Core Arguments in Universal Dependencies




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http://universaldependencies.org/workgroups/core.html

Universal Dependencies

- Unified annotation of…
  - Segmentation to “syntactic” words
  - Morphology (lemma, POS, features)
  - Surface syntax
- Same things annotated same way across languages…
- … while highlighting different coding strategies

Manning's Law

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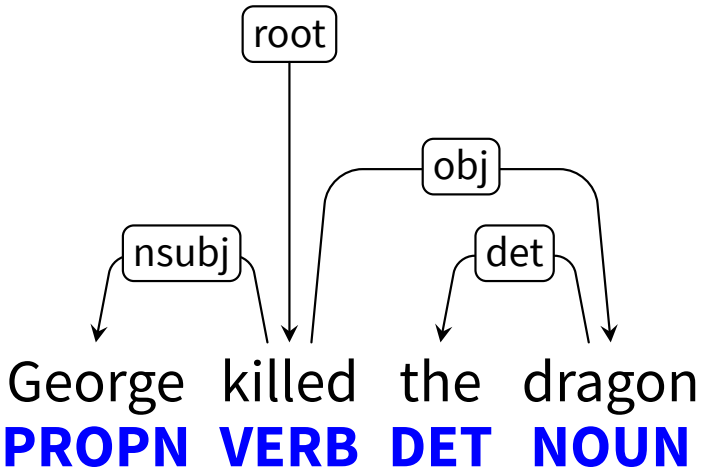

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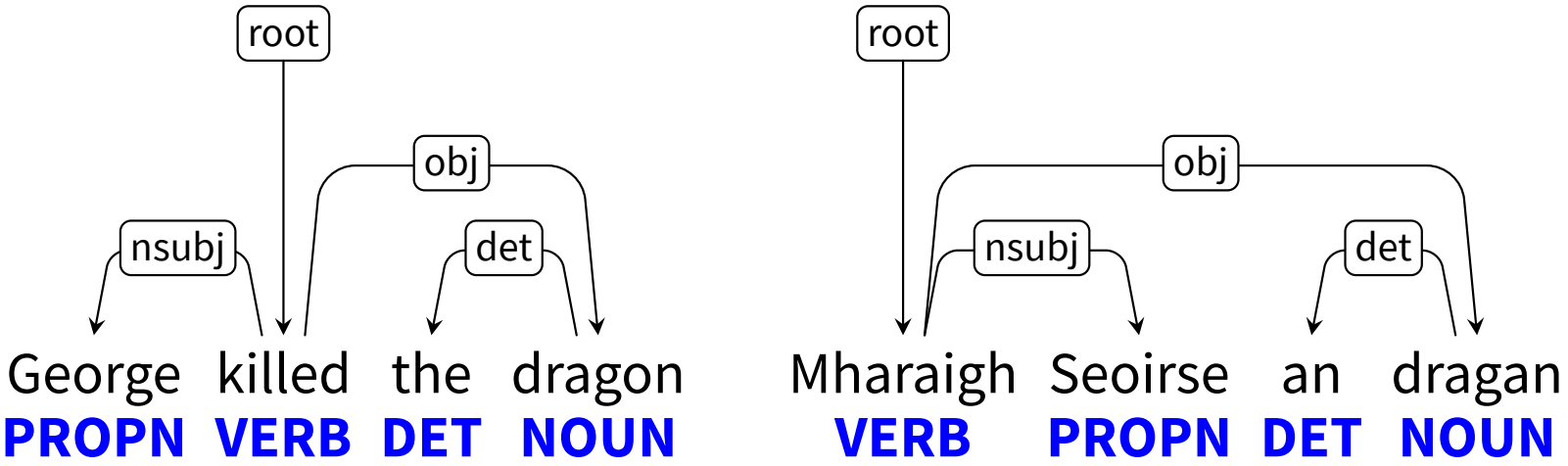

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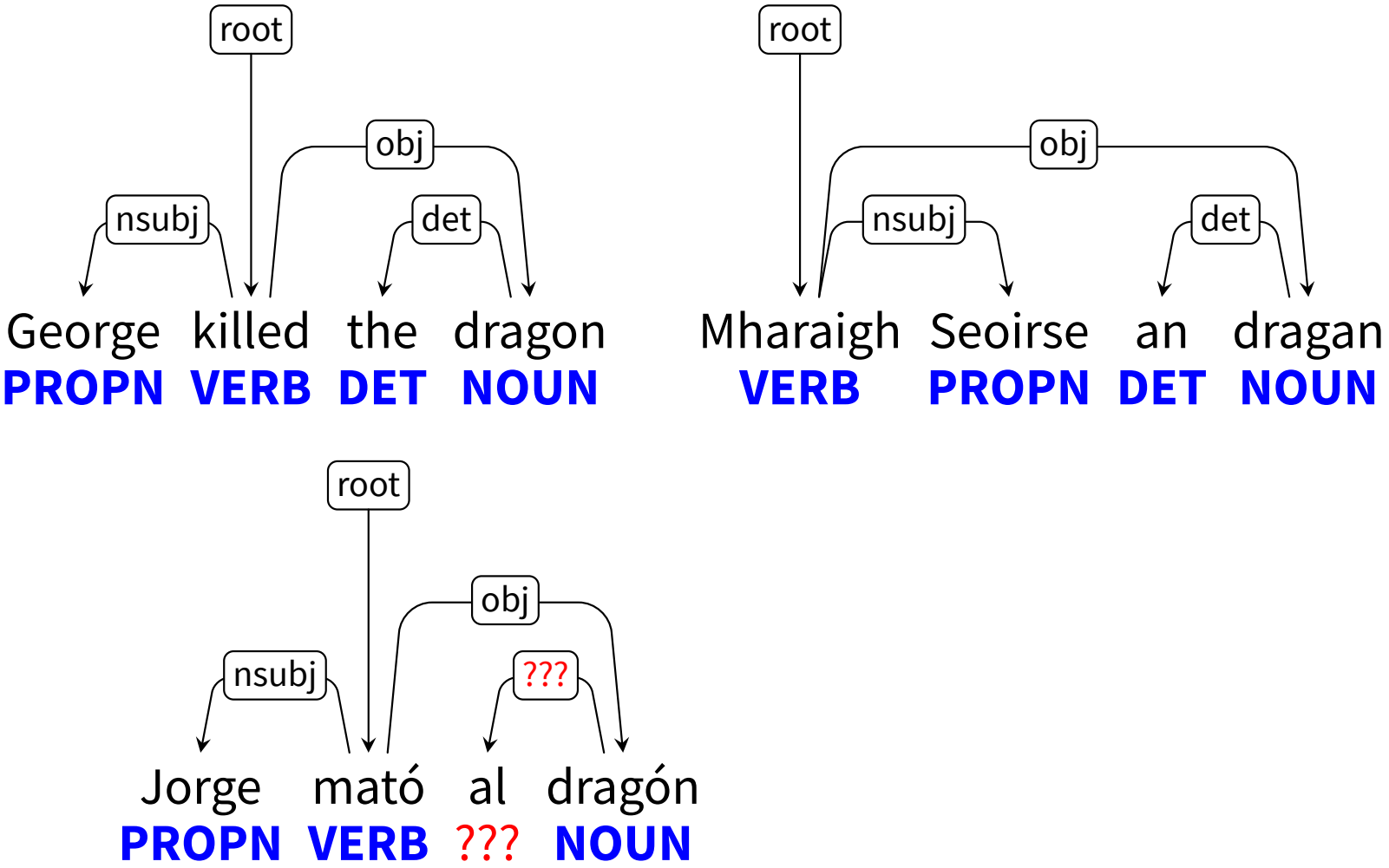

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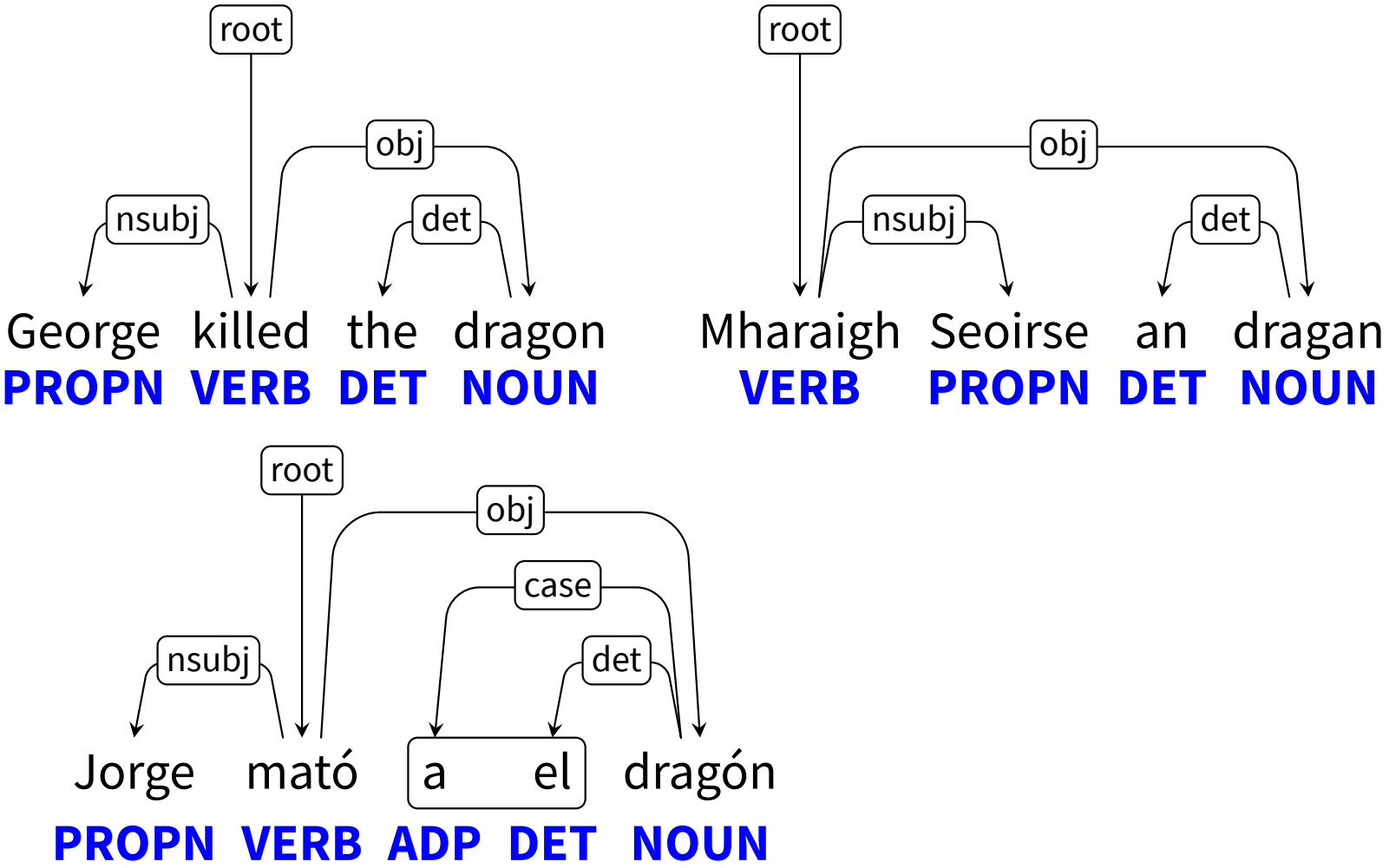

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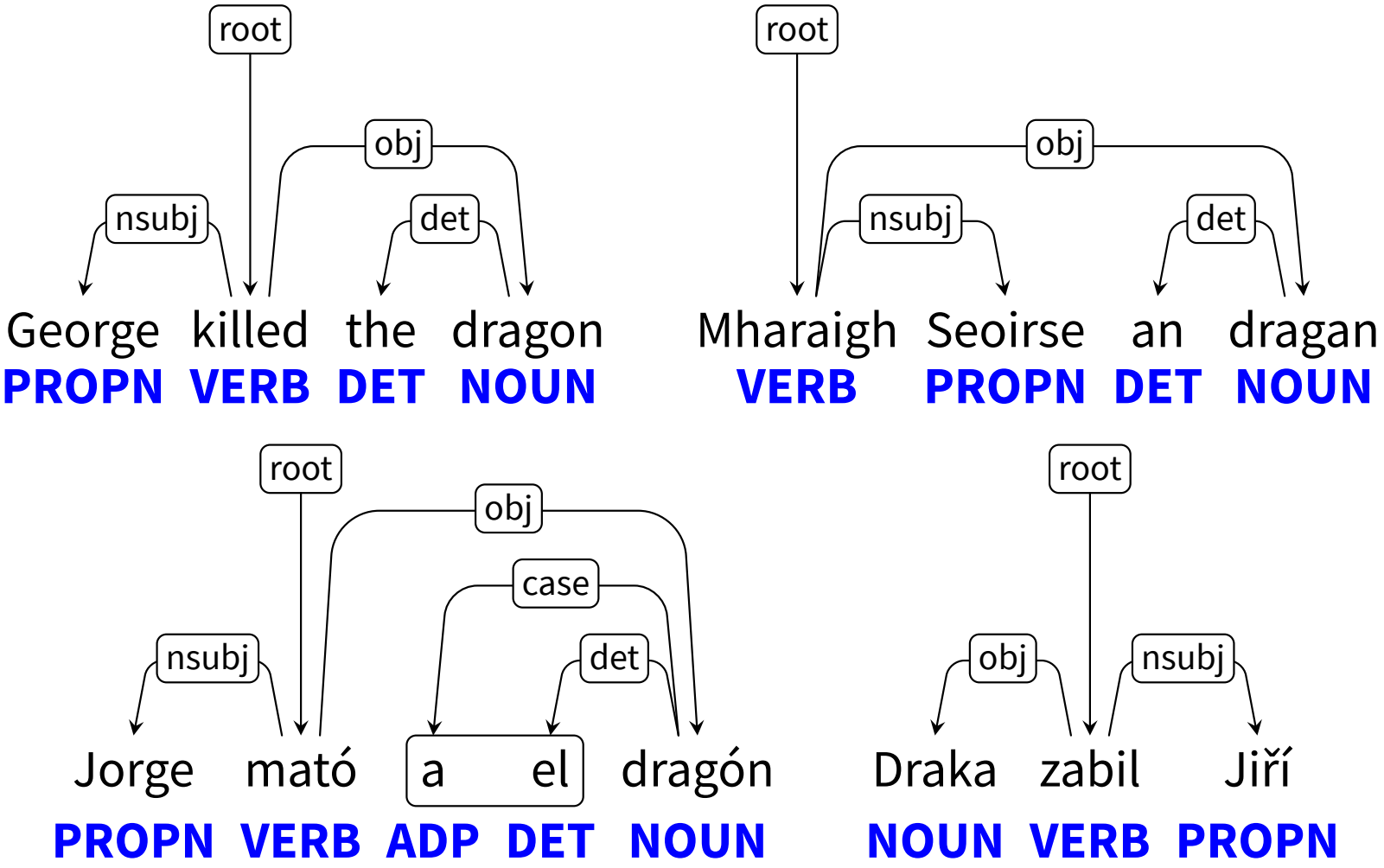

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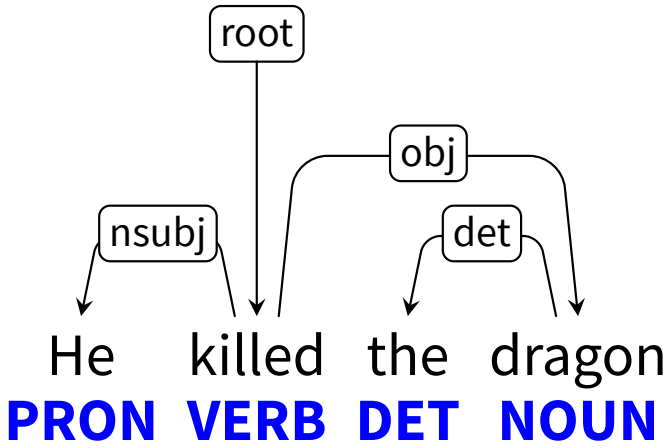

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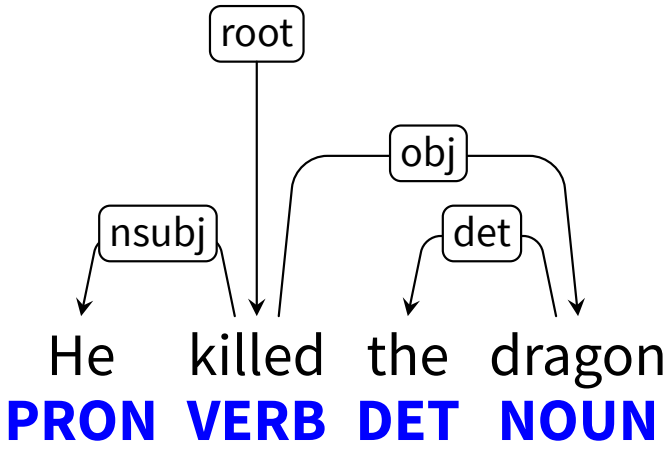

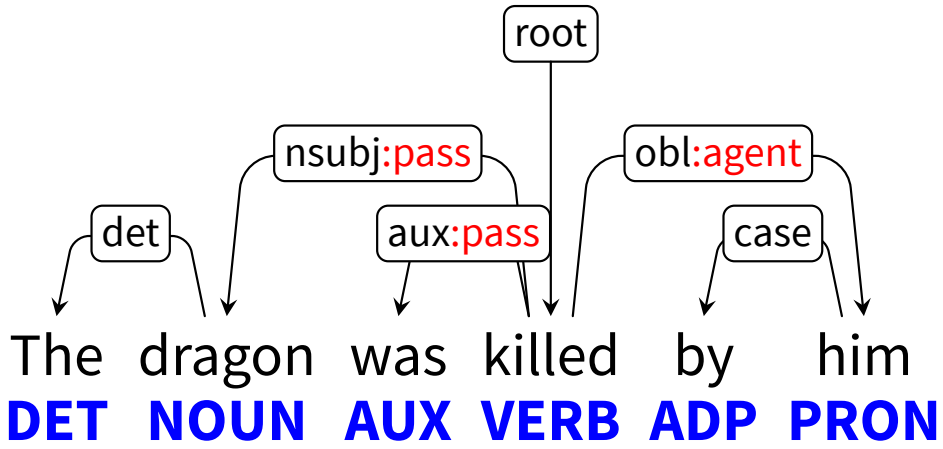

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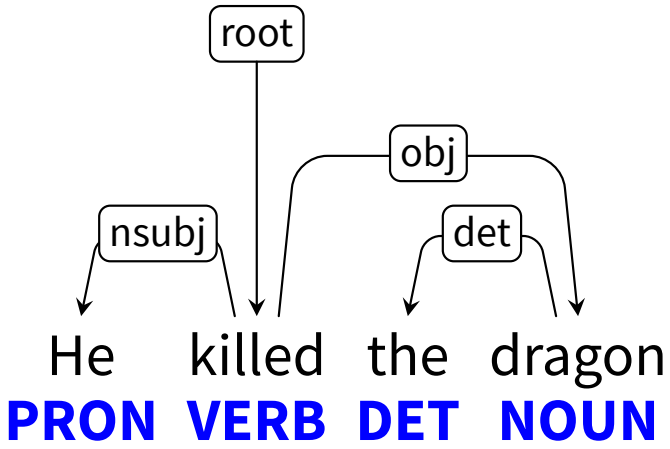

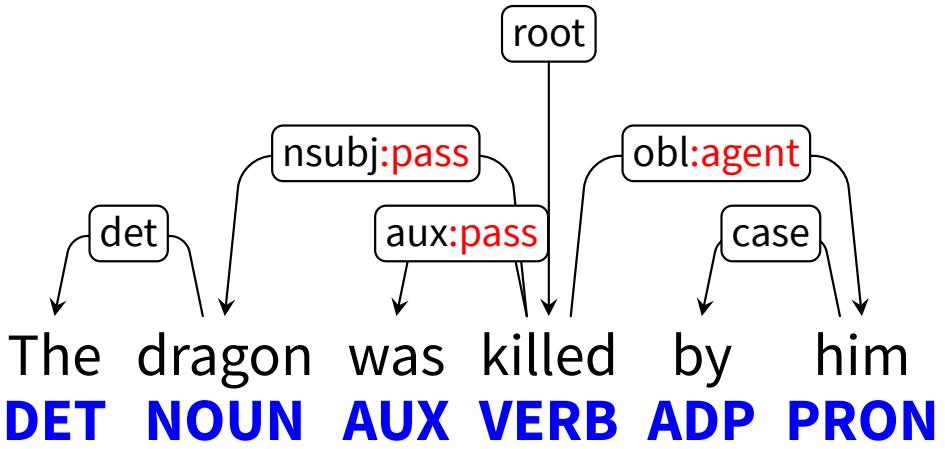

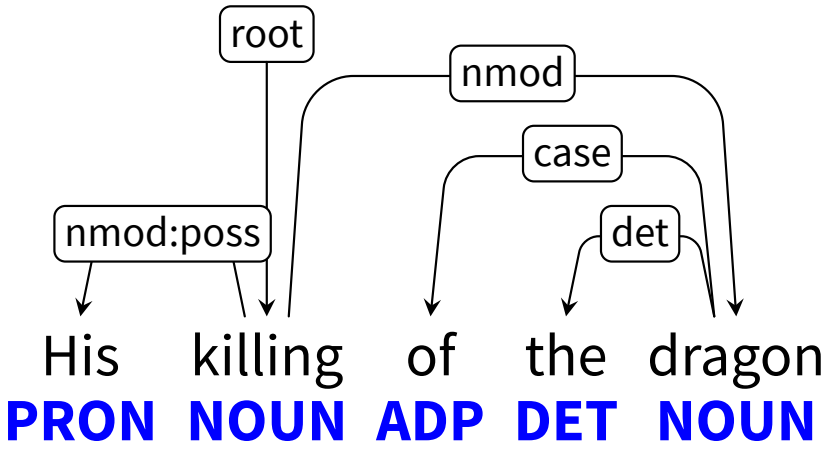

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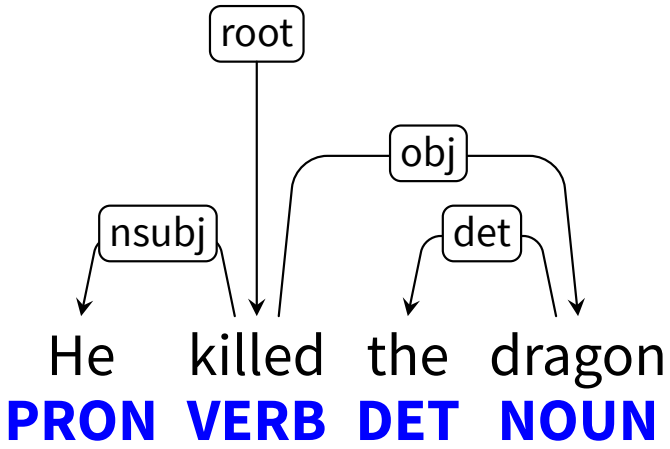

