

Cross-linguistic asymmetries in the positioning of subordinate clauses

Holger Diessel and Karsten Schmidtke
University of Jena

holger.diessel@uni-jena.de
<http://www.holger-diessel.de/>

Typological studies on constituent order

- Ordering of constituents in simple sentences (Greenberg 1966; Hawkins 1983; Tomlin 1986; Dryer 1992; Dryer 2005)
- Ordering of clauses in complex sentences (Greenberg 1966; Dryer 1980, 1992; Diessel 2001; Hetterle 2007; Diessel and Hetterle to appear)

Hypothesis

The positional patterns of subordinate clauses are motivated by competing psychological pressures that affect the processing of complex sentences in language use.

Greenberg's word order correlations

Head-initial	Head-final
V O	O V
P NP	NP P
AUX V	V AUX
ART N	N ART
CONJ S	S CONJ

SUB-clauses are dependent categories

What is the head of a subordinate clause?

- Relative clauses are dependent categories of a noun (phrase).
- Complement clauses are dependent categories of a verb (phrase).
- Adverbial clauses are dependent categories of the main clause or main clause predicate.

Consistent ordering

Head-initial	Head-final
N-REL	REL-N
V-COMP	COMP-V
MAIN-ADV	ADV-MAIN

Relative clauses

	Head-initial	Head-final
N-REL	60	26
REL-N	1	37

(Dryer 1992)

Relative clauses

(1) English

That's *the book* [**that I was looking for**].

(2) Japanese (Keenan 1985: 339)

Watasi wa [sono otoko ga tataita] inu o miru.
I TOP that man SUBJ struck dog OBJ see
'I see the dog which that man struck.'

(3) Persian (Comrie 1989: 147)

Mardi [ke bolandqadd bud] juje-ra kost.
Man that tall was chicken-ACC killed
'The man that was tall killed the chicken.'

Relative clauses

	Head-initial	Head-final
N-REL	x	x
REL-N		x

In languages in which dependent categories follow the head, relative clauses are placed after the noun they modify.

Complement clauses

	Head-initial	Head-final
V-COMP	common	common
COMP-V	rare	common

(Grosu and Thompson 1977; Dryer 1980)

Complement clauses

(1) English

Peter saw [**that Mary went into the store**].

(2) Slave (Rice 1989: 1243)

[**sasónébehshiné** **so?ah?**] **nj**] kodisho yíle
truck 1sg.fix **COMP** 1sg.know NEG

'I didn't know how to fix the car.'

(3) Persian (Mahootian 1997: 30)

mi-dunest-æm [**ke** **dir** **mi-res-i**]
dur-knew-1SG **COMP** late DUR-arrive-2SG

'I knew that you'd arrive late.'

Complement clauses

	Head-initial	Head-final
N-REL	x	x
REL-N		x

In languages in which dependent categories follow the head, complement clauses are placed after the matrix verb.

Complement clauses

Like object complement clauses, subject complement clauses are often extraposed (Grosu and Thompson 1977; Dryer 1980).

- (1) [That you will be there] is important.
- (2) It is important [that you will be there].

Adverbial clauses

(1) English

a. We left [**when** it started to rain].

b. [**When** it started to rain] we left.

(2) Japanese (Kuno 1978: 22)

[Bukka ga agatta **node**], minna ga komatte iru.

Price SUBJ rose since all SUBJ suffering are

‘Because process have gone up, all are suffering.’

Adverbial clauses

	Head-initial	Head-final	Mixed	Total
ADV-MAIN	-	17	-	17
Both orders	15	4	3	22
MAIN ADV		1	-	1
Total	15	22	3	42

(Diessel 2001)

Adverbial clauses

	Head-initial	Head-final
ADV-S	x	
S-ADV	x	x

In languages in which dependent categories precede the head, adverbial clauses are (often) exclusively placed before the main clause.

Adverbial clauses

(1) Supyire (Carlson 1994: 558)

[**Ma** u yaha nai] ka ni i mpa u cu
While him leave there and they NARR come him grab
'While he was there, they caught him.'

(2) Supyire (Carlson 1994: 561)

Ka pi i mpyi amuni [**fo** pi a nO pyEnge na].
and they NARR do thus till they PF arrive home at
'They (continued to) do thus until they arrived home.'

