3.36pt

PF-deletion, LF-copying, and Proforms

Greg Kobele

Ellipsis SoSe22
27.May

An empirical generalization

- Voice mismatches in VPE are good
- Voice mismatches in Sluicing are not

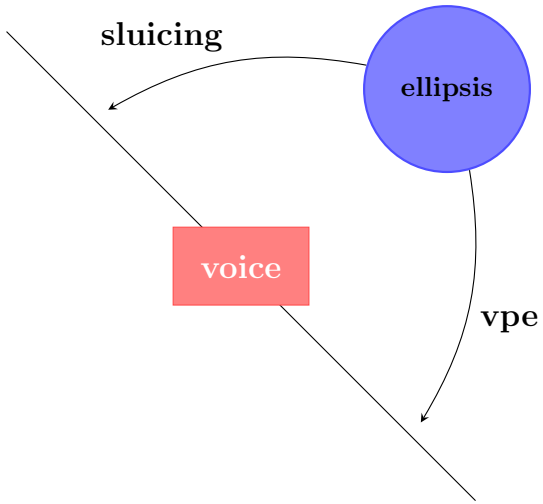
Explanations

Hardt Two mechanisms

- VPE is semantic identity
- Sluicing is (maybe) something else

Merchant One mechanism; syntactic identity

A *different* generalization



If this 'timing' perspective is right, we should expect that

- mismatches are a 'root(-like) phenomenon'
- mismatches **impossible** if embedded in elided structure

Revisiting Mismatches in VPE

And indeed:

- *I know who you believe could have released this information, but I don't know by whom Bill does.
- *This information seems to have been released, although Gorbachev doesn't.

This is bad!

There are good reasons to say that ellipsis is not sensitive to syntax!

- all sorts of structural mismatches
- vehicle change
- island amelioration
- code-switching

⋮

Resolution

Everyone is right

- Ellipsis must be sensitive to syntactic structure
- Ellipsis must not be sensitive to syntactic structure

Resolution

Everyone is right

- Ellipsis must be sensitive to syntactic structure$_1$
- Ellipsis must not be sensitive to syntactic structure$_2$

Different notions of structure

Overview

A slogan:

take LF-copying but copy meanings instead

Making sense of nonsense:

shift perspective from LF to Derivation

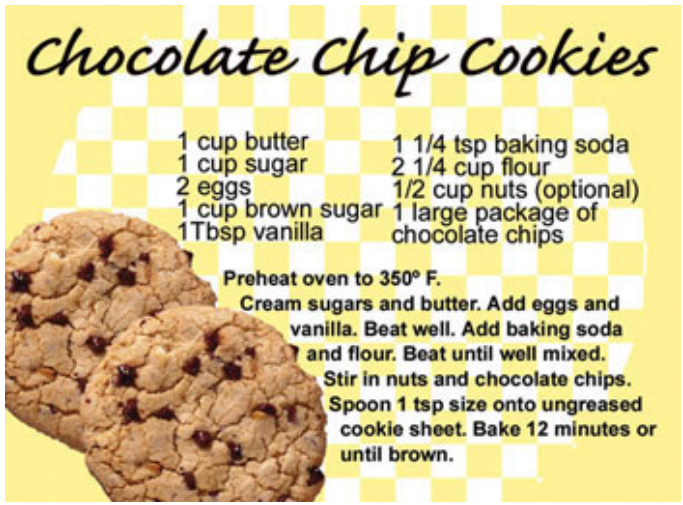
1. Derivations
2. Derivational Ellipsis

Goal:

A computationally tractable but linguistically sophisticated theory of structure sensitive ellipsis

Derivations are recipes

- lexical items are ingredients
- merge and move instead of bake, broil, whip, ...



Derivations are structured

Order is important

- Some things must happen before other things
- Sometimes, it doesn't matter

- merge the det and the noun
- *before* you merge the verb

- Cream sugar and butter
- *before* you add flour

Representing derivations

1. select every
2. select boy
3. MERGE 1 and 2
   $[_{DP}$ every $[_{NP}$ boy $]]$
4. select laugh
5. MERGE 4 and 3
   $[_{VP}$ laugh $[_{DP}$ every boy $]]$
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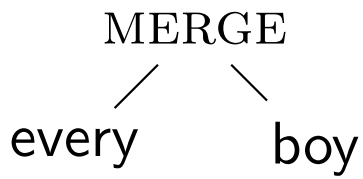

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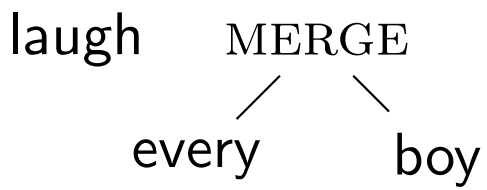

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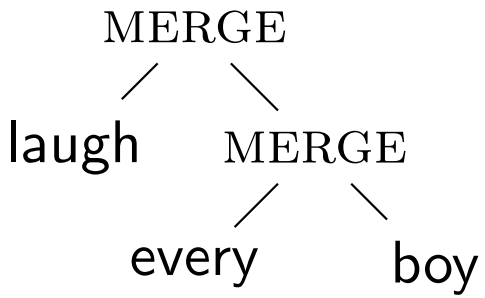

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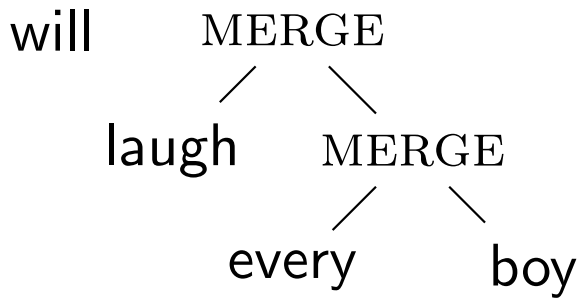

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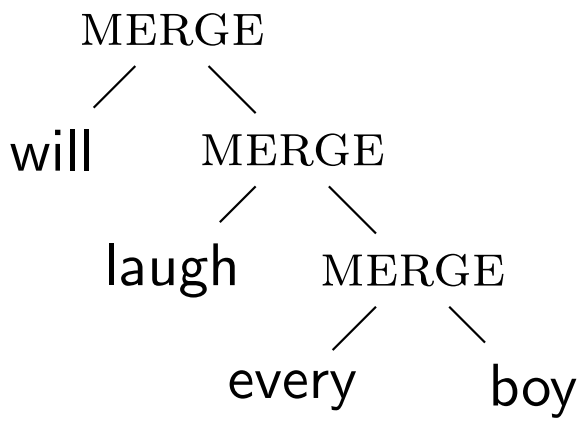

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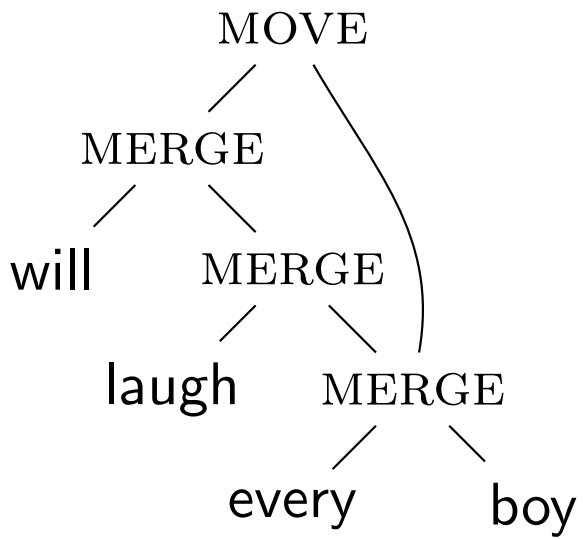
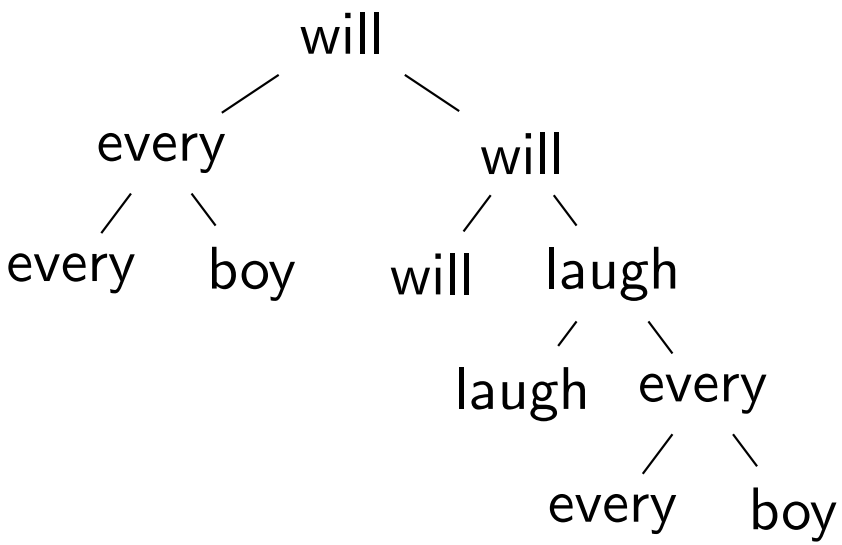


Structure in Minimalism



- occurrences of *every boy* are "non-distinct"
  1. enforced by coindexation of some sort
     - feature duplication
     - violates (spirit of) inclusiveness
     - where do indices come from?
  2. 'MOVE as re-MERGE'

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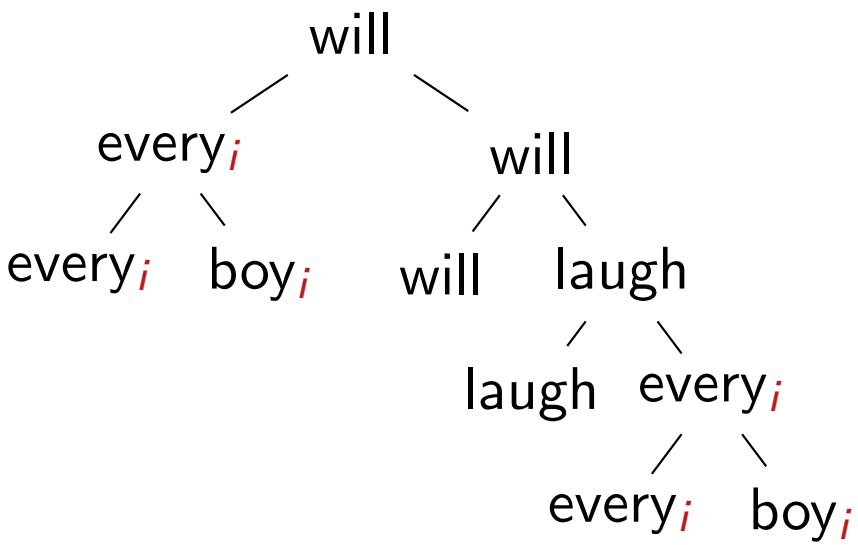

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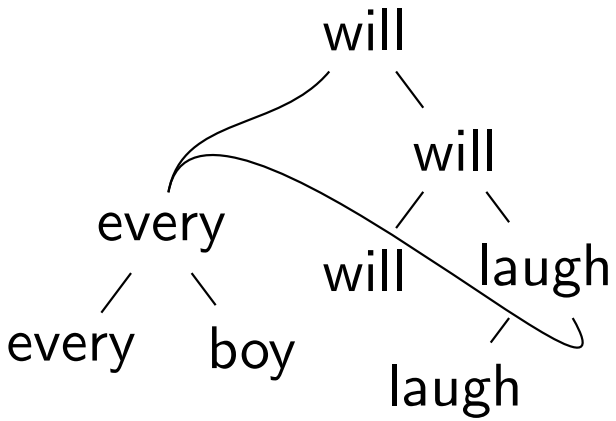

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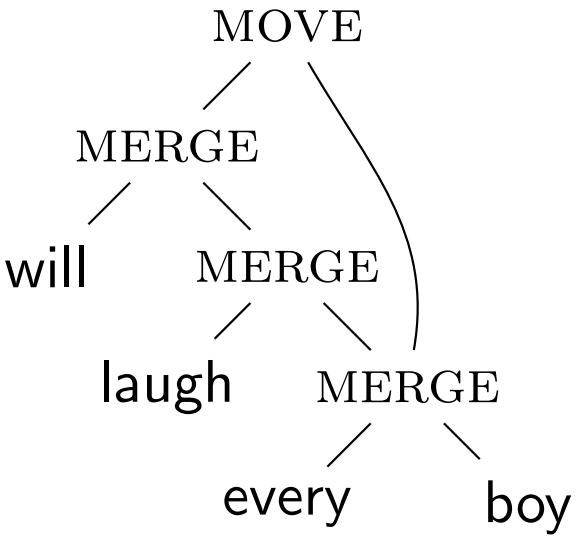
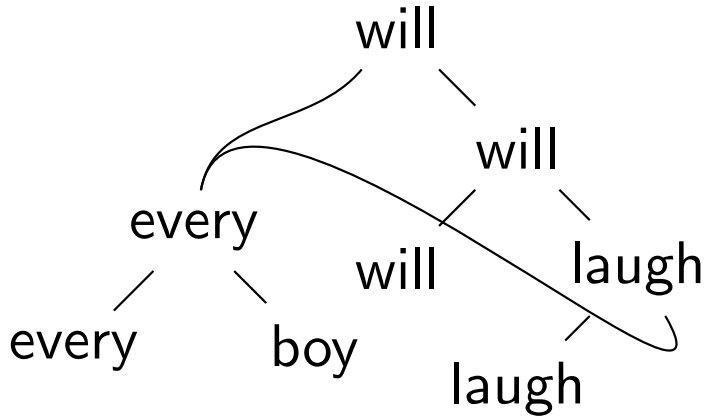
Derivations of Derived Structures





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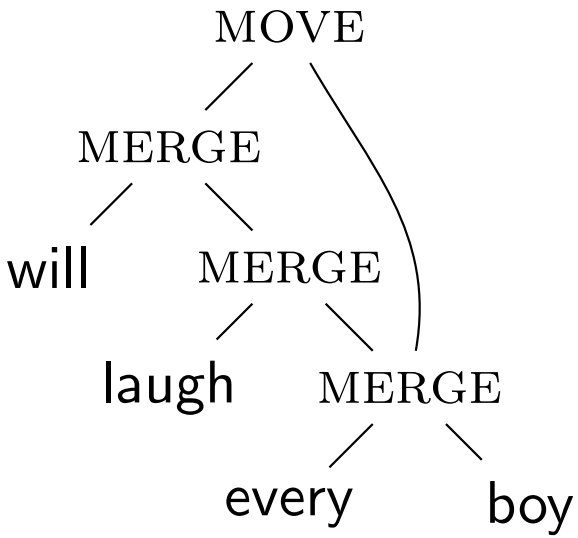
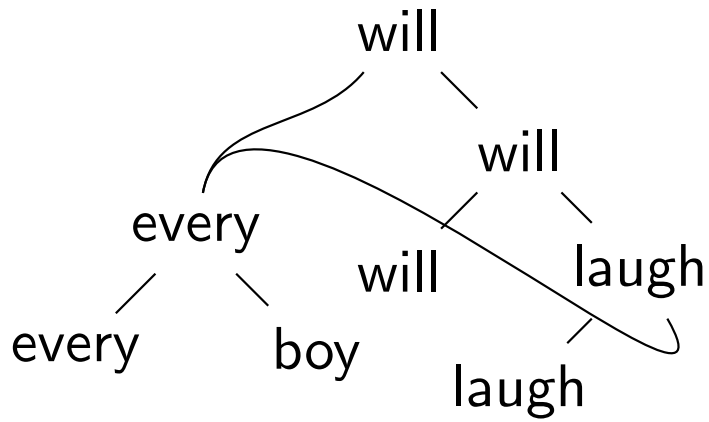
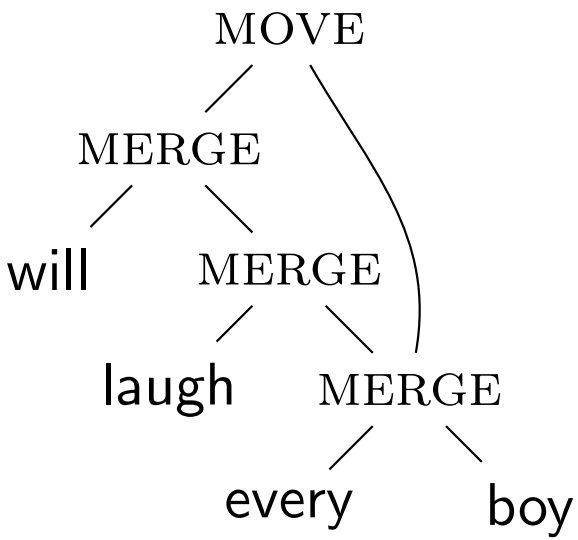