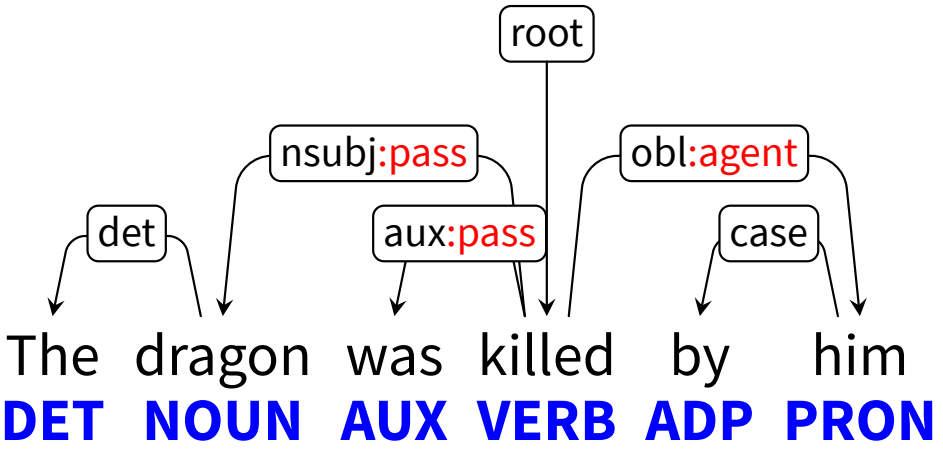

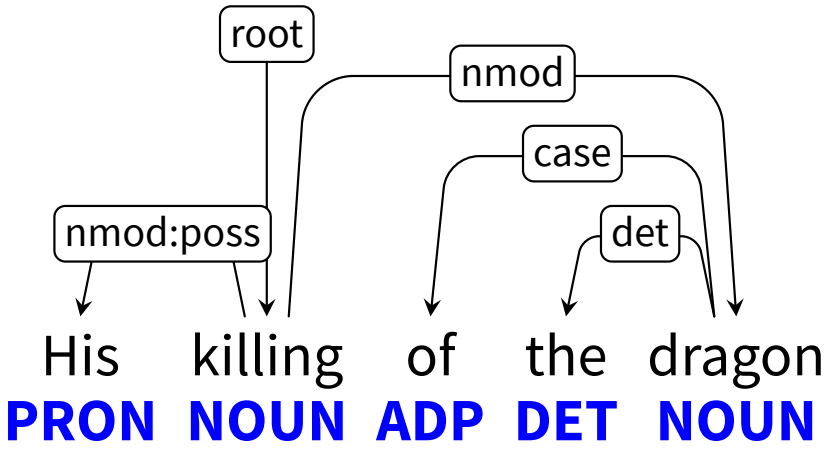

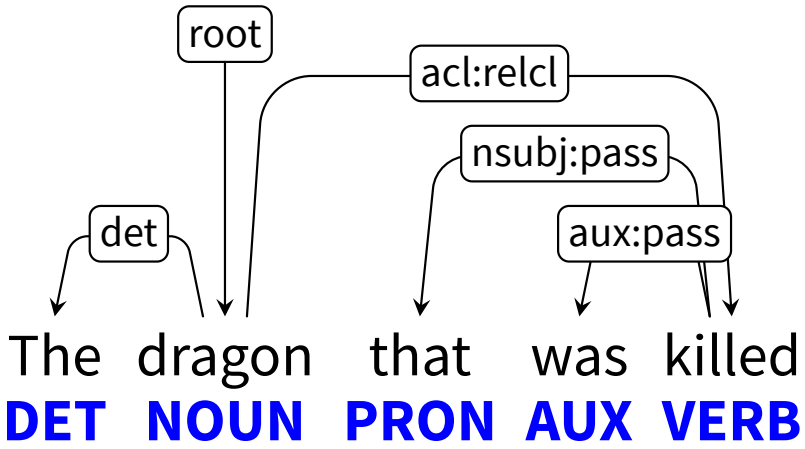

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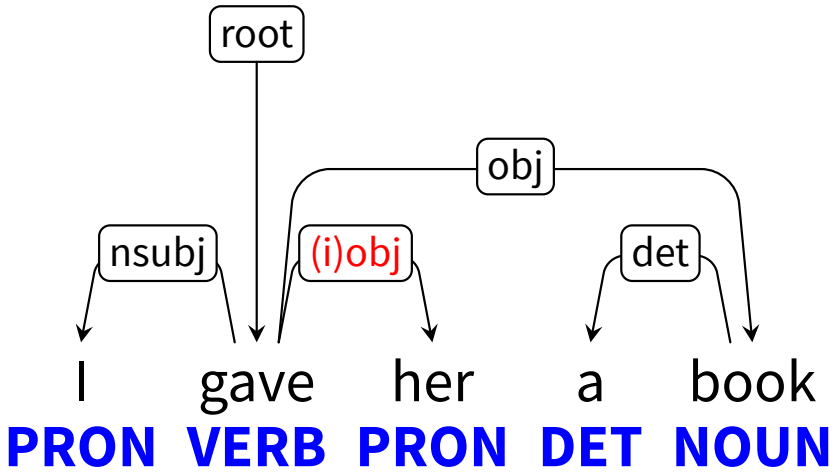

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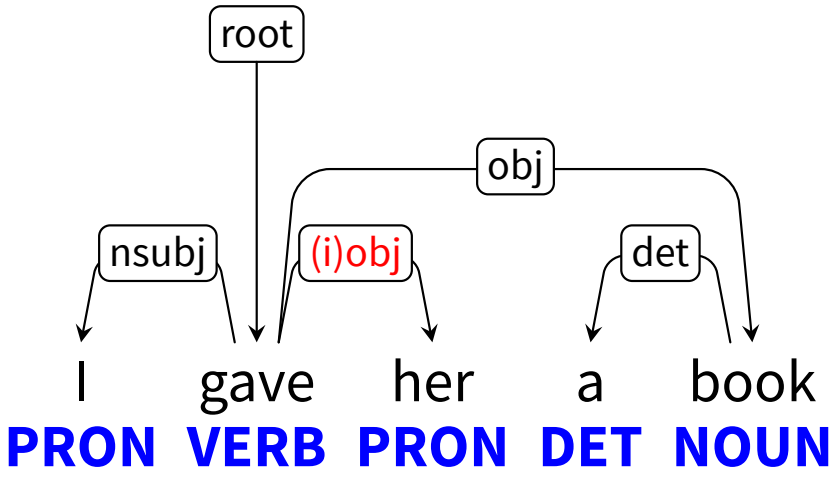

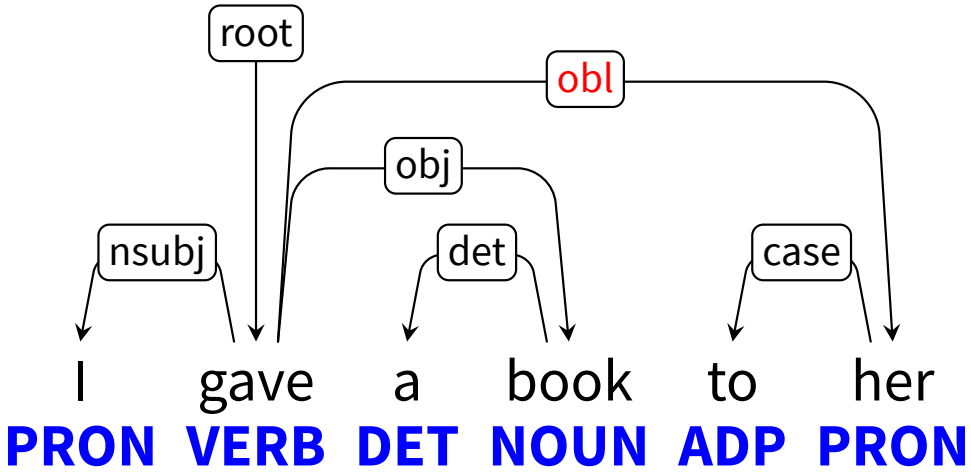

Dependents of Clauses (Verbal or Not)

	Nominal	Clausal	Modifier	Function
Core	**nsubj**	csubj		
Non-Core	**obl**	advcl	advmod	aux
	vocative		discourse	cop
	dislocated			mark
	expl			

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Dependents of Nominals

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nmod	acl	amod	det
appos		nummod	case

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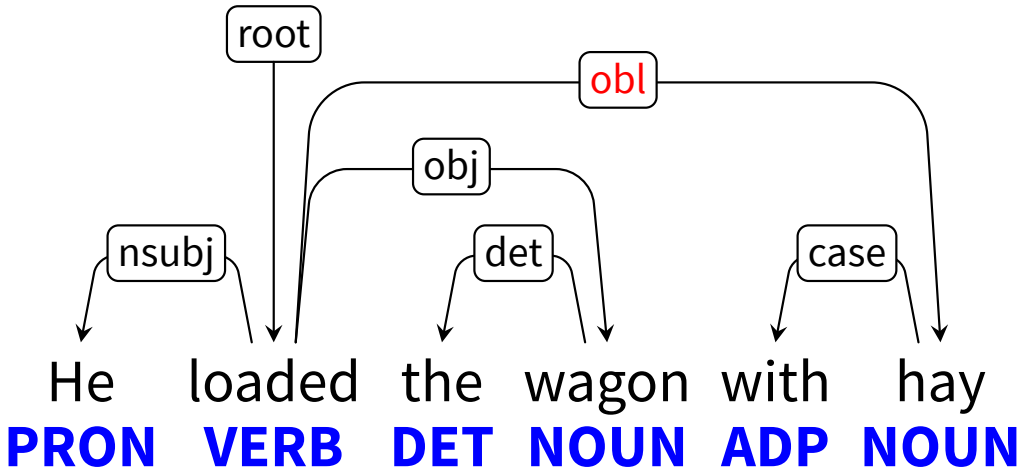

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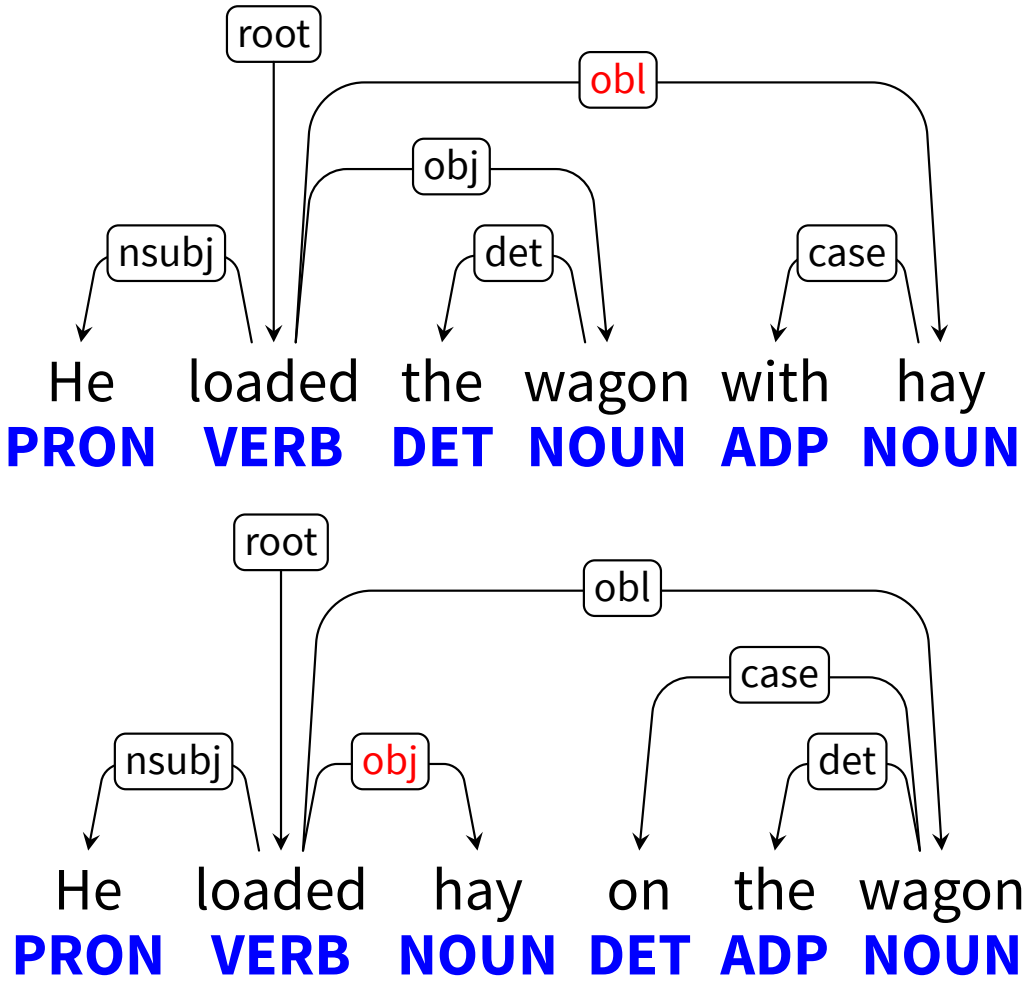
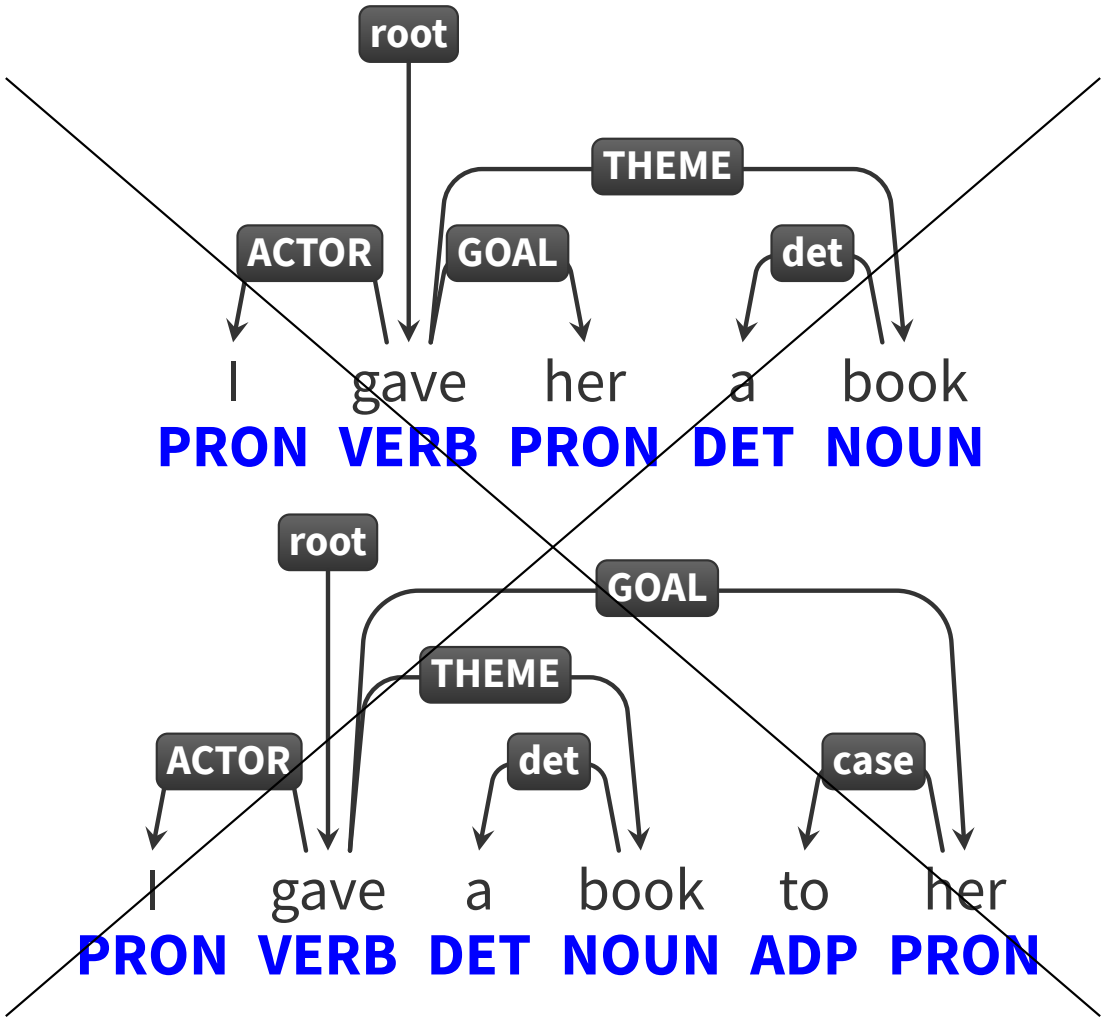


UD is NOT about Semantic Roles!



Manning's Law – What If We Do Semantic Roles?

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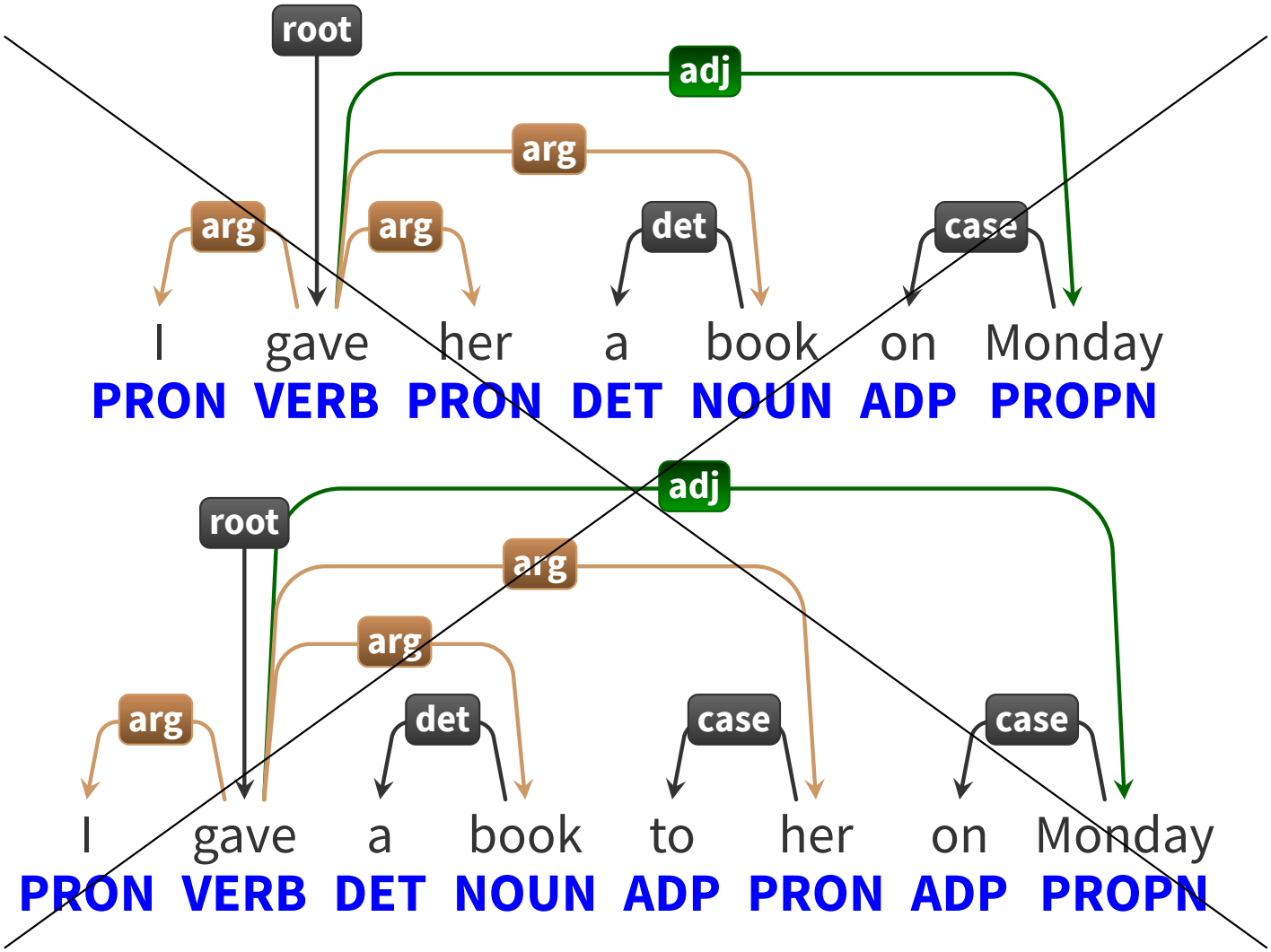
UD Avoids Argument-Adjunct Distinction!



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So What Is Core and Why?