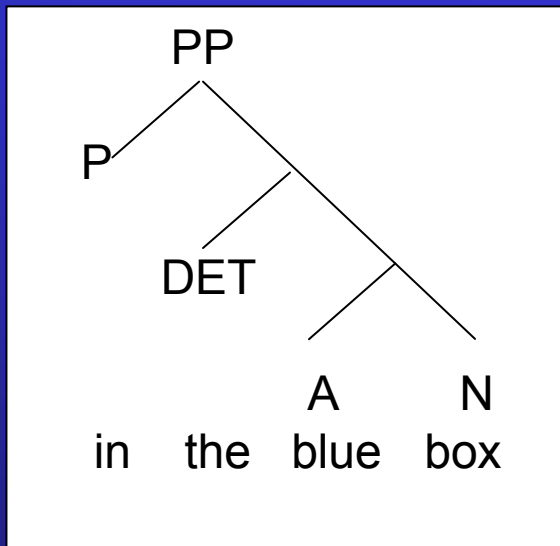
Summary

	Head-initial	Head-final
N-REL	x	x
REL-N		x
V-COMP	x	x
COMP-V		x
S-ADV	x	x
ADV-S	x	

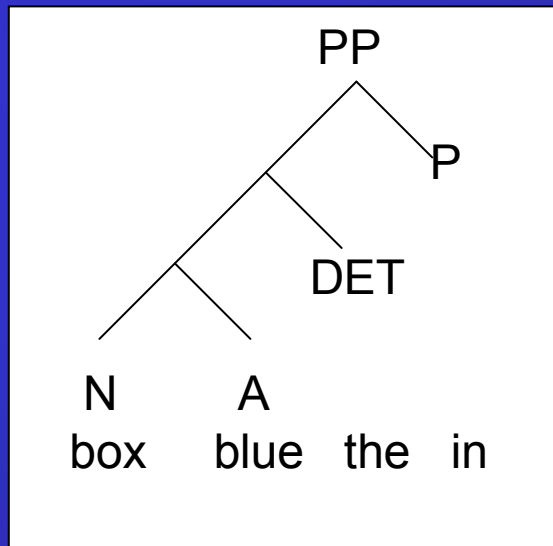
Hypothesis

The positioning of subordinate clauses is motivated by competing functional and cognitive forces.

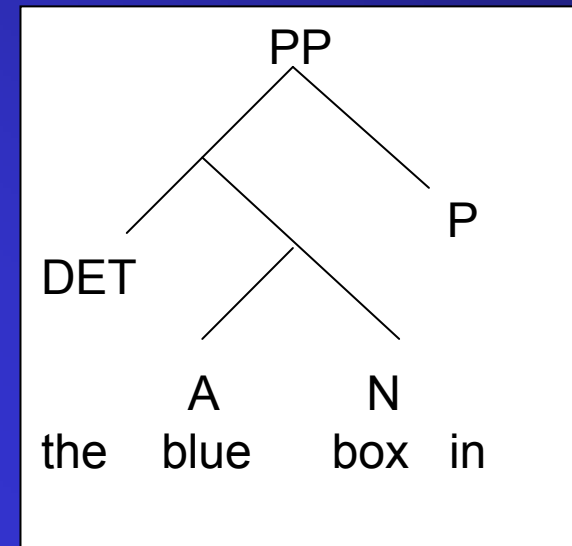
Processing



Right-branching



Left-branching



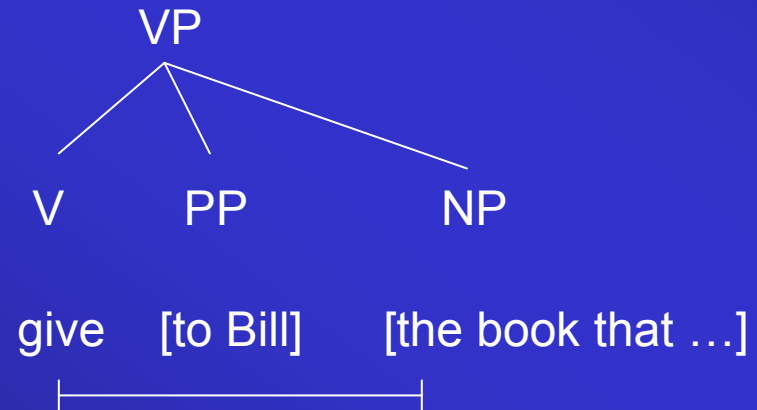
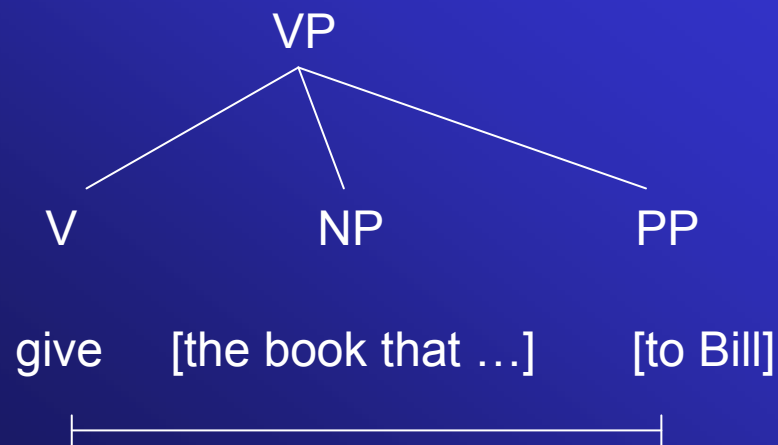
Mixed-branching

