Nested Coordination in Universal Dependencies

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[3]Wolfson College, **University of Oxford**
[4]Centre for Linguistics and Philology, **University of Oxford**

Syntax Fest 2019
Paris, 30 August 2019

Problem – UD

1. Tom and Jerry and Scooby-Doo (ternary)
2. [Tom and Jerry] and Scooby-Doo (binary)
3. Tom and [Jerry and Scooby-Doo] (binary)

Universal Dependencies (UD):

1, 2

3

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1 Tom and Jerry and Scooby-Doo (ternary)
2 [Tom and Jerry] and Scooby-Doo (binary)
3 Tom and [Jerry and Scooby-Doo] (binary)

Universal Dependencies (UD):

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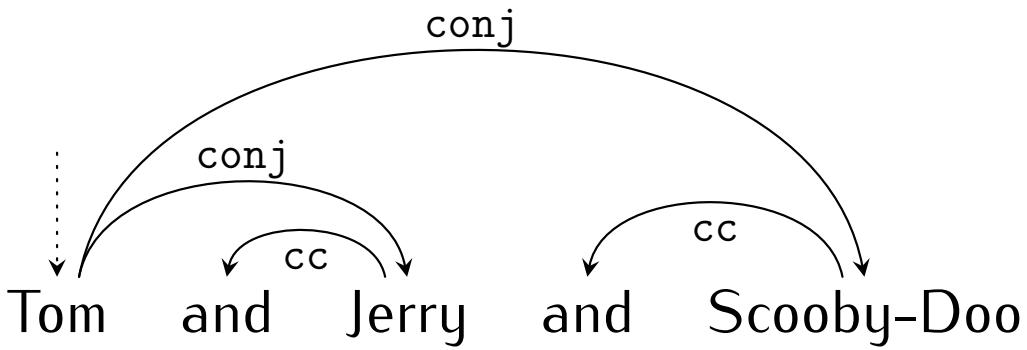

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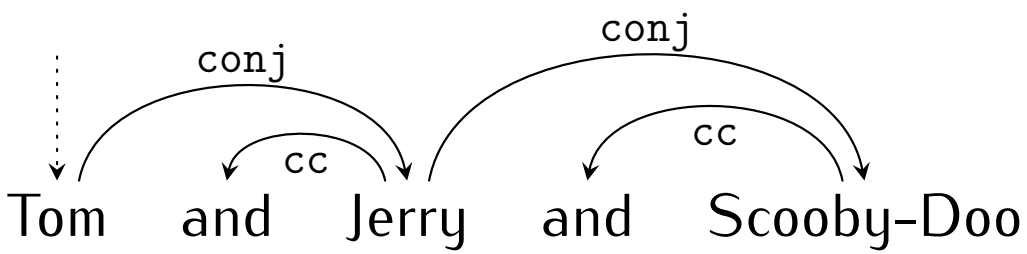

Problem – MTT

1. Tom and Jerry and Scooby-Doo
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Igor Mel'čuk's Meaning–Text Theory (MTT):

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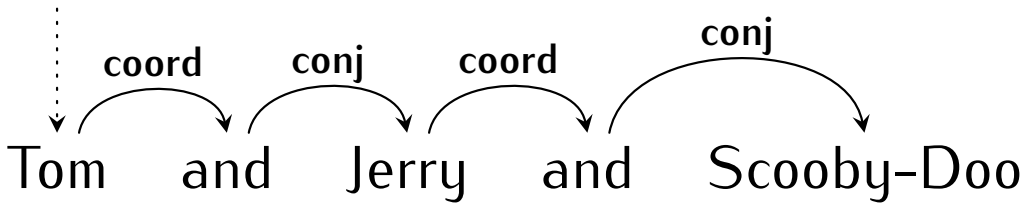