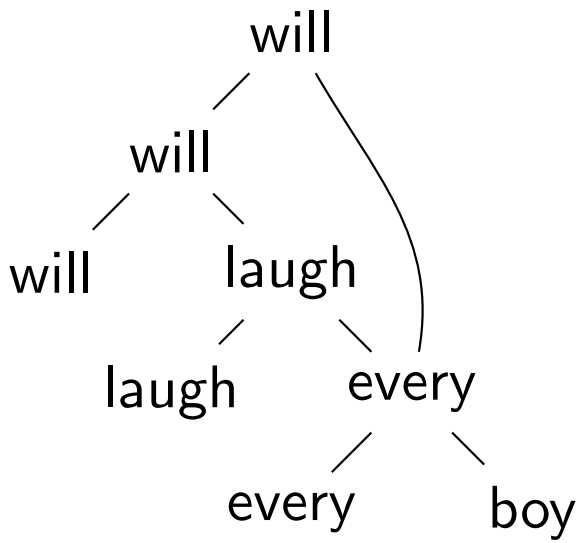


Antisymmetry

Order not meaningful

Derivations of Derived Structures





We have been writing derivation trees all along

- No-tampering
- Extension
- Numerations

A perspective shift

We've been looking at the right structures

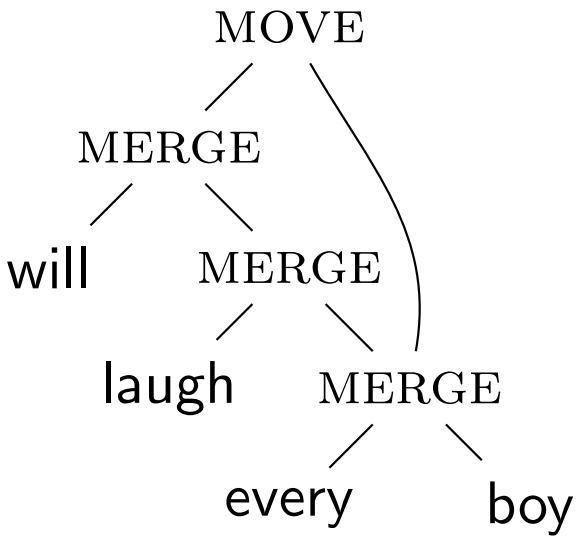
. . . in the wrong way

If you don't like the structure you have

. . . you must build it differently

Syntactic structure is no more than the trace of the algorithm which delivers the interpretation (Steedman, 2000)

The Determinacy of Movement



Attract Closest

Minimal Link

Shortest Move

SMC

can only be 1 thing moving for a particular reason at any time

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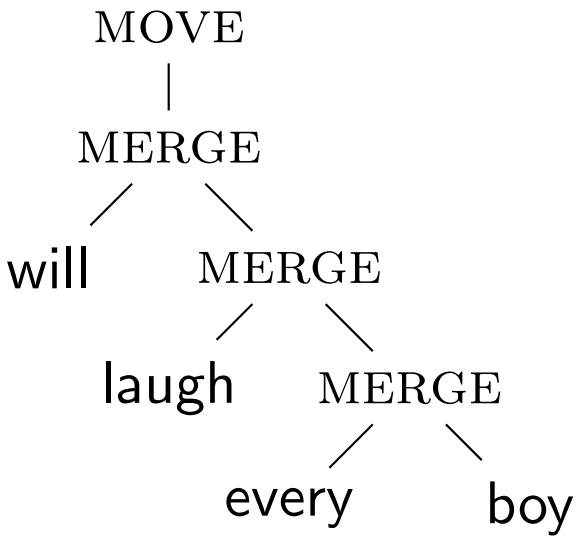

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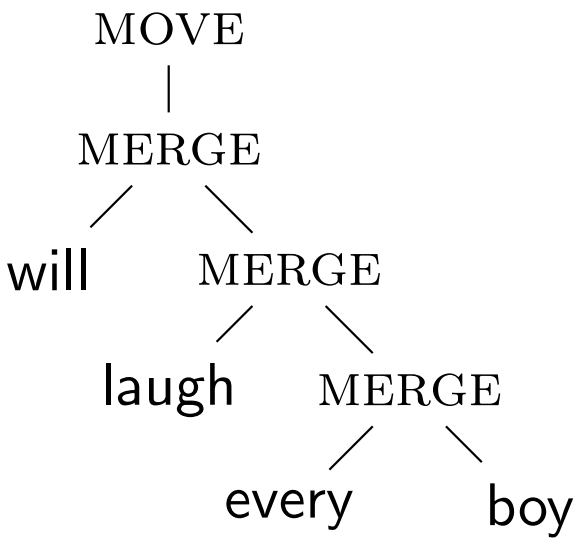

$$\textsc{merge}(\alpha, \beta) = \{\alpha, \beta\}$$

$$\textsc{move}(\alpha) = \textsc{merge}(\alpha, \alpha) = \{\alpha\}$$

$$\{\{\text{will}, \{\text{laugh}, \{\text{every}, \text{boy}\}\}\}\}$$

Three analytical ideas

Ellipsis as a proform

John will kiss Mary, but Bill won't *e*

Ellipsis as deletion

John will kiss Mary, but Bill won't ~~kiss Mary~~

Ellipsis as copying

John will kiss Mary, but Bill won't *e*

John will kiss Mary, but Bill won't ~~kiss Mary~~

Popular arguments for syntax in ellipsis sites

- You can 'extract' out of an ellipsis site, but not out of an overt pronoun (Hankamer & Sag)
  - I know which book John bought, but not which ones Bill did.
- Case matching effects (Ross)
- Preposition stranding effects (Chung et al., Merchant)
  - allow p-stranding $\leftrightarrow$ allow 'p-stranding' in ellipsis
  - can never p-strand something with implicit correlate
- Voice mismatches across ellipsis types (Merchant)
  - VPE allows for voice mismatches
  - Sluicing does not

A unified theory of ellipsis

A proform theory...

- derived from a copying theory
  - derived from a deletion theory

Features:

- high vs low contrast for voice mismatches
- ban on stranding in sprouting
- preposition stranding generalization

Everyone knows that. . .

constituents don't cut it

Mary was kissed, and Susan was *e* too.

Everyone knows that. . .

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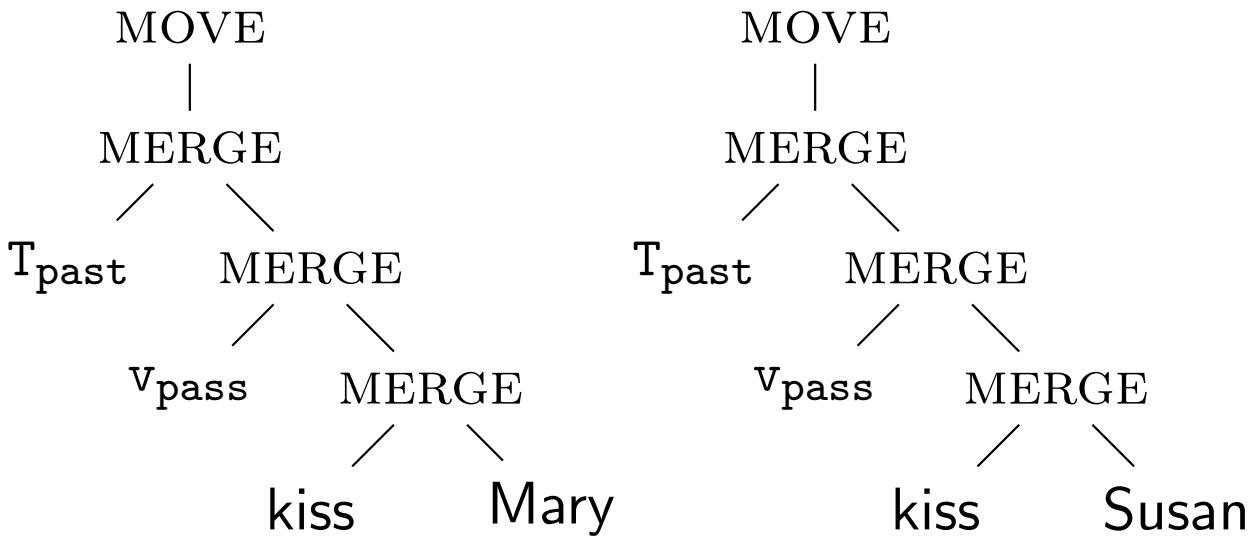

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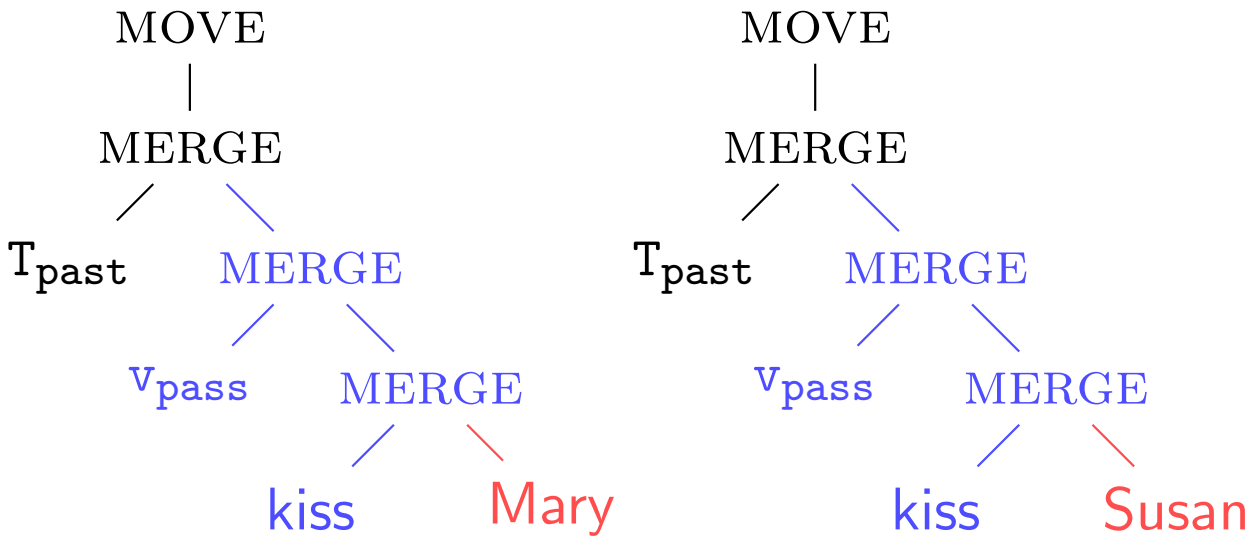

What are antecedents?

The shape of antecedents

- constituents
- (unary) contexts

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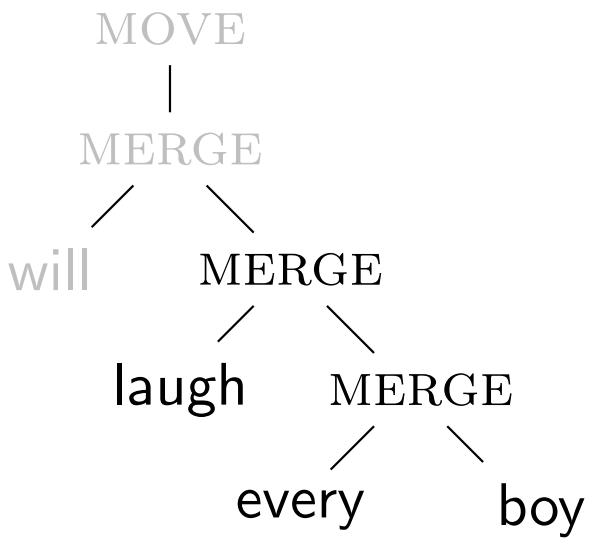
The shape of antecedents

- constituents: pick *one* node
- (unary) contexts



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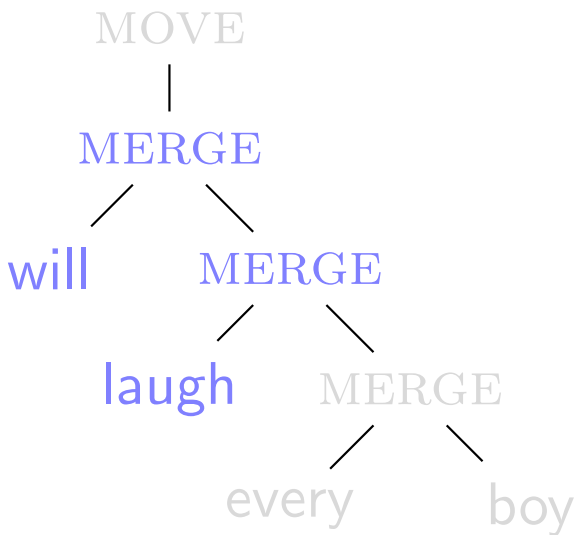
The shape of antecedents

- constituents
- (unary) contexts: pick *two* nodes



From Grammar to Parser

The Strong Competence Hypothesis (Bresnan & Kaplan)

Direct correspondance between rules of grammar and operations performed by human sentence processor

Top-Down Parsing

Predictive

"Anticipatory processes in sentence processing"

Connected

"Interaction with context during human sentence processing"

New predictions derived by

prediction is non-terminal: inverting rules of grammar

prediction is terminal: listening to see if right

From Delete to LF-copy

Adding deletion

grammar: Delete something

- **if** identical to something else

parser: Guess what was deleted

- **Hint:** something you've seen

From Delete to LF-copy

Adding deletion

grammar: Delete something

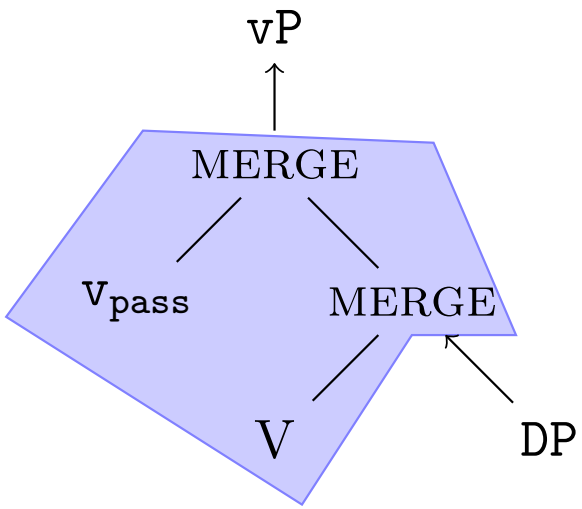
- **if** identical to something else

parser: Copy something

- **Hint:** something you've seen

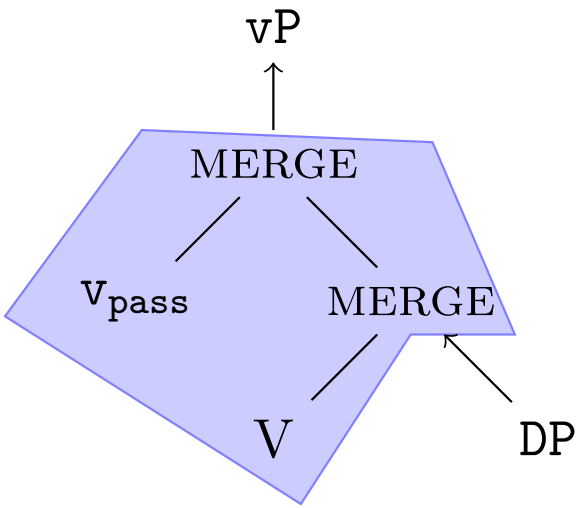
(Parts of) Derivations

- Parts of derivations contain two sorts of information:
  - internal their internal structure
    - How do I do what I do?
  - external categorical (= distributional) information
    - what do I make?
    - what do I need?



