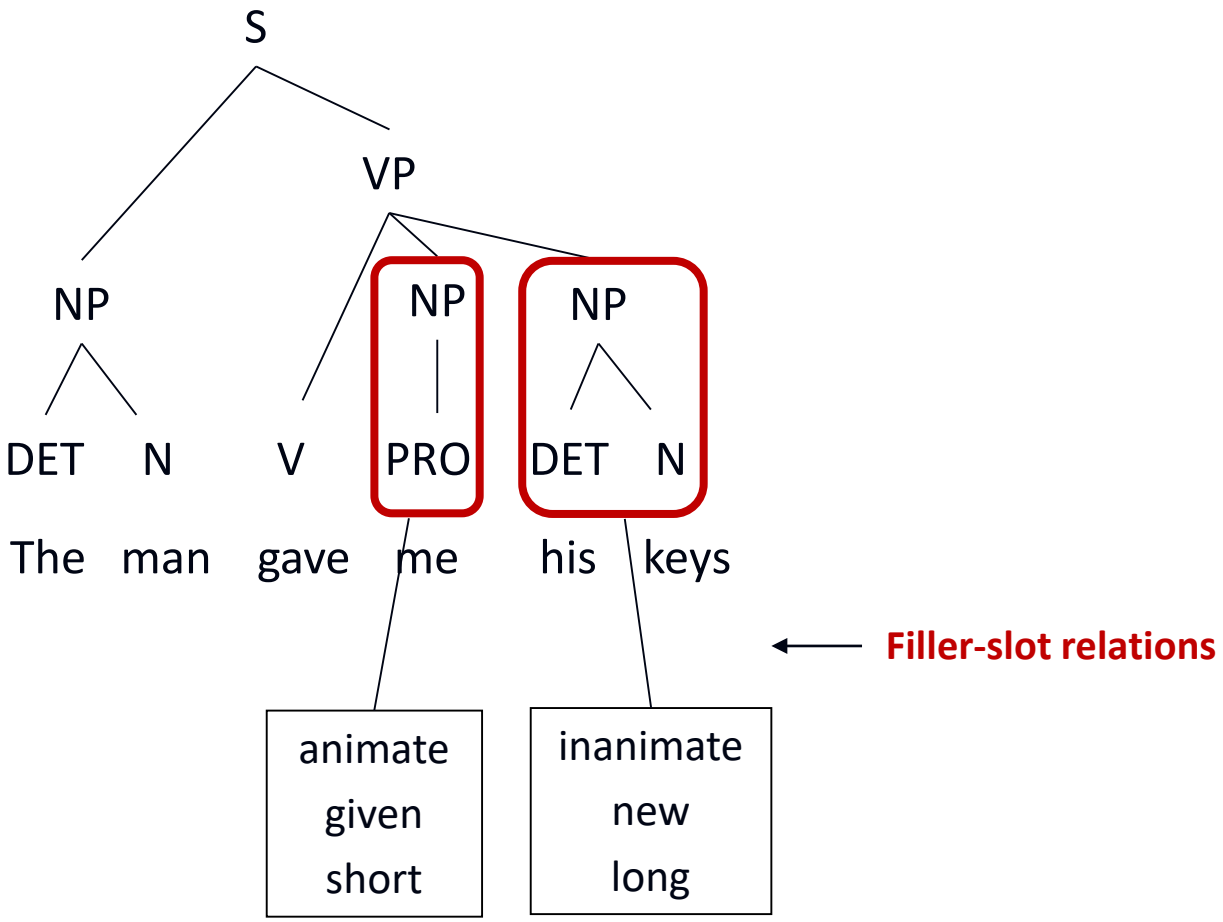


- Phrase structure trees can be seen as some kind of networks.
- Chunking is one of the domain-general processes behind hierarchical phrase structure (but it is not the only one).

Shortcomings

- Syntactic constituents are not basic or primitive but derived and fluid.
- Phrase structure is gradient and often lexically particular.
- Phrase structure is shaped by domain-general processes of language use.

Filler-slot relations



Bresnan et al. 2007 …

Constituent types

Constituent types

Two basic distinctions:

- NP, VP, PP …
- Compound phrases vs. grammatical phrases

COMPOUND PHRASES (LEX & LEX)	
V – NP	[saw] [a man]
V – PP	[walk] [into the room]
V – CC	[notice] [that she is leaving]
A – N	[beautiful] [day]
G – N	[John's] [brother]
N – REL	[people] [I met]

Constituent types

Two basic distinctions:

- NP, VP, PP …
- Compound phrases vs. grammatical phrases

COMPOUND PHRASES (LEX & LEX)		GRAMMATICAL PHRASES (GRAM & LEX)	
V – NP	[saw] [a man]	**P – N(P)**	[at] [school]
V – PP	[walk] [into the room]	**AUX – V(P)**	[has] [done]
V – CC	[notice] [that she is leaving]	**DET – N(P)**	[the] [tree]
A – N	[beautiful] [day]	**COP – NP/AP**	[is] [my friend]
G – N	[John's] [brother]	**COMP – S**	[that] [she will come]
N – REL	[people] [I met]	**SUB – S**	[when] [they left]

Constituent types

Hypothesis:

- **Compound phrases** are created by general conceptual processes of **frame semantics**;
- whereas **grammatical phrases** are not only motivated by certain conceptual processes but are also shaped by **grammaticalization**.

Compound phrases

Compound phrases

Syntactic constituents are semantically motivated.

Behaghel's „First Law"

Geistig eng Zusammengehöriges wird auch eng zusammengestellt.

[Conceptually related entities are placed close to each other.] [Behaghel 1932]

What is the nature of the conceptual relations between adjacent phrases?

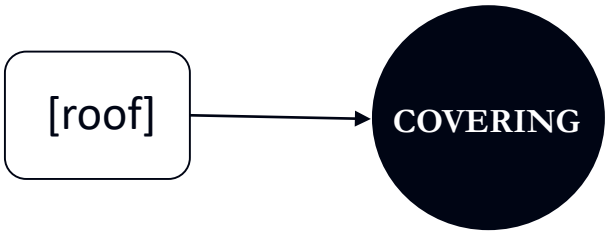
- In the case of compound phrases, these relations are established by the conceptual properties of relational content words.

Compound phrases

Relational expressions activate a figure concept that entails a base.

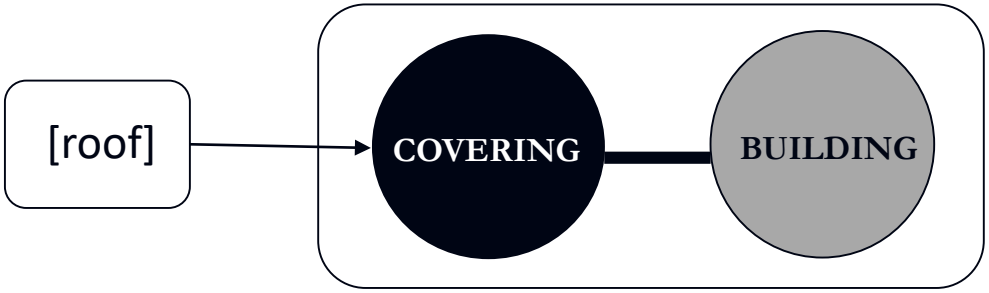
Compound phrases

Relational expressions activate a figure concept that entails a base.



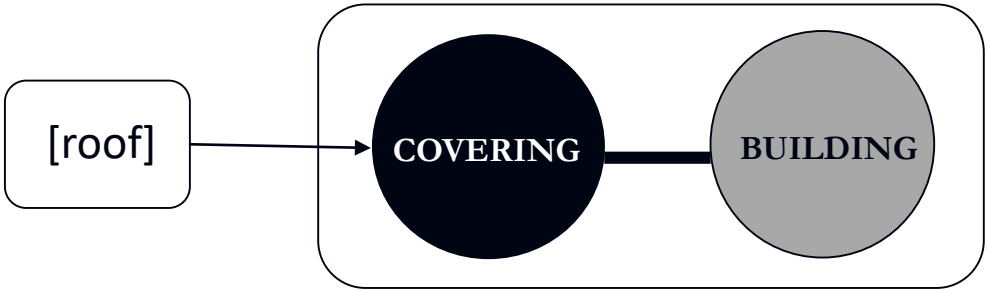
Compound phrases

Relational expressions activate a figure concept that entails a base.



Compound phrases

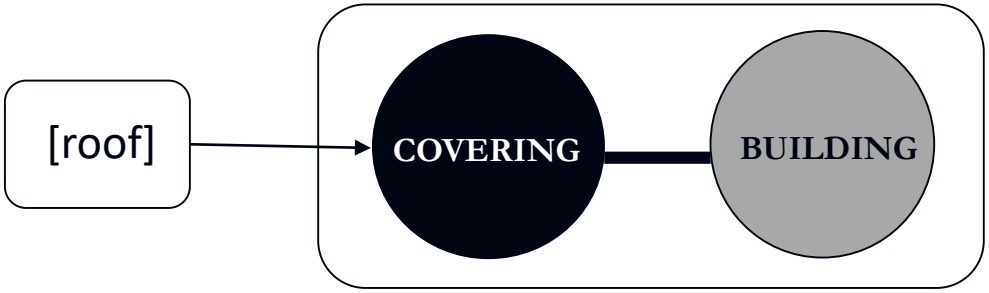
Relational expressions activate a figure concept that entails a base.