Minimize Domains

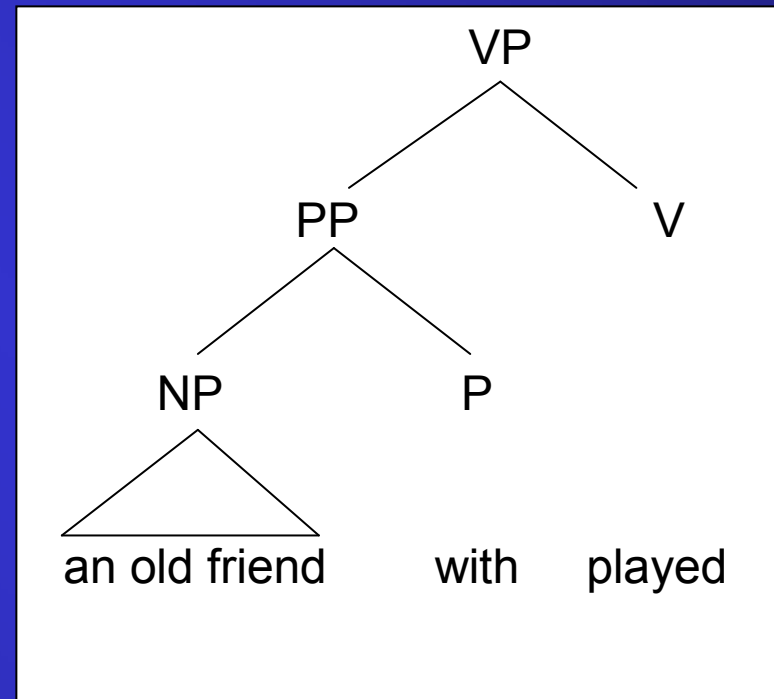
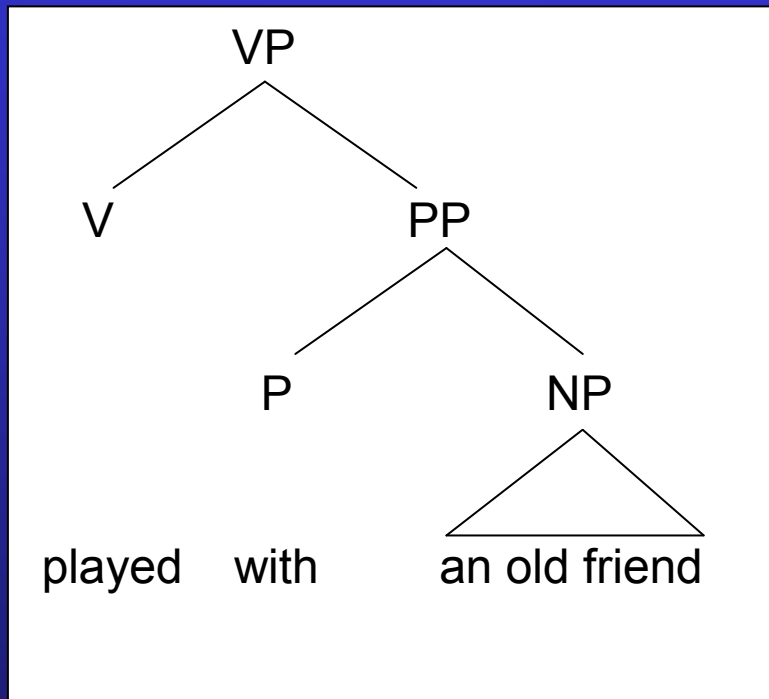
- The human parser prefers linguistic structures with a short dependency domain.
- The dependency domain is defined as the string of linguistic elements that must be parsed (and kept in working memory) in order to access the Mother Node Constructing Categories (MNCCs) of all immediate constituents of a phrase once the first MNCC has been accessed.
- A MNCC is a linguistic element that allows the parser to uniquely identify the mother node of a phrase.