Community Confusion

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- Clash with traditional terminology
  - Grammars of German, Czech etc. define prepositional objects
  - But these are not necessarily core…
  - Yet some people took their national definition of object…

Language-specific Coding Strategy

- Idea:
  - Oblique arguments are marked similarly to adjuncts (prepositions, certain morphological cases…)
  - Core arguments are marked differently
    - ⇒ easy for annotators and non-linguists!
- Why are core arguments special?
  - They tend to be targeted by grammatical rules
    - Passivization
    - Control verbs
    - Reflexives
    - …

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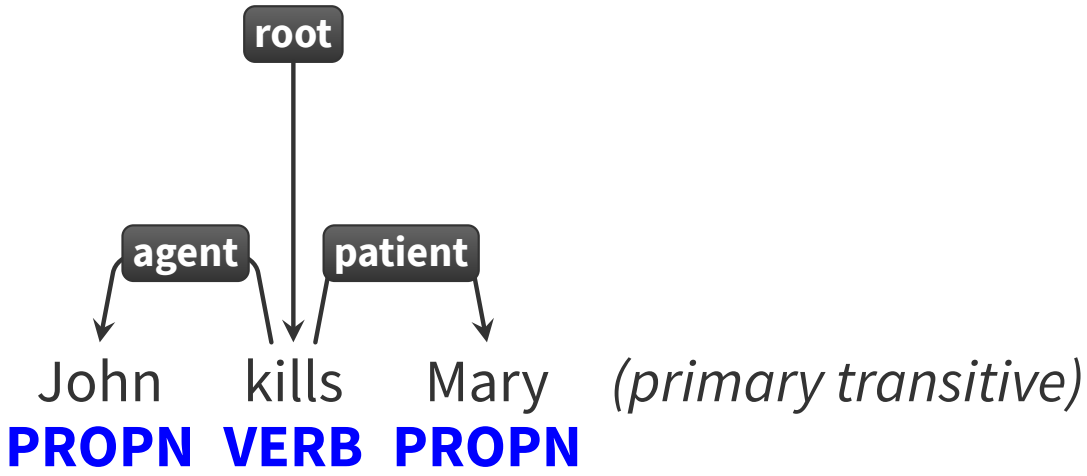
  - Then define:
    - ★ function A ⇒ **`nsubj`**
    - ★ function P ⇒ **`obj`**

Transitive Predicates in English



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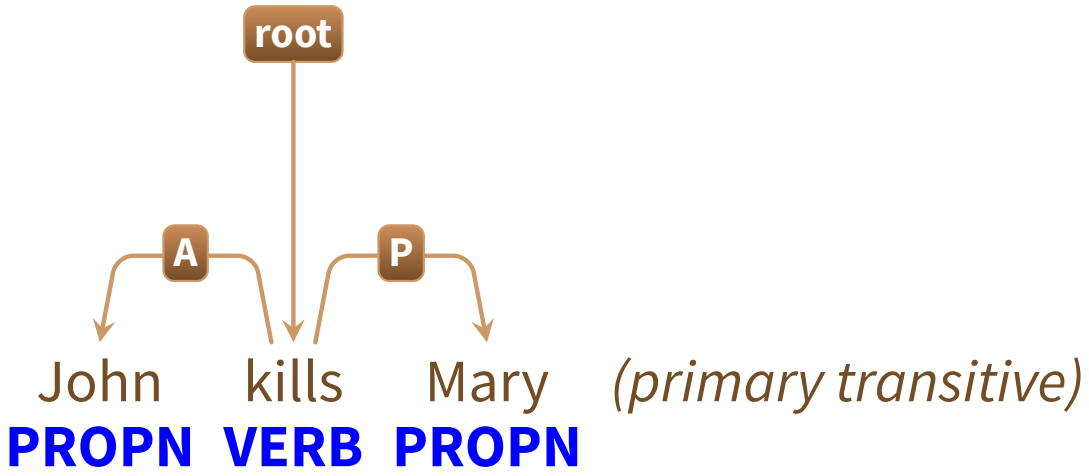

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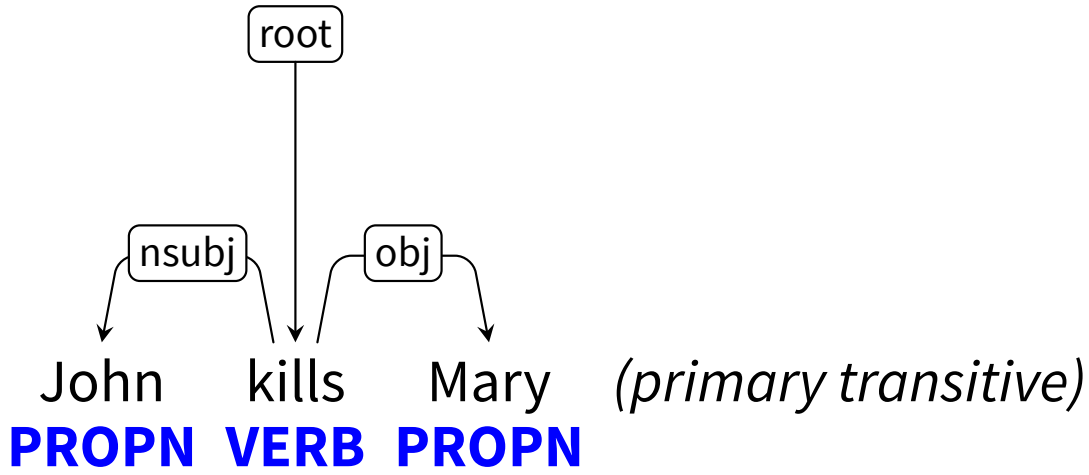
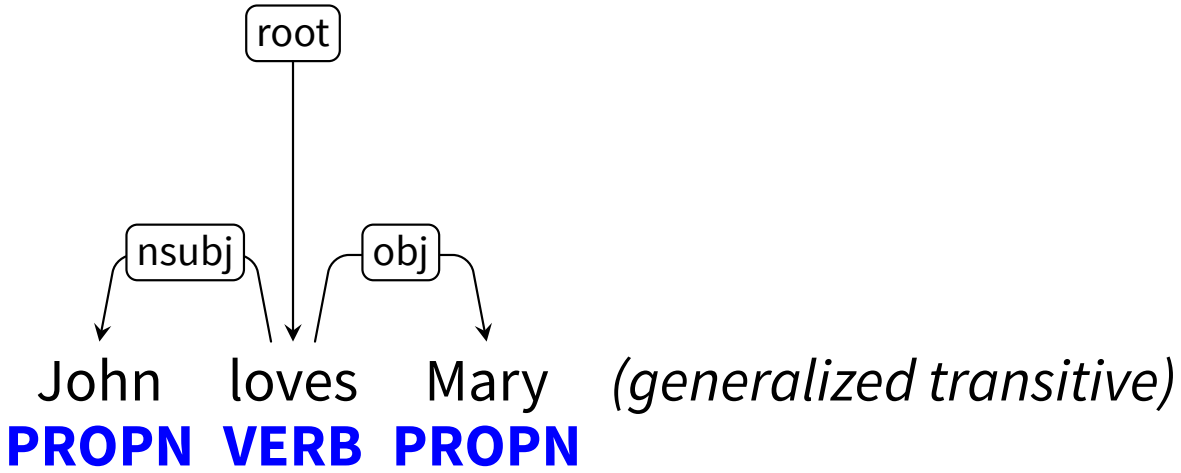


(primary transitive)



(generalized transitive)

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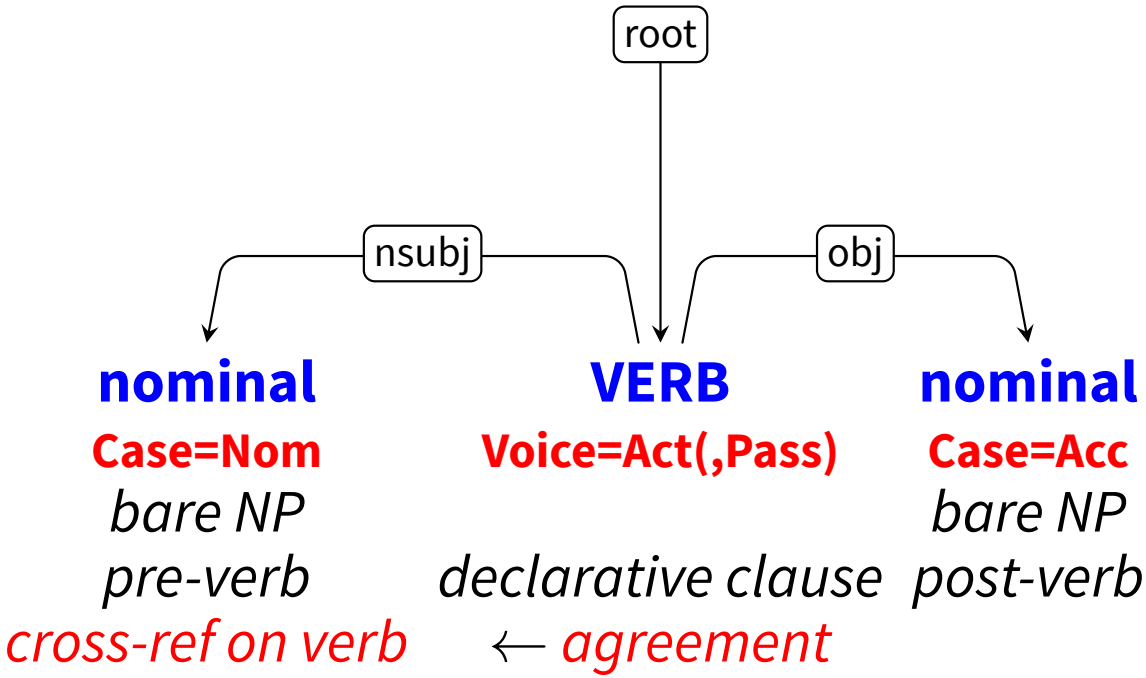
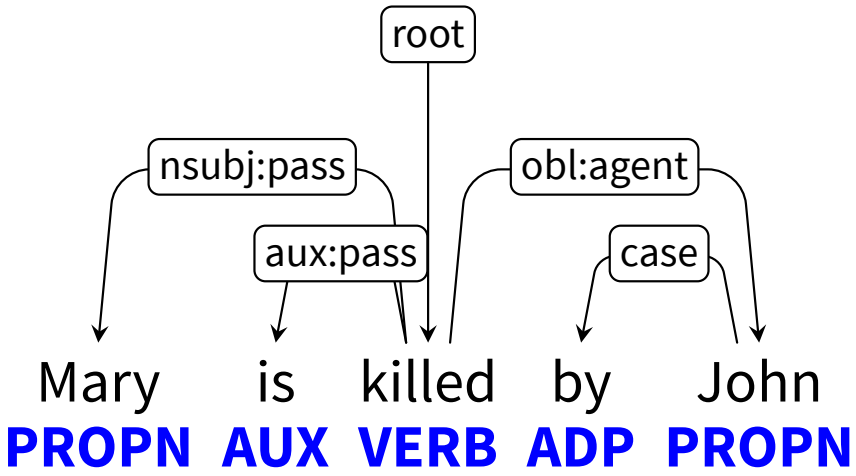
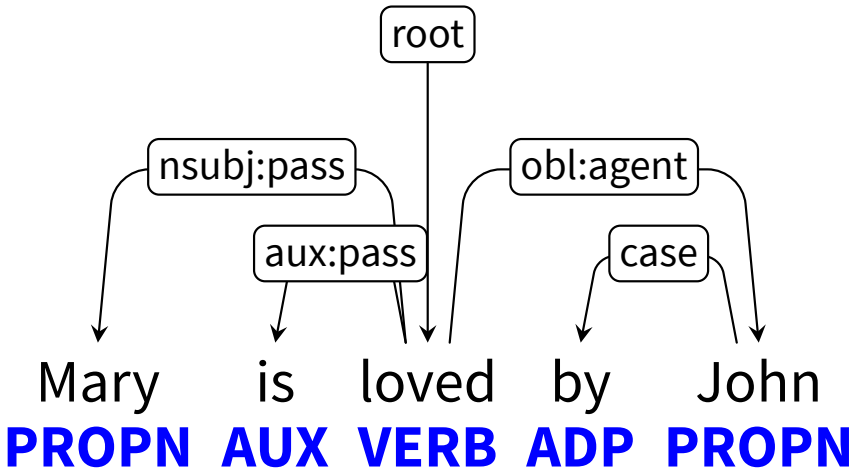
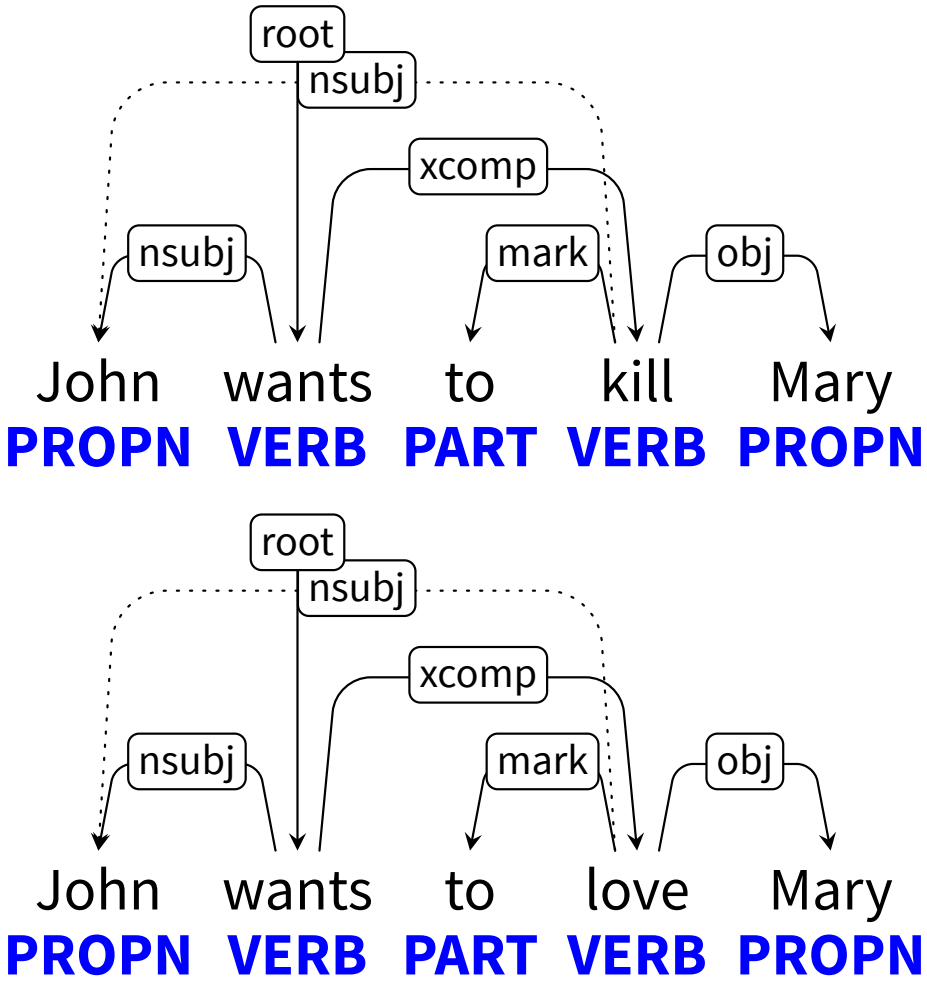


Passivization in English

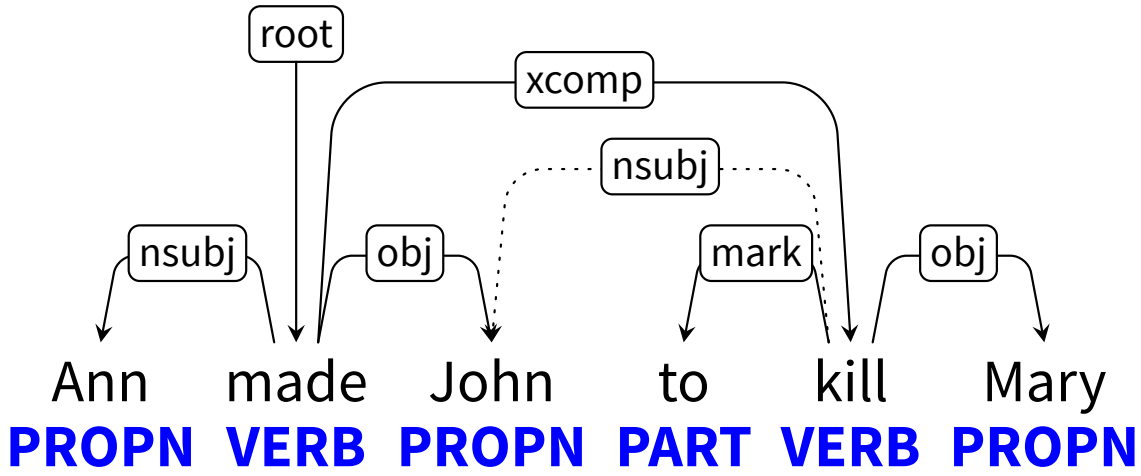


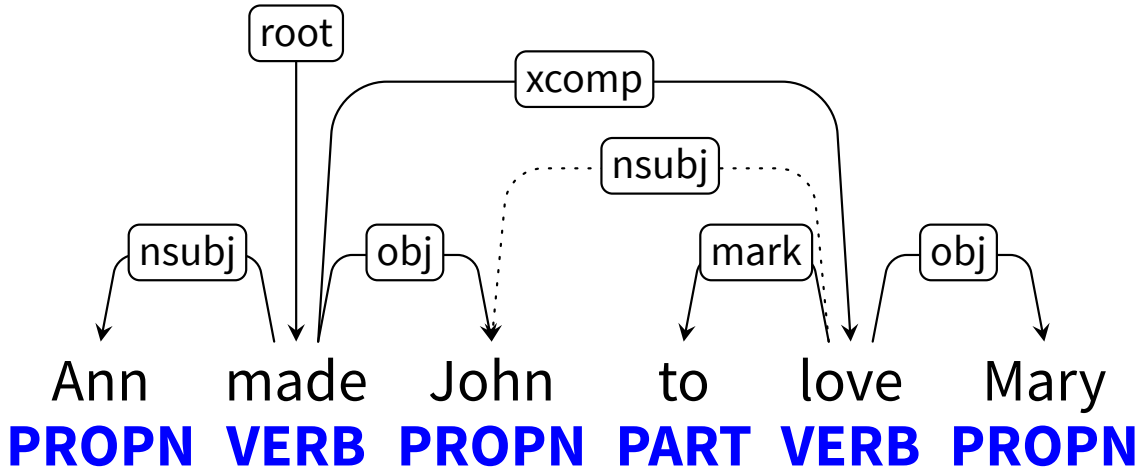


Subject Control in English



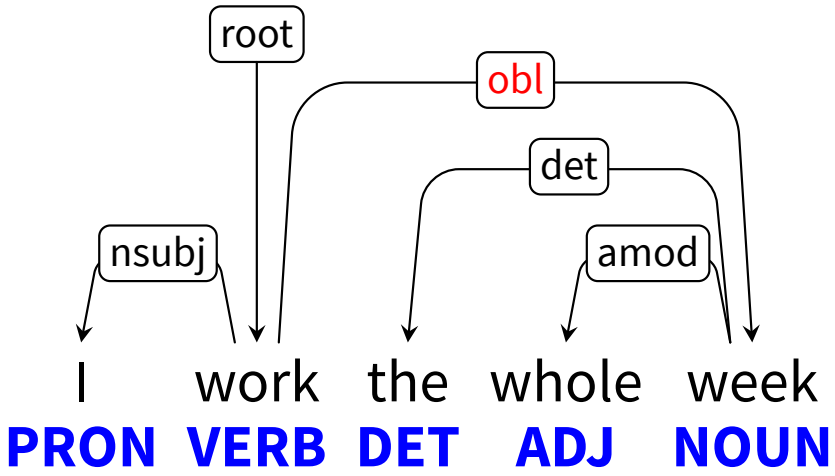
Object Control in English





Some Problems

- Some temporal adjuncts are bare noun phrases
  - *I work the whole week.*
  - *I work every Friday.*



- At least it cannot passivize:
  - **The whole week is worked by me.*
  - **Every Friday is worked by me.*
- But…

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- Some transitive verbs cannot passivize
  - *John has a new car.*
    - ★ **A new car is had by John.*
  - *Friday does not suit me.*
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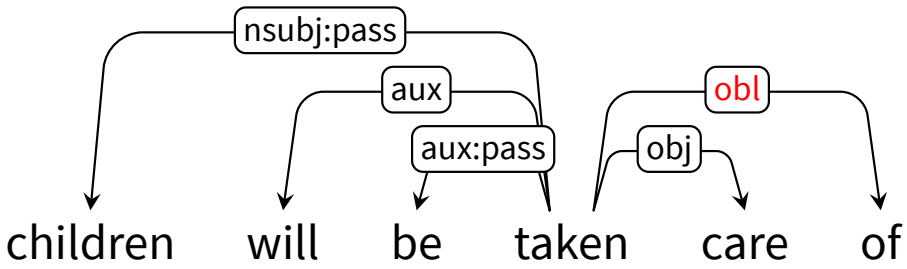
- Some prepositional verbs can passivize
  - *You can rely on Ben.*
    - ★ *Ben can be relied on.*
  - *They will take care of your children.*
    - ★ *Your children will be taken care of.*



Tentative Summary?

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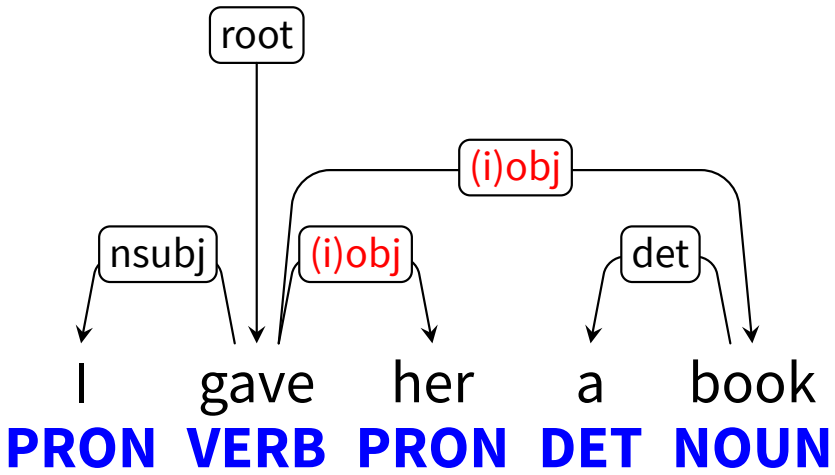
- Semantic roles needed when starting a new language
- Argument-adjunct needed to describe exceptions *(the whole week)*

Intransitive Predicates

- Just one core argument
  - We already “know” how to find out if there are two
- ⇒ function S
  - Regardless of semantic role:
    - *John runs.*
    - *John sleeps.*
    - *John falls.*
- Then define:
  - function S ⇒ **nsubj**

Ditransitive Predicates

- Three core arguments
- Is one of them “least core”? ⇒ **`iobj`**
- (Alternatively, we could look at the semantic roles once again.)