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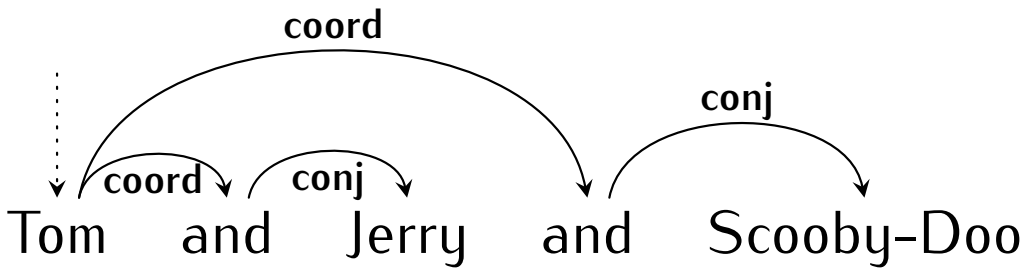

Solution – MTT

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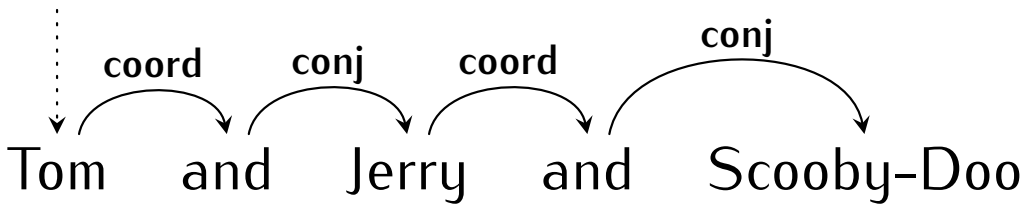
Groupings in MTT:

1



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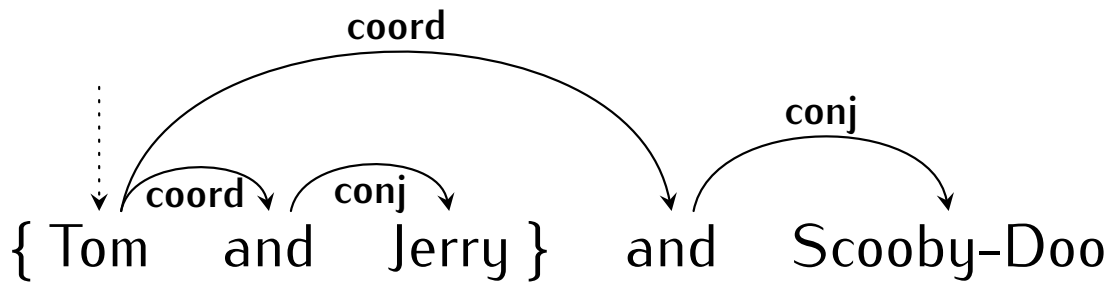

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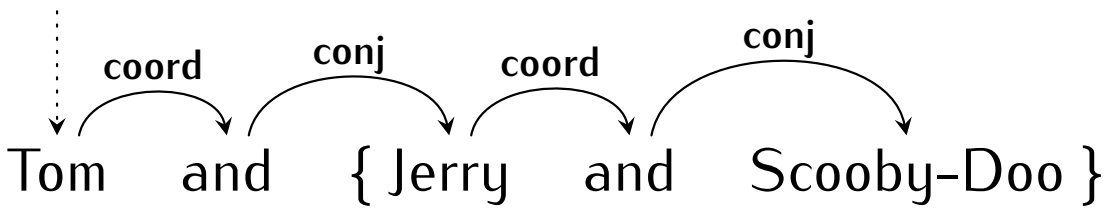
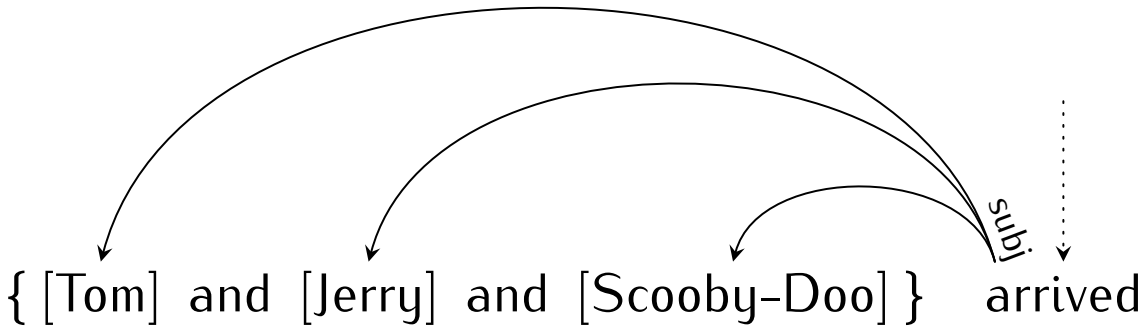