Minimize Domains

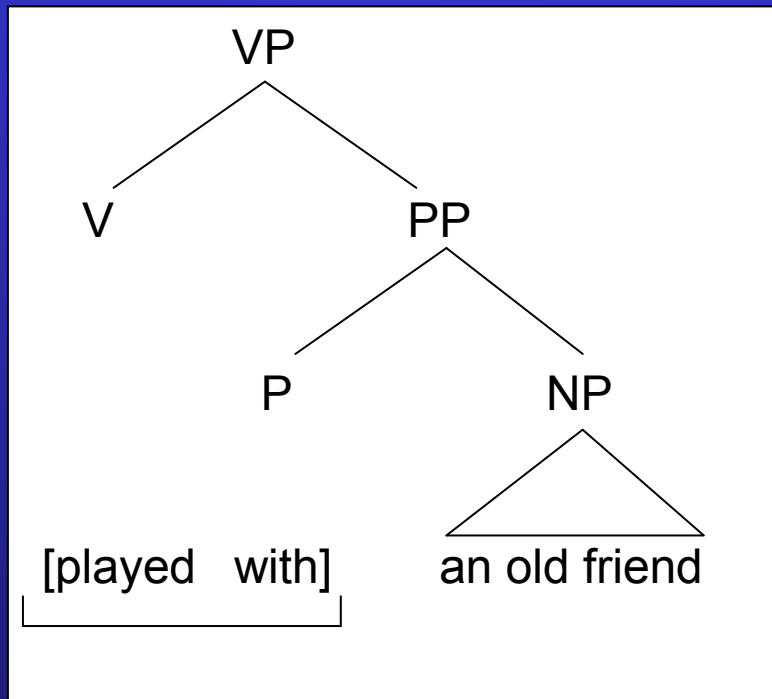
- (1) Mary [gave]_{VP} [the book that she had been searching for since Christmas]_{NP} [to Bill]_{PP}.
- (2) Mary [gave]_{VP} [to Bill]_{PP} [the book that she had been searching for since Christmas]_{NP}.