- Passivization:
  - *She was given a book by me.*
  - *?A book was given her by me.*

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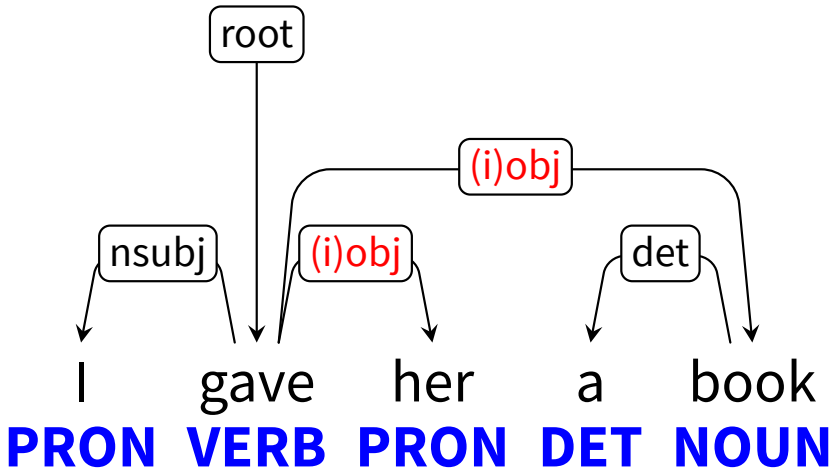
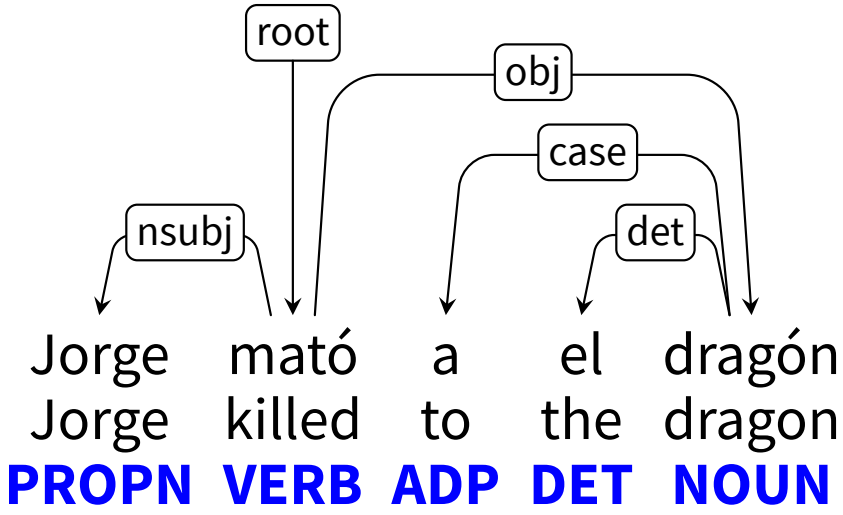
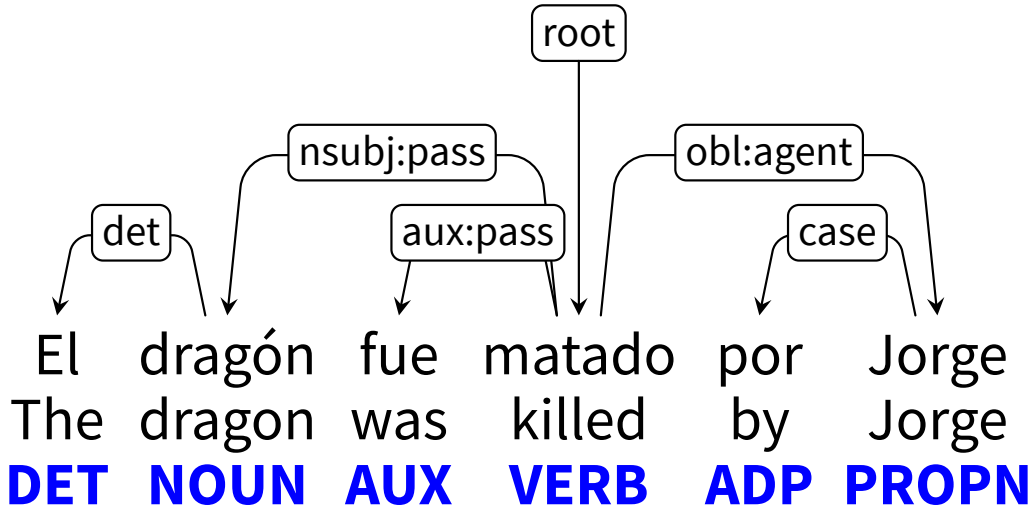


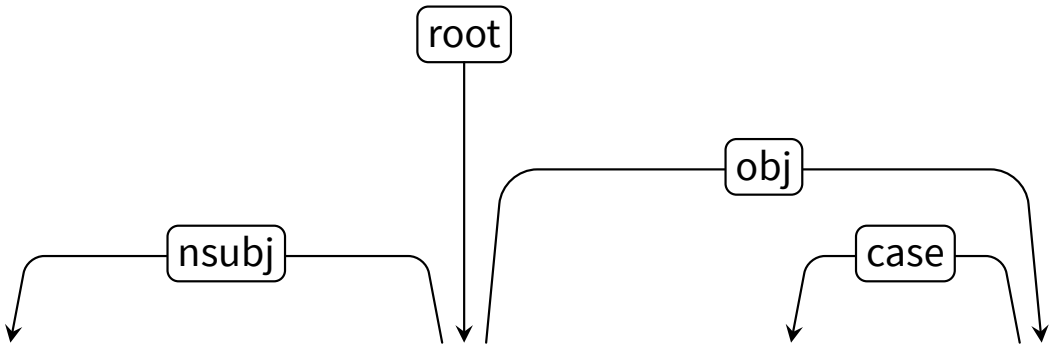
- Andrews (2007): *the status of the notion of ‘indirect object’ is problematic and difficult to sort out. The top priority is to work out what properties recipients and themes do and do not share with P arguments of primary transitive verbs.*

Spanish


root
obj
case
nsubj
det
Jorge mató a el dragón
Jorge killed to the dragon
PROPN VERB ADP DET NOUN


root
nsubj:pass
obl:agent
det
aux:pass
case
El dragón fue matado por Jorge
The dragon was killed by Jorge
DET NOUN AUX VERB ADP PROPN

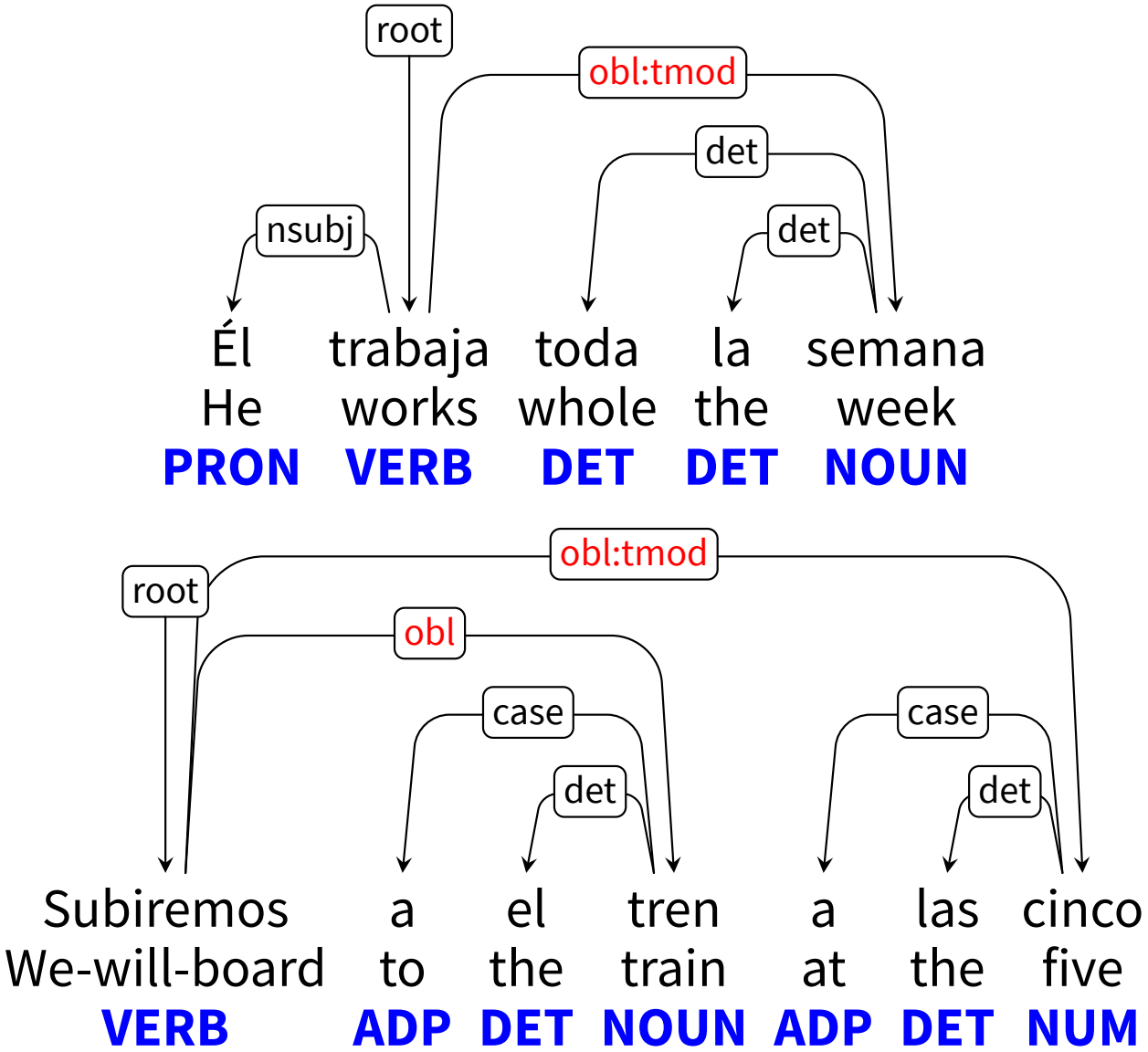
Spanish Transitive Clauses



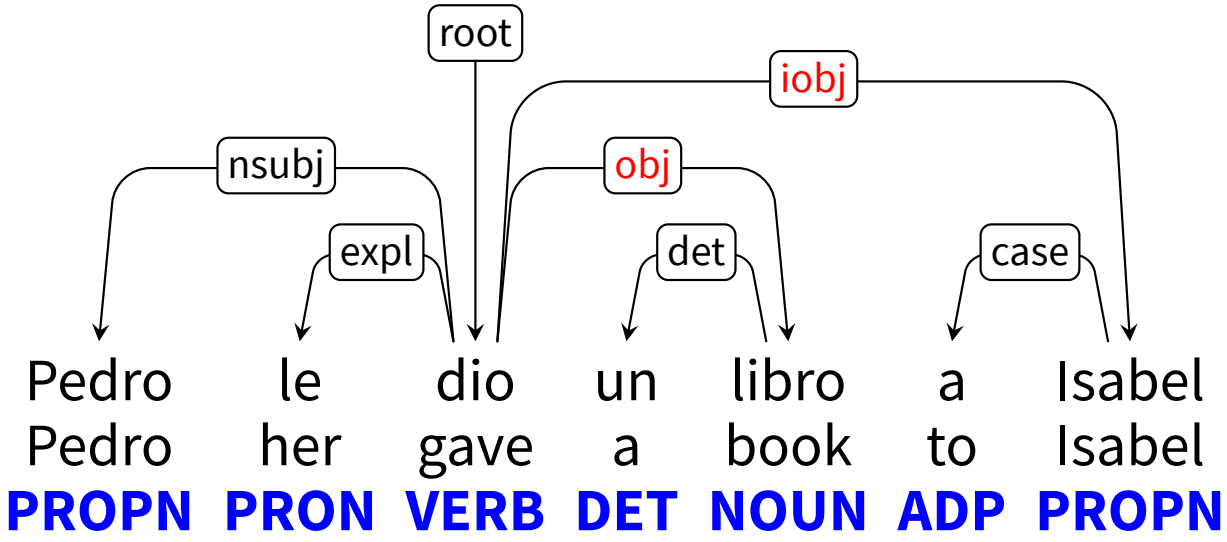
(a)

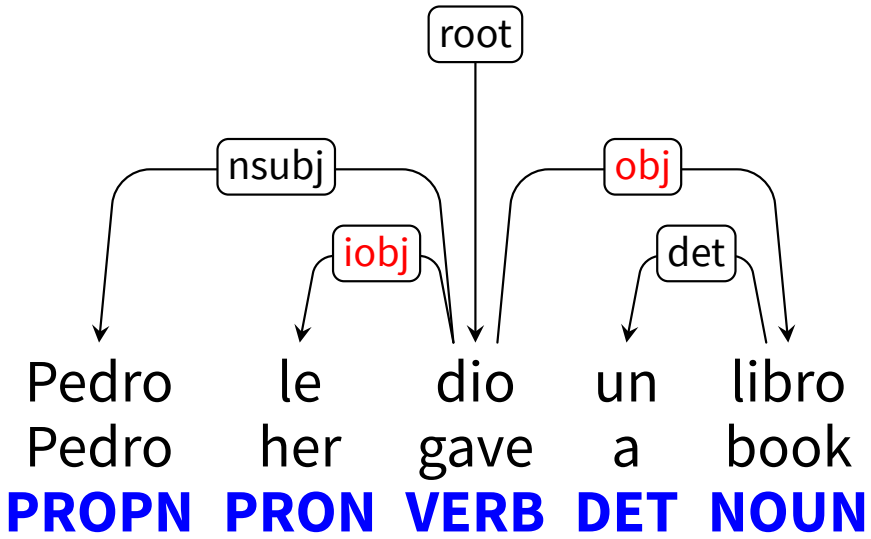
nominal	**VERB**	**(ADP)**	**nominal**
Case=Nom	**Voice=Act(,Pass)**		**Case=Acc**
bare NP			*(or bare NP)*
~~pre-verb~~	*declarative clause*		*~~post-verb~~*
cross-ref on verb	*← agreement*		

Spanish Adjunct Exceptions



Spanish Ditransitive Clauses





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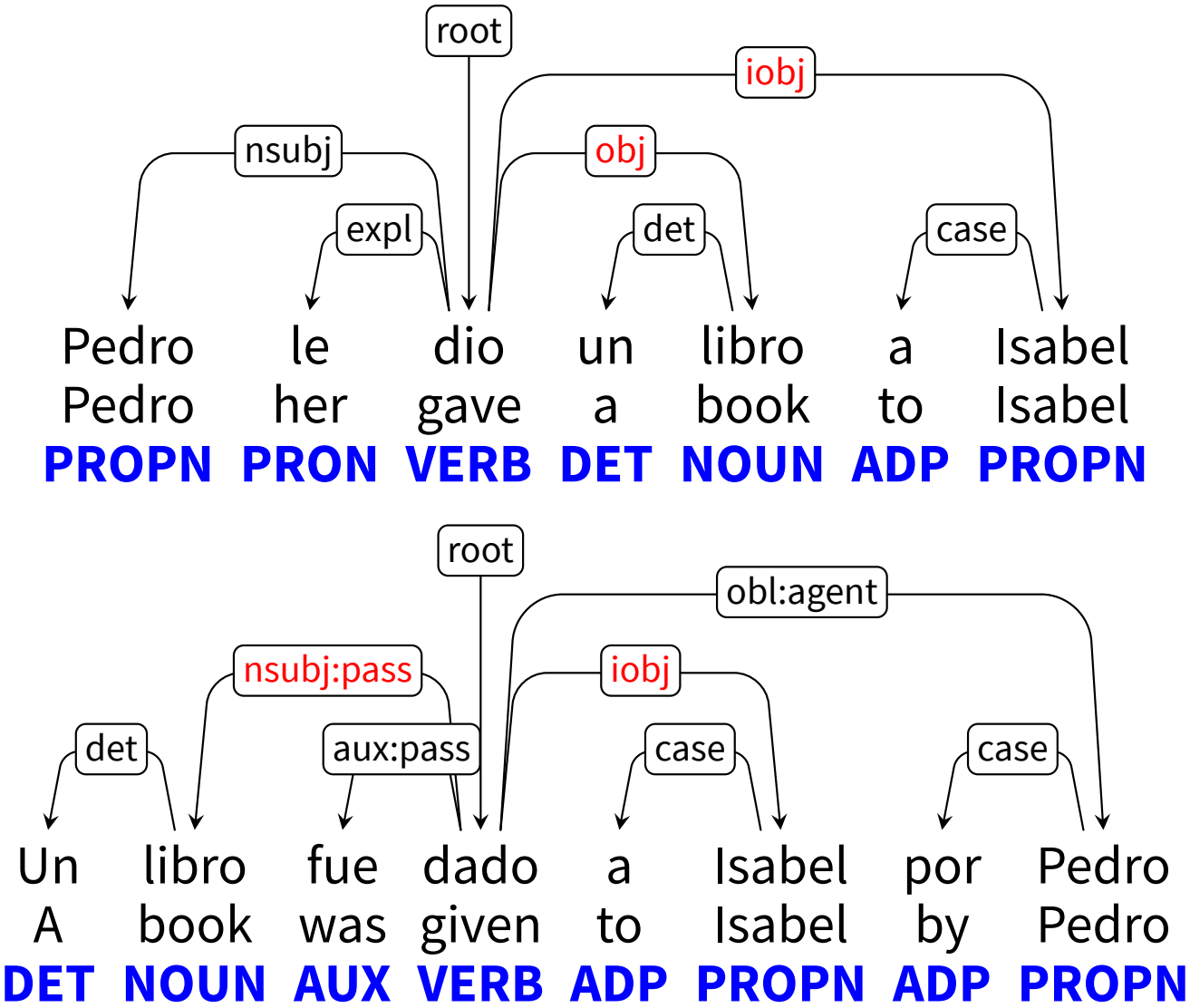
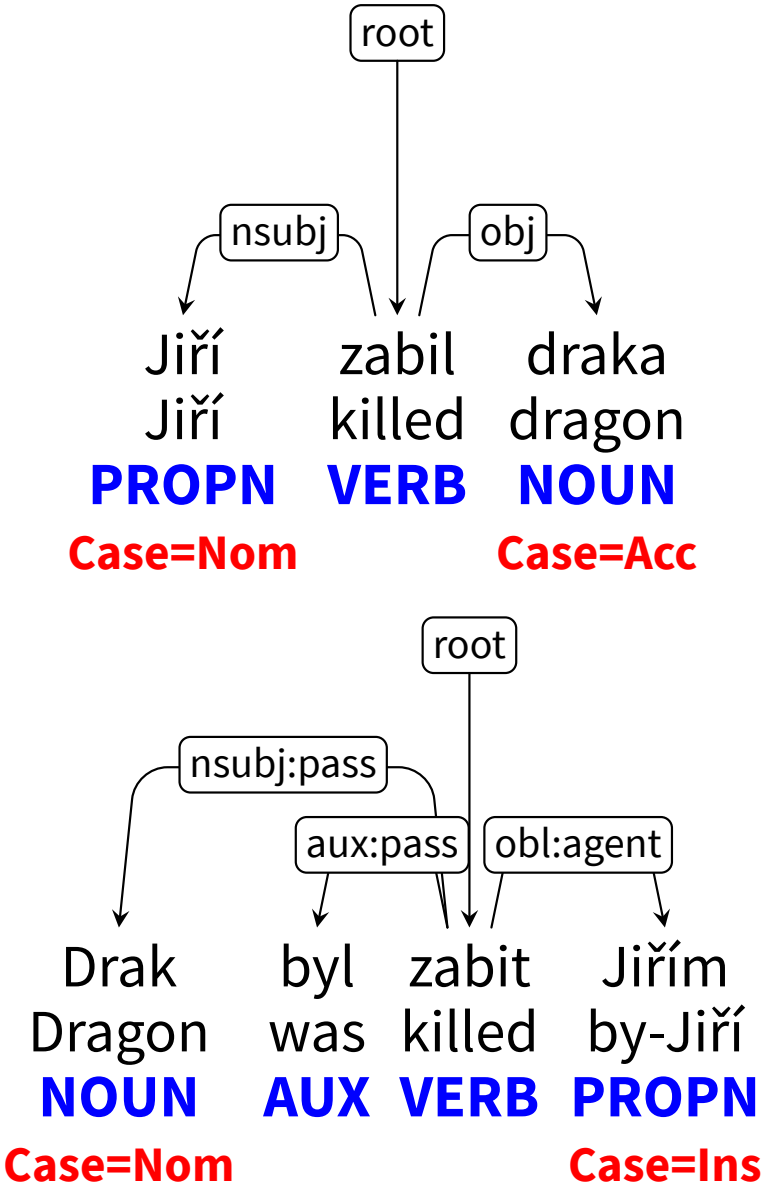
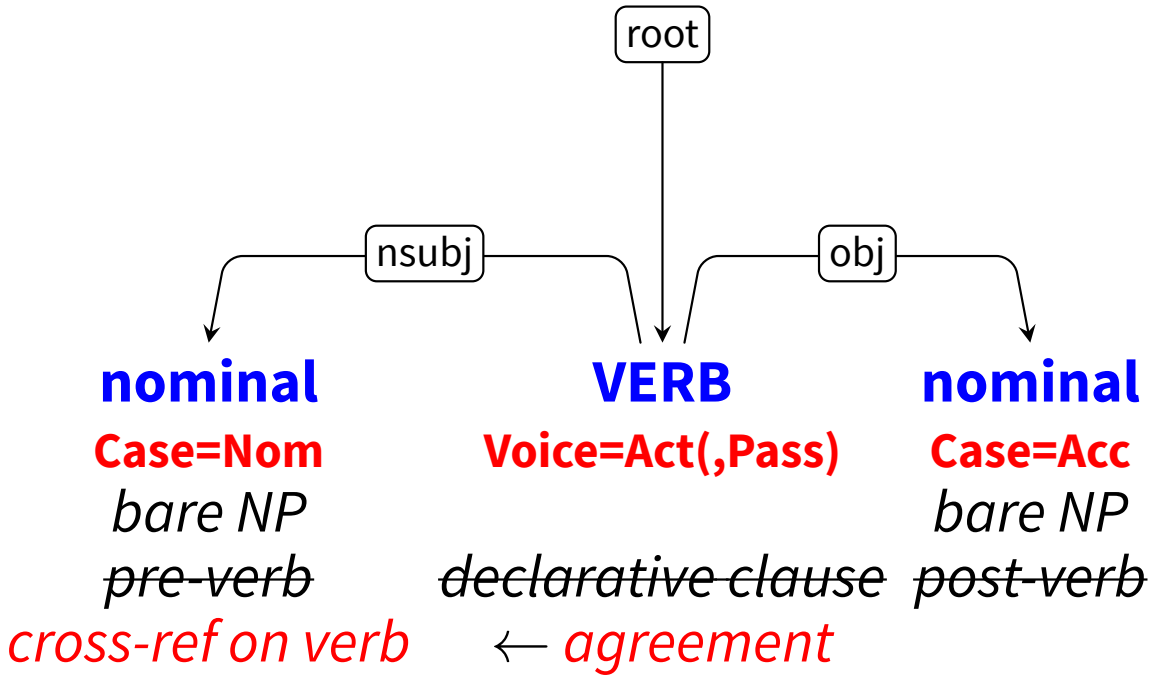


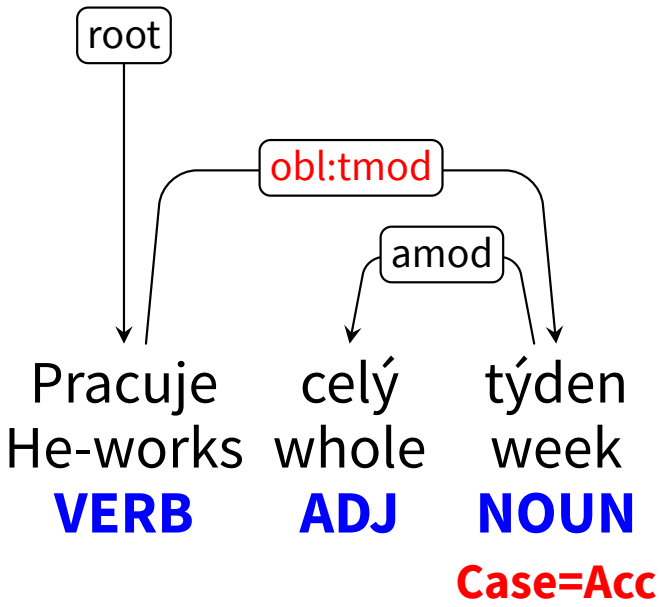
Czech


root
nsubj
obj
Jiří
Jiří
PROPN
Case=Nom
zabil
killed
VERB
draka
dragon
NOUN
Case=Acc
root
nsubj:pass
aux:pass
obl:agent
Drak
Dragon
NOUN
Case=Nom
byl
was
AUX
zabit
killed
VERB
Jiřím
by-Jiří
PROPN
Case=Ins