Eliminating internal structure

Direct interpretation



$$\Longrightarrow \quad \lambda x.\ \Phi(x) : \mathtt{DP} \to \mathtt{VP}$$

$$[\![\text{MERGE}]\!]([\![\ \mathtt{v}_{\mathtt{pass}}\ ]\!]) \circ [\![\text{MERGE}]\!]([\![\mathtt{V}]\!])$$

Eliminating internal structure

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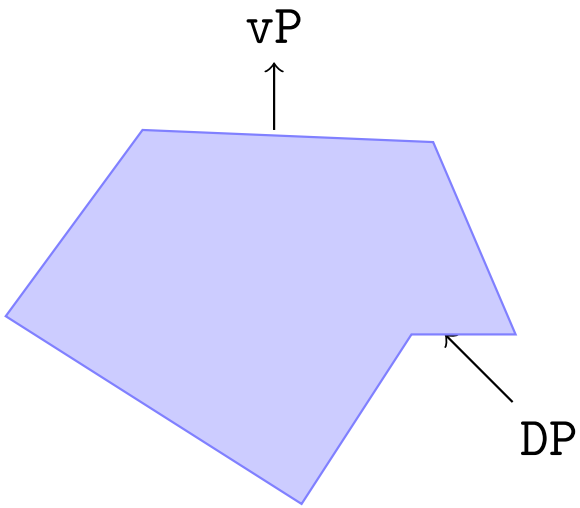

$$\Longrightarrow \quad \lambda x.\ \Phi(x) : \mathtt{DP} \rightarrow \mathtt{VP}$$

As far as the parser is concerned,

there is no syntactic structure in the ellipsis site.

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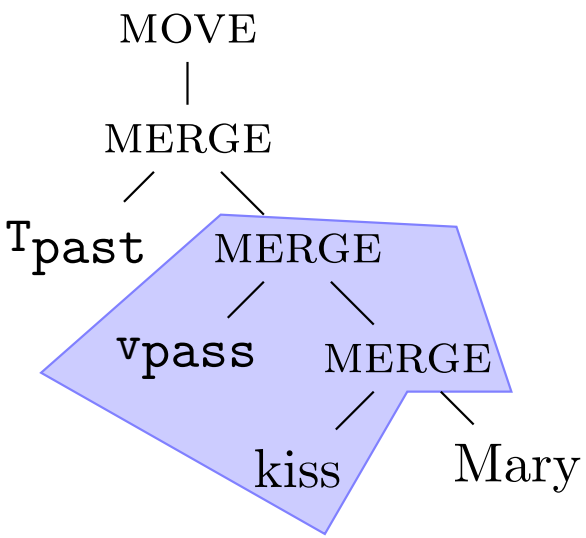

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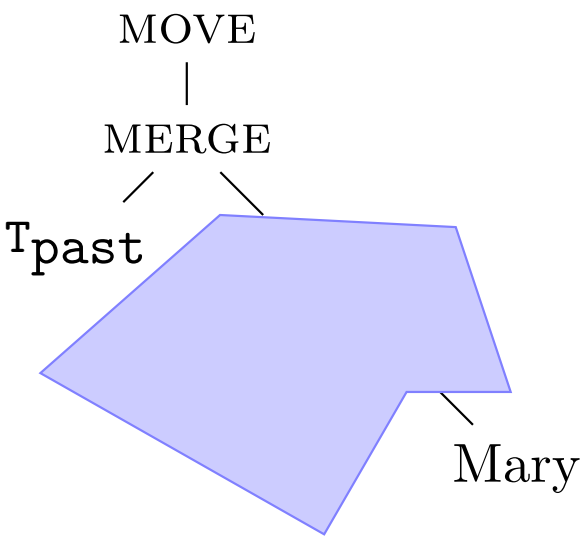

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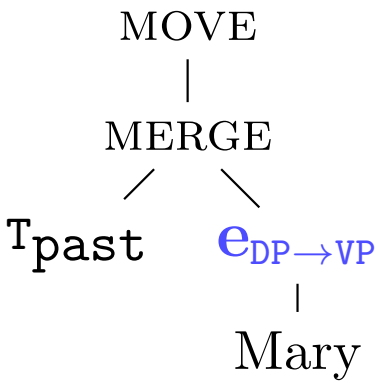


(Typed) ellipsis sites

$$[\![\mathbf{e}_{\mathtt{DP}\to\mathtt{VP}}]\!] = \lambda x, c.\mathtt{sel}_E(c)(x)$$

Ellipsis and Pronouns

- A parser should maintain a database γ of possible elliptical antecedents
- When an ellipsis site is encountered, an antecedent must be selected from this database ($\text{sel}_E(\gamma)$)

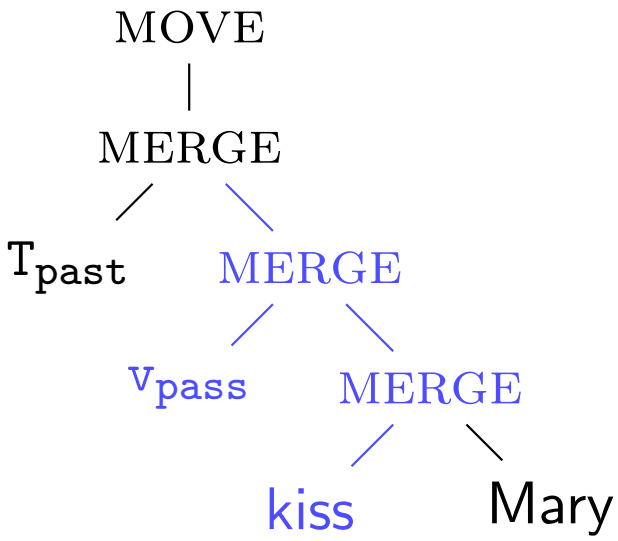
- A parser should maintain a database γ of possible pronominal antecedents
- When a pronoun is encountered, an antecedent must be selected from this database ($\text{sel}_P(\gamma)$)

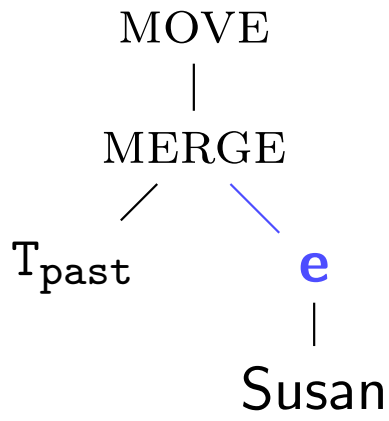
Deep and Surface Anaphora

surface sel_E cares about *external syntax*

deep sel_P only cares about *semantic type*

An example

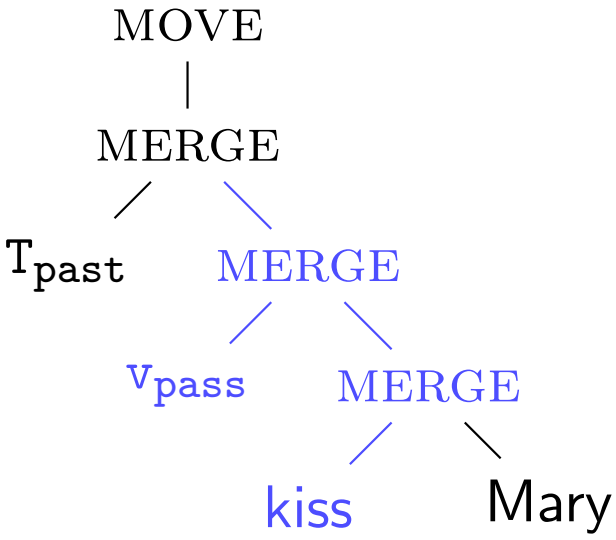


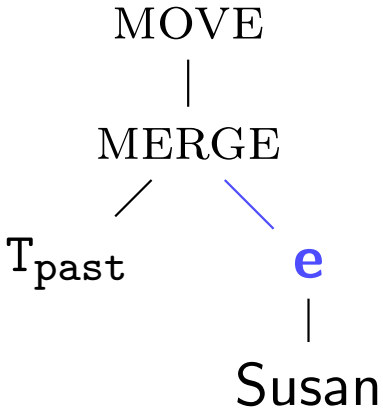


e is a grammatical operation

Intuition: 'have already constructed something of this sort, instead of doing it again, will just go back and grab it'

An example





$$[\![\text{MOVE}]\!]([\![\text{MERGE}]\!](\mathtt{T}_{\mathtt{pst}})([\![\mathbf{e}]\!](\text{Susan})))$$

$$([\![\text{MERGE}]\!]([\![\,\mathtt{v}_{\mathtt{pass}}\,]\!]) \circ [\![\text{MERGE}]\!]([\![\mathtt{kiss}]\!]))$$

Connections

The very idea

exact same *idea* appears in

- dynamic syntax (Kempson)
- categorial grammar (Barker)

The essence of the idea

- derivations are descriptions of *computations*
- instead of *repeating* the *same* computation,
- compute *once*, and share the result

Programming language theory memoization

Theory of algorithms dynamic programming

Some arguments for syntax in ellipsis sites

- You can 'extract' out of an ellipsis site, but not out of an overt pronoun (Hankamer & Sag)
  - I know which book John bought, but not which ones Bill did.
- Case matching effects (Ross)
- Preposition stranding effects (Chung et al., Merchant)
  - allow p-stranding $\leftrightarrow$ allow 'p-stranding' in ellipsis
  - can never p-strand something with implicit correlate
- Voice mismatches across ellipsis types (Merchant)
  - VPE allows for (root) voice mismatches
  - Sluicing does not
- Code-switching ellipsis generalization (Merchant)

Some arguments for syntax in ellipsis sites

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- Code-switching ellipsis generalization (Merchant)

Only require sensitivity to external structure

Plan

- Voice mismatches across ellipsis types
- Code-switching ellipsis generalization

How this works (for VPE)

Begin with small VPE

A-P: Max fired Harry, although it was Tom who should have been.

(Fiengo & May)

P-A: This information could have been released by Gorbachev, but he chose not to.

(Hardt)

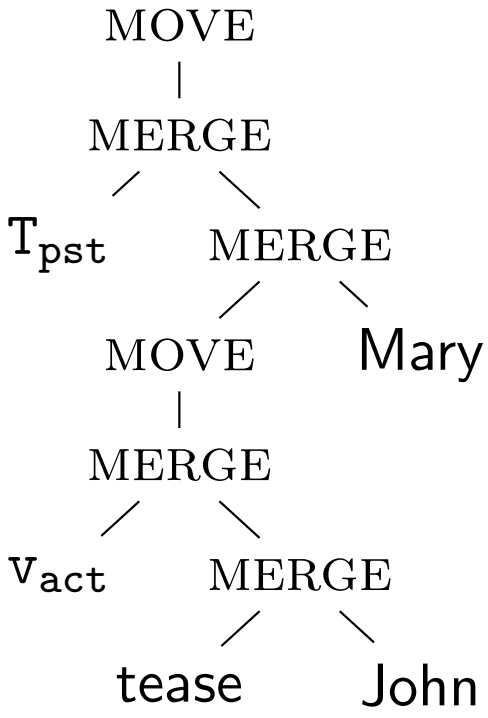
Move on to big VPE

. . . where mismatches don't work

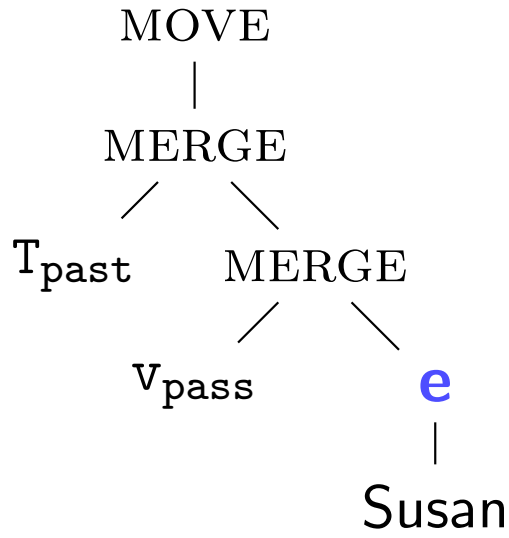
VPE: Active-Passive (Max fires Harry, while Tom laughs)

Mary teased John, and Susan was too

Antecedent



VPE



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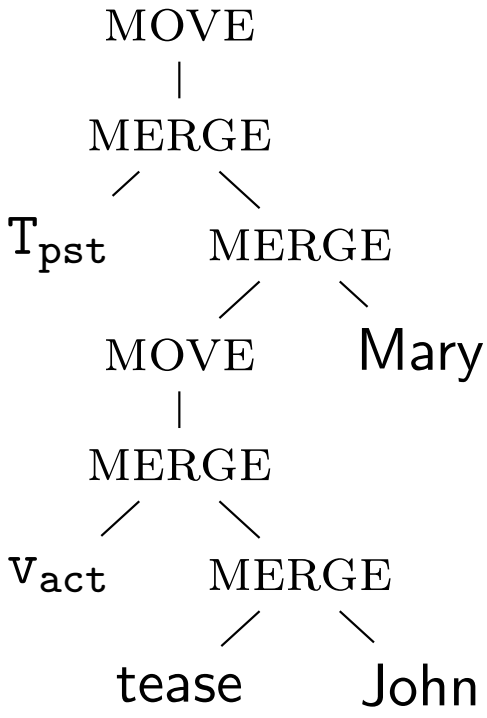

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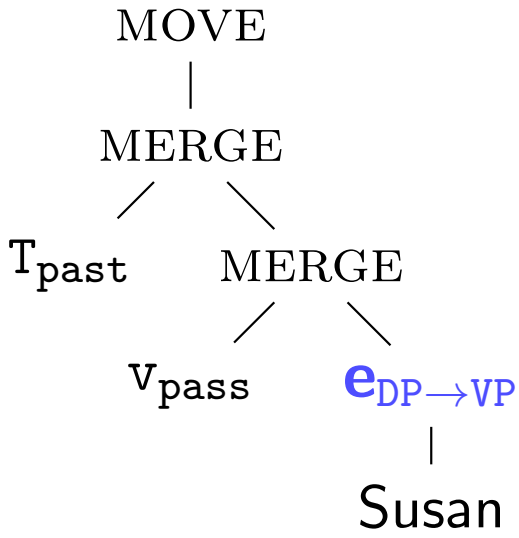