Solution – WG

Constituents in Dick Hudson's Word Grammar:

1



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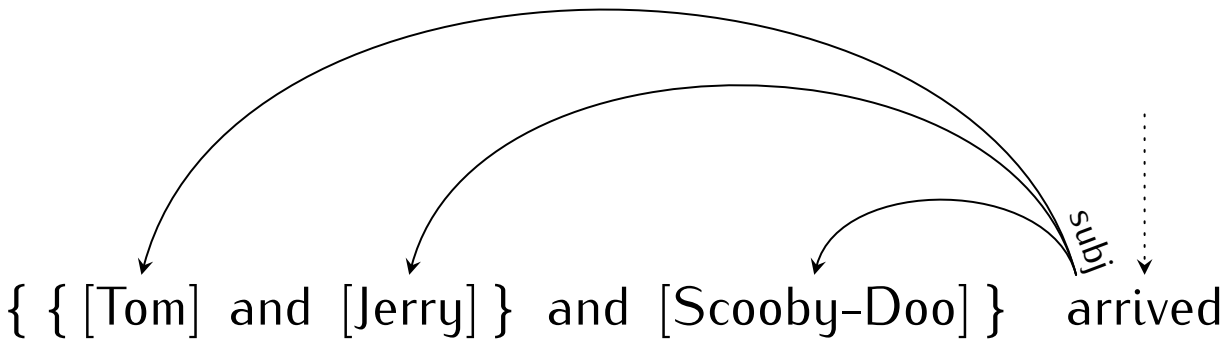

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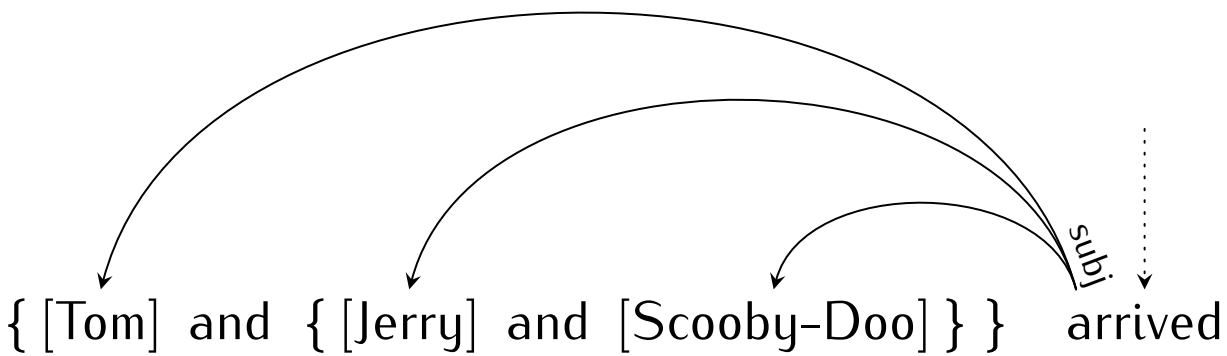