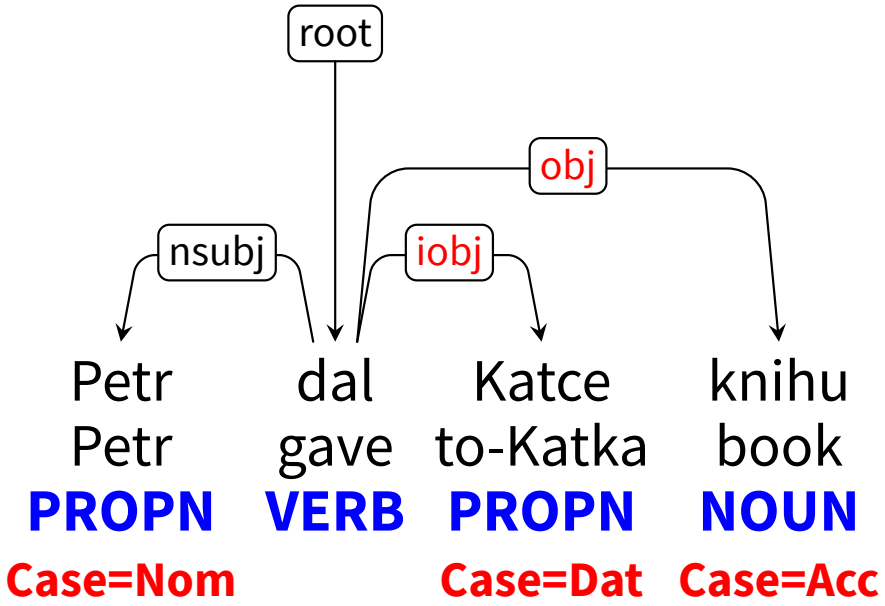
Czech Transitive Clauses

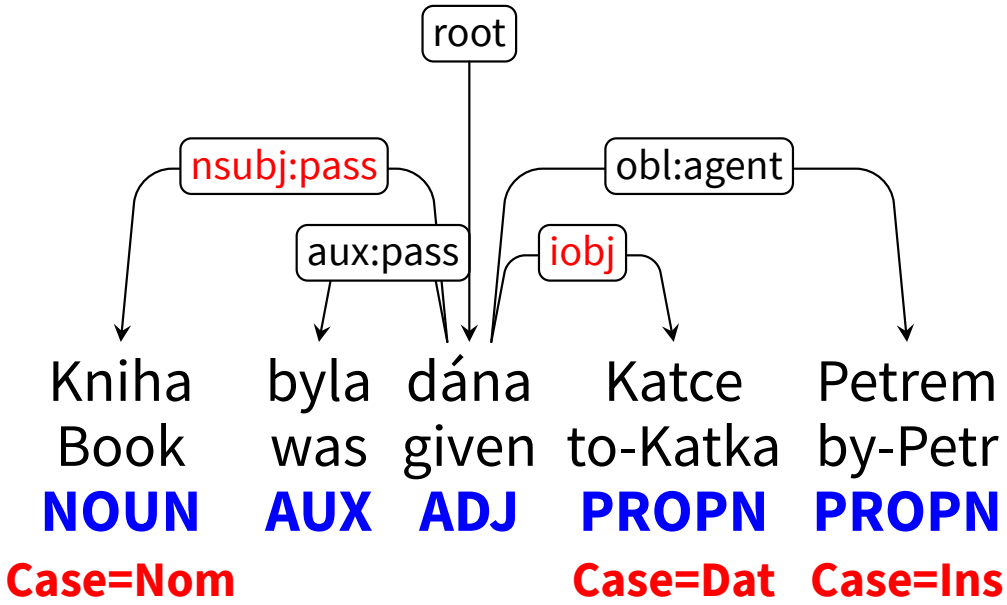


Czech Adjunct Exceptions

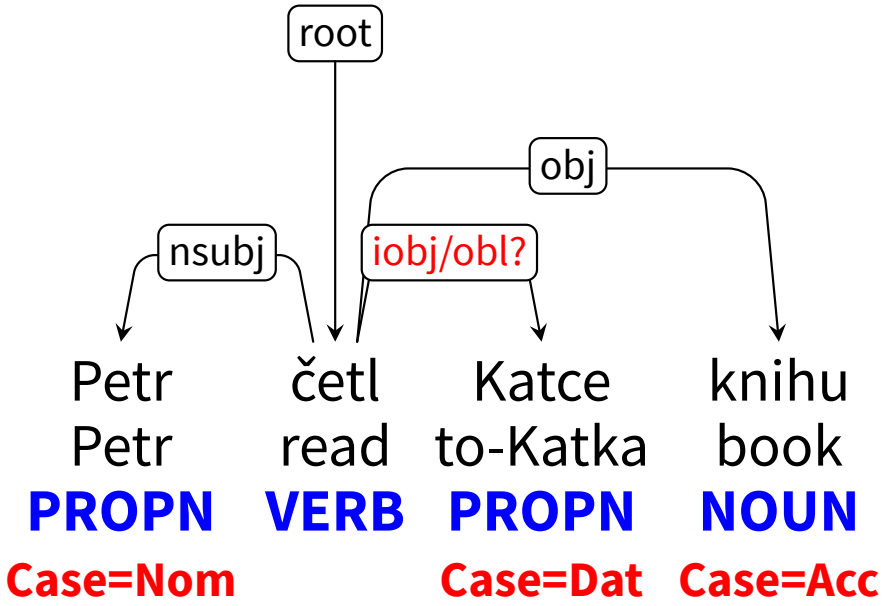


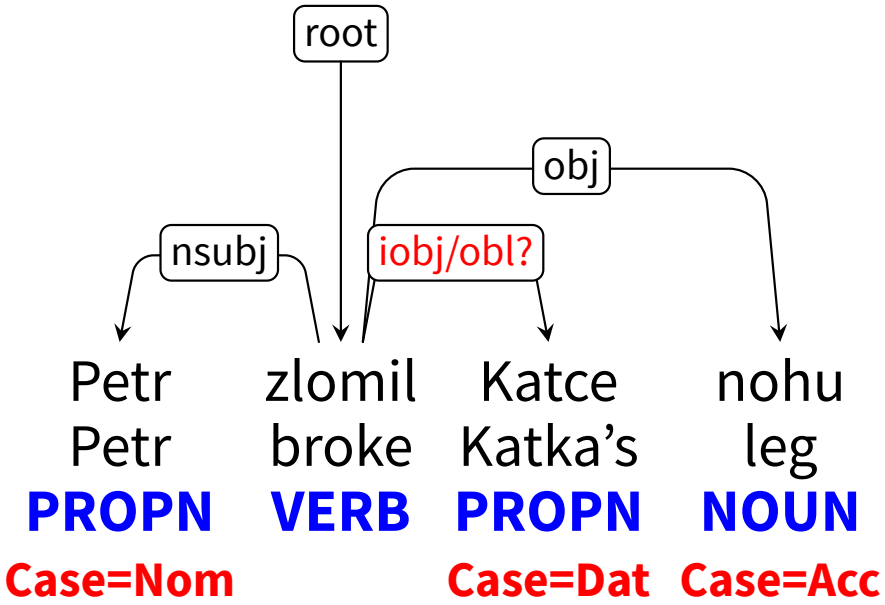
Czech Ditransitive Clauses



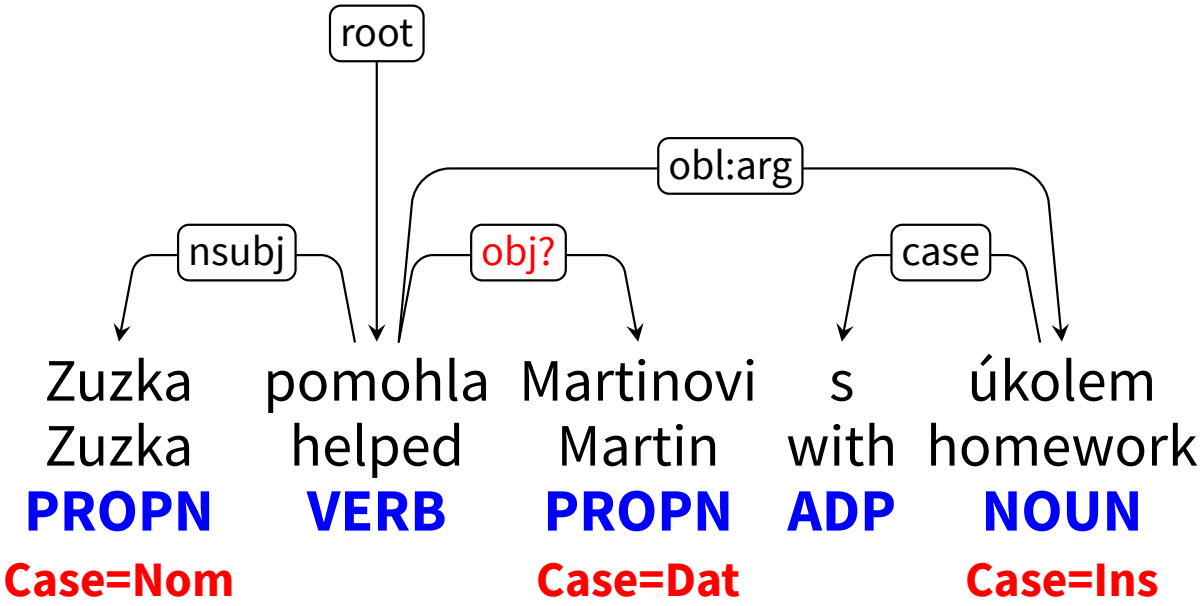


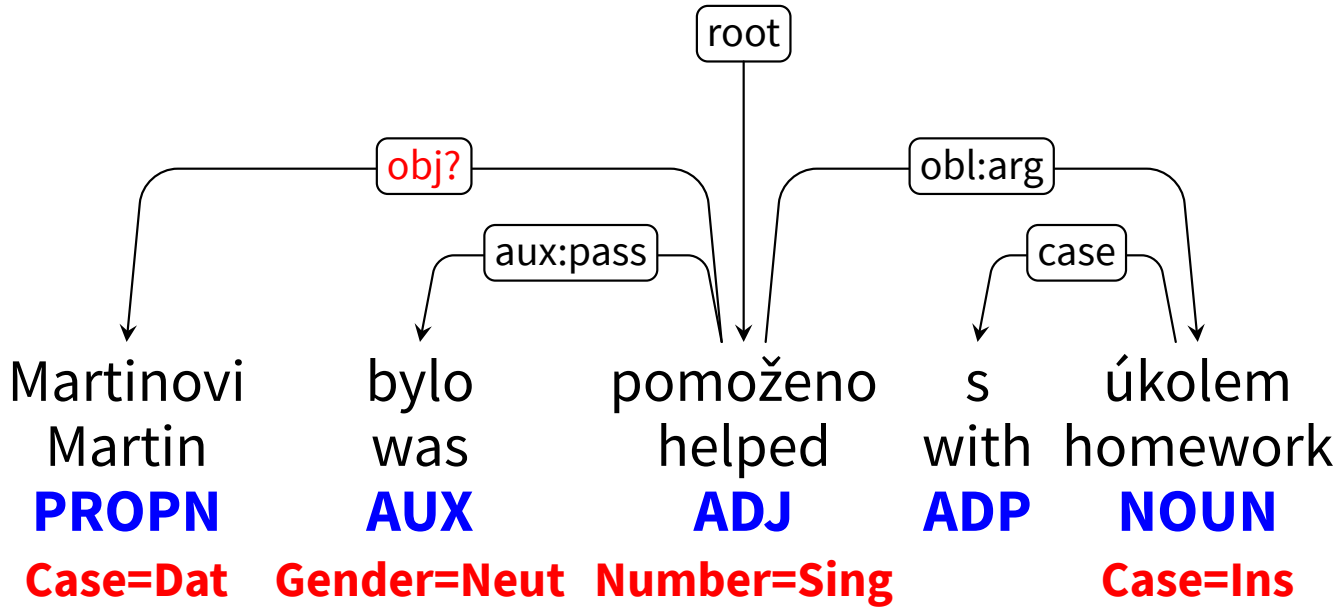
Dative: Recipient vs. Beneficiary



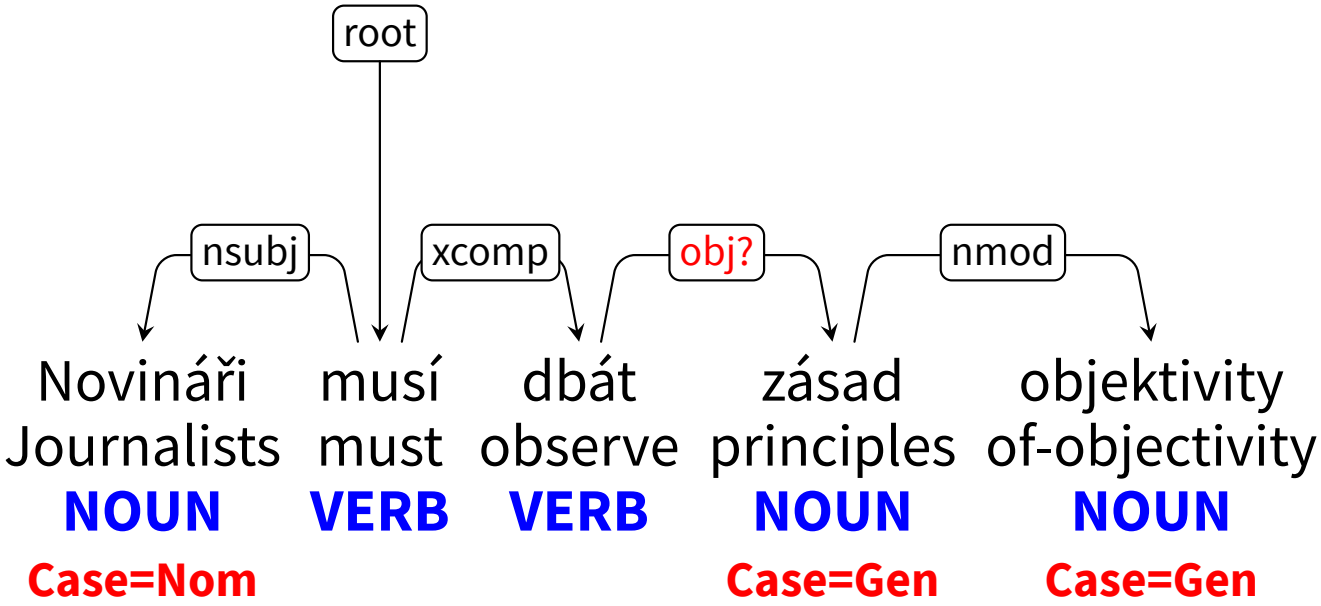


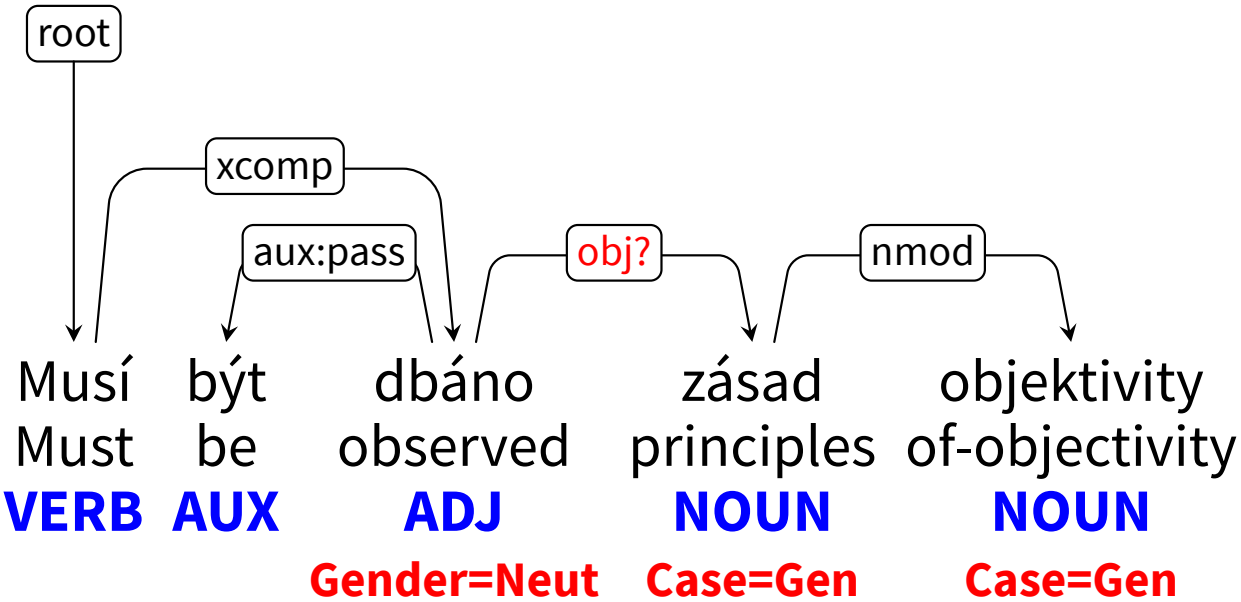
Monotransitive with Dative?



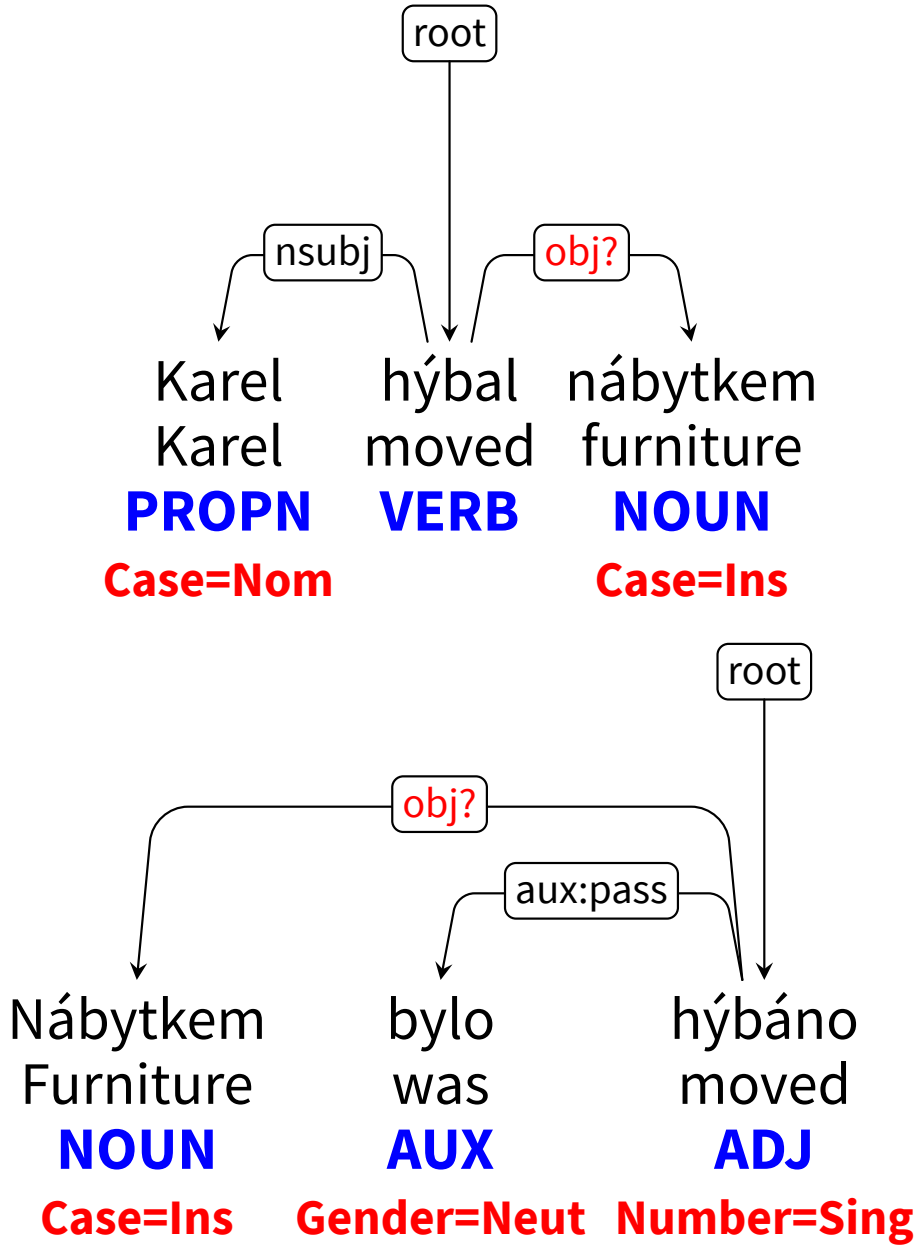


Monotransitive with Genitive?

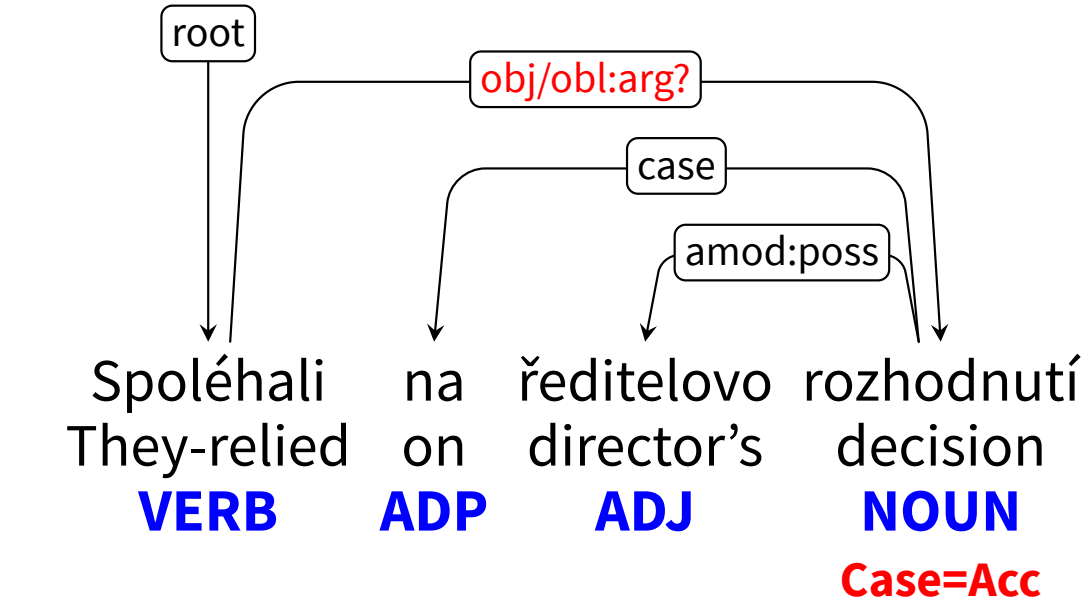


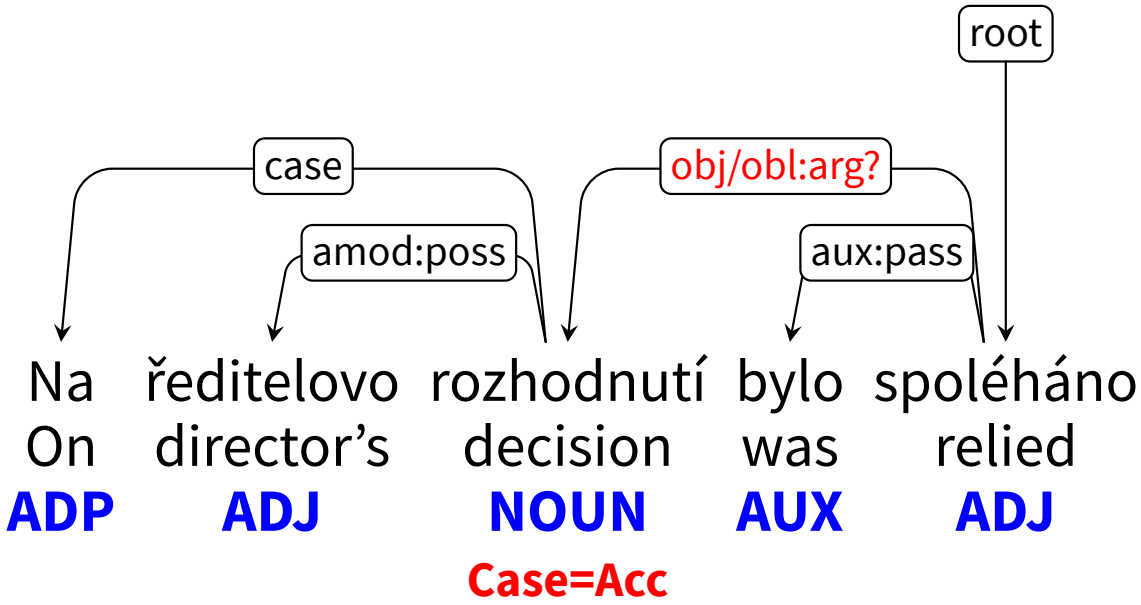


Monotransitive with Instrumental?