The entailed base nodes of relational expressions provide „conceptual slots“ that are crucial for compound phrases.

Compound phrases

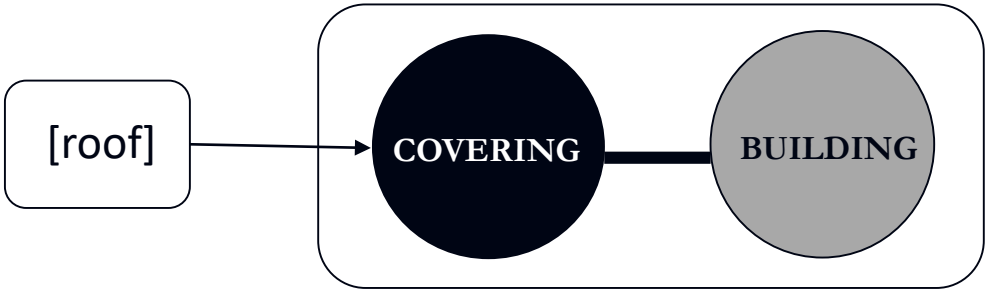
Relational expressions activate a figure concept that entails a base.



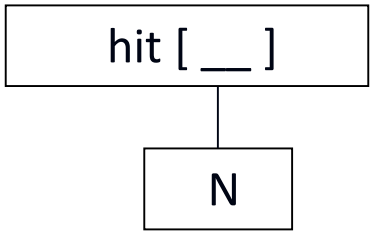
- Only some nouns are relational (e.g. roof)
- All verbs are relational (e.g. ACTOR hit PATIENT)
- All adjectives are relational (e.g. bitter FOOD, furry ANIMAL)

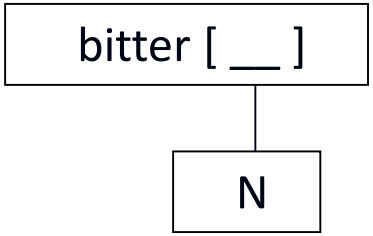
Compound phrases

Relational expressions activate a figure concept that entails a base.



- Only some nouns are relational (e.g. roof)
- All verbs are relational (e.g. ACTOR hit PATIENT)
- All adjectives are relational (e.g. bitter FOOD, furry ANIMAL)





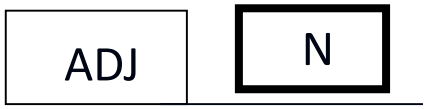
Compound phrases

RELATIONAL HEAD

RELATIONAL DEPENDENT

Compound phrases

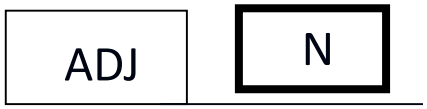
RELATIONAL HEAD



RELATIONAL DEPENDENT

Compound phrases

RELATIONAL HEAD



RELATIONAL DEPENDENT

- The conceptual motivations behind compound phrases are universal, but the use of overt (or lexical) fillers is a matter of **experience** and **convention** (-> pro drop languages).

Grammatical phrases

Grammatical phrases

Like compound phrases, grammatical phrases are semantically motivated.

But the coherence of grammatical phrases is also a result of grammaticalization.

Grammatical phrases

(1) Mandarin Chinese (Li and Thompson 1981)

a. wǒmen **dào**-le Xiānggǎng.
we arrive-ASP Hong Kong
'We have arrived in Hong Kong.'

b. tā **dào** Lúndūn qù le.
3SG to London go SFP
'S/he has gone to London.'

Grammatical phrases

(1) Mandarin Chinese (Li and Thompson 1981)

a. wǒmen **dào**-le Xiānggǎng.
we arrive-ASP Hong Kong
'We have arrived in Hong Kong.'

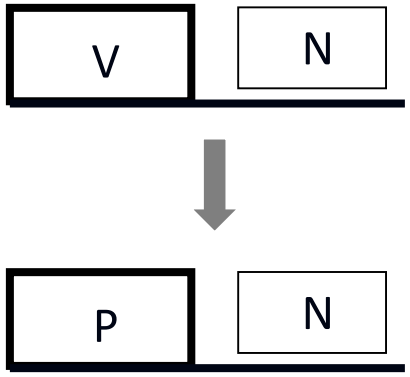
b. tā **dào** Lúndūn qù le.
3SG to London go SFP
'S/he has gone to London.'

Grammatical phrases

(1) Mandarin Chinese (Li and Thompson 1981)

a. wǒmen **dào**-le Xiānggǎng.
we arrive-ASP Hong Kong
'We have arrived in Hong Kong.'

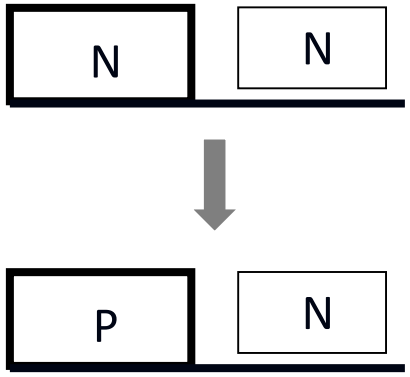
b. tā **dào** Lúndūn qù le.
3SG to London go SFP
'S/he has gone to London.'



Grammatical phrases

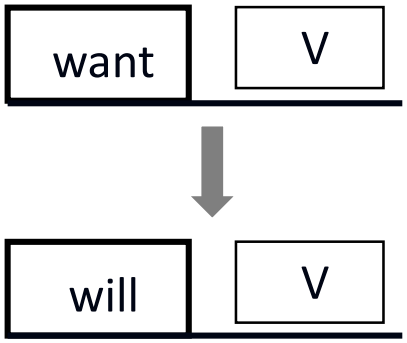
(1) Heine and Kuteva 2002: 53

a.	ʔé	à	kɛ́	à	**bú**-ɛ́.
	3SG	ASP	hurt	LOC	belly-3.SG.POSS
	'His stomach is aching.')				
b.	ʔé	à	nɔ̀ɔ̀	à	**bu** ngo.
	3SG	ASP	run	LOC	belly (in) water
	'He is running in the water.'				



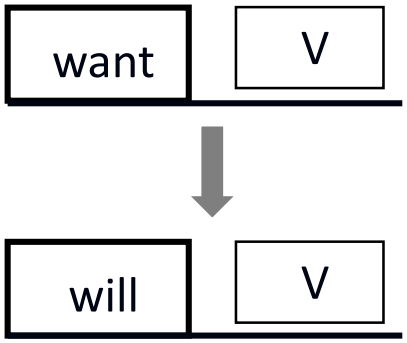
Grammatical phrases

Auxilaries often develop from verbs of verbal complements.

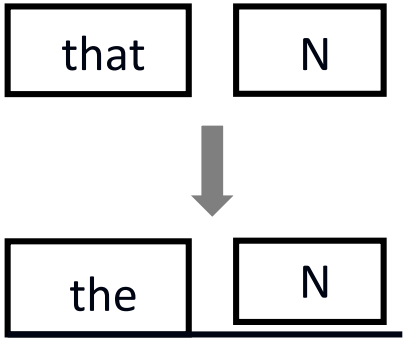


Grammatical phrases

Auxilaries often develop from verbs of verbal complements.



Definite articles develop from demonstrative pronouns in apposition to a noun.



Complementizers

Some complementizers develop from speech verbs.

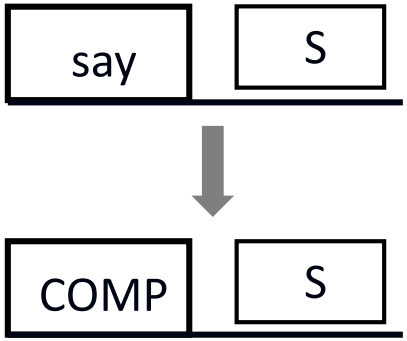
(1) Ewe (Hopper and Traugott 2003)

a. me-**bé** me-wɔ-e
I-say I-did-it
'I said I did it'.

b. me-gblɔ **bé** me-wɔ-e
I-say say I-do-it
I said (that) I did it.'

c. me-dí **bé** máple awua dewó
I-want say I.buy dress some
'I want to buy some dress.'