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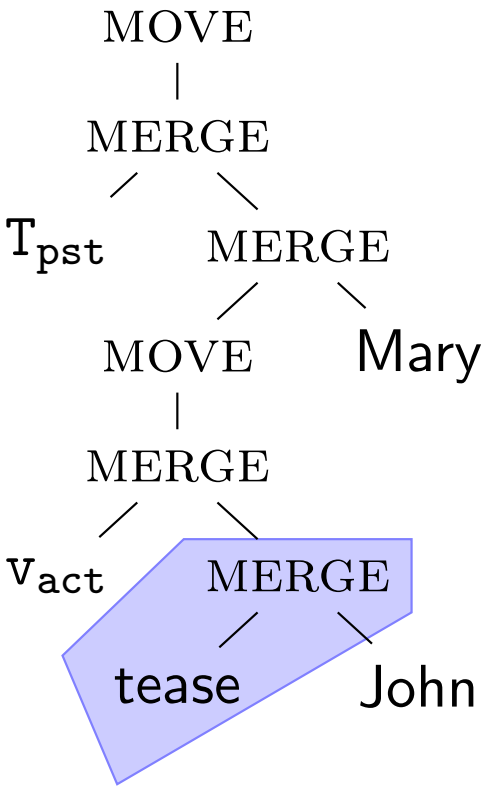

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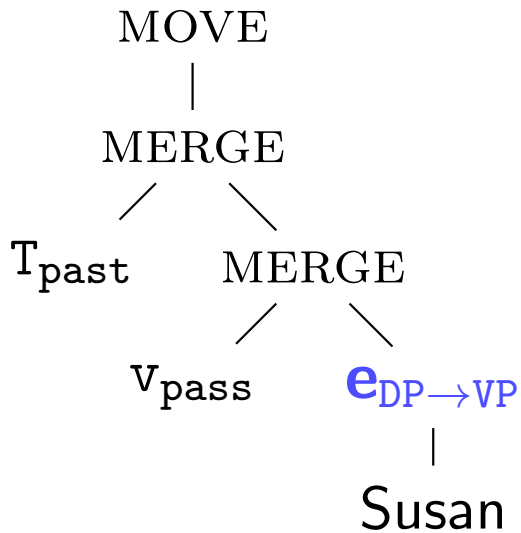

VPE: Passive-Active (Gorbachev likes secrecy)

John was teased, but Susan didn't

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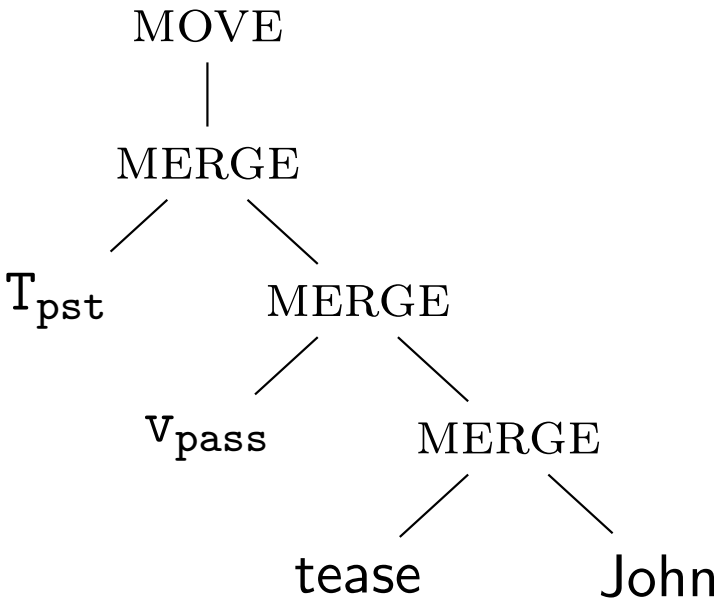

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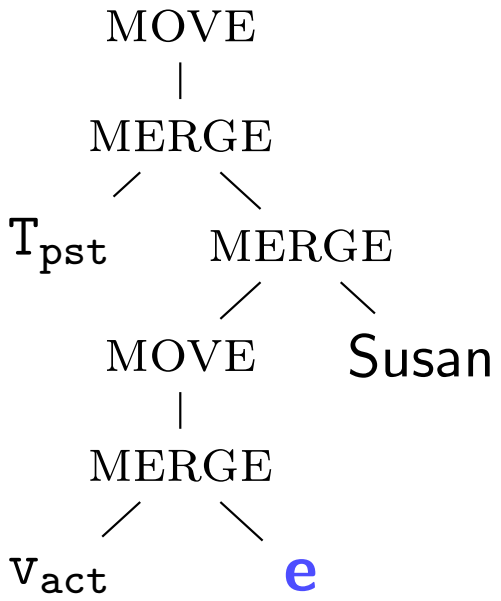

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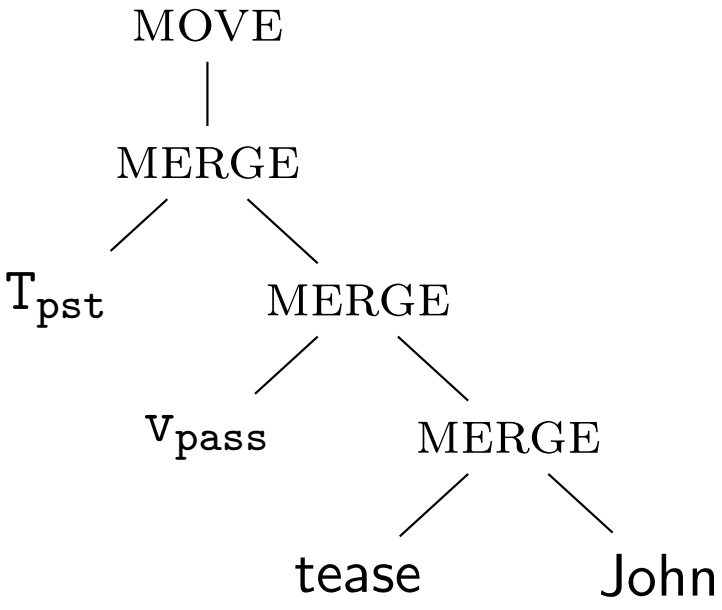

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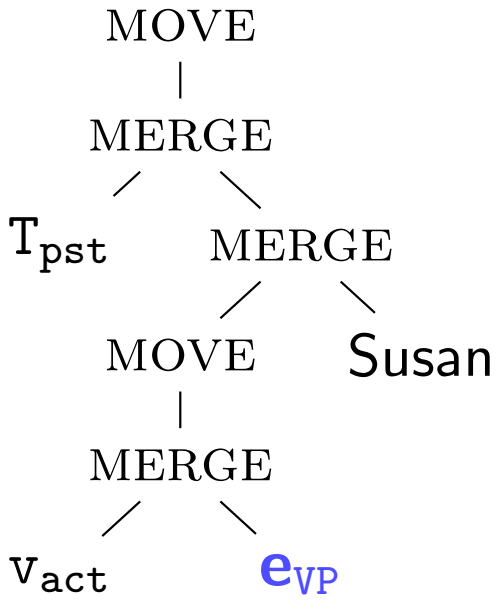

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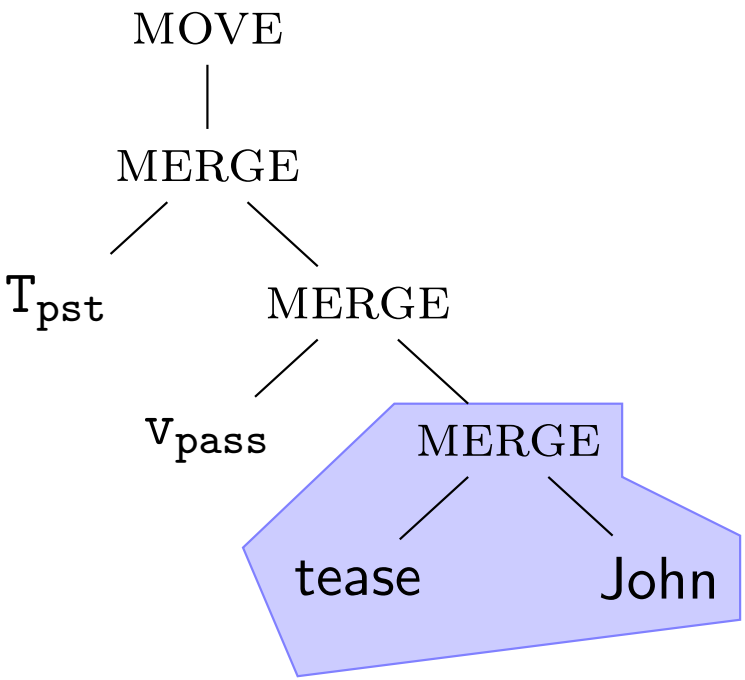

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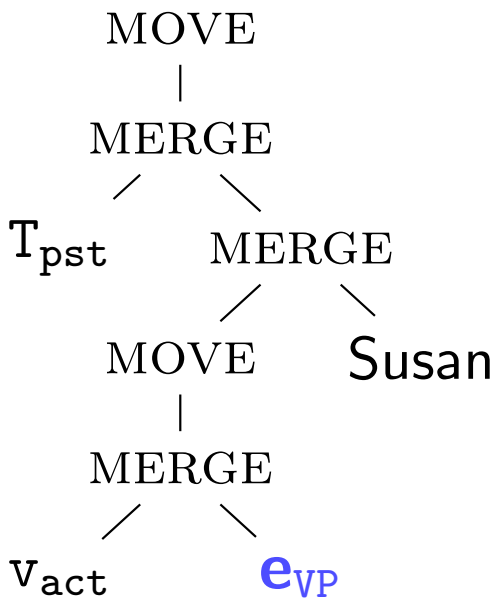

VPE: No mismatch in big VPE; Pass-Act

*This information seems to have been released, although Gorbachev doesn't ~~seem to have released it~~.

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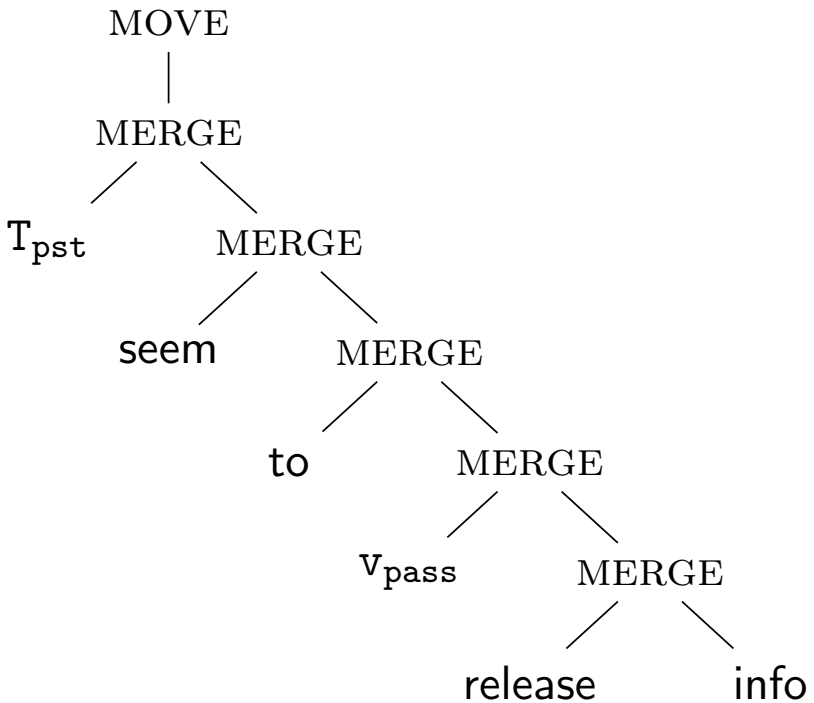

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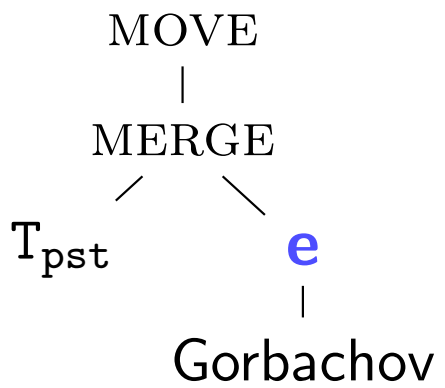

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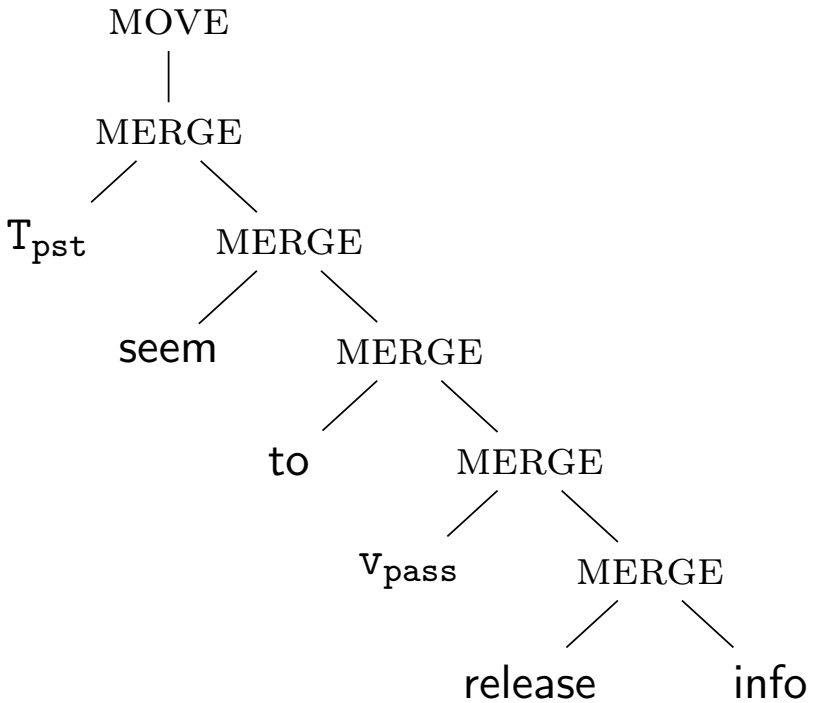

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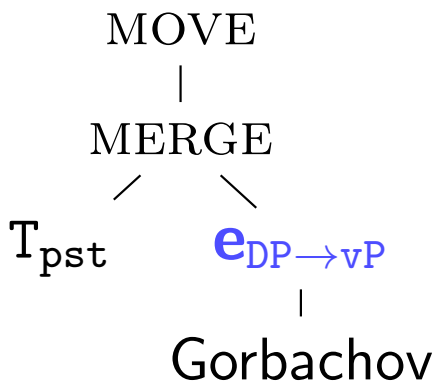

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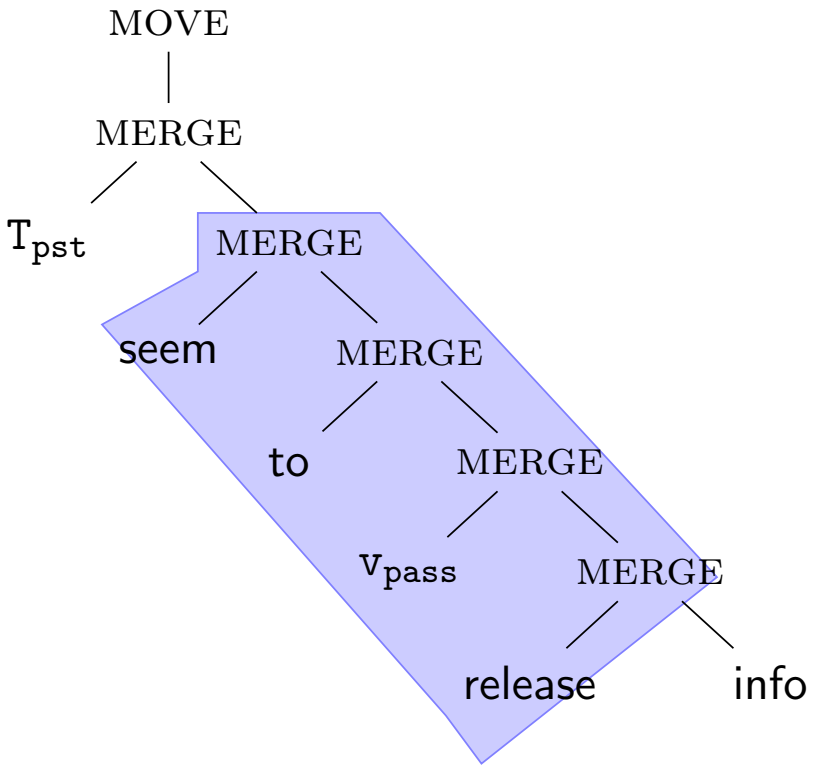