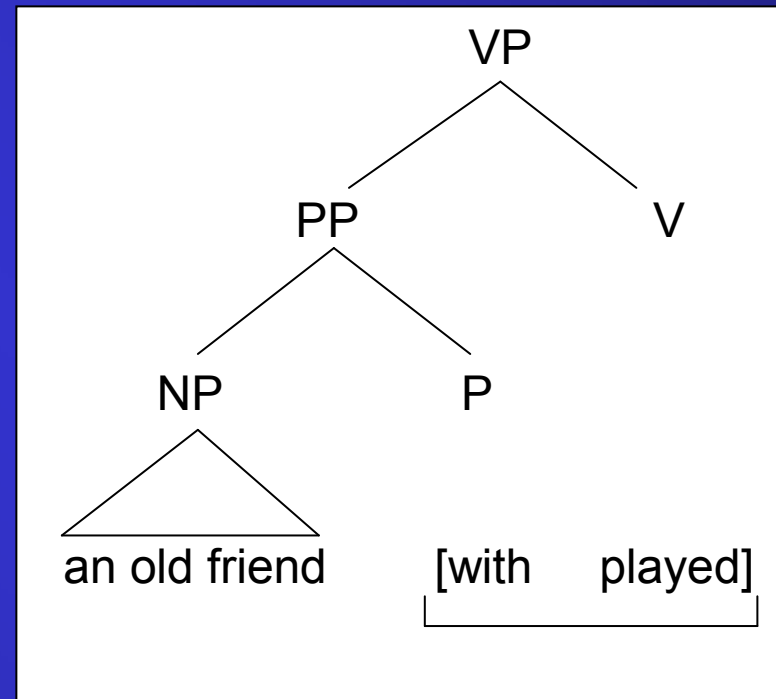
Dependency domain



Dependency domain

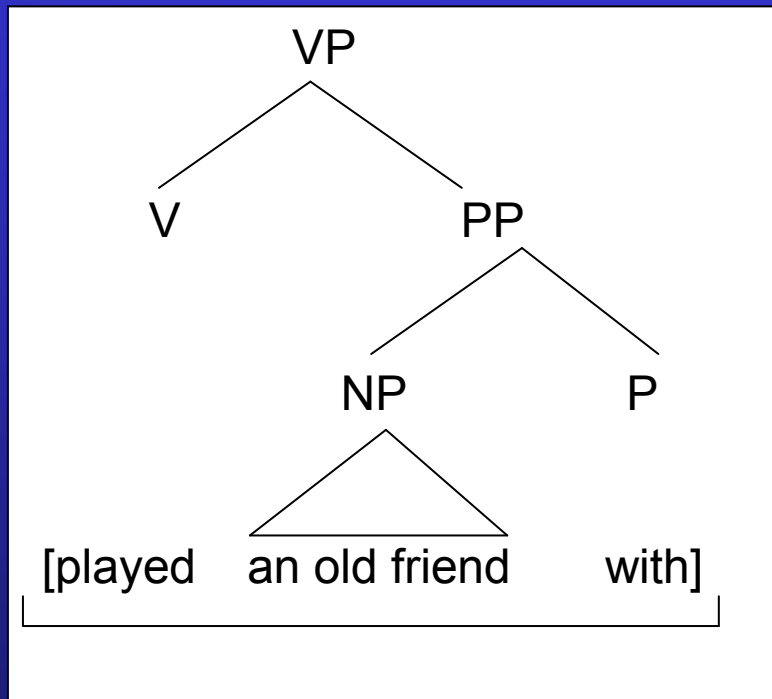


IC to word ratio: $2/2 = 1$

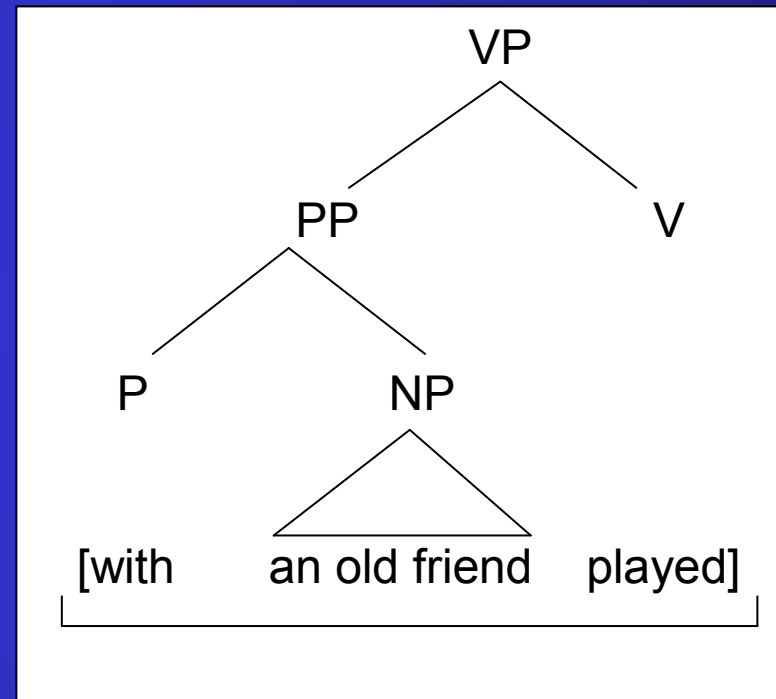


IC to word ratio: $2/2 = 1$

Dependency domain

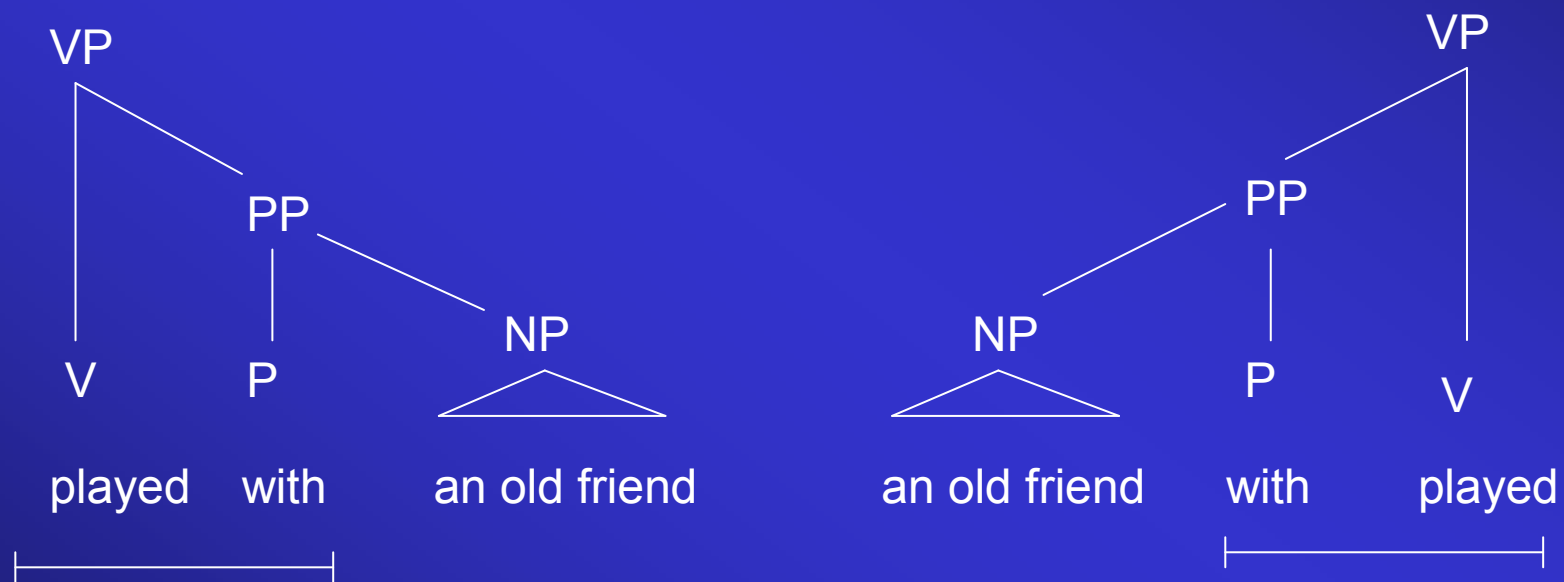


IC to word ratio: $2/4 = .5$



IC to word ratio: $2/4 = .5$

Position of the dependency domain