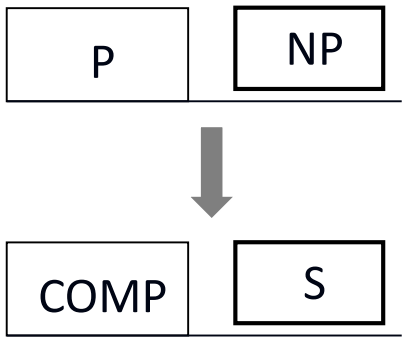
Grammatical phrases



Grammatical phrases

Some adverbial subordinators develop from adpositions.

(1) **after** dinner > **after** we had dinner



Interim summary

- **Compound phrases** are organized around content words whose relational properties are due to general conceptual processes of frame semantics.
- **Grammatical phrases** are organized around function words whose relational properties are primarily due to grammaticalization.

Word order correlations

Background

Factors influencing word order correlations:

- Genetic inheritance
- Language contact
- Cognitive processes

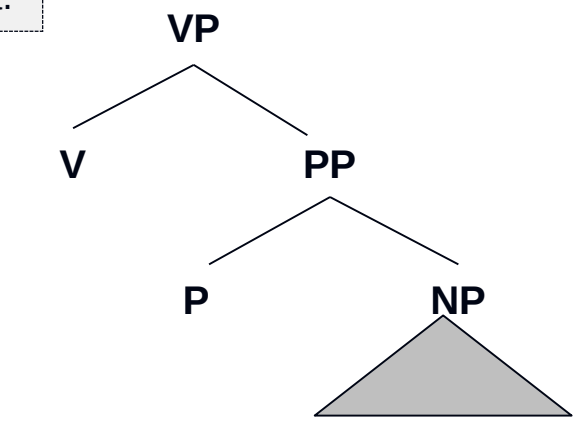
Some recent studies seem to suggest that word order correlations are not influenced by cognitive processes (Dunn et al. 2011).

Background

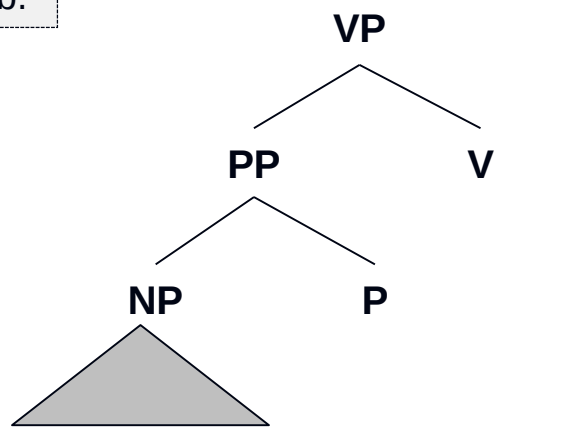
Cognitive accounts for word order correlations:

- Parameter setting (Chomsky 1981)
- Processing (Hawkins 2004)

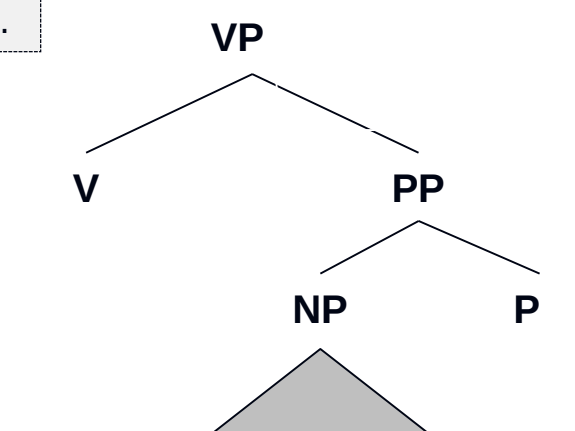
a.


VP
V
PP
P
NP
played with an old friend

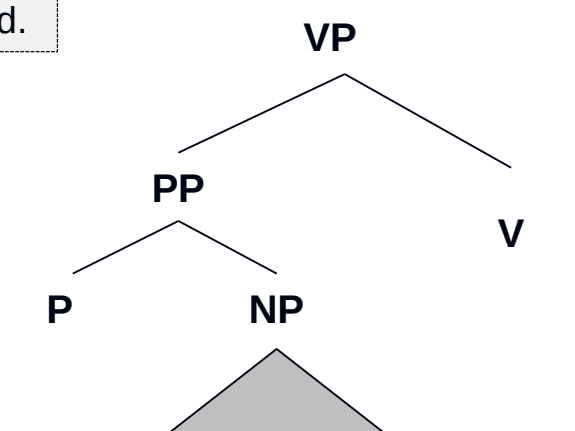
b.


VP
PP
V
NP
P
an old friend with played

c.


VP
V
PP
NP
P
played an old friend with

d.


VP
PP
V
P
NP
with an old friend played

An alternative account

Basic assumptions

„There have been some misunderstandings …“ (Chomsky):

- Word order correlations are not uniform but **local** (see Greenberg 1966). The global devision between VO/OV is NOT statistically significant (Justeson and Stephens 1990).
- There are **no “causal” connections between word order pairs** (contrary to what seems to be presupposed in some studies Dunn et al. 2011).
- In order to understand word order correlations, we need to look at individual word order pairs.

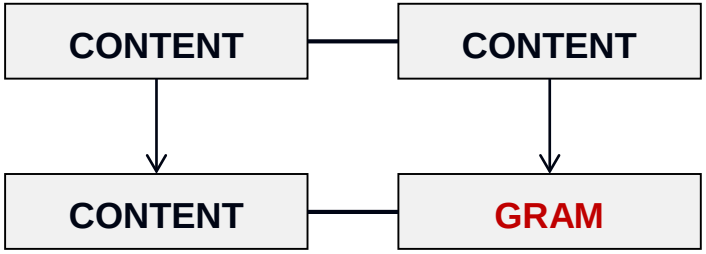
➢ Two basic types of word order pairs must be distinguished.

Basic assumption

Hypothesis: All word order pairs that include a grammatical function word are the product of grammaticalization.

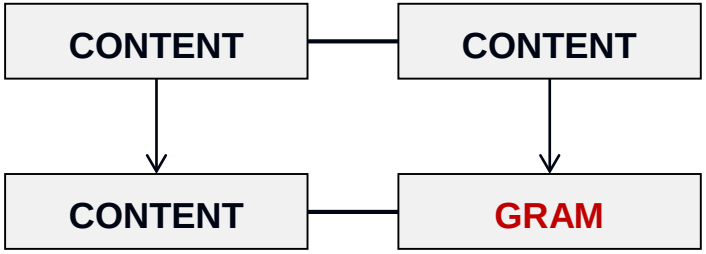
Basic assumption

Hypothesis: All word order pairs that include a grammatical function word are the product of grammaticalization.



Basic assumption

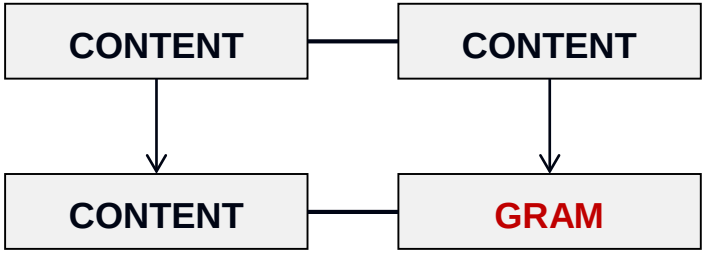
Hypothesis: All word order pairs that include a grammatical function word are the product of grammaticalization.



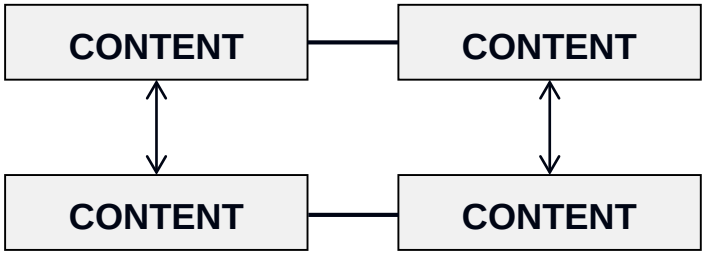
Word order patterns that do **not** include a grammatical function word need a different explanation (= analogy, nominalization).

Basic assumption

Hypothesis: All word order pairs that include a grammatical function word are the product of grammaticalization.



Word order patterns that do **not** include a grammatical function word need a different explanation (= analogy, nominalization).



Grammaticalization

VO&OV – AuxV&VAux

VO&OV – AuxV&VAux

Where do auxiliaries come form?

VO&OV – AuxV&VAux

Where do auxiliaries come form?

-> They often come from main verbs (Bybee et al 1994).

VO&OV – AuxV&VAux

Where do auxiliaries come form?

-> They often come from main verbs (Bybee et al 1994).

VERB – OBJECT
want something
AUXILIARY – VERB

VO&OV – AuxV&VAux

Where do auxiliaries come form?