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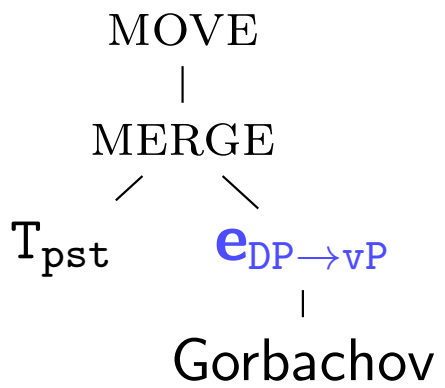


Code switching in Ellipsis

Gonzáles-Vilbazo & Ramos

1. Juan amenazó a alguen, aber ich weiss nicht, wem Juan gedroht hat
2. Juan amenazó a alguen, aber ich weiss nicht, wen Juan amenazó
3. ⋆Juan amenazó a alguen, aber ich weiss nicht, wem
4. Juan amenazó a alguen, aber ich weiss nicht, wen

Code switching ellipsis generalization

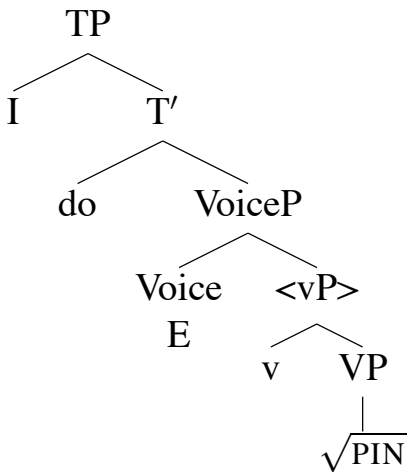
All apparently cross-language ellipses involve code switching at the ellipsis site (into the language of the antecedent) (Merchant, 15)

Merchakidou data

Doing hunger

Q	Pinás?	hunger.2s.PRES
A	Yes, I do.	
A'	⋆Yes, I do pináo.	hunger.1s.PRES
A''	⋆Yes, I do pin.	hunger

Merchant's analysis



- Generative semantics-style analysis allows for right antecedents
- ill-formed examples grammatical but ineffable

Deriving the Spanish data

Gonzáles-Vilbazo & Ramos

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Constraints on the analysis

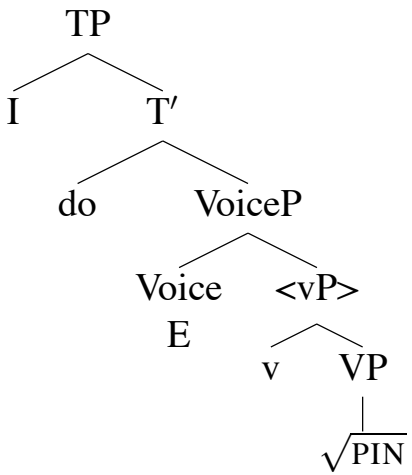
1. *wen Juan amenazó* is derivable
2. then *Juan amenazó* is a piece of derivation of type $\texttt{DP}[+\textsc{acc}] \rightarrow \texttt{TP}$
3. this occurs in the antecedents of 3 and 4
4. crucially, nothing of type $\texttt{DP}[+\textsc{dat}] \rightarrow \texttt{TP}$ occurs

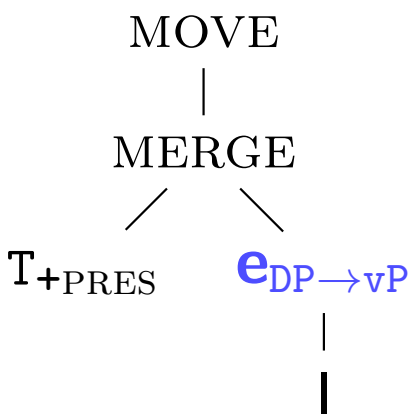
Deriving the Greek data

Ariadne is starving

Q	Pinás?	hunger.2s.PRES
A	Yes, I do.	
A'	⋆Yes, I do pináo.	hunger.1s.PRES
A''	⋆Yes, I do pin.	hunger

Merchant's analysis reformulated





Deriving Merchant's generalization

Code switching ellipsis generalization

All apparently cross-language ellipses involve code switching at the ellipsis site (into the language of the antecedent) (Merchant, 15)

You reuse the results of the derivation of the antecedent

- its categorial properties are the ones that matter, not those of some translation
- its meaning is the one that is reused, not that of some translation

A reformulation

All ~~cross-language~~ ellipses have the categorial properties and meaning of their antecedent

Claims

Derivations structure expressions

We have been using derivational structure all along

Syntax only cares about shape, not pictures

- Ellipsis must be sensitive to external syntactic structure
- Ellipsis must not be sensitive to internal syntactic structure

Ellipsis wants a semantic antecedent

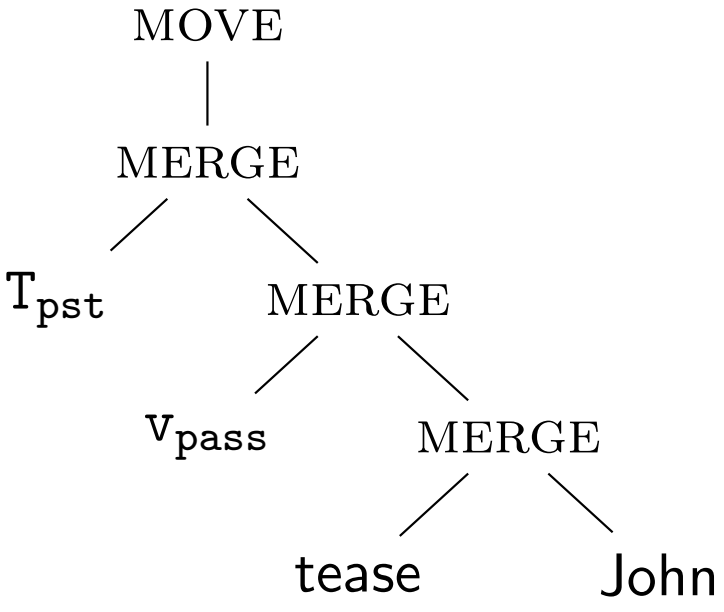
delimited by its syntactic shape

The end.

Sluicing: Passive-Active

*John was teased, but I don't know who ~~teased him~~

Antecedent



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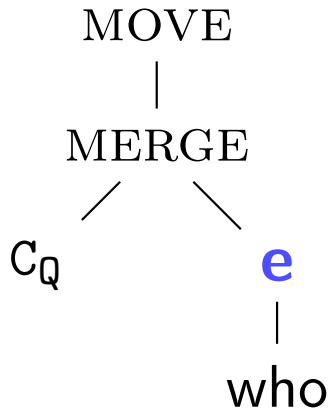

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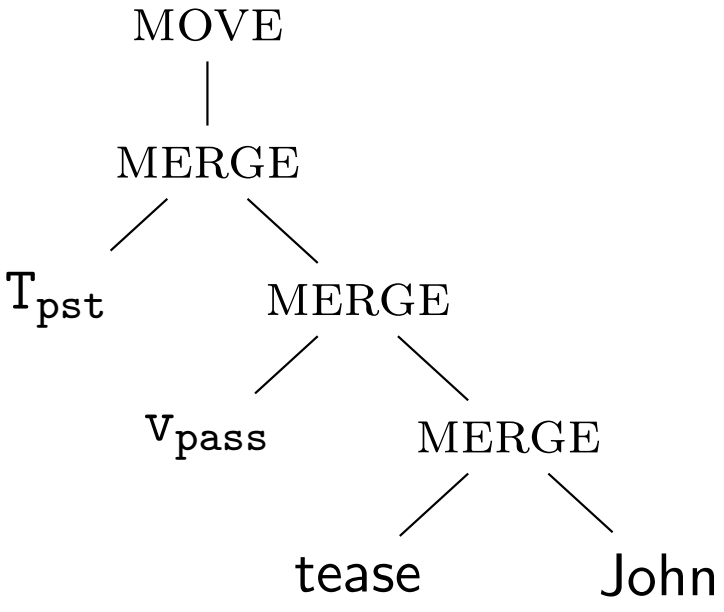

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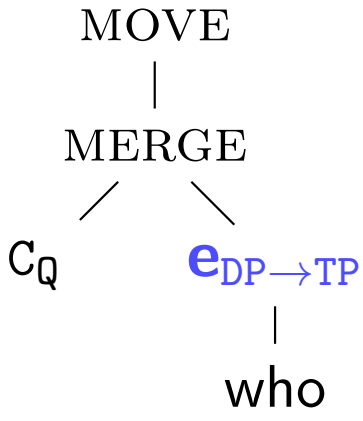

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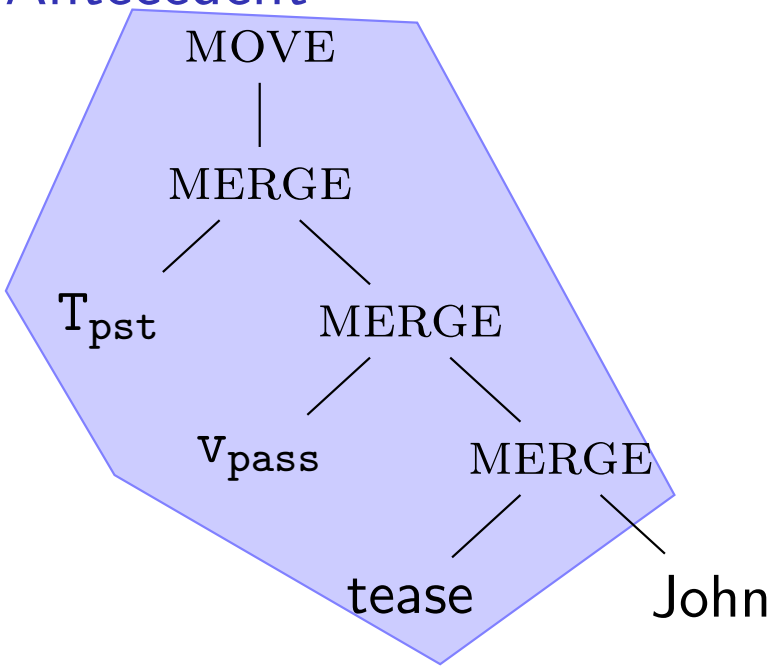

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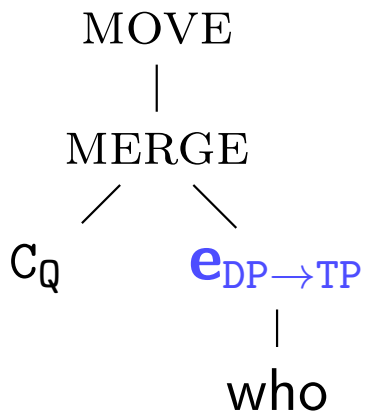

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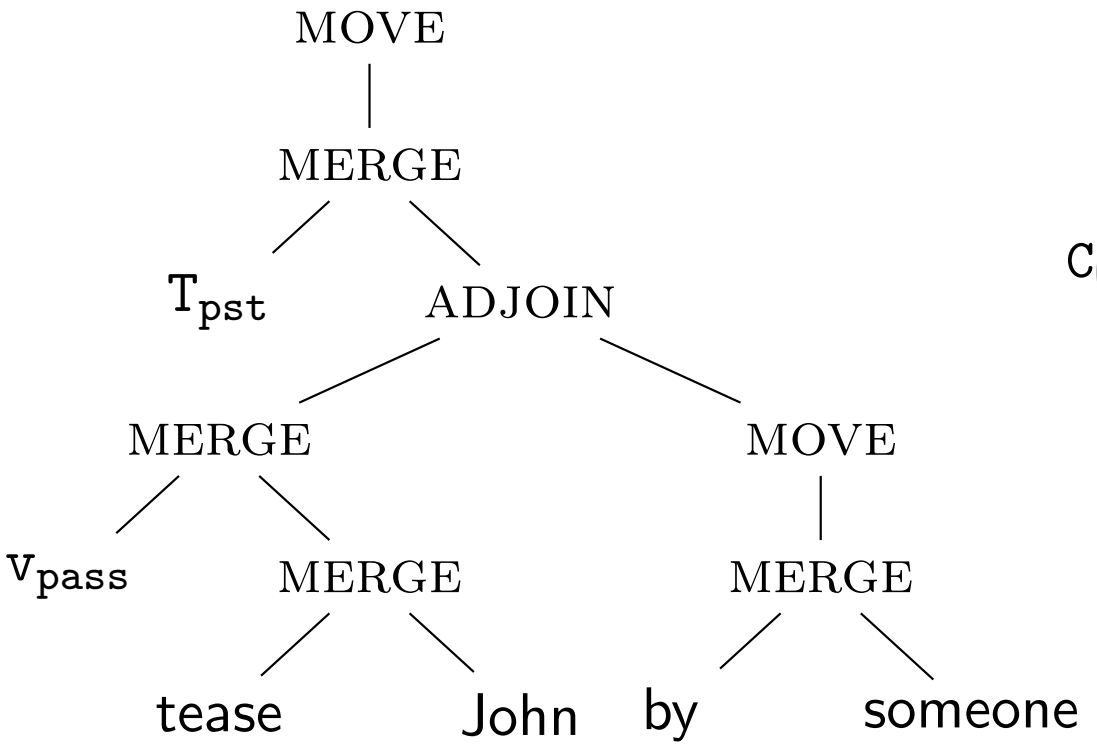

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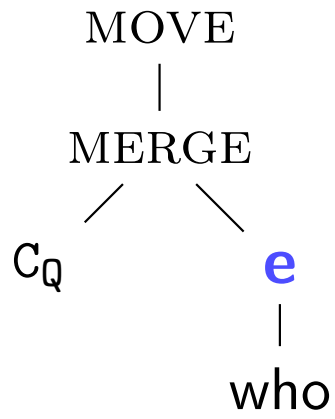