Monotransitive with Preposition?





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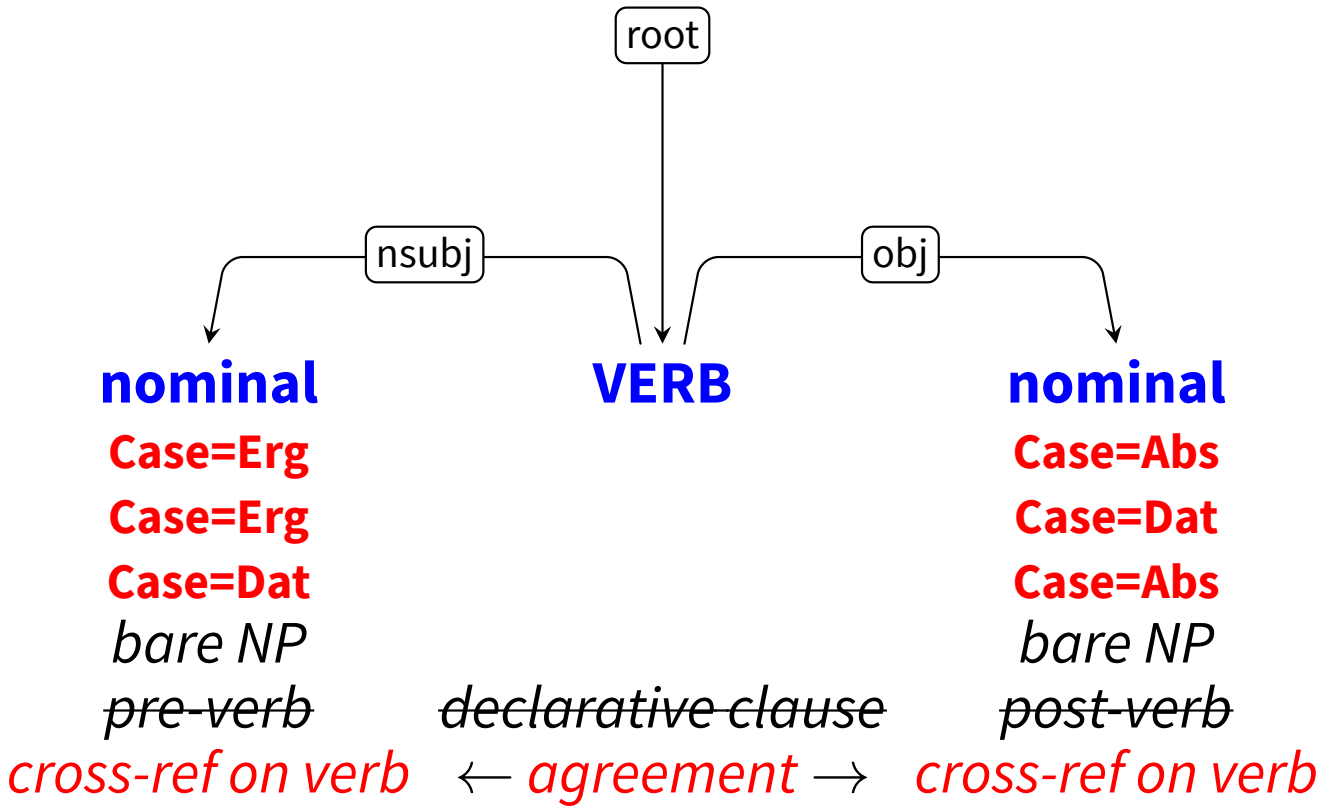
  - $\Rightarrow$ No ditransitives in Czech!

Basque Transitive Clauses



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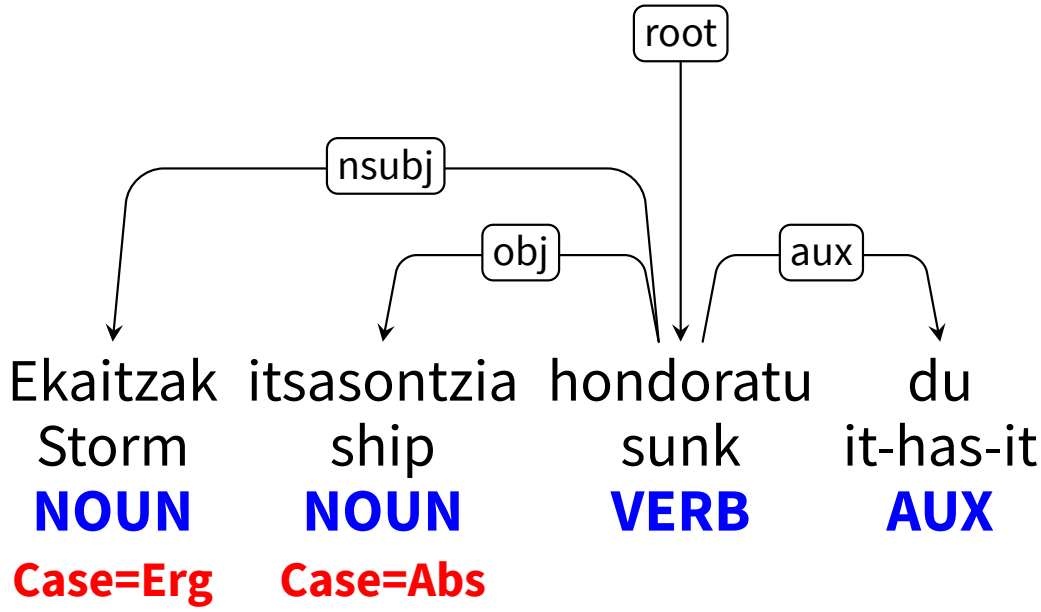
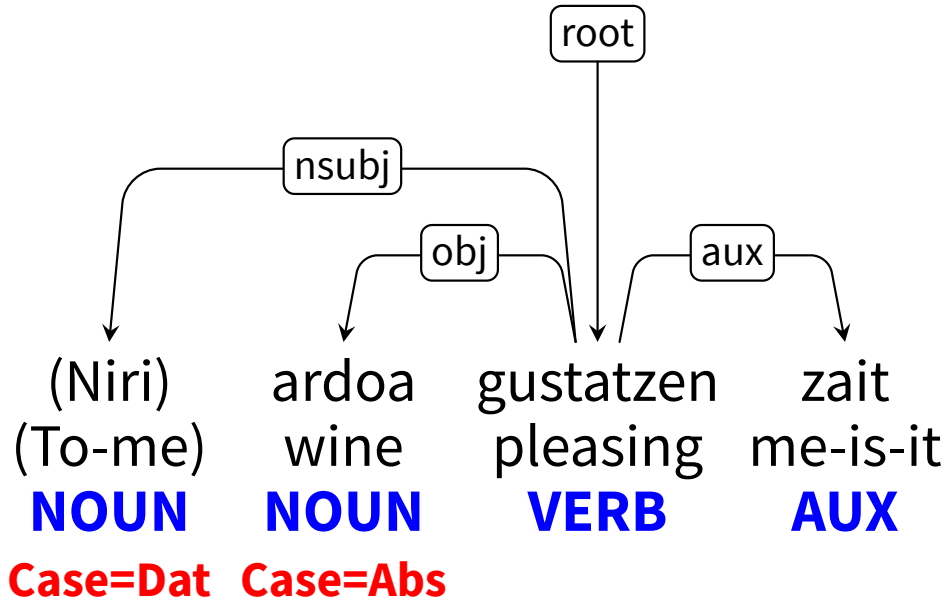
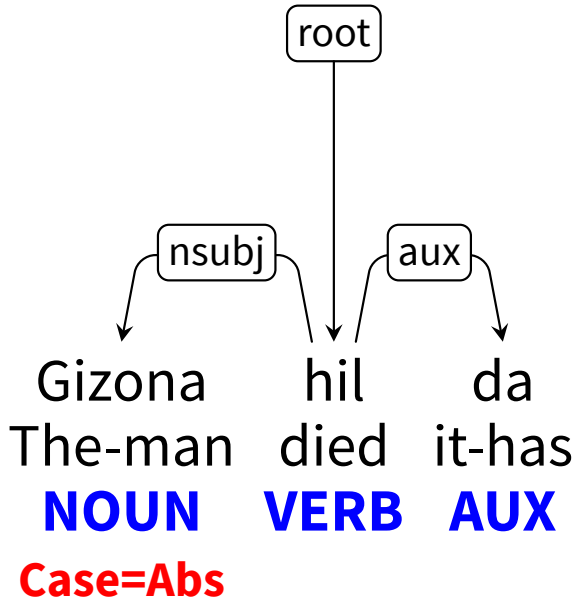
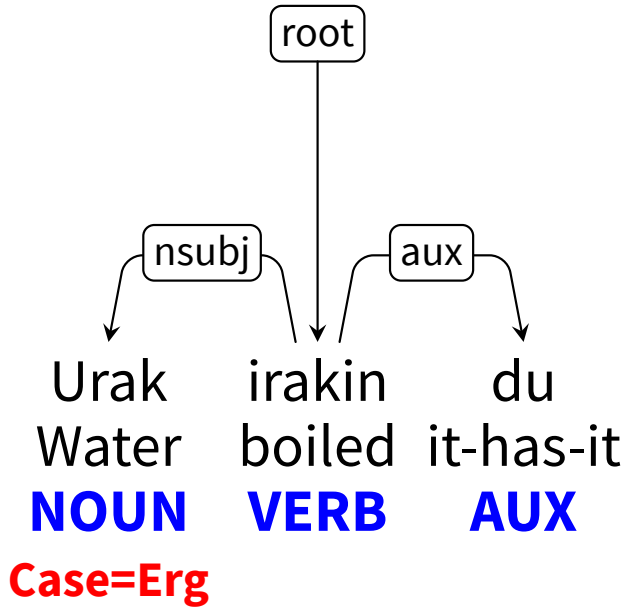