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Prague-style:

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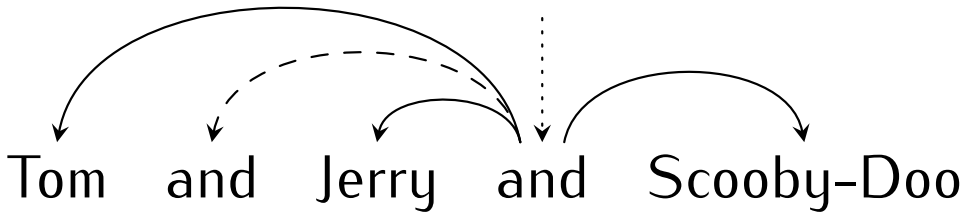

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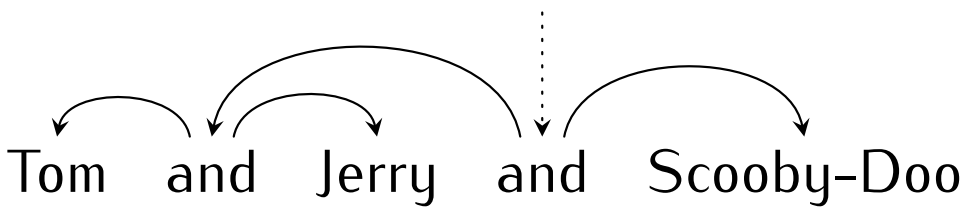

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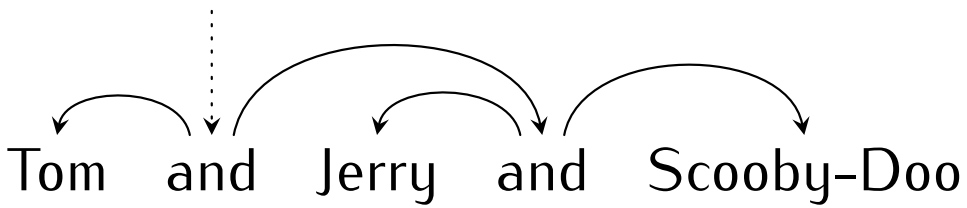

Problem – UD (summary)

But Prague-style analysis is **theoretically problematic** and rejected by many linguists of different theoretical persuasions (Mel'čuk and Pertsov 1987: 65, Hudson 1988: 314–315, Gerdes and Kahane 2015: 102–105; also Borsley 2005).

Summary of the problem:

- UD does not distinguish between certain nestings of coordination,
- MTT and WG use mechanisms unavailable in UD (groupings, constituents),
- not a technical problem for Prague-style analysis of coordination,
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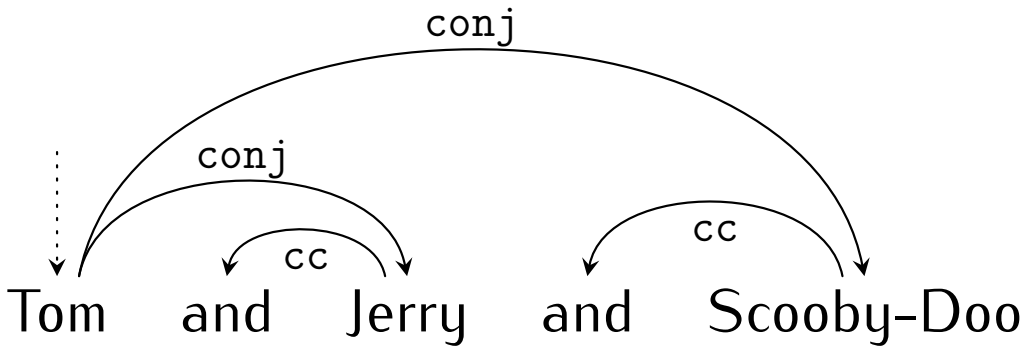
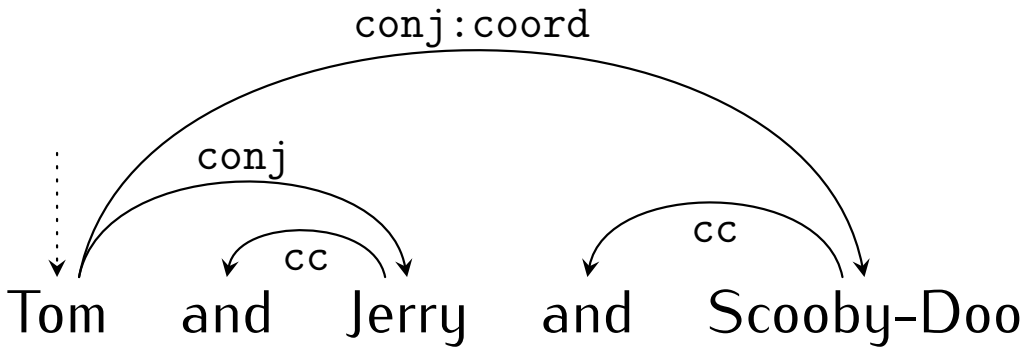
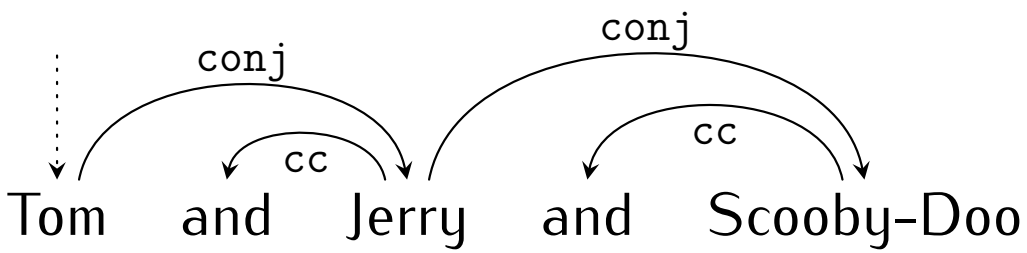
- 

- 

- 

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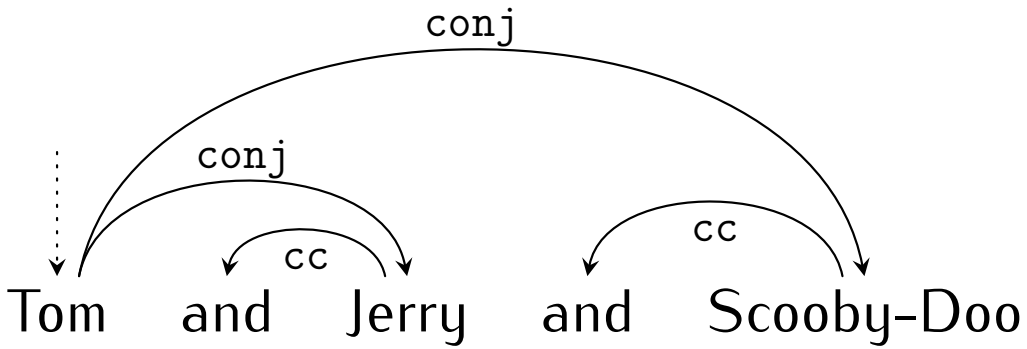
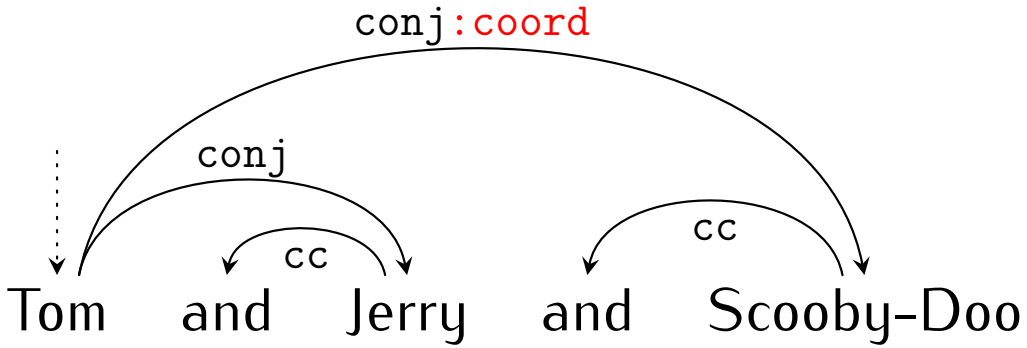
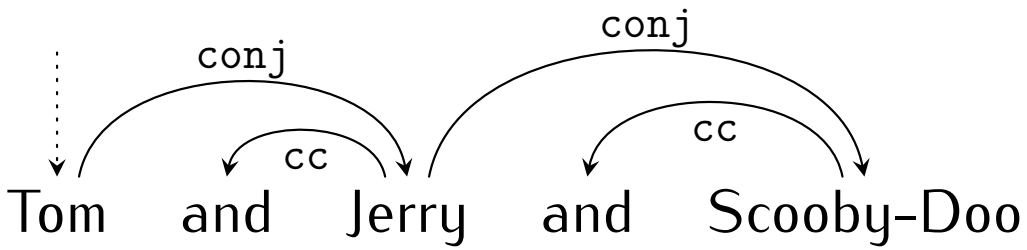
- 