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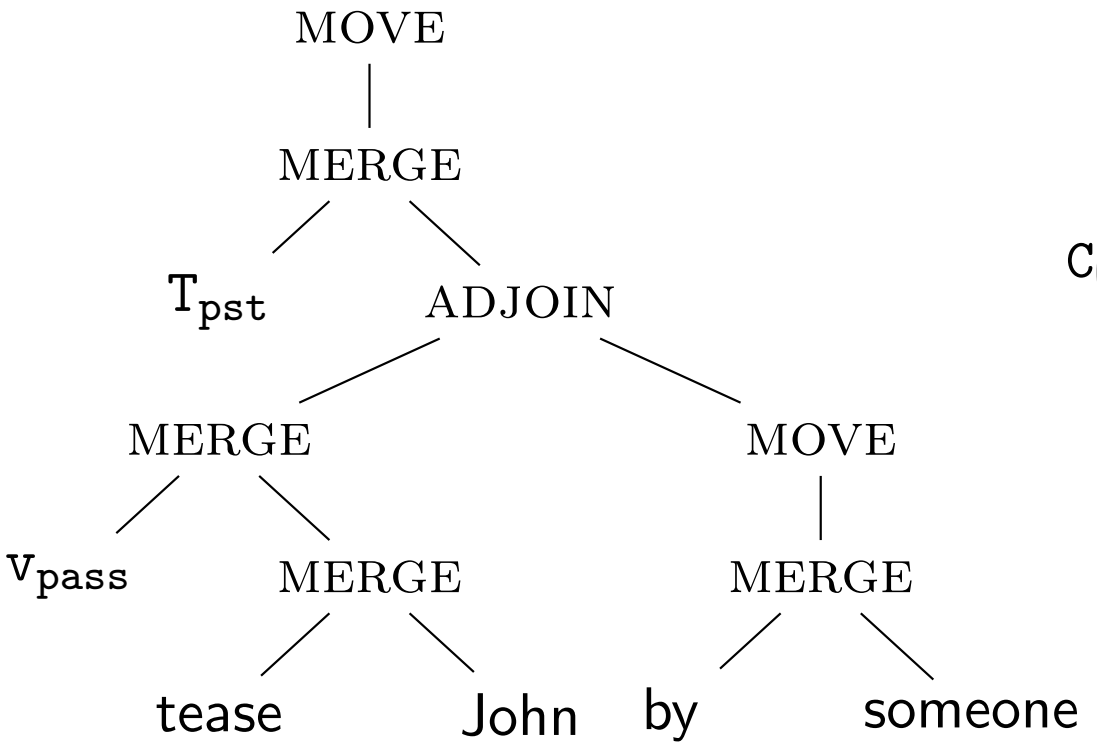

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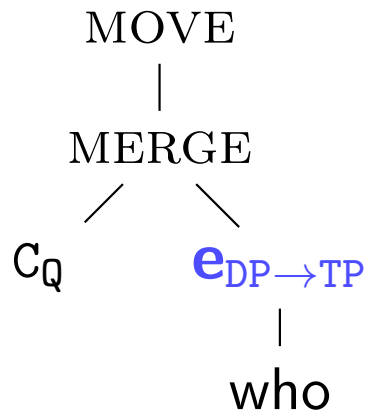

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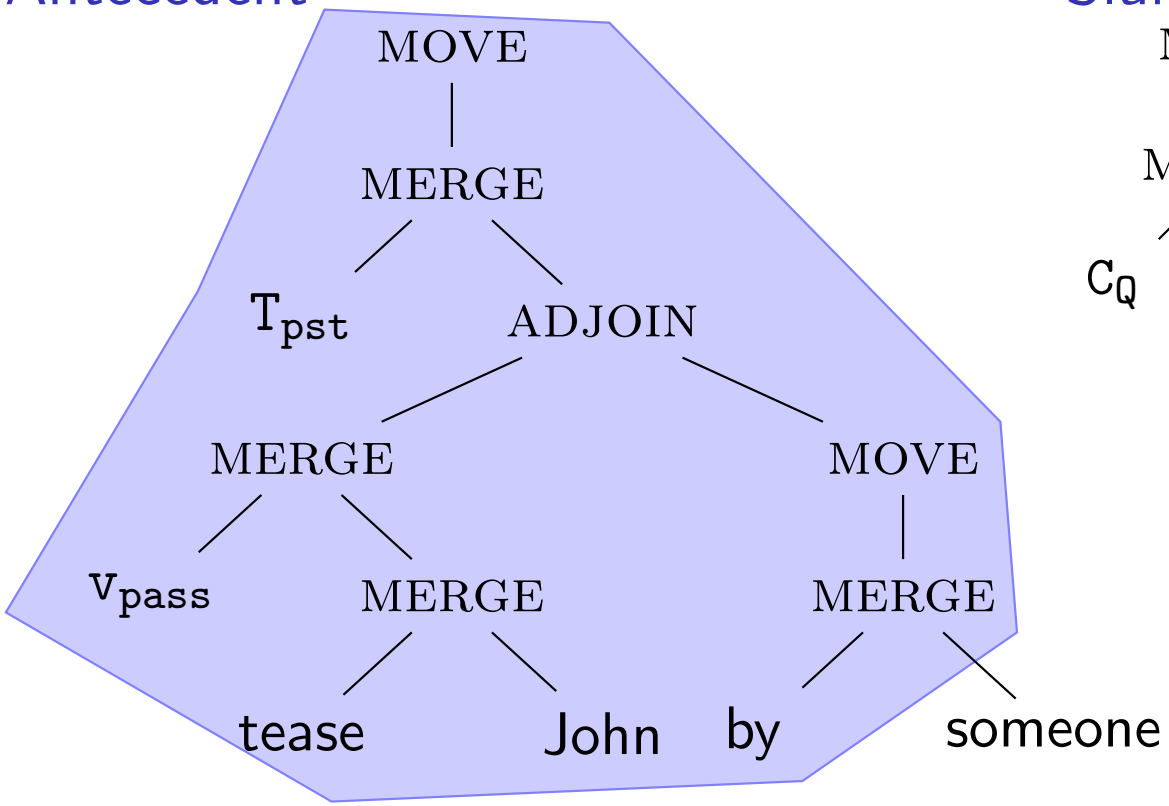

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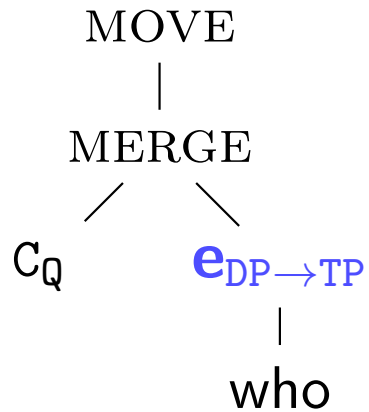

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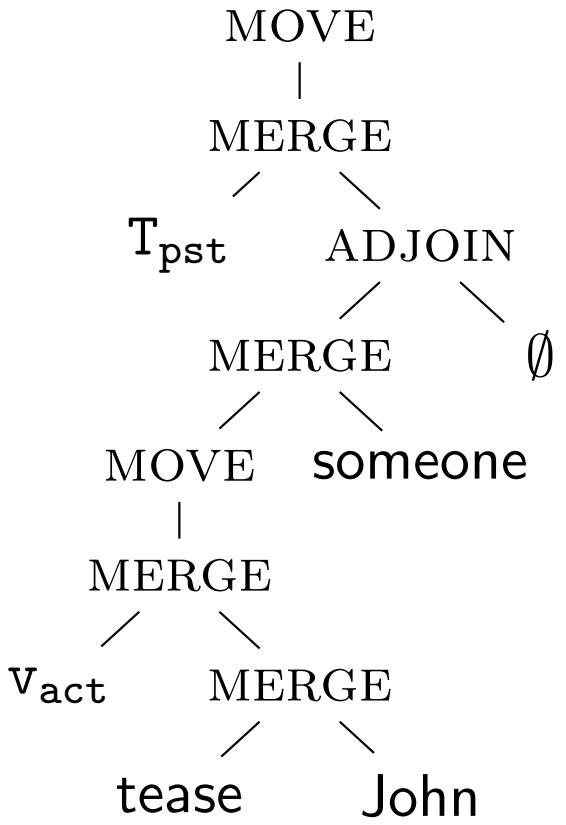

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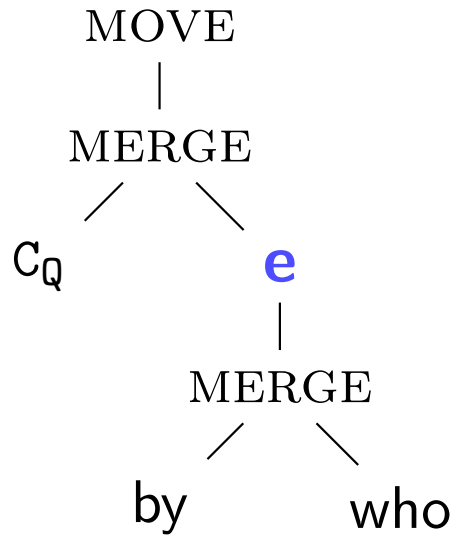

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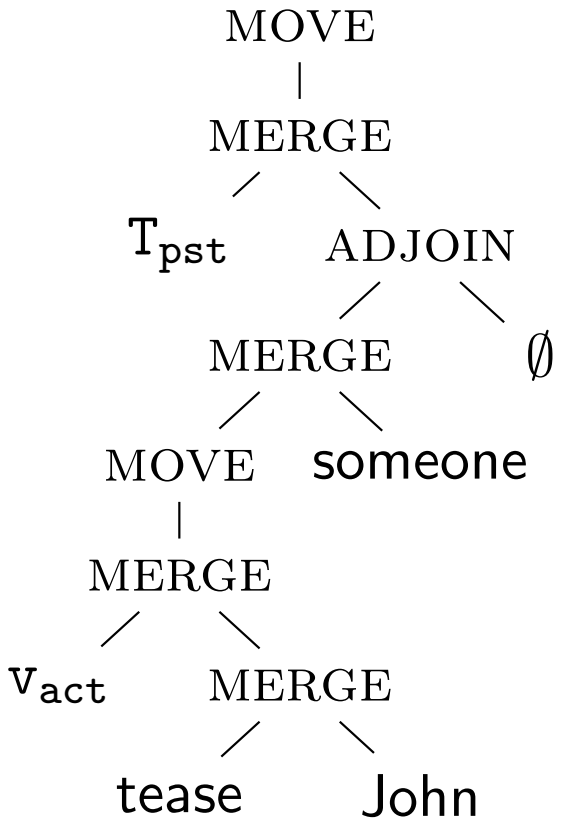

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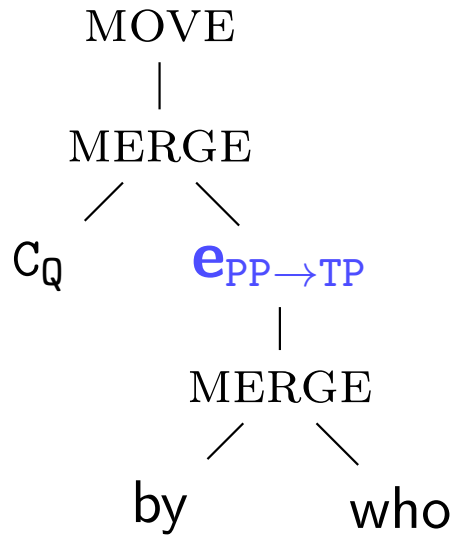

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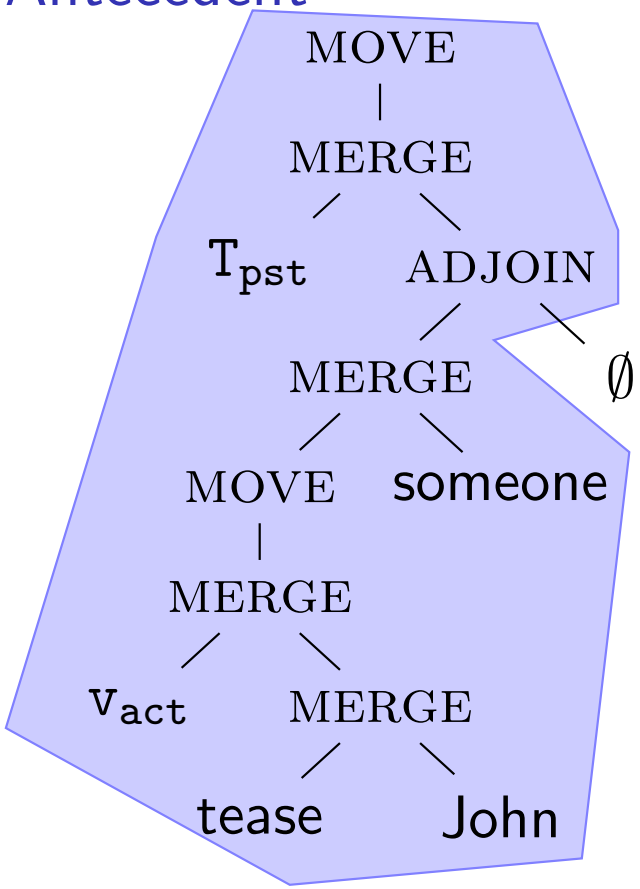

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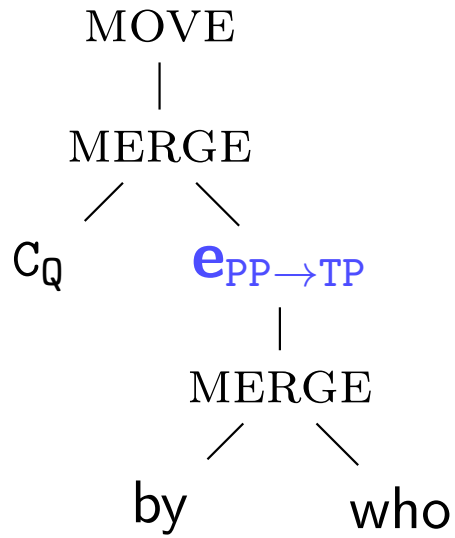

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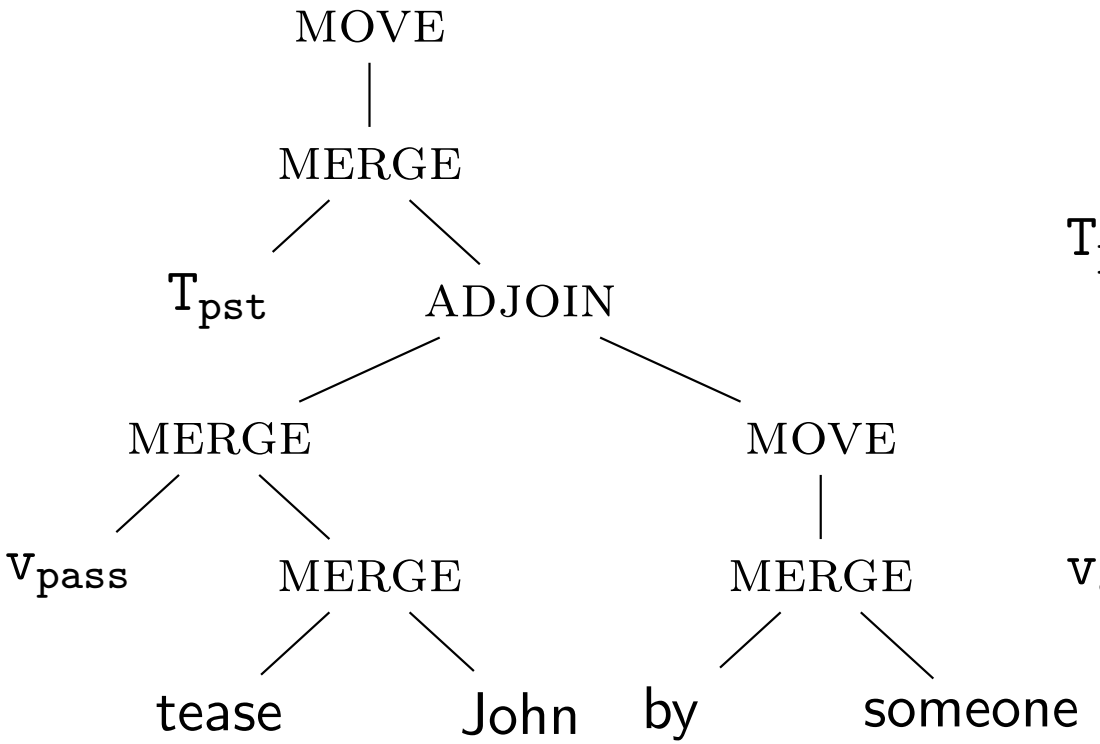