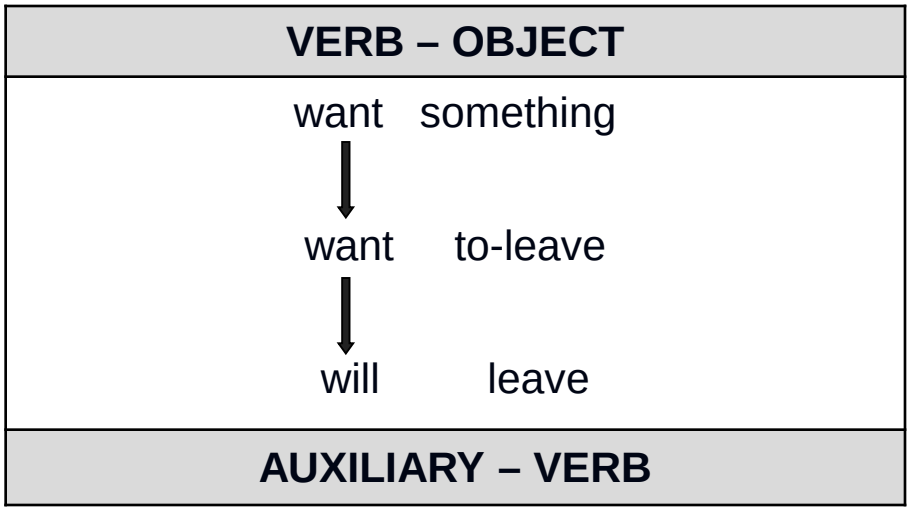
-> They often come from main verbs (Bybee et al 1994).

VERB – OBJECT
want something ↓ want to-leave
AUXILIARY – VERB

VO&OV – AuxV&VAux

Where do auxiliaries come form?

-> They often come from main verbs (Bybee et al 1994).



VO&OV – AuxV&VAux

Where do auxiliaries come form?

-> They often come from main verbs (Bybee et al 1994).

VERB – OBJECT	OBJECT – VERB
want something ↓ want to-leave ↓ will leave	something want
AUXILIARY – VERB	**VERB – AUXILIARY**

VO&OV – AuxV&VAux

Where do auxiliaries come form?

-> They often come from main verbs (Bybee et al 1994).

VERB – OBJECT	OBJECT – VERB
want something ↓ want to-leave ↓ will leave	something want ↓ to-leave want
AUXILIARY – VERB	**VERB – AUXILIARY**

VO&OV – AuxV&VAux

Where do auxiliaries come form?

-> They often come from main verbs (Bybee et al 1994).

VERB – OBJECT	OBJECT – VERB
want something ↓ want to-leave ↓ will leave	something want ↓ to-leave want ↓ leave will
AUXILIARY – VERB	**VERB – AUXILIARY**

VO&OV – AuxV&VAux

Where do auxiliaries come form?

-> They often come from main verbs (Bybee et al 1994).

VERB – OBJECT	OBJECT – VERB
want something ↓ want to-leave ↓ will leave	something want ↓ to-leave want ↓ leave will
AUXILIARY – VERB	**VERB – AUXILIARY**

-> In some languages, auxiliaries are based on particles (Dryer 1992).

VO&OV – AuxV&VAux

Where do auxiliaries come form?

-> They often come from main verbs (Bybee et al 1994).

VERB – OBJECT	OBJECT – VERB
want something ↓ want to-leave ↓ will leave	something want ↓ to-leave want ↓ leave will
AUXILIARY – VERB	**VERB – AUXILIARY**

-> In some languages, auxiliaries are based on particles (Dryer 1992).

VO&OV – PrN&NPo

Where do adpositions come form?

VO&OV – PrN&NPo

Where do adpositions come form?

Motion/aspectual V > P

finish [V] > after
pass [V] > after
arrive [V] > to
give [V] > for
go.to [V] > to
follow [V] > behind

VO&OV – PrN&NPo

Where do adpositions come form?

Motion/aspectual V > P

finish [V] > after
pass [V] > after
arrive [V] > to
give [V] > for
go.to [V] > to
follow [V] > behind

Relational/body N > P

back [N] > behind/after
front [N] > in.front.of
head [N] > in.front.of
eye [N] > behind
heart [N] > in
side [N] > near

VO&OV – PrN&NPo

Adpositions derived from verbs

VERB – OBJECT
give someone
PREPOSITION – NOUN

VO&OV – PrN&NPo

Adpositions derived from verbs

VERB – OBJECT
give someone ↓ for someone
PREPOSITION – NOUN

VO&OV – PrN&NPo

Adpositions derived from verbs

VERB – OBJECT	OBJECT – VERB
give someone ↓ for someone	someone give ↓ someone for
PREPOSITION – NOUN	**NOUN – POSTPOSITION**

VO&OV – PrN&NPo

Adpositions derived from nouns

VO&OV – PrN&NPo

Adpositions derived from nouns

NOUN – GENITIVE	
front	of_someone
PREPOSITION – NOUN	

VO&OV – PrN&NPo

Adpositions derived from nouns

NOUN – GENITIVE	
front	of_someone
↓	
in.front.of	someone
PREPOSITION – NOUN	

VO&OV – PrN&NPo

Adpositions derived from nouns

NOUN – GENITIVE	GENITIVE – NOUN
front of_someone ↓ in.front.of someone	someone_of front ↓ someone of.in.front
PREPOSITION – NOUN	**NOUN – POSTPOSITION**

VO&OV – PrN&NPo

Chinese has prepositions derived from coverbs and postpositions derived from relational nouns.

VO&OV – PrN&NPo

Chinese has prepositions derived from coverbs and postpositions derived from relational nouns.

COVERB – NOUN
go/arrive N ↓ ***dào [to]*** N
PREPOSITION – NOUN

VO&OV – PrN&NPo

Chinese has prepositions derived from coverbs and postpositions derived from relational nouns.

COVERB – NOUN	GENITIVE – NOUN
go/arrive N ↓ ***dào [to]*** N	GEN ***side*** ↓ N ***biān* [by]**
PREPOSITION – NOUN	**POSTPOSITION – NOUN**

VO&OV – PrN&NPo

Chinese has prepositions derived from coverbs and postpositions derived from relational nouns.

COVERB – NOUN	GENITIVE – NOUN
go/arrive N ↓ ***dào [to]*** N	GEN ***side*** ↓ N ***biān* [by]**
PREPOSITION – NOUN	**POSTPOSITION – NOUN**

See also Finnish (Aristar 1991) and Dryer (2019) for other examples.

VO&OV – PrN&NPo

Once a lexeme has developed into a grammatical marker / category, there is pressure from analogy.

VO&OV – PrN&NPo

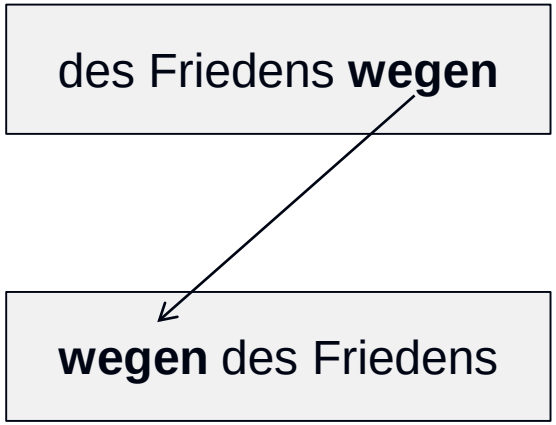
Once a lexeme has developed into a grammatical marker / category, there is pressure from analogy.

des Friedens **wegen**

‘because of the piece‘

VO&OV – PrN&NPo

Once a lexeme has developed into a grammatical marker / category, there is pressure from analogy.



‘because of the piece‘

More examples of grammaticalization

Complementizers

	V_O	O_V	Total
S_Comp	417	10	427
Comp_S	38	427	465
Total	455	437	892

Complementiżer 1

Complementizers

(1) Ewe (Hopper and Traugott 2003)

me-dí **bé** [máple awua dewó]
I-want say&COMP I.buy dress some
'I want to buy some dress.'

(2) Malayalam (Asher and Kumari 1997: 46)

[[avan varumoo] **ennə**] enikkə ariyilla
he come-FUT-IP say&COMP I.DAT know.NEG
'I don't know what you think.'