Hypotheses

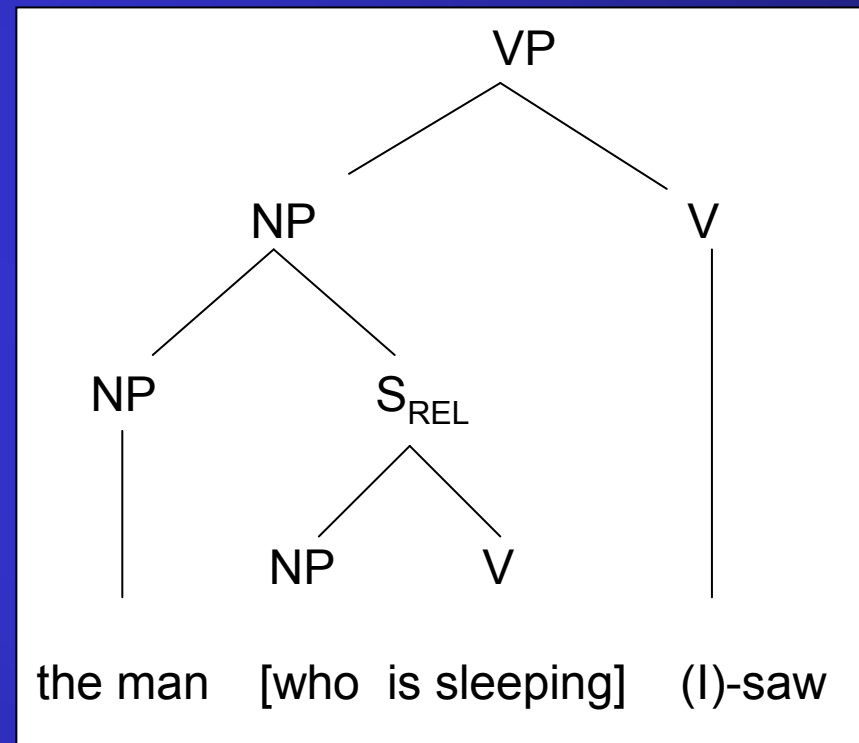
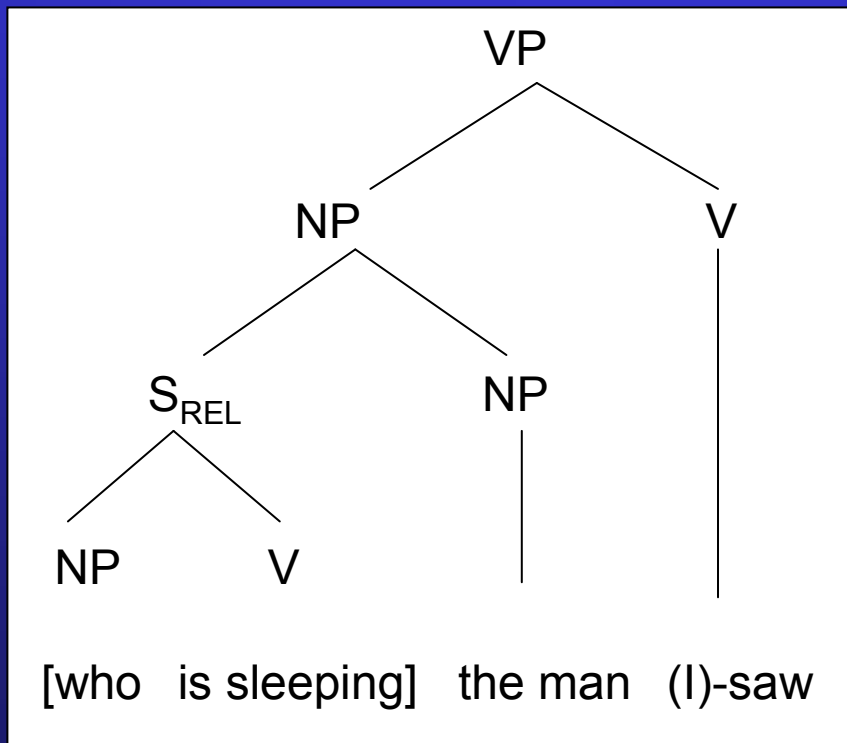
The preference for a short dependency domain is one of the factors that influences the positioning of subordinate clauses.

The asymmetries in the positioning of subordinate clauses arise from competing forces that override the processing preference for a short dependency domain.