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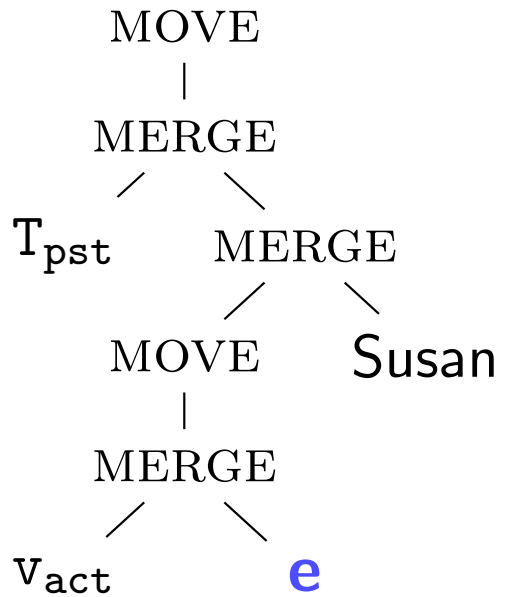

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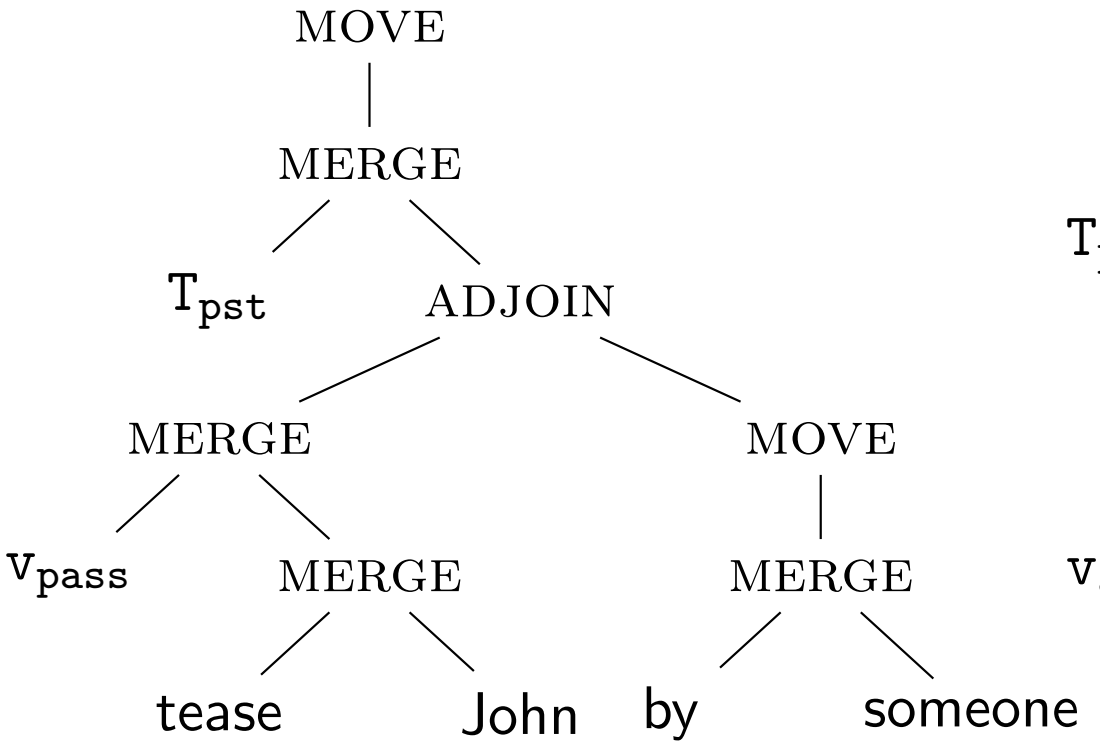

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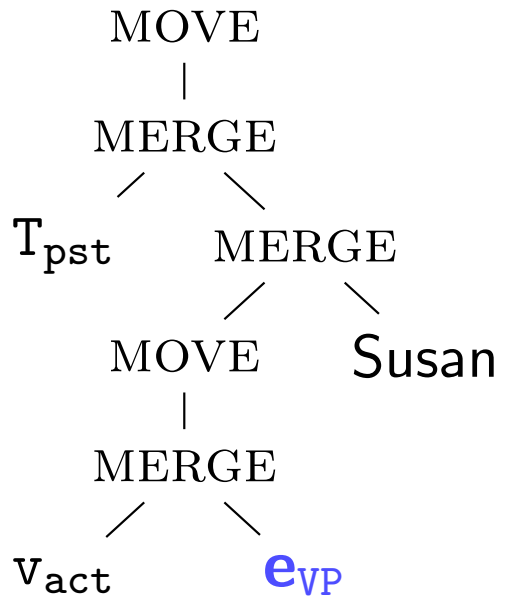

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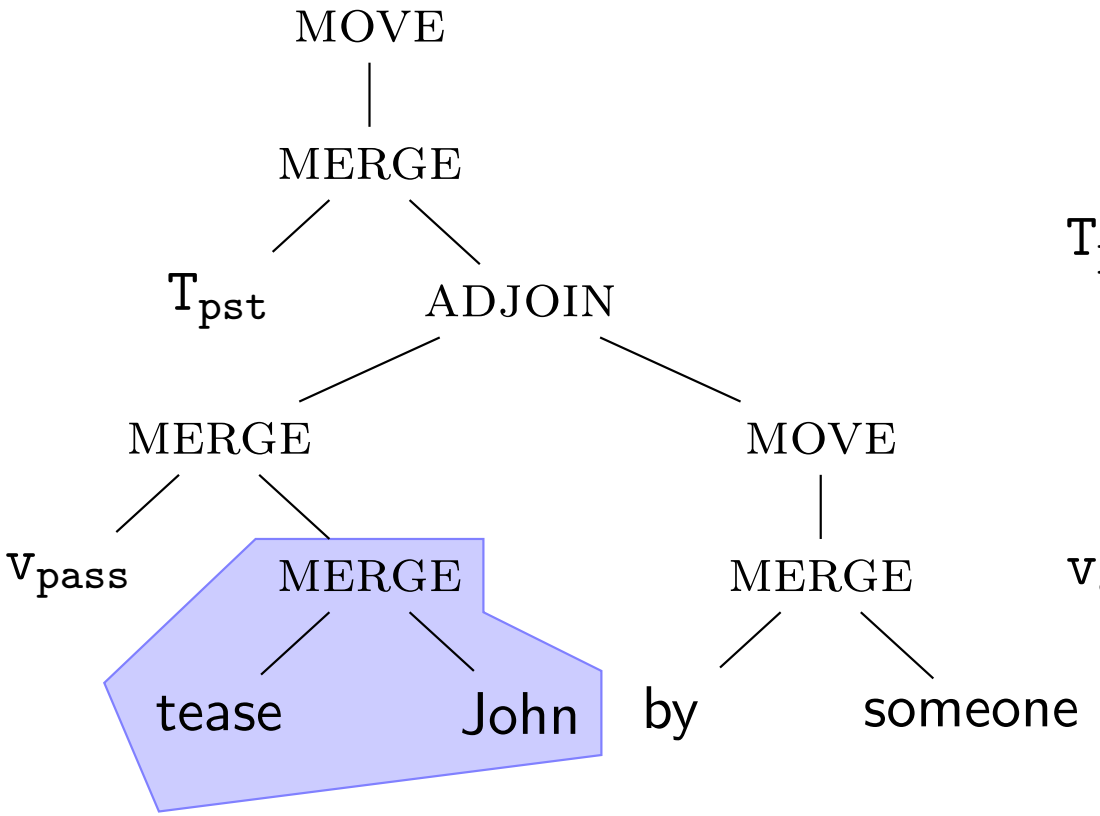

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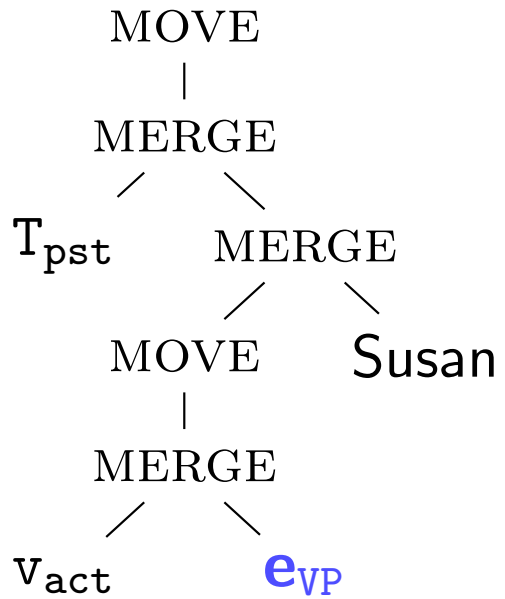

Sprouting and preposition stranding

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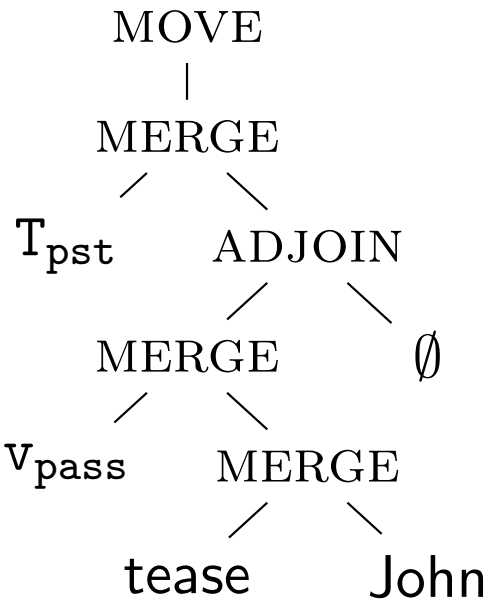

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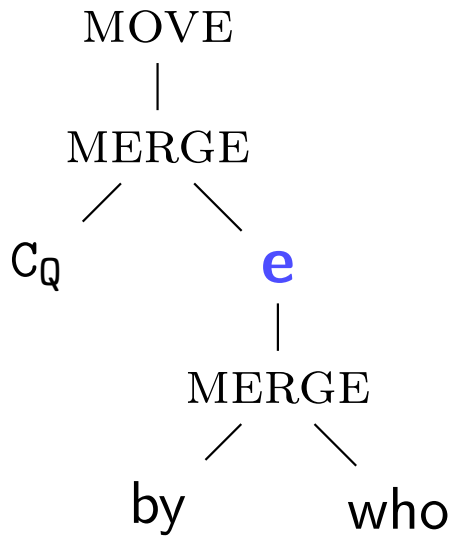

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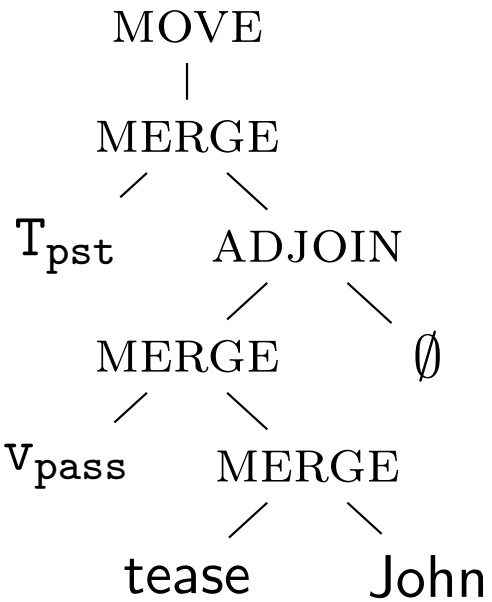
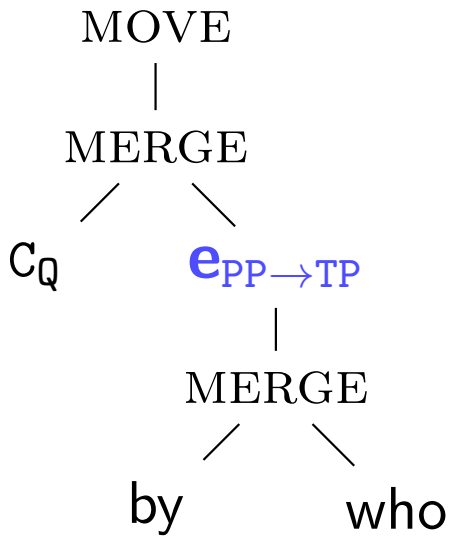


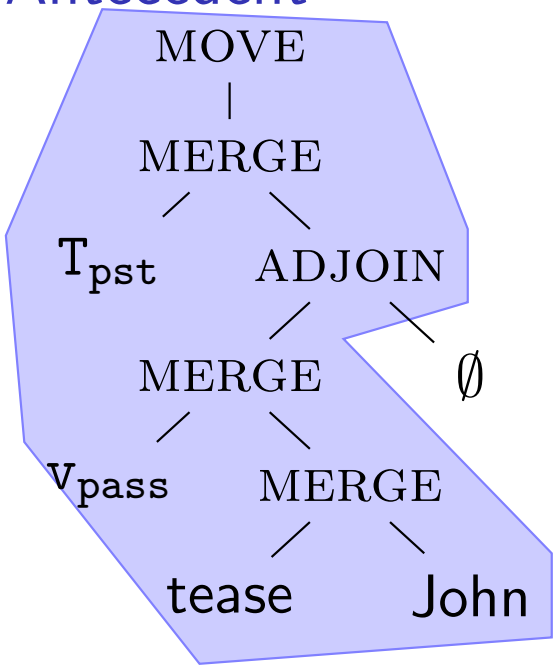
Sluice



Sprouting and preposition stranding

John was teased, but I don't know by whom

Antecedent



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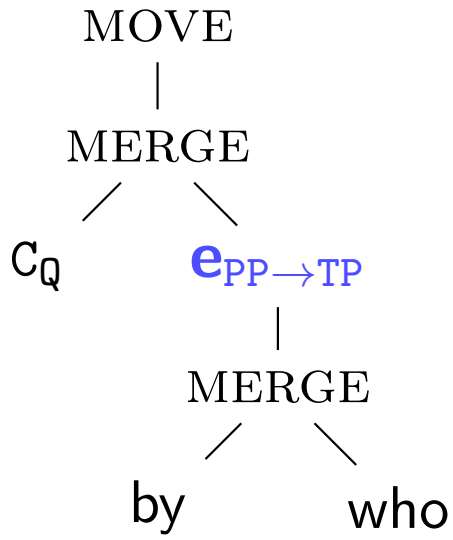

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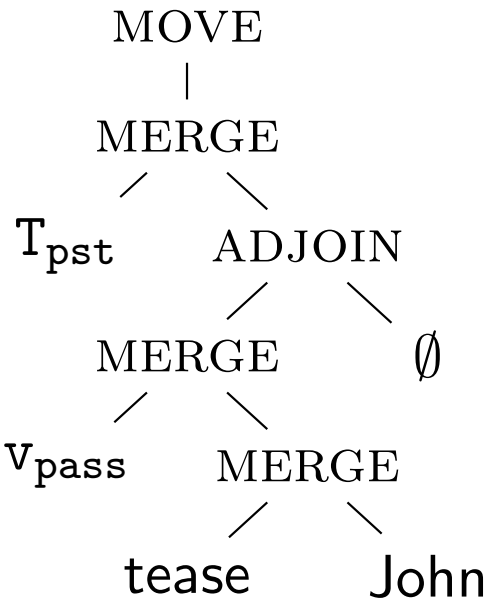