Complementizers

I-speak/say **SAY** „He will come“ „He will come“ **SAY** I-speak/say

Complementizers

I-speak/say **SAY** „He will come“ „He will come“ **SAY** I-speak/say

I-speak/say **QUOTE** „He will come“

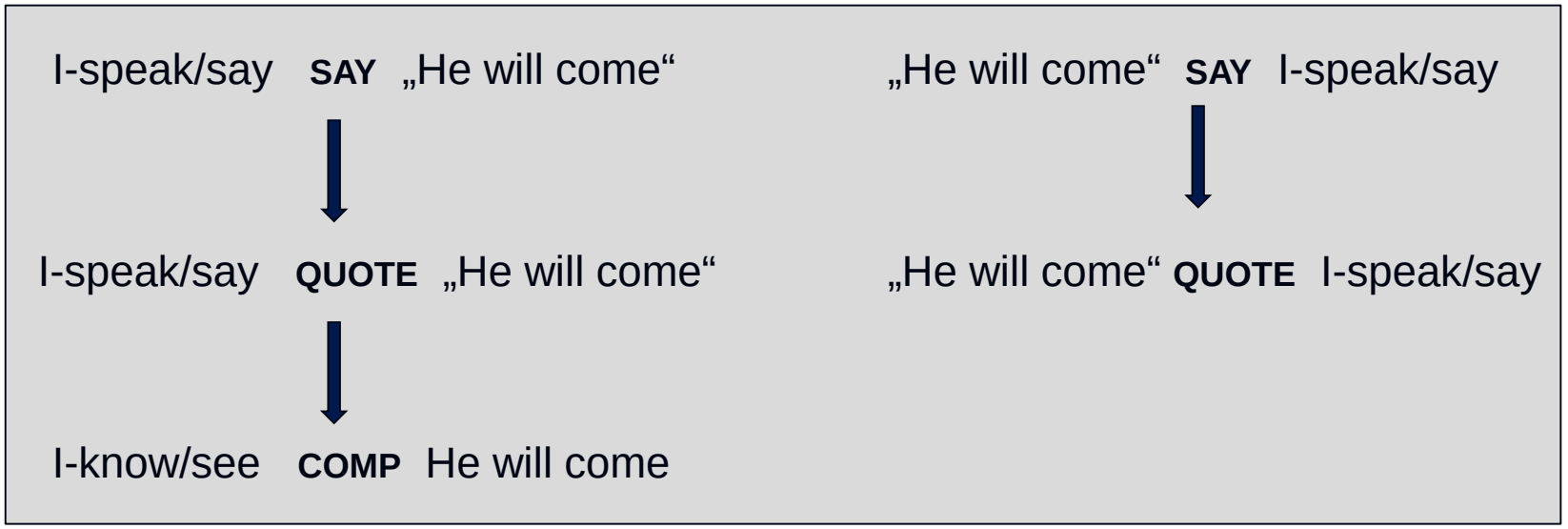
Complementizers

I-speak/say **SAY** „He will come“ „He will come“ **SAY** I-speak/say

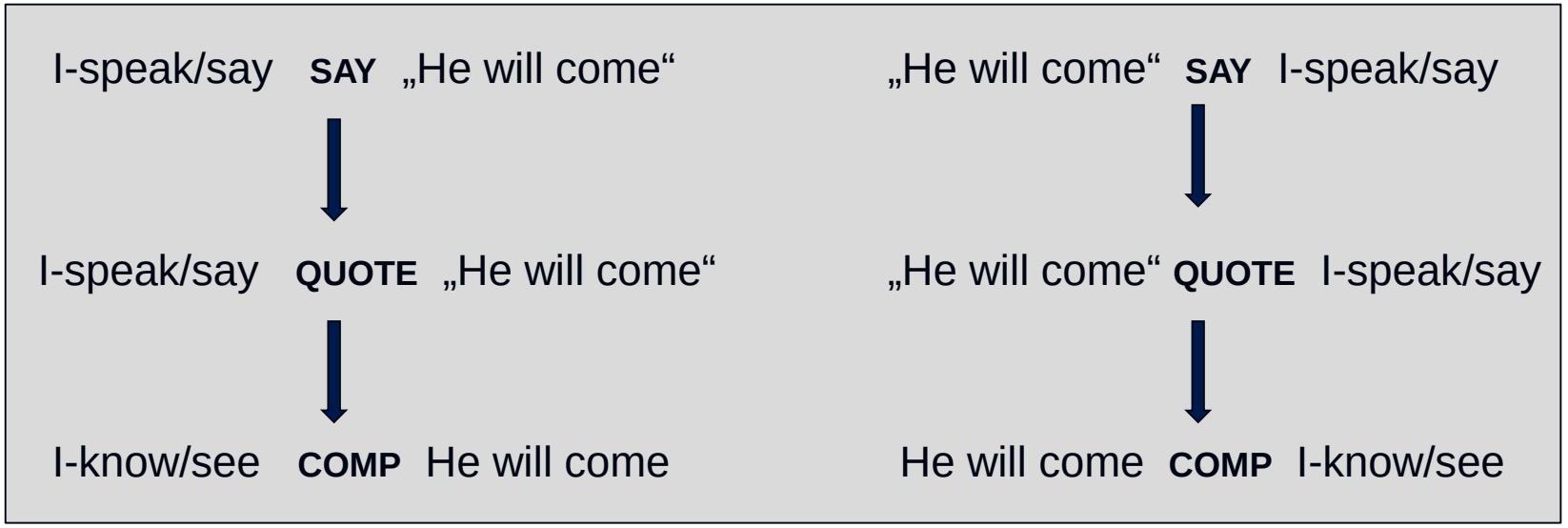
I-speak/say **QUOTE** „He will come“

I-know/see **COMP** He will come

Complementizers



Complementizers



Complementiżer 2

Complementizers

The initial COMPs of postverbal CCs also come from relative markers of postnominal RCs.

Complementizers

The initial COMPs of postverbal CCs come from relative markers of postnominal RCs.

I see the one [**that** he is leaving]$_{RC}$.

Complementizers

The initial COMPs of postverbal CCs come from relative markers of postnominal RCs.

I see the one [**that** he is leaving]$_{RC}$.

I see ∅ [that he is leaving]$_{CC}$.

Complementizers

But where do the final COMPs of preverbal CCs come from?

Complementizers

But where do the final COMPs of preverbal CCs come from?

(1) Korean (Sohn 1994: 67)
[na-nun Mia-ka wu-n-un **kes**-ul] po-ass-e
I-TOP Mia-NOM cry-IN-MD THING-ACC see-PST-INF
'I saw Mary crying.'

Complementizers

But where do the final COMPs of preverbal CCs come from?

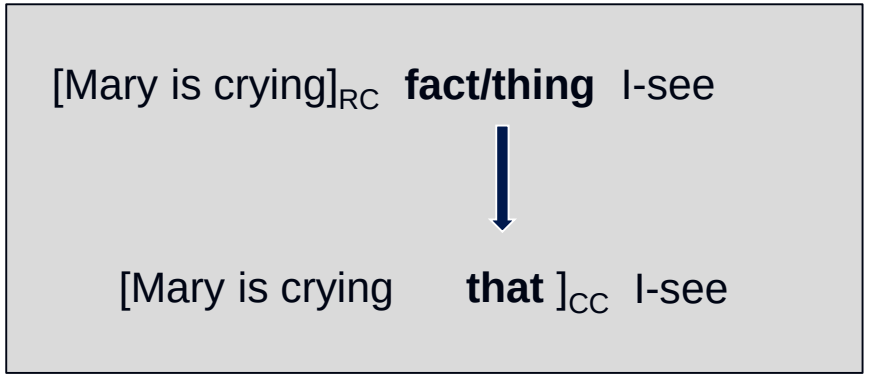
(1) Korean (Sohn 1994: 67)
[na-nun Mia-ka wu-n-un **kes**-ul] po-ass-e
I-TOP Mia-NOM cry-IN-MD THING-ACC see-PST-INF
'I saw Mary crying.'

[Mary is crying]$_{RC}$ **fact/thing** I-see

Complementizers

But where do the final COMPs of preverbal CCs come from?

(1) Korean (Sohn 1994: 67)
[na-nun Mia-ka wu-n-un **kes**-ul] po-ass-e
I-TOP Mia-NOM cry-IN-MD THING-ACC see-PST-INF
'I saw Mary crying.'



Subordinators

Subordinators

Where do subordinate conjunctions come from?

Subordinators

Where do subordinate conjunctions come from?

P – NP
since my arrival
SUB – S

Subordinators

Where do subordinate conjunctions come from?

P – NP
since my arrival ↓ since I arrived
SUB – S

Subordinators

Where do subordinate conjunctions come from?

P – NP	NP – P
since my arrival ↓ since I arrived	arrival my since ↓ I arrive since
SUB – S	**S – SUB**

Analogy: Correlations between compound phrases

Noun modifiers

The order of adjective and noun does **not** correlate with the order of verb and object (Dryer 1988).

	V_O	O_V	Total
N_A	404	287	691
A_N	100	201	301
Total	504	488	992

Noun modifiers

But it **does** correlate with the order of …

	RC_N	N_RC	Total
N_A	4	92	96
A_N	28	27	55
Total	32	99	131

Noun modifiers

But it **does** correlate with the order of …

	RC_N	N_RC	Total
N_A	4	92	96
A_N	28	27	55
Total	32	99	131

	G_N	N_G	Total
N_A	91	83	174
A_N	77	19	96
Total	168	102	270

Noun modifiers

But it **does** correlate with the order of …

	RC_N	N_RC	Total
N_A	4	92	96
A_N	28	27	55
Total	32	99	131

	G_N	N_G	Total
N_A	91	83	174
A_N	77	19	96
Total	168	102	270

	DEM_N	N_DEM	Total
N_A	28	28	56
A_N	31	4	35
Total	59	32	91

Noun modifiers

- There is analogical pressure to place ADJ, RCs, GENs, and DEMs in parallel positions because they are syntactically and semantically related.
- However, the relationships between noun modifiers vary across languages.