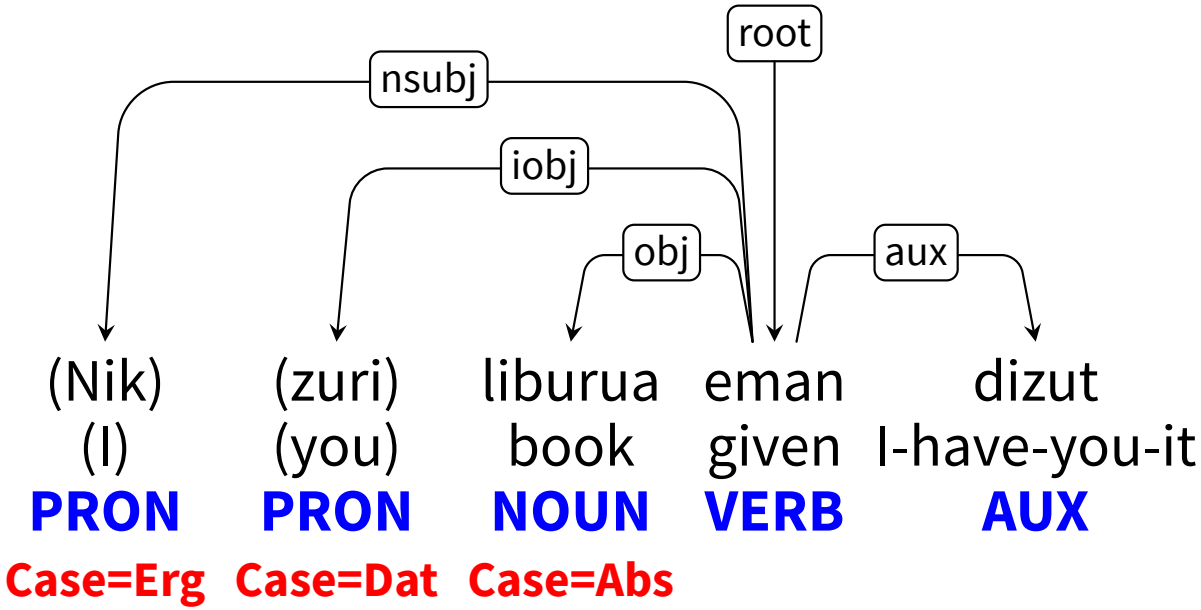


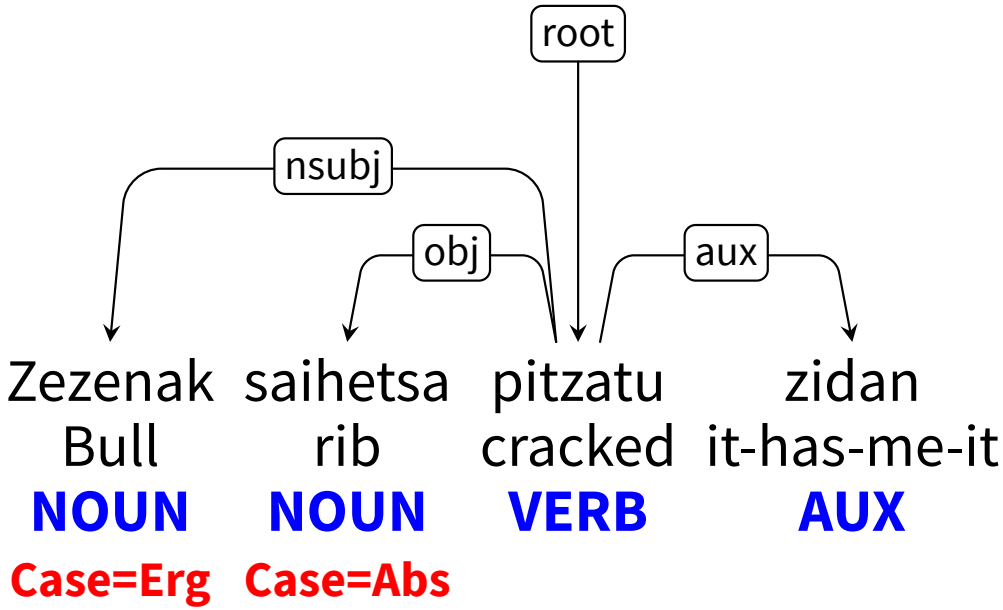
Basque Intransitive Clauses



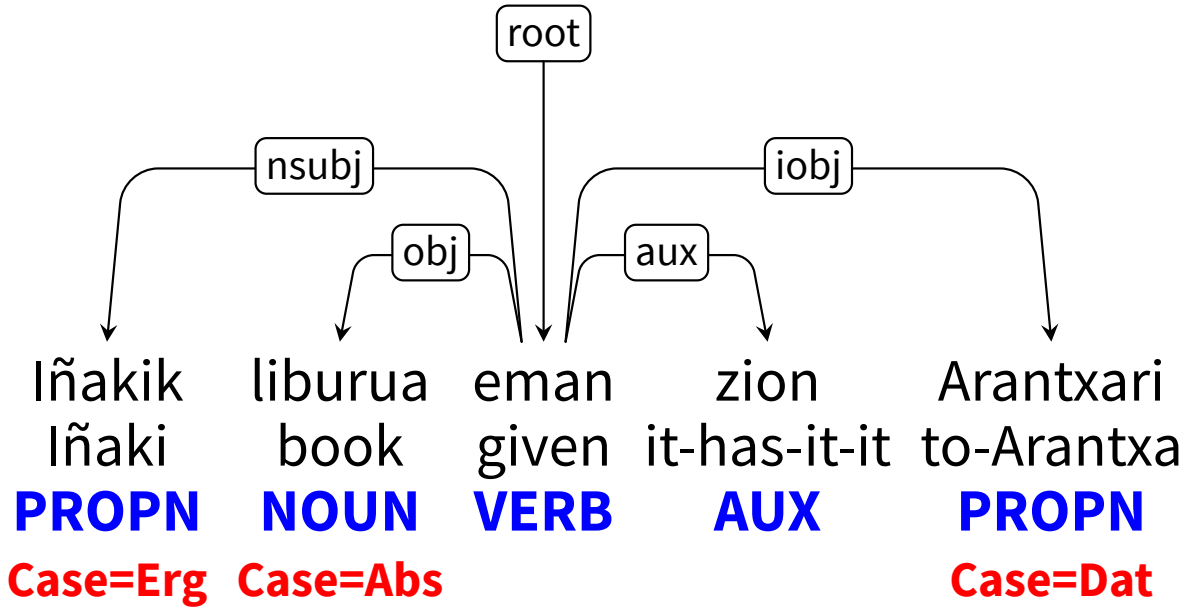


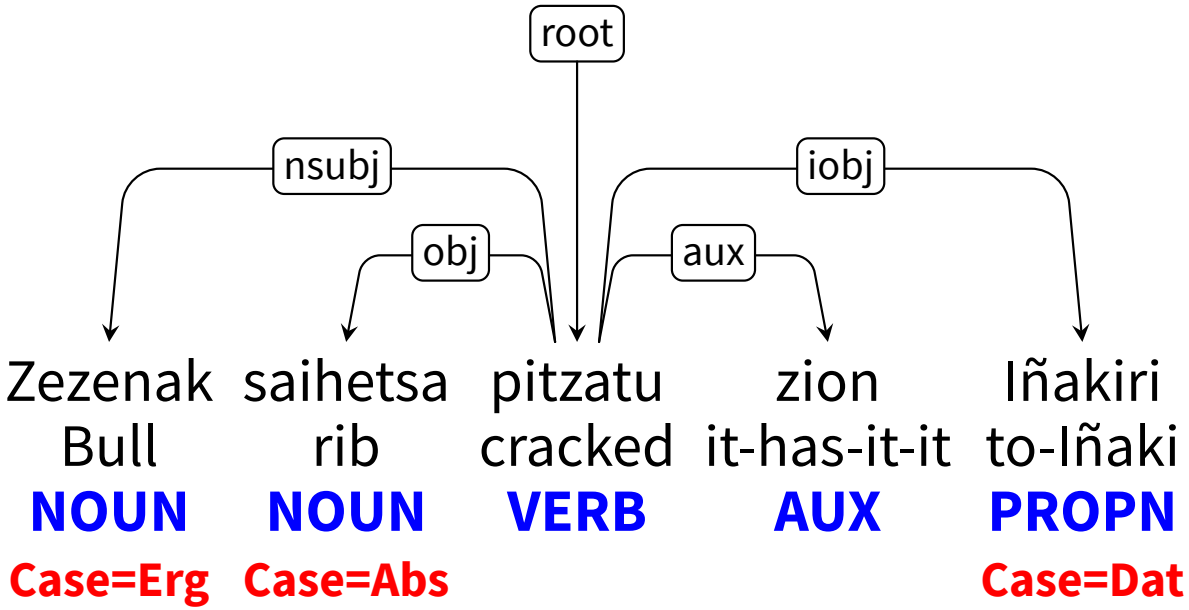
Basque Ditransitive Clauses



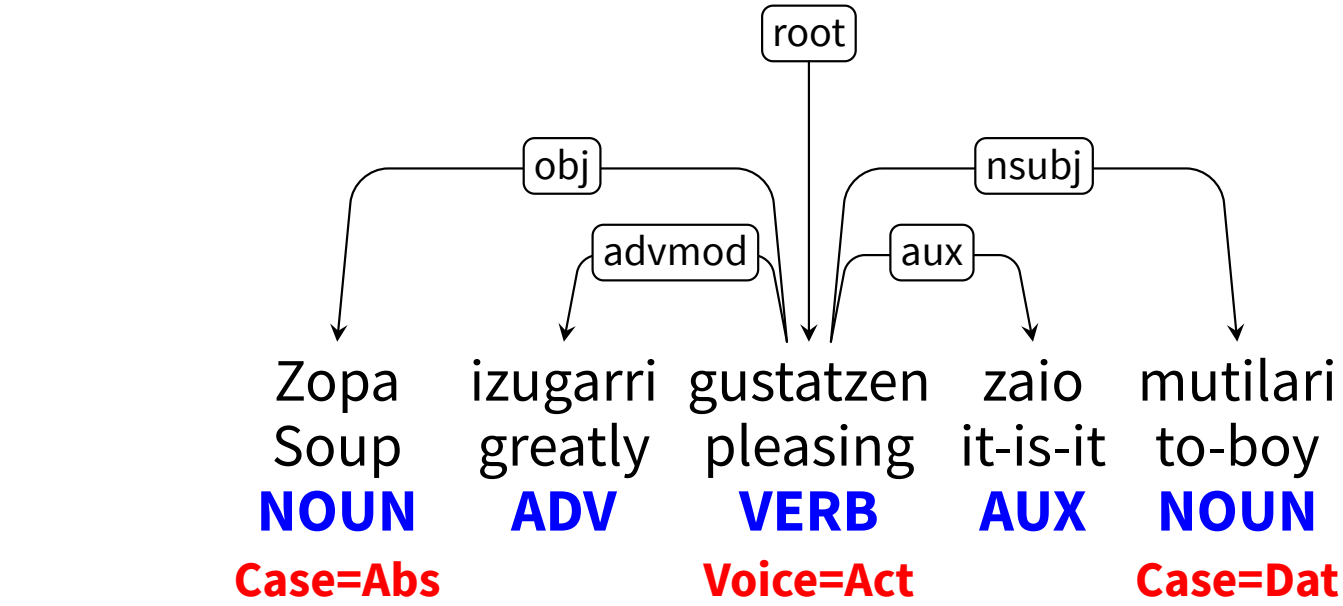


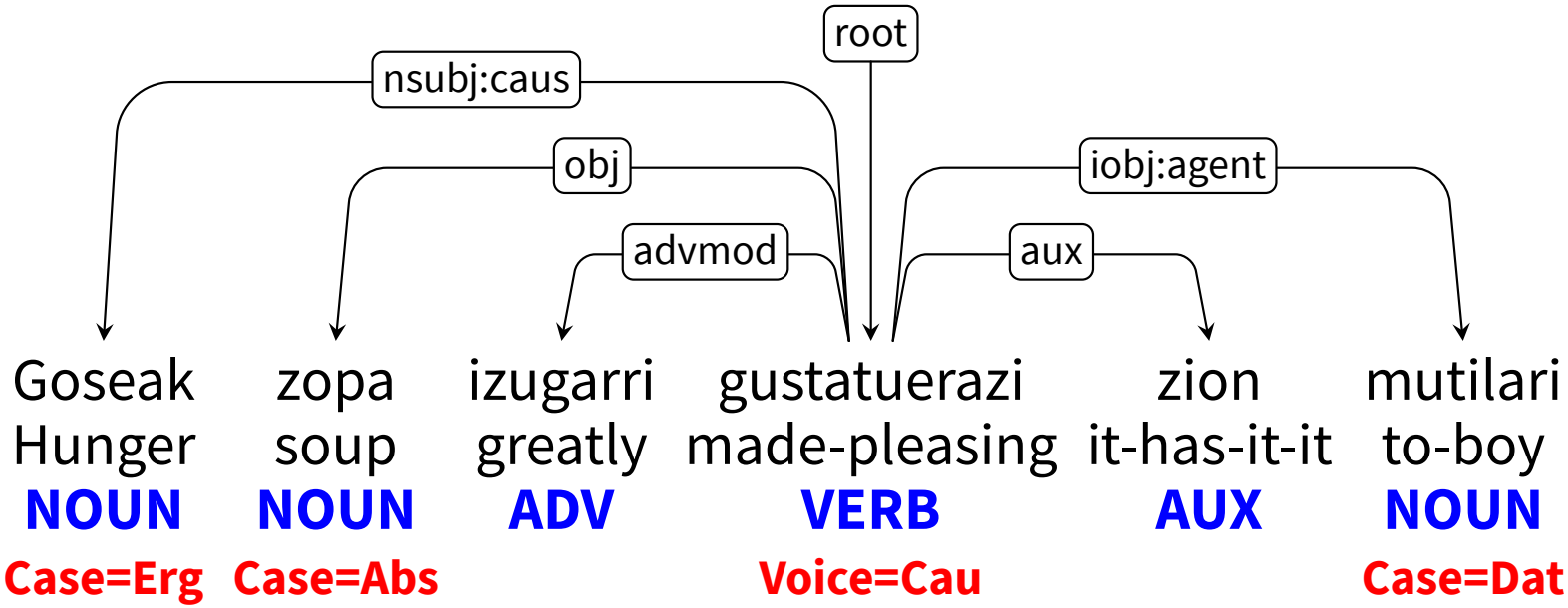
Basque Ditransitive Clauses



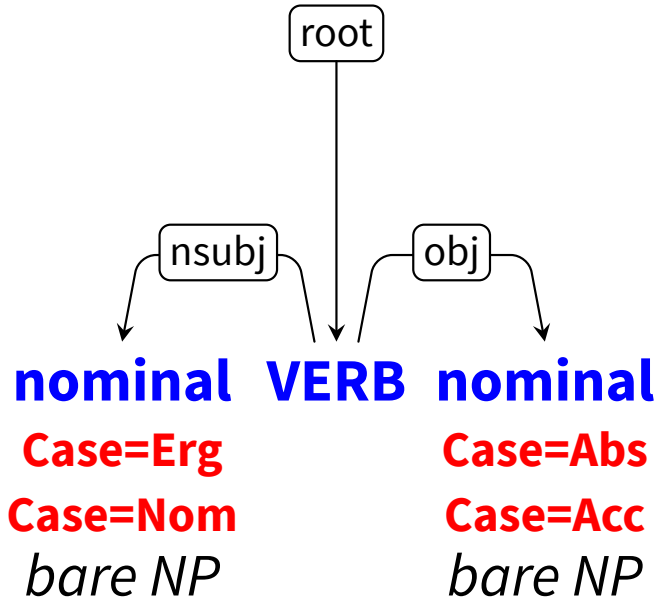


Basque Causative Applied to Dative Subject



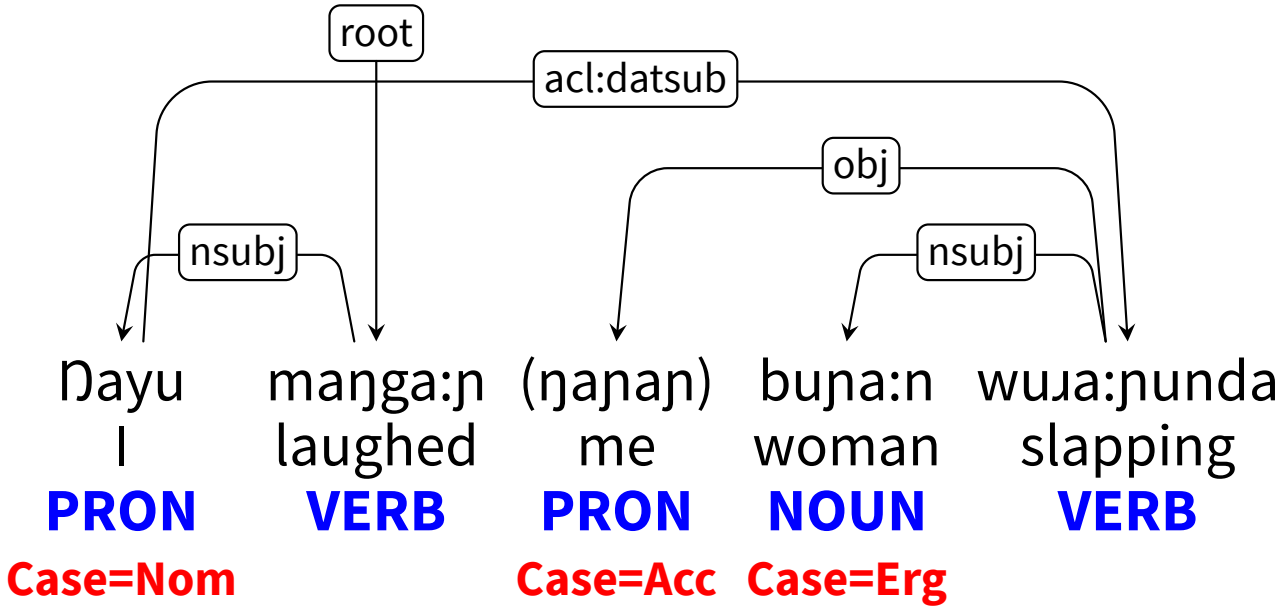


Yidiɲ Transitive Clauses



Yidiɲ “Dative” Adnominal Clauses

“I, (who) was slapped by the woman, laughed”



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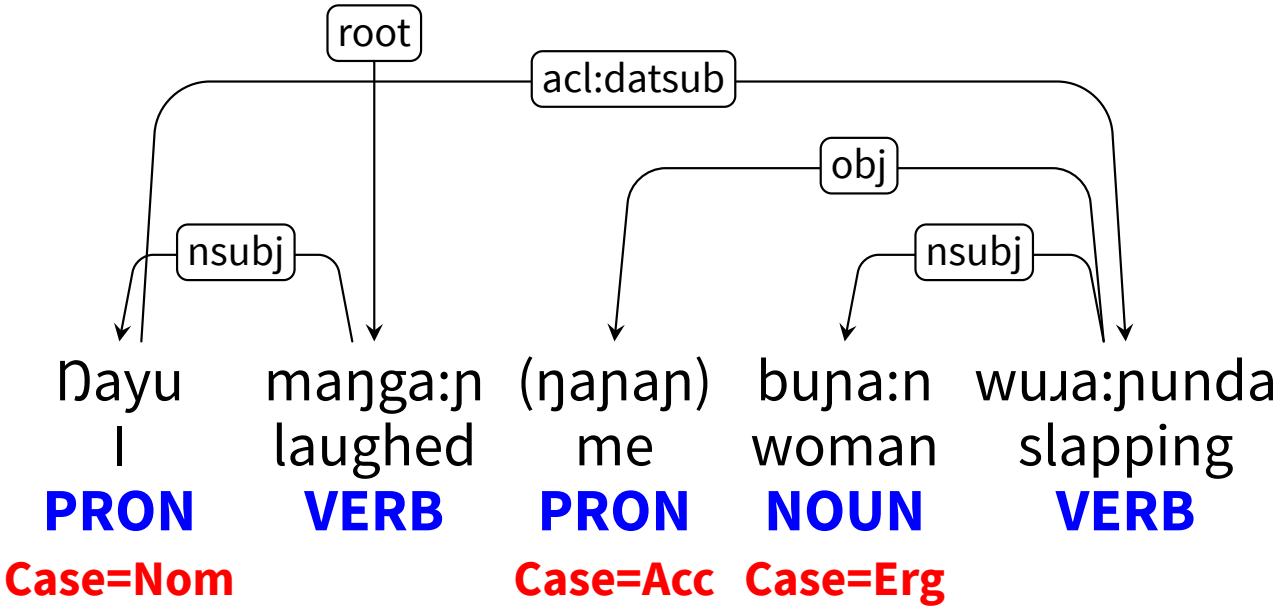

The coreferential (and elidable) NP must have S or P function.

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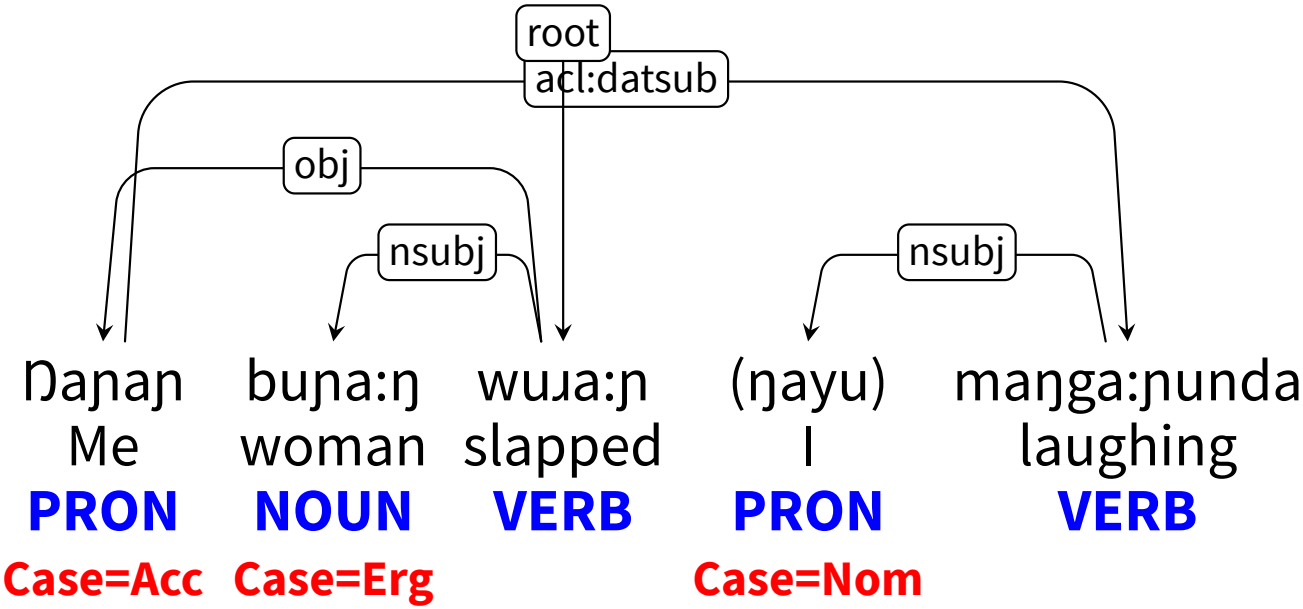

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Yidiɲ Antipassive

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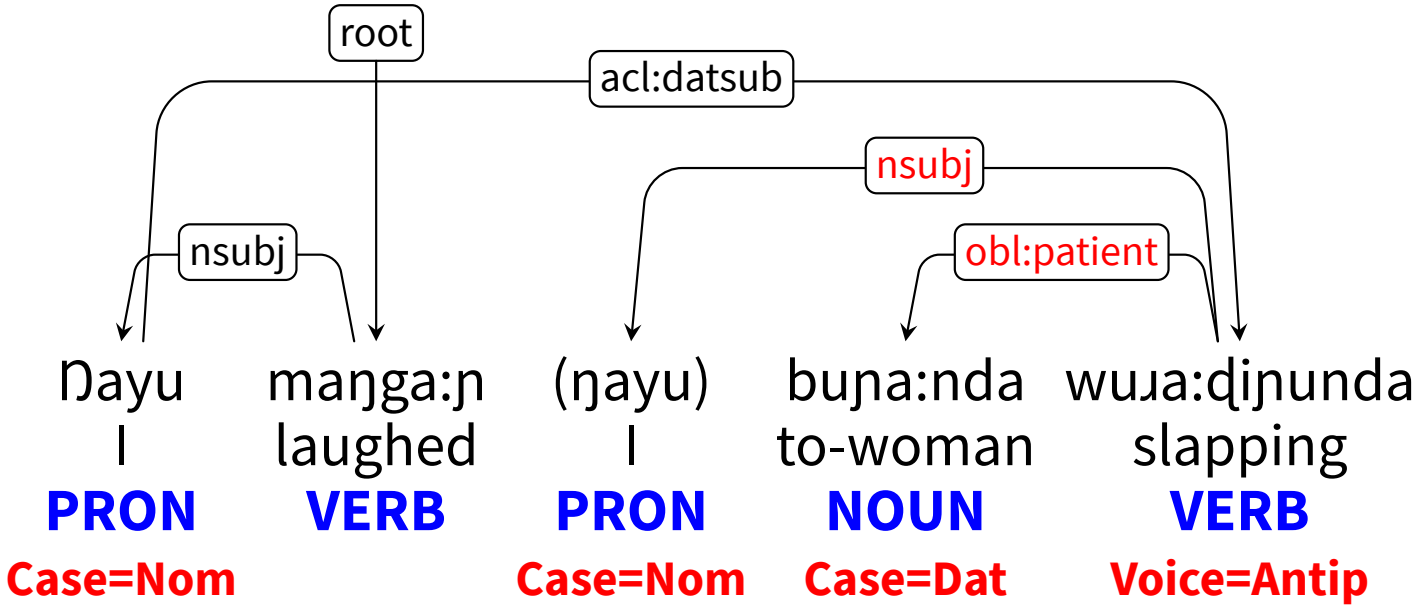
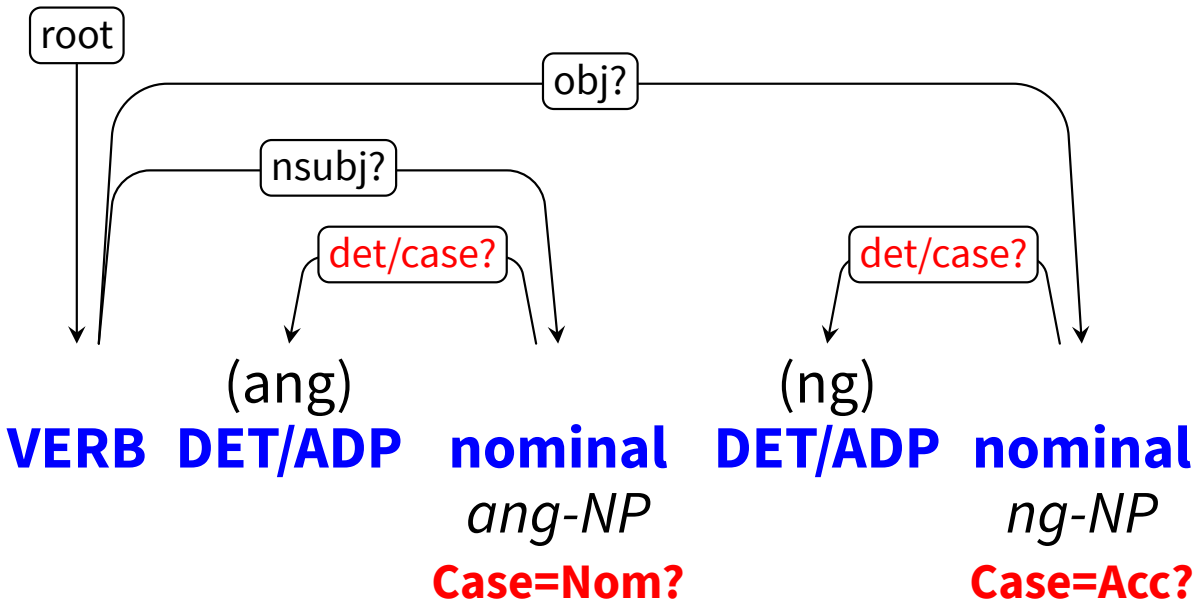
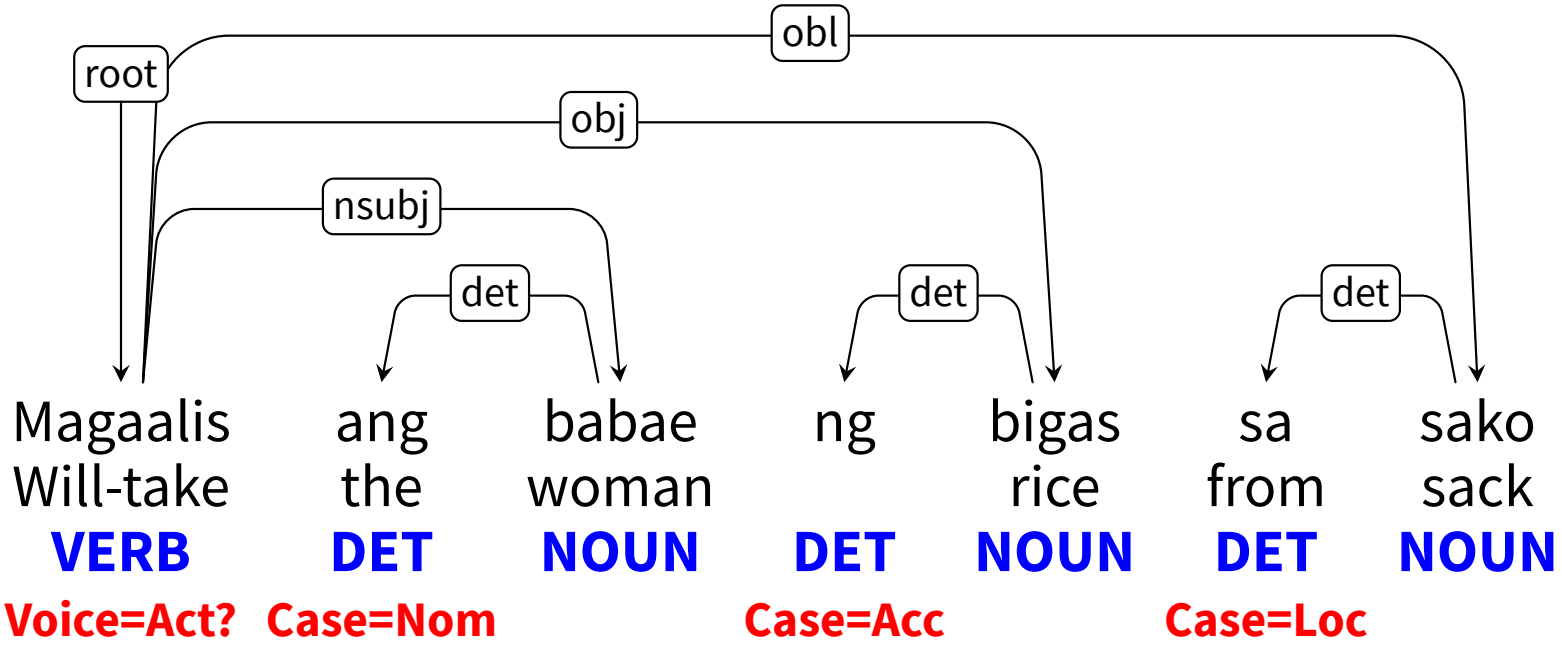
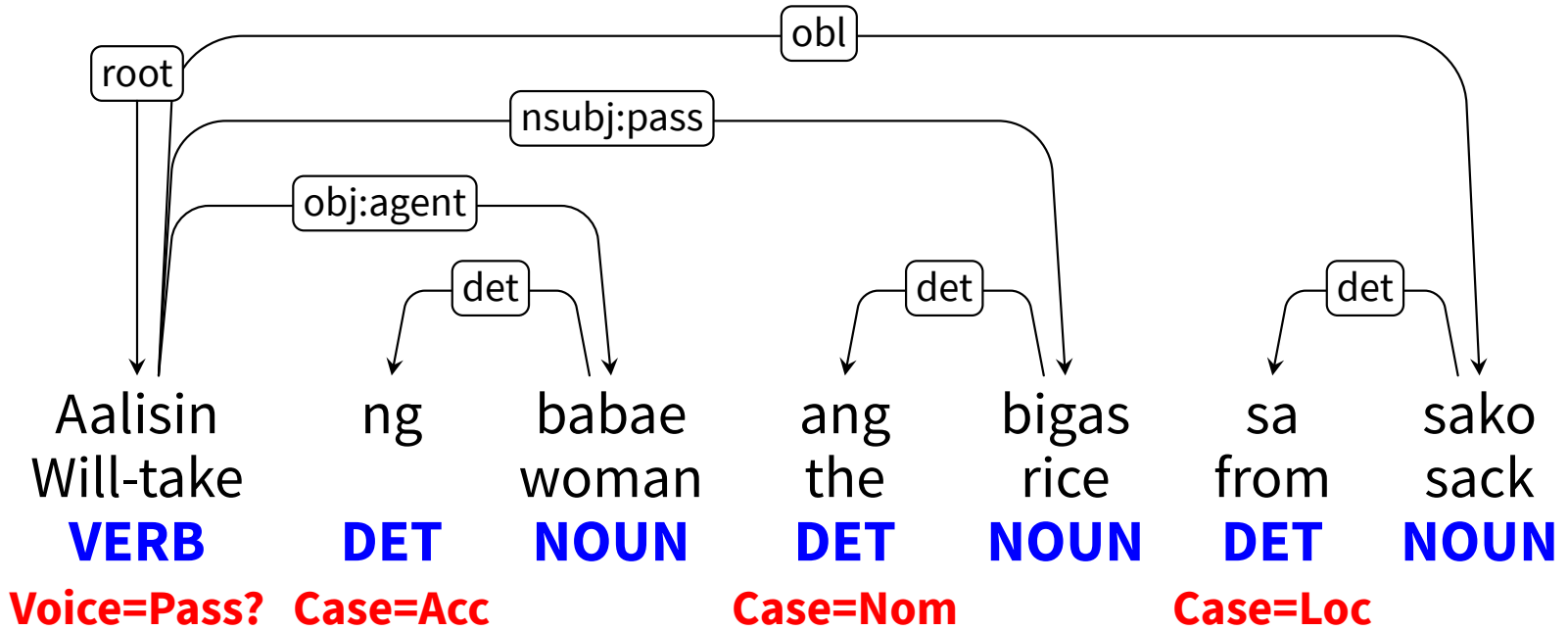


Original P is now oblique and original A is now S.