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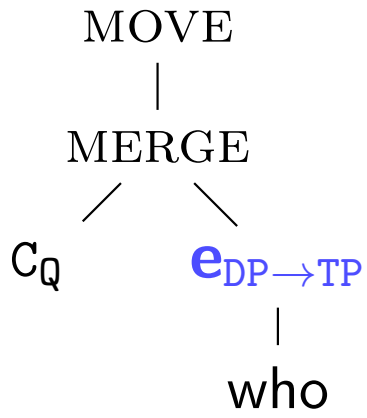

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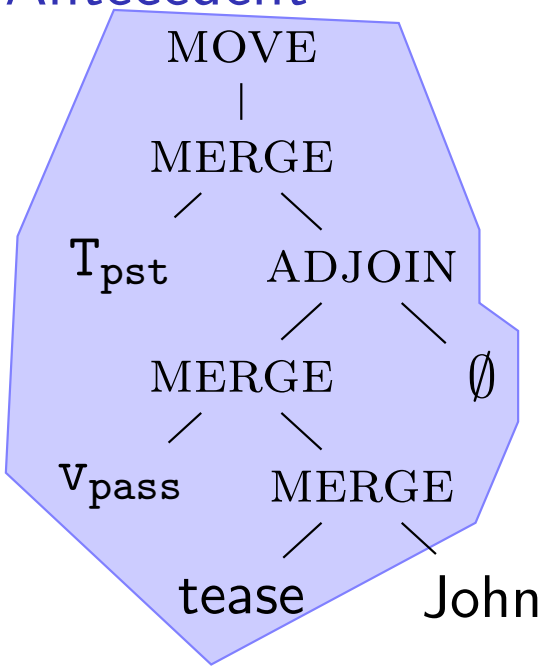

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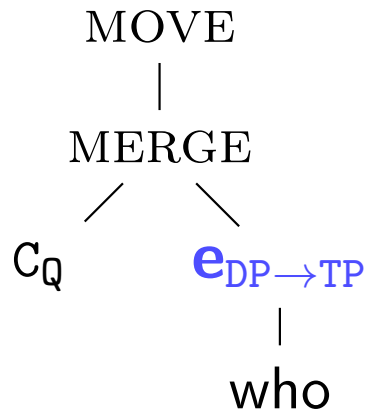

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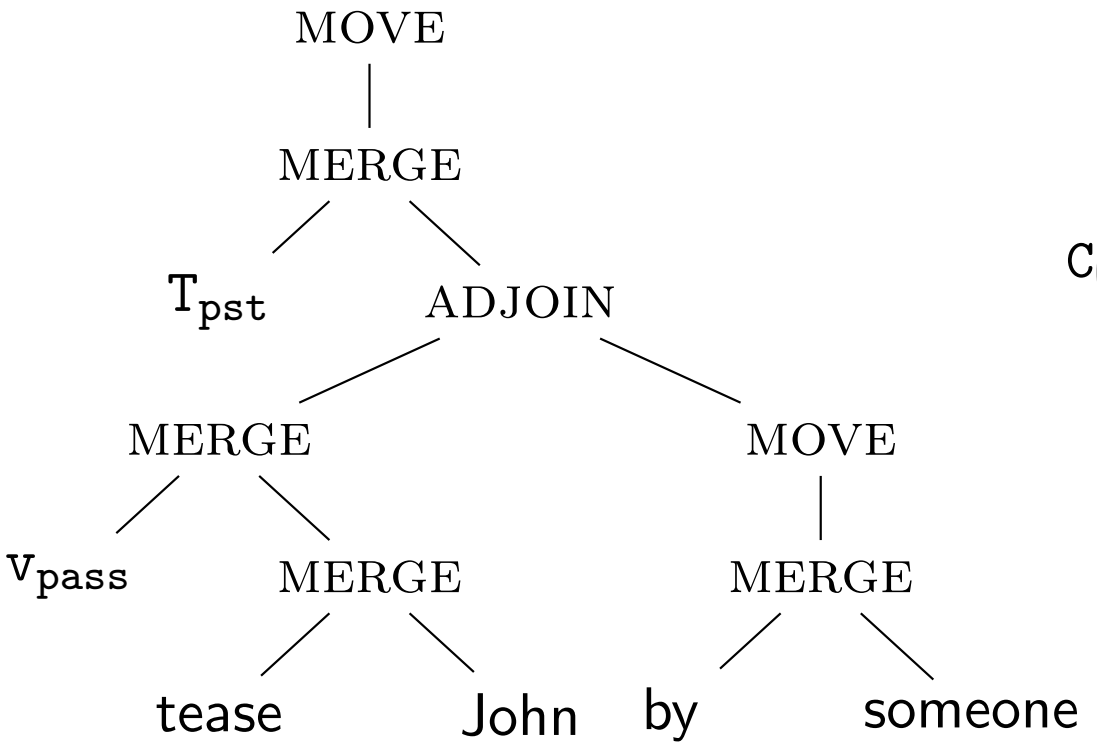

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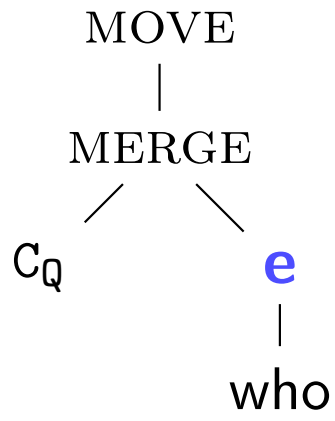

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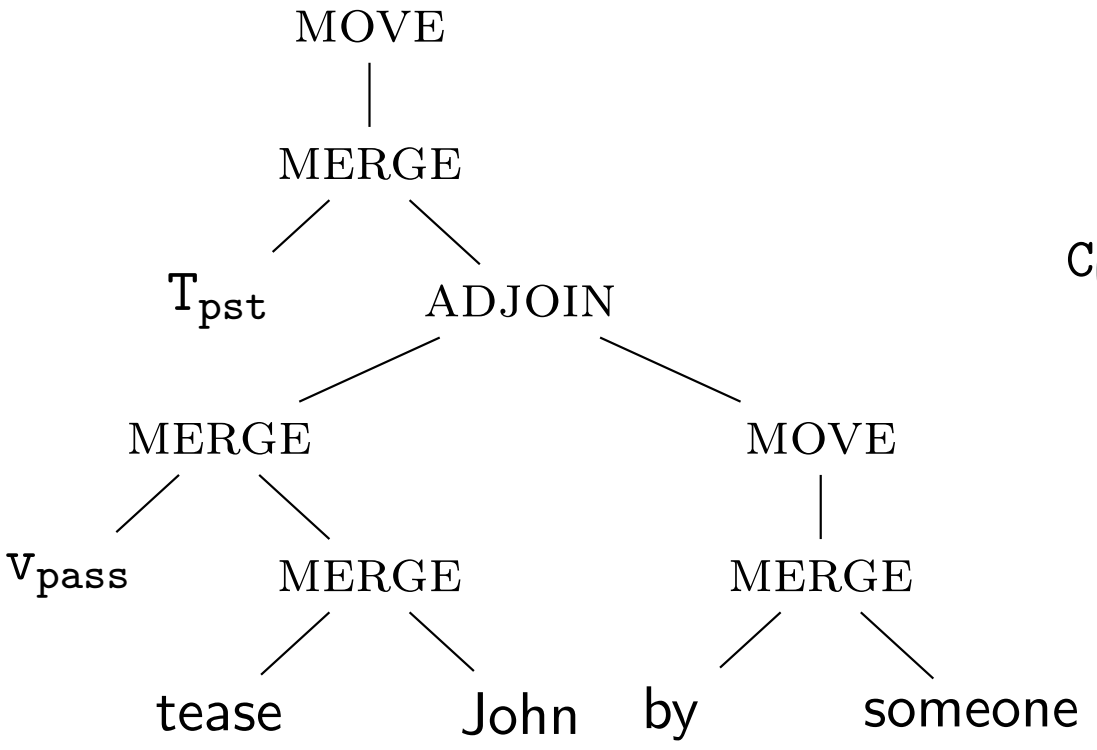

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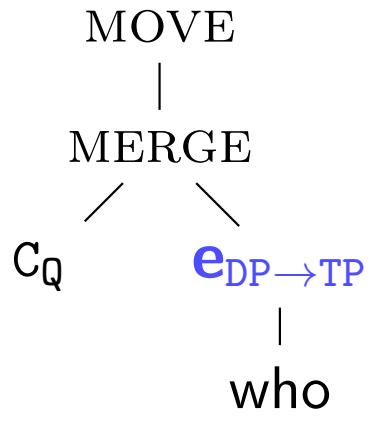

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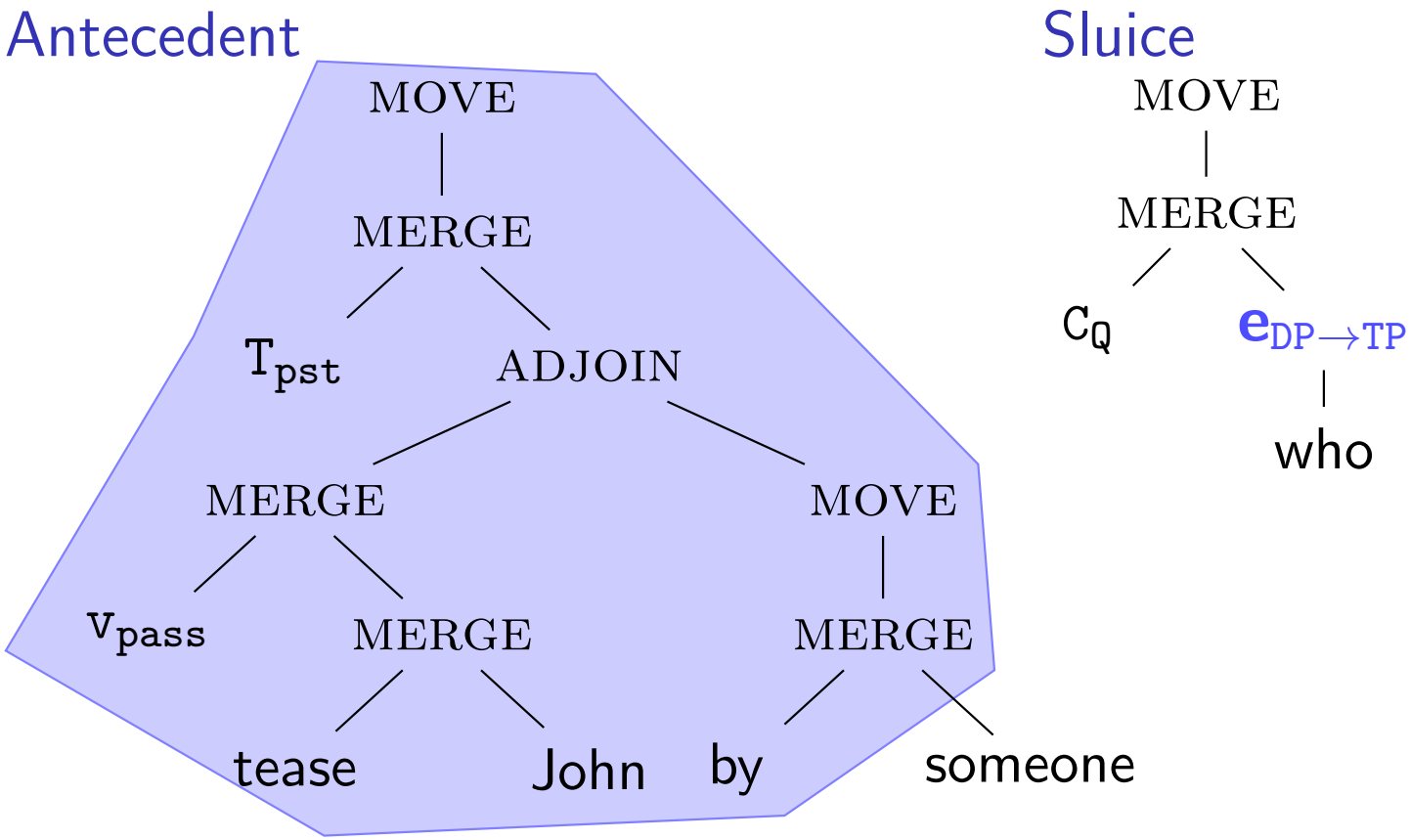

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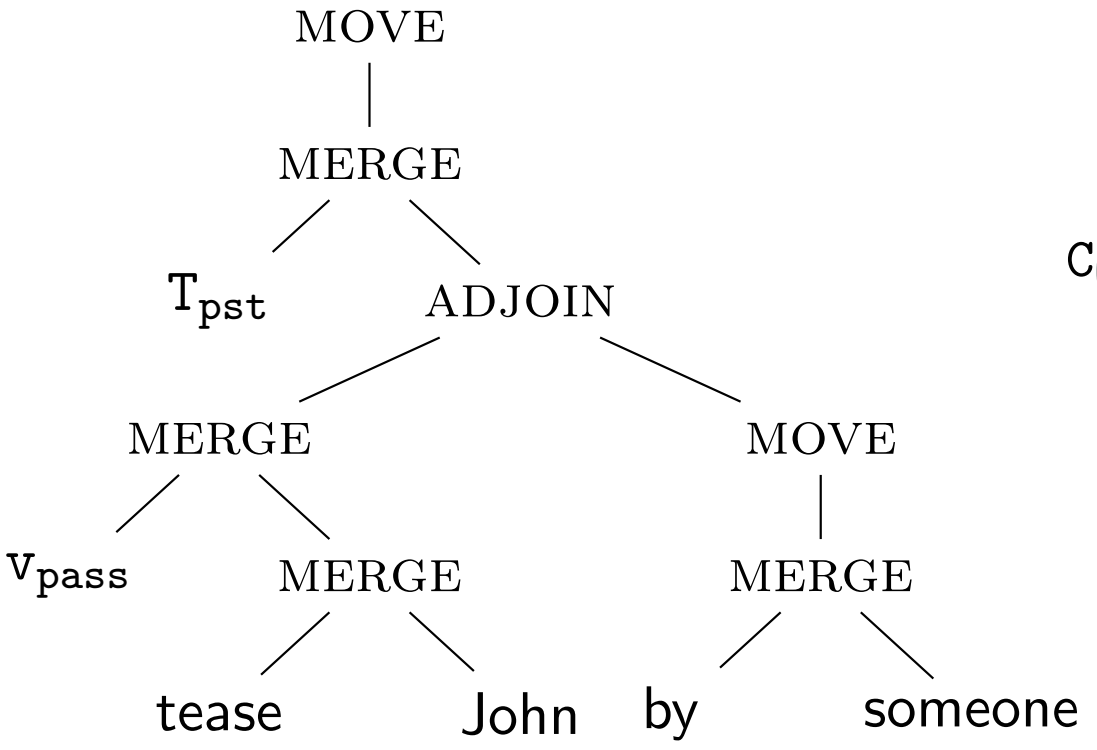

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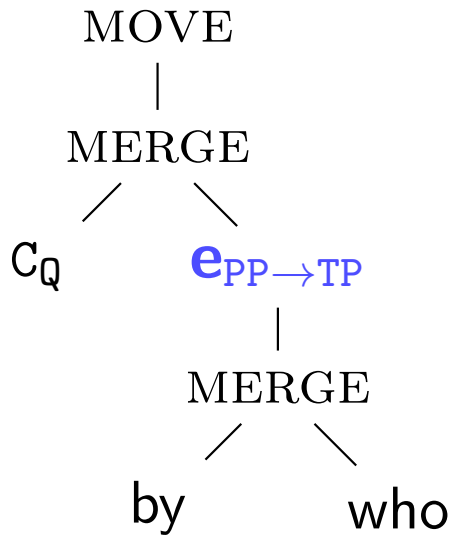

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