Noun modifiers

(1) English
   a. the **red** door
   b. **Peter's** book **on word order**
   c. the book **Peter has written on word order**

(2) Chinese
   a. **[gè rén de]** xīn
      CL person DE heart
      'every person's heart'
   b. **[bù hǎo de]** lái-wǎng
      NEG good DE come-go
      'bad contact'
   c. **[zhòng shuǐguǒ de]** nóngrén
      grow fruit DE farmer
      'The farmer who grows fruit.'

Hypothesis: The more similar the various noun modifiers, the stronger the tendency to align them.

Relative clauses

The order of adjective and noun **does not** correlate with the order of verb and object, …

Relative clauses

The order of adjective and noun **does not** correlate with the order of verb and object, … **but** there is a correlation between the order of verb and object and that of RC and noun.

Relative clauses

The order of adjective and noun **does not** correlate with the order of verb and object, … **but** there is a correlation between the order of verb and object and that of RC and noun.

	V_O	O_V	Total
N_Rel	370	96	466
Rel_N	5	109	114
Total	375	205	580

Relative clauses

The order of adjective and noun **does not** correlate with the order of verb and object, … **but** there is a correlation between the order of verb and object and that of RC and noun.

VO&OV

N-Rel&Rel-N

NA&NA

Relative clauses

The order of adjective and noun **does not** correlate with the order of verb and object, … **but** there is a correlation between the order of verb and object and that of RC and noun.

Relative clauses

The order of adjective and noun **does not** correlate with the order of verb and object, … **but** there is a correlation between the order of verb and object and that of RC and noun.

Relative clauses

The order of adjective and noun **does not** correlate with the order of verb and object, … **but** there is a correlation between the order of verb and object and that of RC and noun.

(1) a. I saw the car [that disappeared] N-RC
b. I saw [that the car disappeared] V-CC
c. I saw [the car] V-NP

Relative clauses

VERB – OBJECT	OBJECT – VERB
Verb obj Verb cc Noun rc	obj verb cc verb rc noun

Relative clauses

VERB – OBJECT	OBJECT – VERB
Verb obj Verb cc Noun rc	obj verb cc verb rc noun

Correlations between VP and NP categories

VO/OV & NG/GN

	V-O	O-V	Total
N_G	67	12	79
G_N	29	112	141
Total	96	124	220

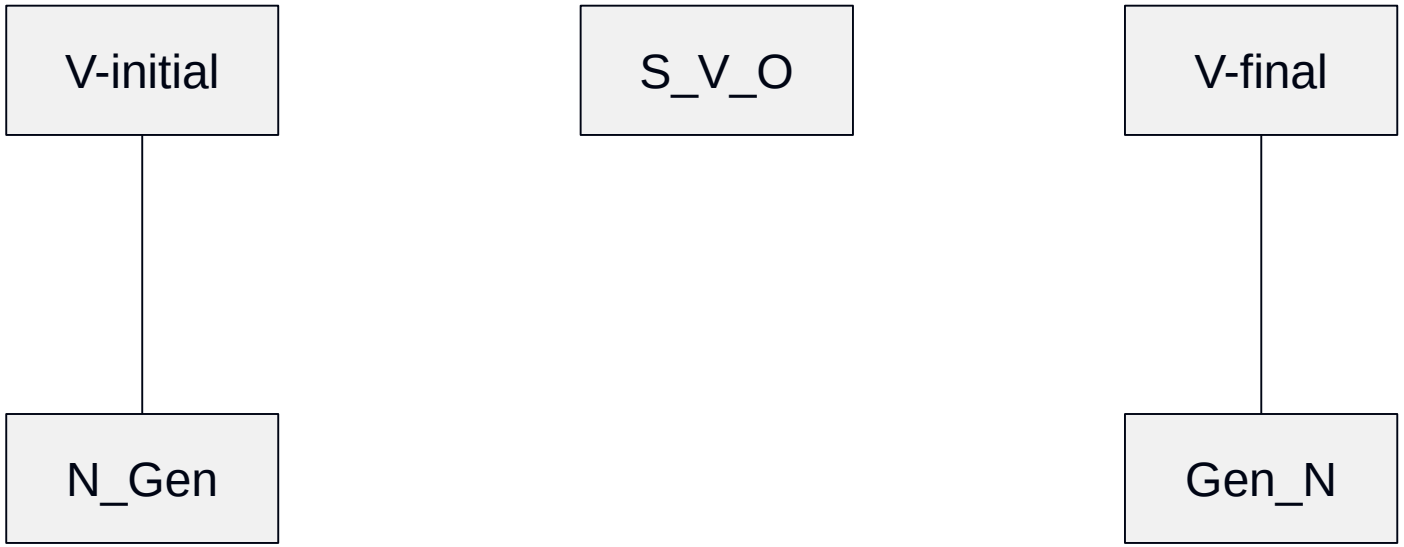
VO/OV & NG/GN

	V-initial	SVO	V-final	Total
N_G	33	34	12	79
G_N	7	22	112	141
Total	40	56	124	220

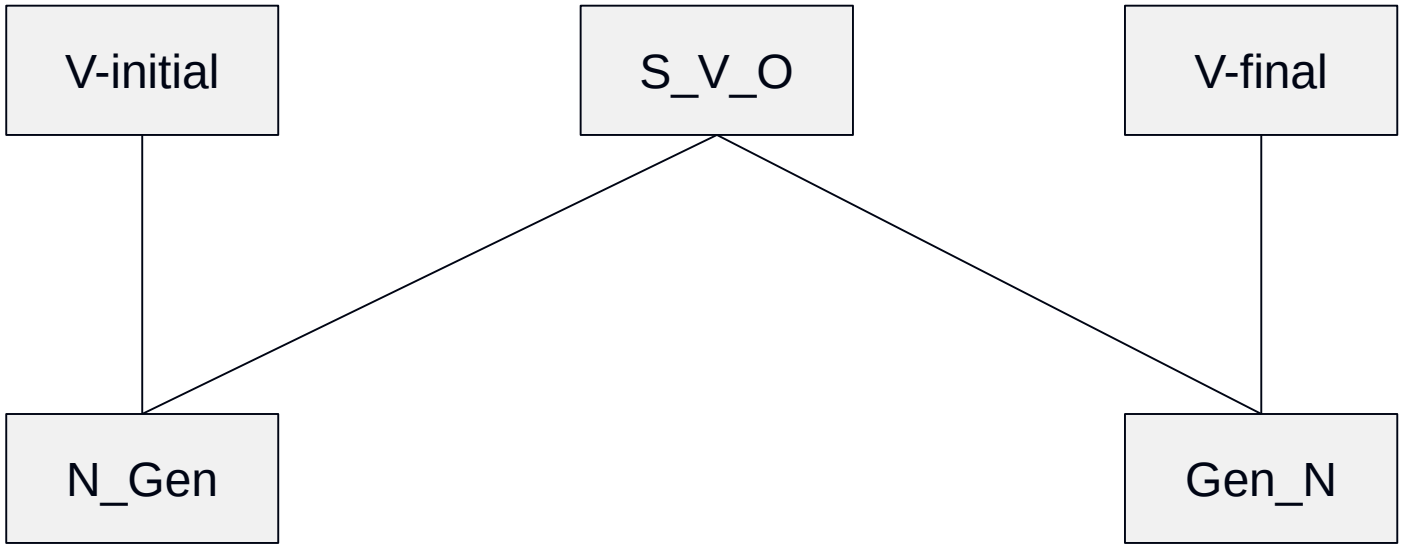
This is one of the few word order pairs where SVO does not pattern with V-initial languages (Dryer 1991).

VO&OV – NG&GN

VO&OV – NG&GN



VO&OV – NG&GN



VO&OV – NG&GN

Givón (1975): Nominalization provides a link between nominal and verbal categories.

VO&OV – NG&GN

Givón (1975): Nominalization provides a link between nominal and verbal categories.

	VERB	**OBJECT**
	he-attacked	the-city
	NOUN	**GENITIVE**

VO&OV – NG&GN

Givón (1975): Nominalization provides a link between nominal and verbal categories.

	VERB	OBJECT
	he-attacked	the-city
	|	|
Nominalization	the-attack	of-the-city
	NOUN	**GENITIVE**

VO&OV – NG&GN

Givón (1975): Nominalization provides a link between nominal and verbal categories.

	VERB	OBJECT
Nominalization	he-attacked | the-attack | the-center	the-city | of-the-city | of-the-city
	NOUN	**GENITIVE**

VO&OV – NG&GN

Givón (1975): Nominalization provides a link between nominal and verbal categories.