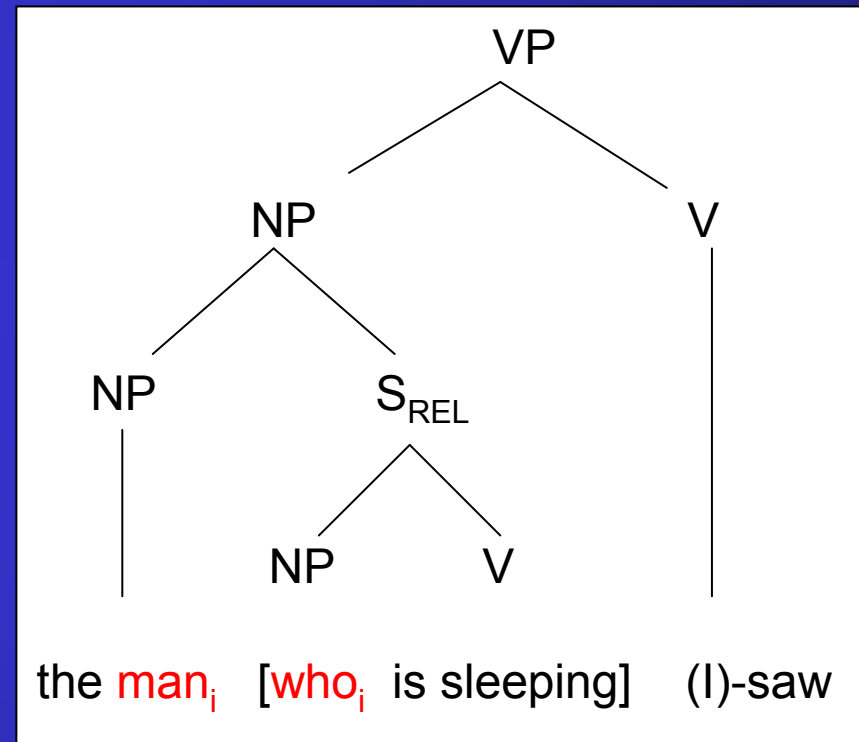
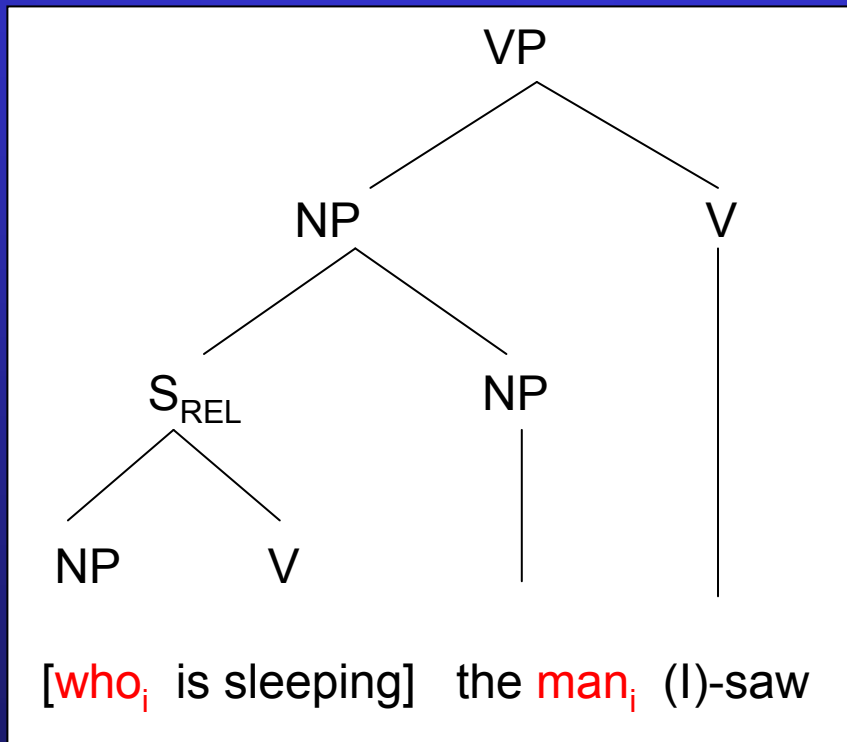
Relative clauses

	Head-initial	Head-final
N-REL	x	x
REL-N		x

Relative clauses



Relative clauses



Relative clauses

a. NP_i [who_i ]

b. [who_i ] NP_i

Relative clauses

In head-final languages relative clauses show a mixed pattern because their position is motivated by two competing forces:

- The parsing preference for consistent branching directions favors prenominal relative clauses.
- The preference for (anaphoric) filler-gap relationships favors postnominal relative clauses.

Relative clauses

Japanese (Clancy, Lee, and Zoh 1986: 247)

Zoo-ga [kirin-o taoshi-ta] *shika-o* nade-ta.
elephant-SUBJ giraffe-OBJ knock-PAST deer-OBJ pat-PAST
The elephant patted the deer that knocked down the giraffe.

Zoo-ga kirin-o taoshi-ta].
elephant-SUBJ giraffe-OBJ knock-PAST
The elephant knocked down the giraffe..