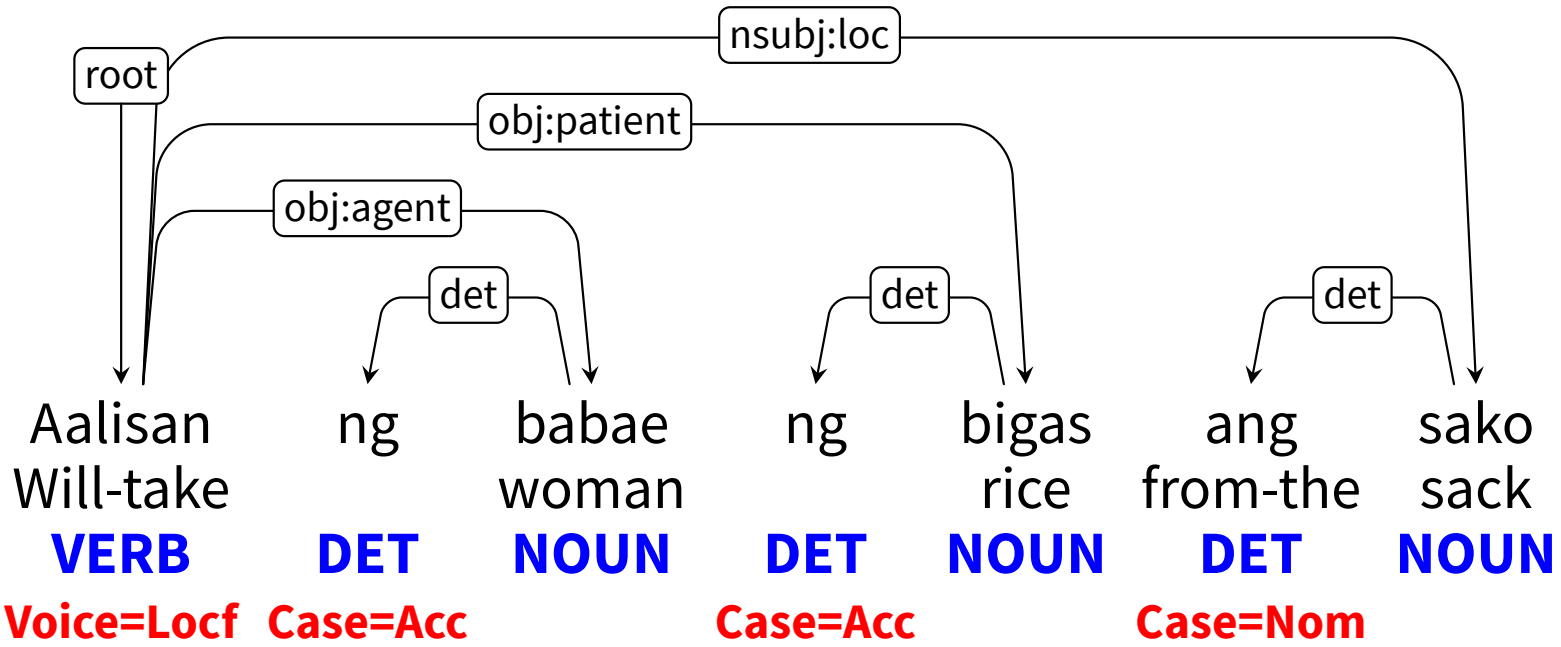
Tagalog Transitive Clauses



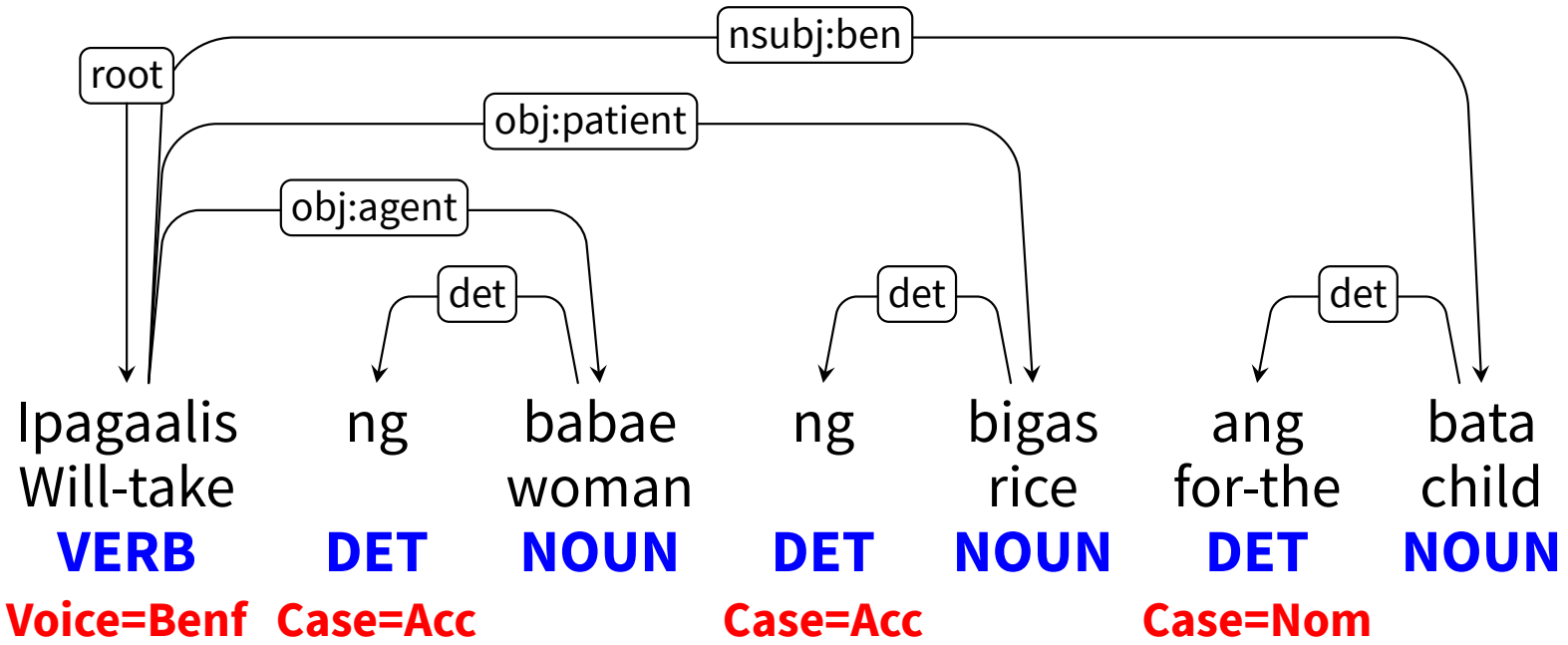

root
obl
obj
nsubj
det
det
det
Magaalis
Will-take
VERB
Voice=Act?
ang
the
DET
Case=Nom
babae
woman
NOUN
ng
DET
Case=Acc
bigas
rice
NOUN
sa
from
DET
Case=Loc
sako
sack
NOUN


root
obl
nsubj:pass
obj:agent
det
det
det
Aalisin
Will-take
VERB
Voice=Pass?
ng
DET
Case=Acc
babae
woman
NOUN
ang
the
DET
Case=Nom
bigas
rice
NOUN
sa
from
DET
Case=Loc
sako
sack
NOUN

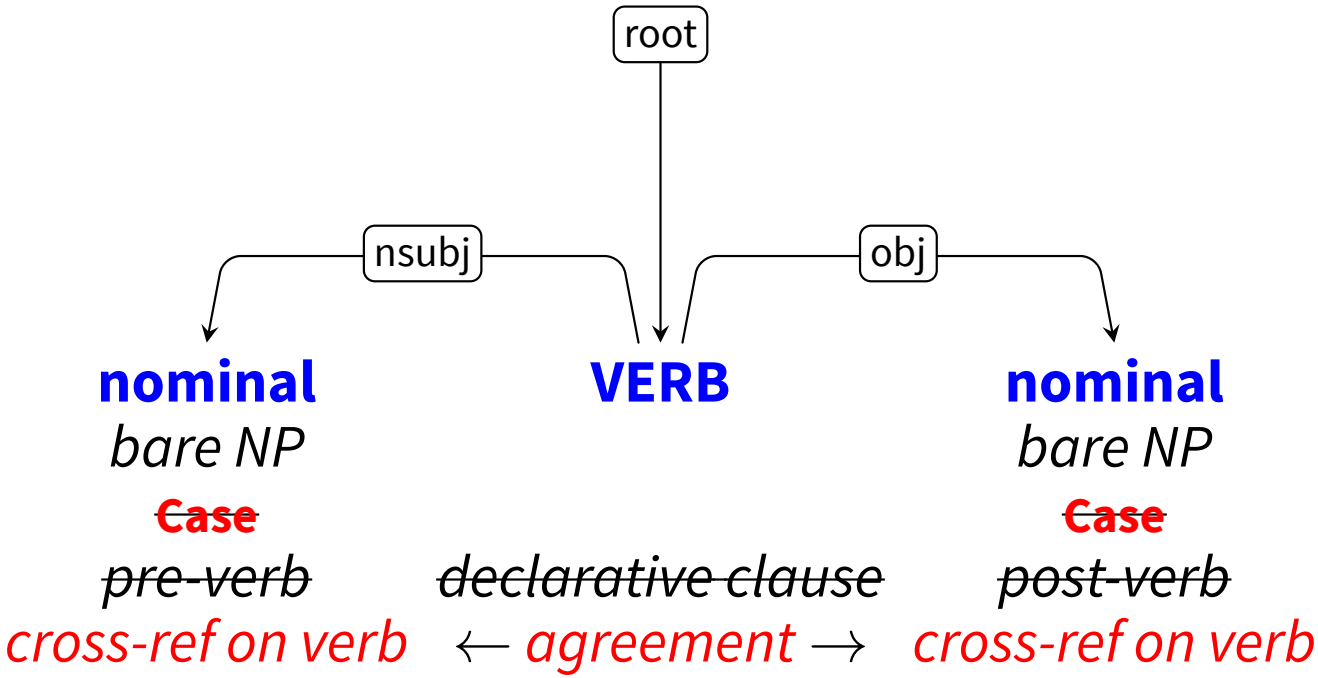
Tagalog Locative Voice ⇒ Ditransitive!



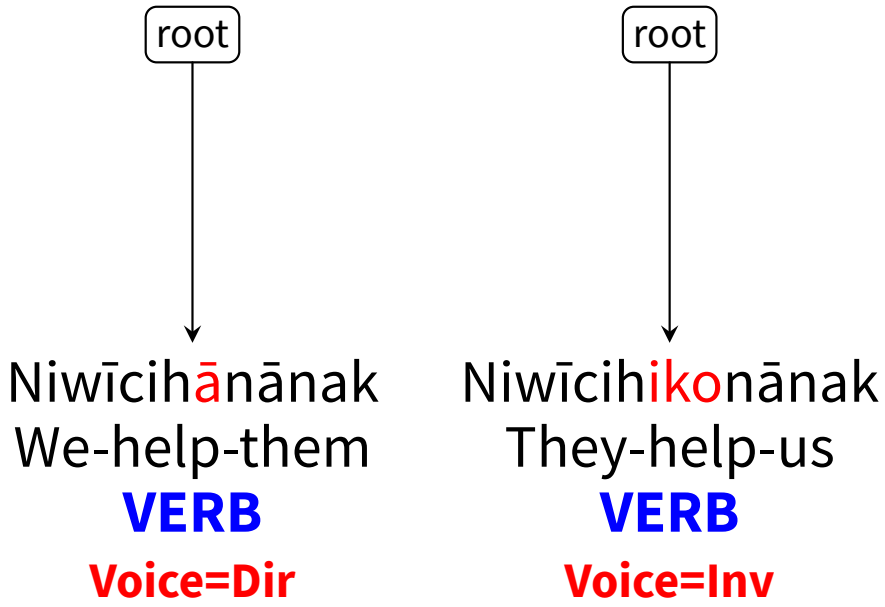
Tagalog Benefactive Voice ⇒ Ditransitive!



Plains Cree Transitive Clauses

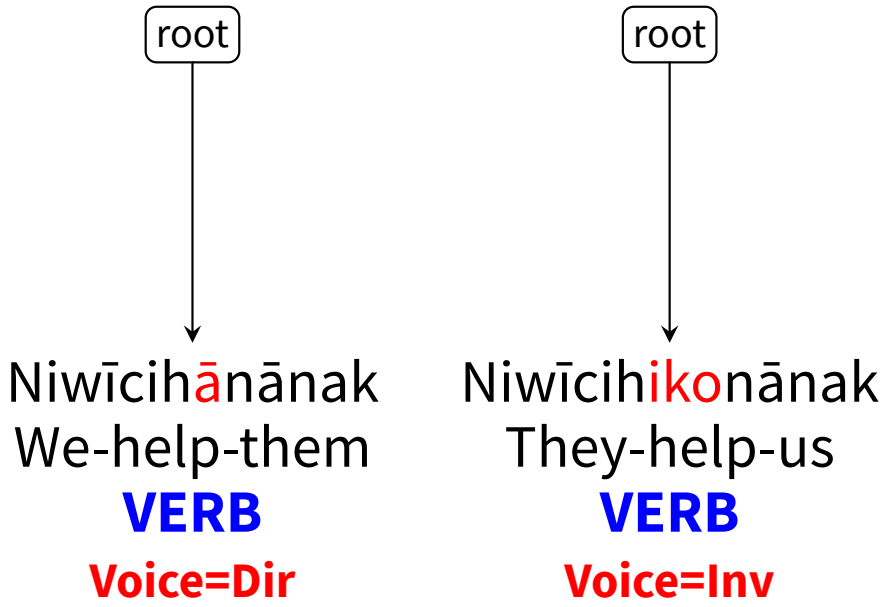


Direct-Inverse Voice in Plains Cree



Animacy hierarchy: 1st person > 3rd person

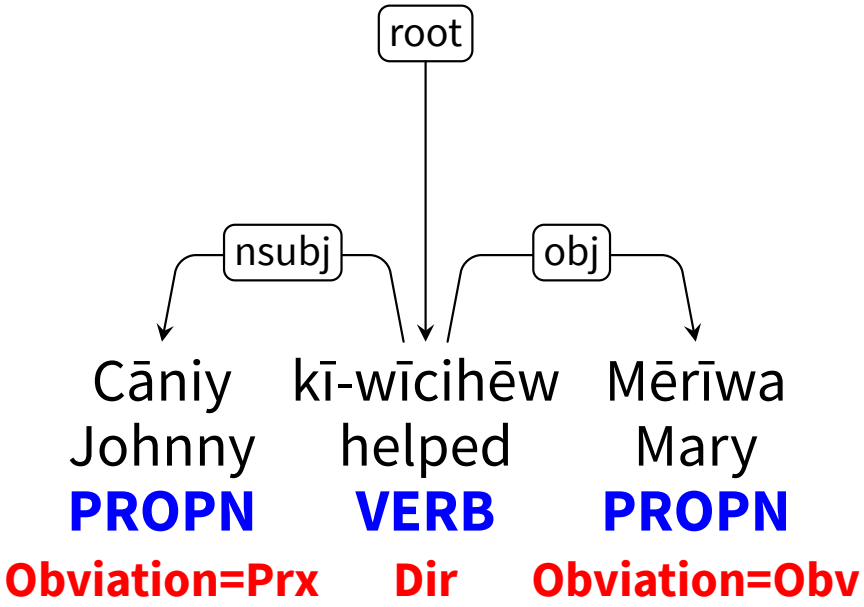
Direct-Inverse Voice in Plains Cree

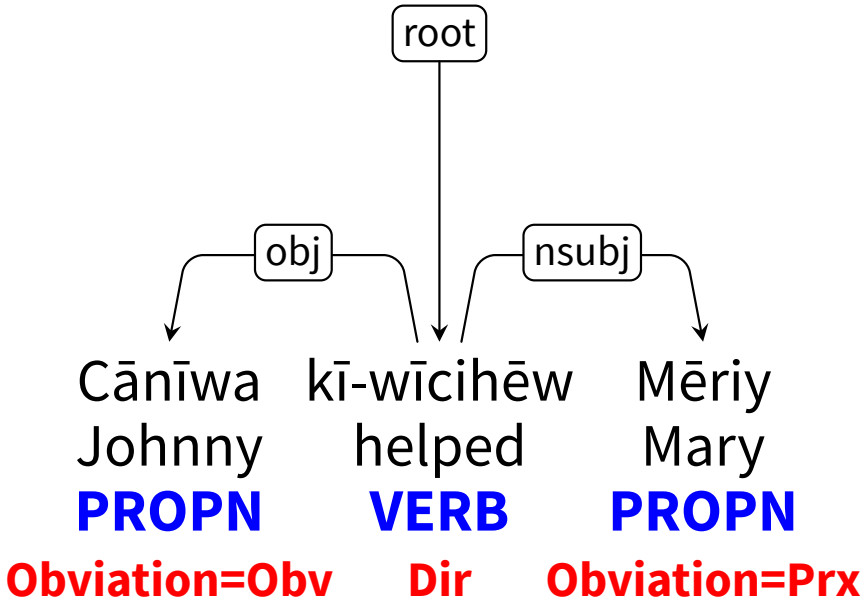


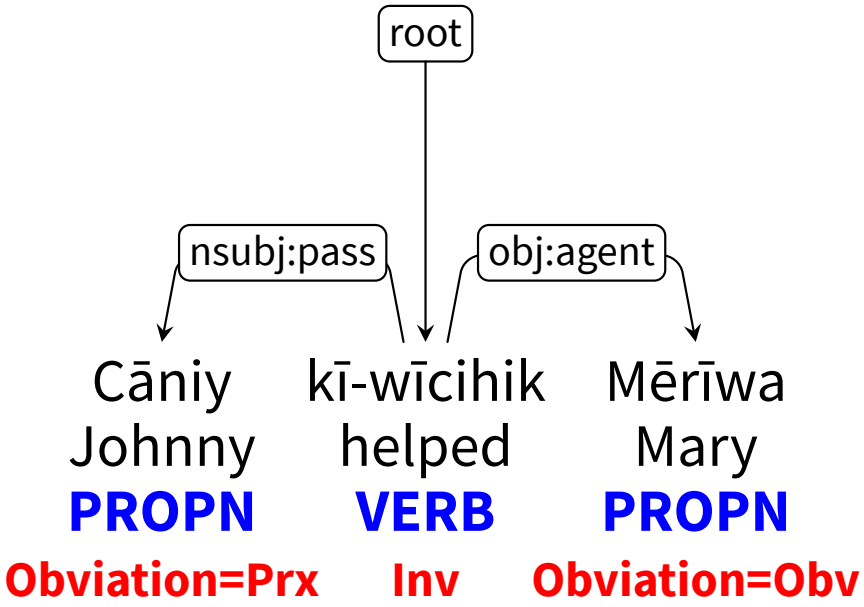
Animacy hierarchy: 1st person > 3rd person

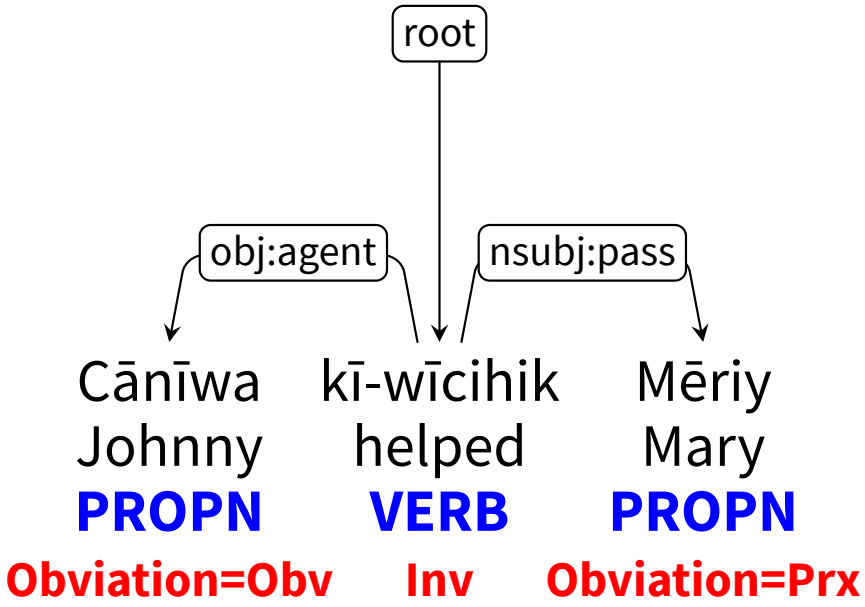
Should we set **nsubj** > **obj**?

Direct-Inverse Voice in Plains Cree

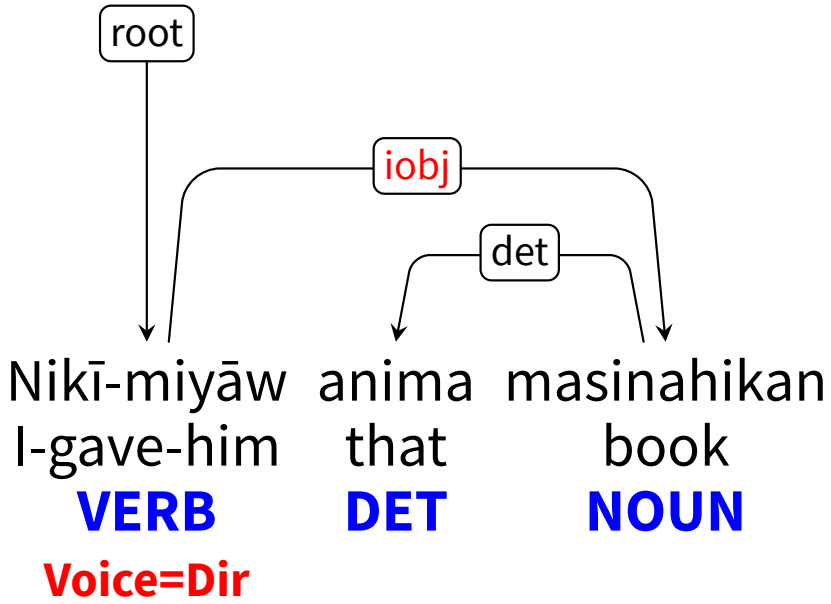








Plains Cree Ditransitive Clauses



The theme (not the recipient) is indirect object because it is not cross-referenced on the verb (it is inanimate, while the verb references an animate object).

Summary

UD guidelines: *"UD taxonomy is centered around the fairly clear distinction between core arguments versus other dependents."*

I have tried to find out how clear it is.
There is a fair number of open questions.

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ANSWERS WELCOME!
(Questions too.)