	VERB	OBJECT
	he-attacked	the-city
	|	|
Nominalization	the-attack	of-the-city
	|	|
	the-center	of-the-city
	NOUN	**GENITIVE**

-> A deverbal noun phrase shares properties with both VP and NP and therefore there is analogical pressure to align VP and NP.

Genitive construction in SVO

attacked city **[V-O]**

attack city [**N-G**]

Genitive construction in SVO

(1) Peter's proposal (-> GEN is subject of NML)
(2) the enemy's attack of the city

- Genitivus subjectivus
- Genitivus objectivus

Genitive construction in SVO

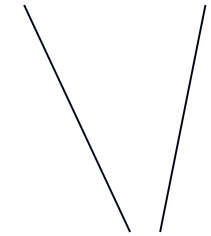
SVO

enemy [GS] attack **city** [GO]

Genitive construction in SVO

VERB-INITIAL

attack **enemy** [GS] **city** [GO]

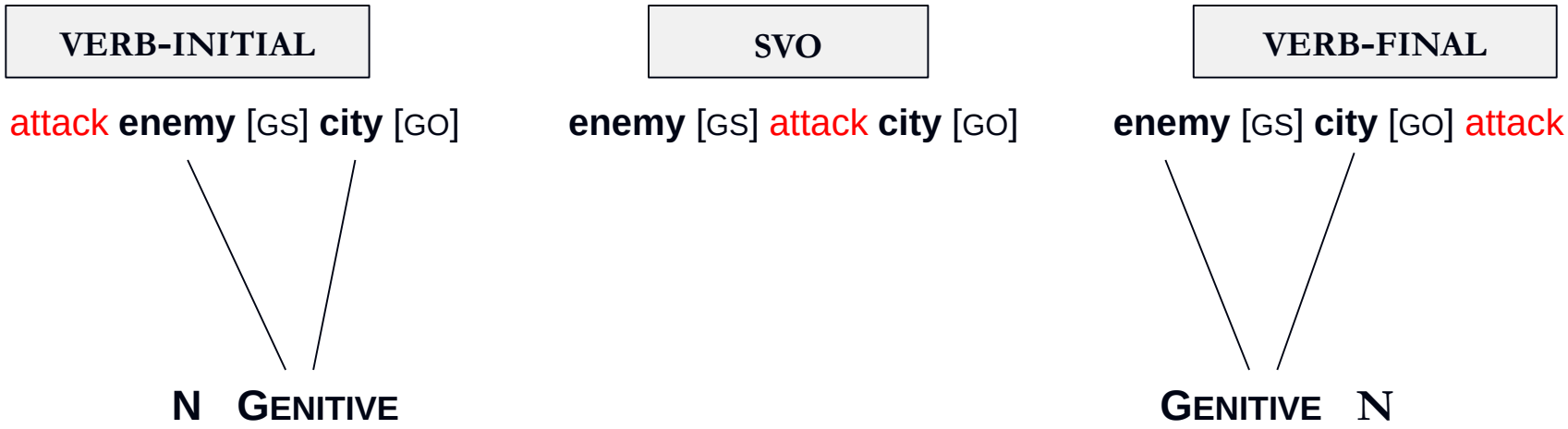


N **GENITIVE**

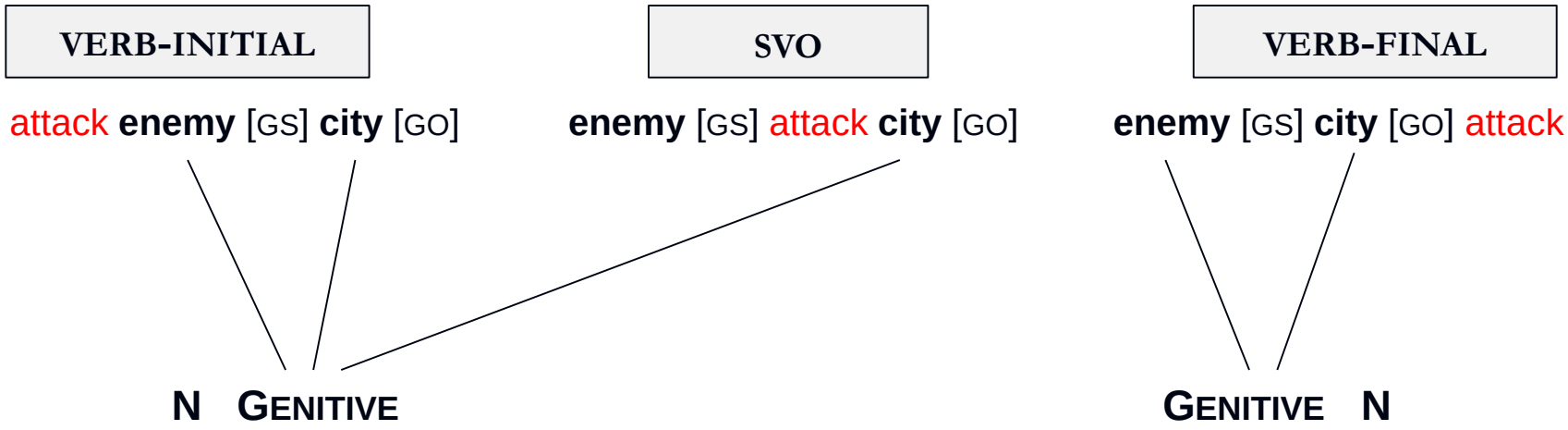
SVO

enemy [GS] attack **city** [GO]

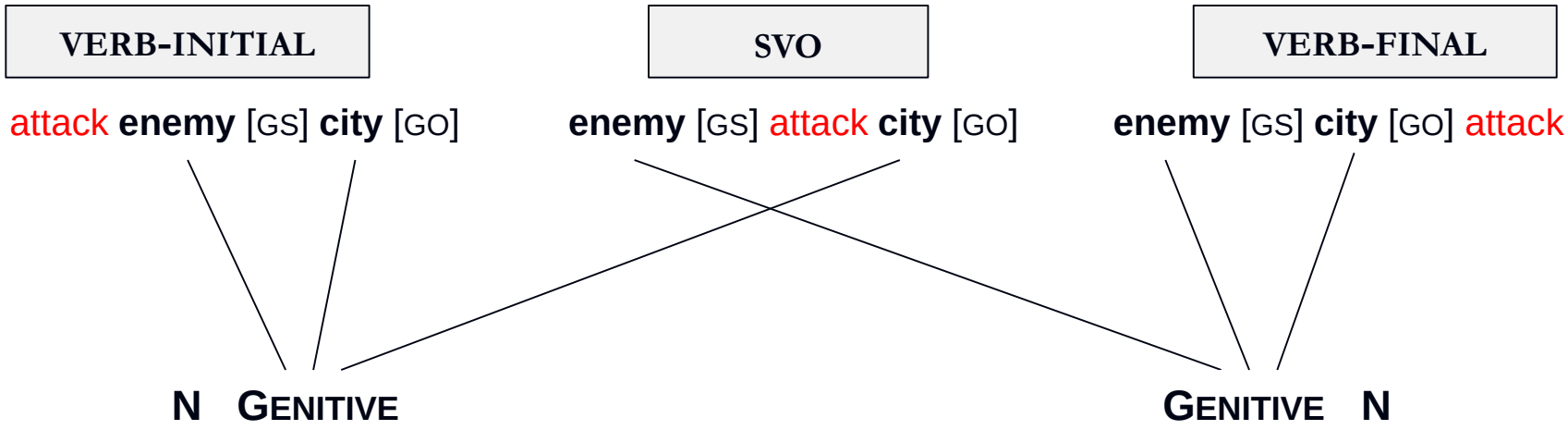
Genitive construction in SVO



Genitive construction in SVO



Genitive construction in SVO



Competing processes

Some word order correlations are strongly skewed (e.g. the correlation of VO/OV and N-RC/RC-N).

Hypothesis: At least some of these skewed distributions seem to be due to the "short-before-long preference".