Complement clauses

	Head-initial	Head-final
V-COMP	x	x
COMP-V		x

Complement clauses

(1) Persian (Mahootian 1997: 30)

mi-dunest-æm [ke dir mi-res-i]
Dur-knew-1SG **COMP** late DUR-arrive-2SG
'I knew that you'd arrive late.'

(2) Slave (Rice 1989: 1243)

[sasónébehshíné so?ah?j nj] kodisho yíle
truck 1sg.fix **COMP** 1sg.know NEG
'I didn't know how to fix the car.'

Complement clauses

a. V [that]_{OBJ} common
 └──────────┘

b. V [..... that]_{OBJ} rare
 └──────────────────┘

Complement clauses

a. V [that]_{OBJ} common
 └──────────┘

b. V [..... that]_{OBJ} rare
 └──────────────────────────┘

c. [..... that]_{OBJ} V common
 └──────────┘

d. [that]_{OBJ} V > V [that]_{OBJ}
 └──────────────────────────┘ ↗

The diagram illustrates four different syntactic structures for complement clauses, labeled a through d. Each structure consists of a verb (V) and an object (OBJ) containing a clause. Structure a shows the verb followed by a bracketed object containing 'that' and a gap. Structure b shows the verb followed by a bracketed object containing a gap and 'that'. Structure c shows a bracketed object containing a gap and 'that', followed by the verb. Structure d shows a bracketed object containing 'that' and a gap, followed by the verb, which is then compared to structure a. A greater-than sign (>) is placed between the two forms in d, and a curved arrow points from the bracketed object in the first form to the 'that' in the second form, indicating a transformation or preference.

Complement clauses

Written	[That ...] V	It is V [that ...]
New	26.8	83.2
Given	73.2	16.8

Kaltenböck 2004: 216

Spoken	[That ...] V	It is V [that ...]
New	7.6	56.1
Given	92.4	43.3

Kaltenböck 2004: 214

Complement clauses

Spoken	[That ...] V	It is V [that ...]
COMP-clause	7.8	11.7
Main-clause	7.8	3.5

Kaltenböck 2004: 214

Relative clauses

- Initial complement clause resumes information from the previous discourse or present new information as if it was given ('presupposition effect')
- Extraposed complement clauses provide new information or else function as afterthoughts. If the complement clause provides new information the initial matrix clauses if often downgraded to an epistemic marker:
 - (1) It's interesting to note ...
 - (2) It's tempting to say ...
 - (3) It happens ...
 - (4) It seems

Adverbial clauses

	Head-initial	Head-final
Main Adv	x	
Adv Main	x	x

Adverbial clauses

	Initial SUB	Final SUB
ADV-MAIN	-	17
ADV-MAIN + MAIN-ADV	22	1

(Diessel 2001)

Adverbial clauses

a. [.....]_{MAIN} [when.....]_{SUB} common

b. [.....]_{MAIN} [..... when]_{SUB} rare

Adverbial clauses

Initial adverbial clauses are commonly used to provide a thematic ground for the interpretation of subsequent clauses (cf. Chafe 1984; Ford 1993; Diessel 2005).

- (1) There was a story circulating about Ms McKinley that at one luncheon given in honor of the president and his wife, the centerpiece was a large, staffed American eagle. When the guests sat down, the thing began to bob its head and move up and down in perky, lifelike movements.

There was a story circulating ... When the guests sat down, the thing began to



thematic link to previous
discourse



orientation for
subsequent discourse

Adverbial clauses

	Initial ADV-clause	Final ADV-clause
New	4	32
Given	38	26

Adverbial clauses in Chinese

Both the spoken and written data suggest that initial adverbial clauses are used to form pivotal points in the development of talk and to present explicit background information for material that follows ... They signal a path or orientation in terms of which the following information is to be understood; (Wang 2006: 57)

Adverbial clauses

(1) Lisu (Thompson and Longacre 1985: 232)

[ame	th{	nwu	patsi-a	dyea	Îu	b{a	nya]	
yesterday	TIME	you	plain-to	go	FACT	say	TOP	

nwu	nya	asa	ma	mu-a
you	TOP	Asa	not	see-Q

‘When we went to the plain yesterday, didn’t you see Asa?’

Position and form

	Deranked	Balanced & deranked	Balanced	Total
Initial	10	4	3	17
Initial & final	4	8	11	23
Total	13	17	7	60

Adverbial clauses

(1) Japanese (Kuno 1978: 22)

[bukka ga agatta **node**], minna ga komatte iru.
Price SUBJ rose since all SUBJ suffering are
'Because process have gone up, all are suffering.'

(2) Evenki (Nedjalkov 1997: 45)

[asi-va ga-**kaim**] [oron-mo rege-**keim**] tar beje suru-re-n
wife-ACC take-CONV reindeer-ACC sit-CONV that man go.away
(lit) 'Having taken a wife and having sat on a reindeer that man left.'

Hypothesis: Since processing of initial subordinate clauses involves the storage of unattached material, they tend to be short and compact.