Possible factors behind the short-before-long preference:

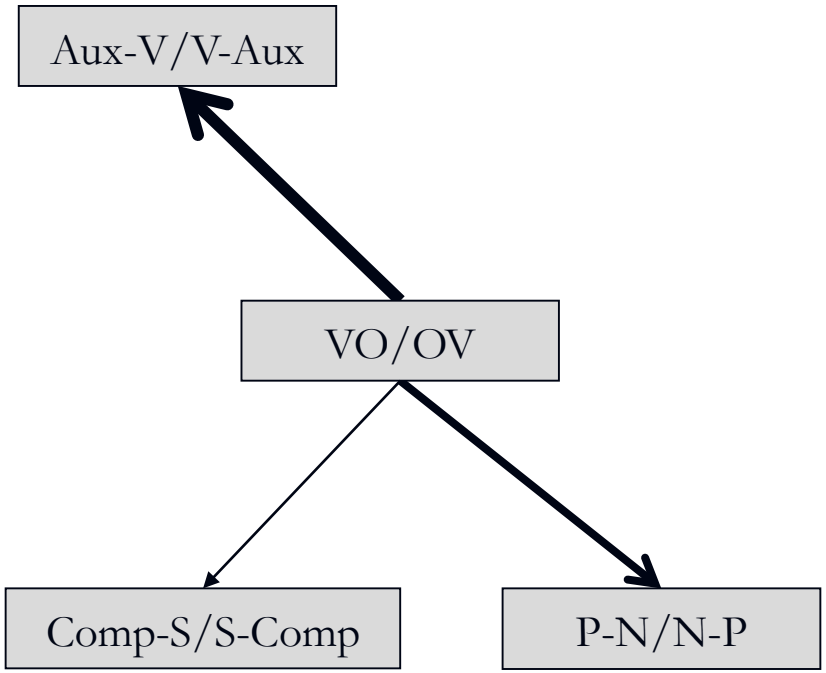
- Processing (Hawkins 2004)
- Flow of consciousness (Chafe 1994)

Conclusion

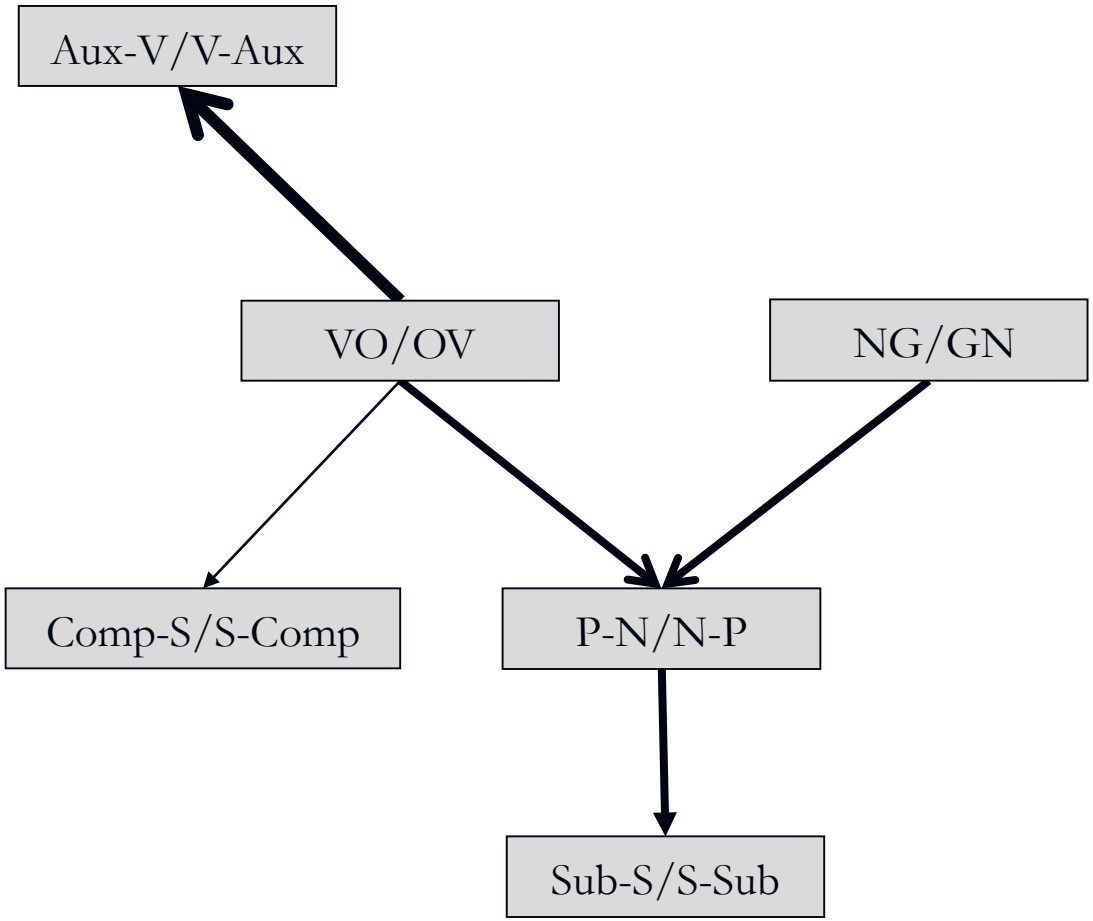
Conclusion

- The two main cognitive processes behind word order correlations are analogy and grammaticalization.
- If this is correct, we (probably) have to give up the global typology of head-initial and head-final languages.
- Unlike parameter setting and processing, grammaticalization and analogy are known to affect linguistic structure in a piecemeal fashion.
- They create local relations between individual word order pairs which together constitute a network of related constructions.

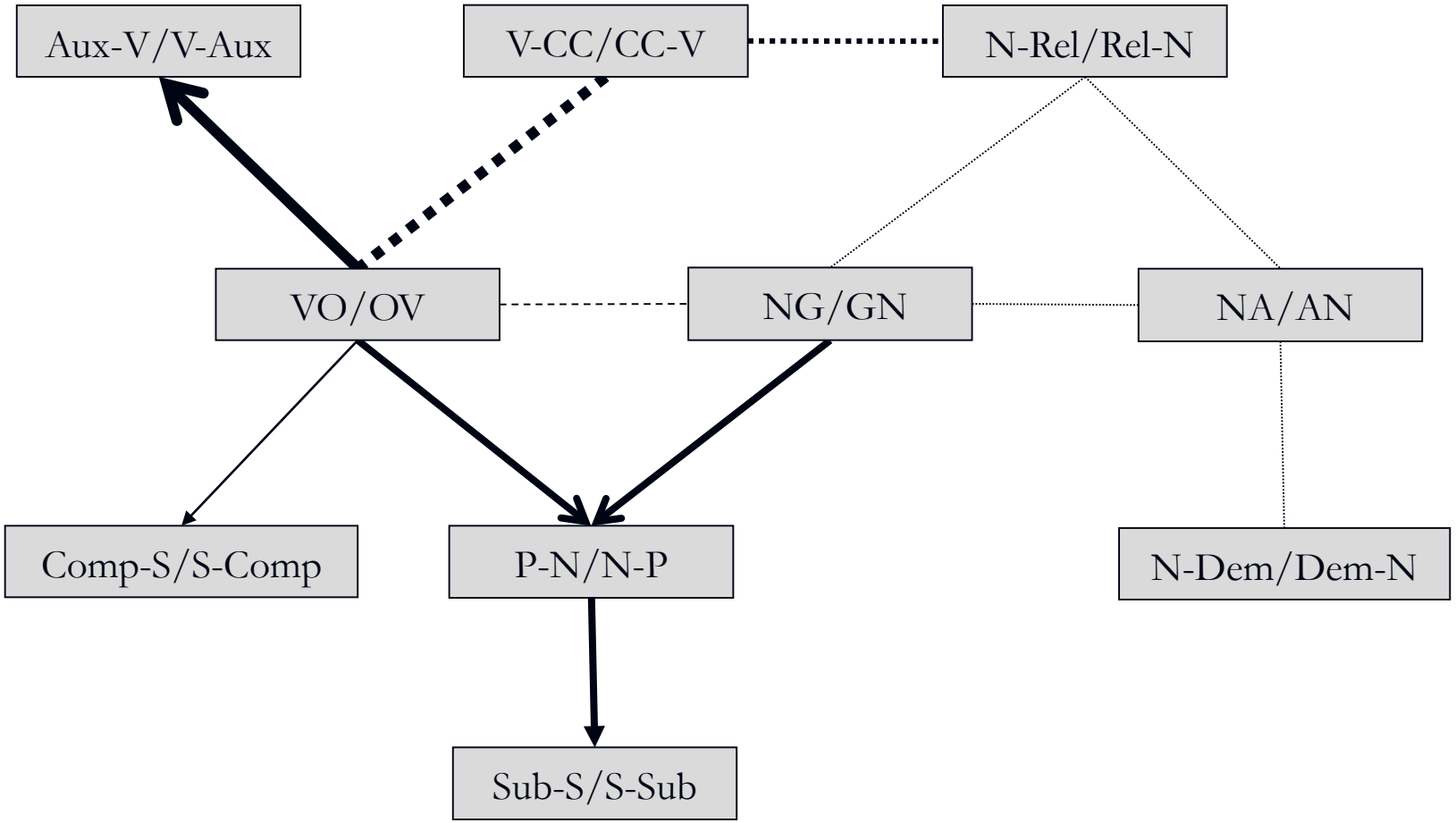
Conclusion



Conclusion



Conclusion


Aux-V/V-Aux
V-CC/CC-V
N-Rel/Rel-N
VO/OV
NG/GN
NA/AN
Comp-S/S-Comp
P-N/N-P
N-Dem/Dem-N
Sub-S/S-Sub

Thank you