- 

- 

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Similar solution considered in Mel'čuk 1988: 30 and Mel'čuk 2009: 93–94 and earlier. **Rejected** as 'highly unnatural' and leading to the doubling of dependency labels.

A problem for UD – **no theoretical limit** to the number of subtypes (Schuster *et al.* 2017: 130–131):

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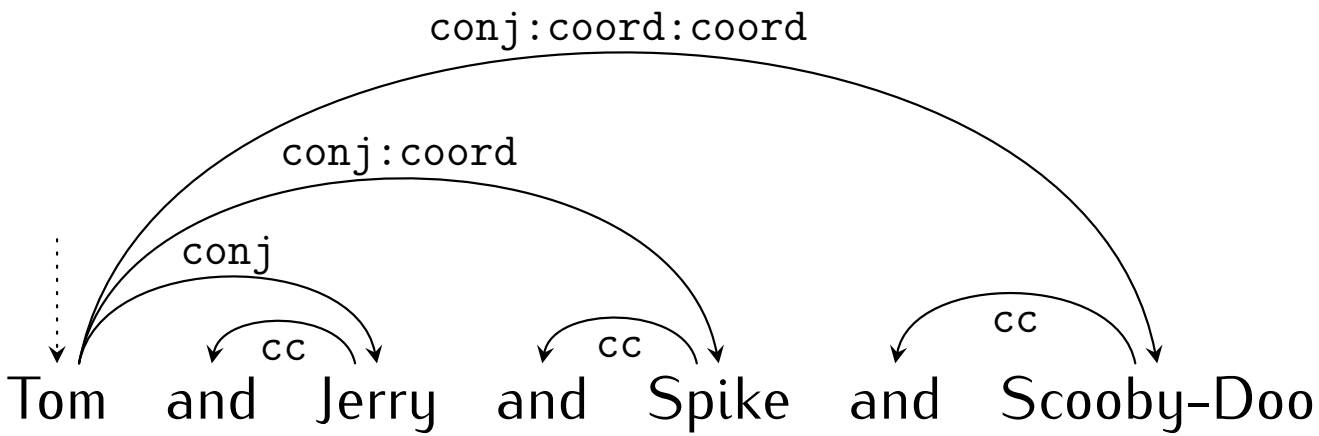
- 

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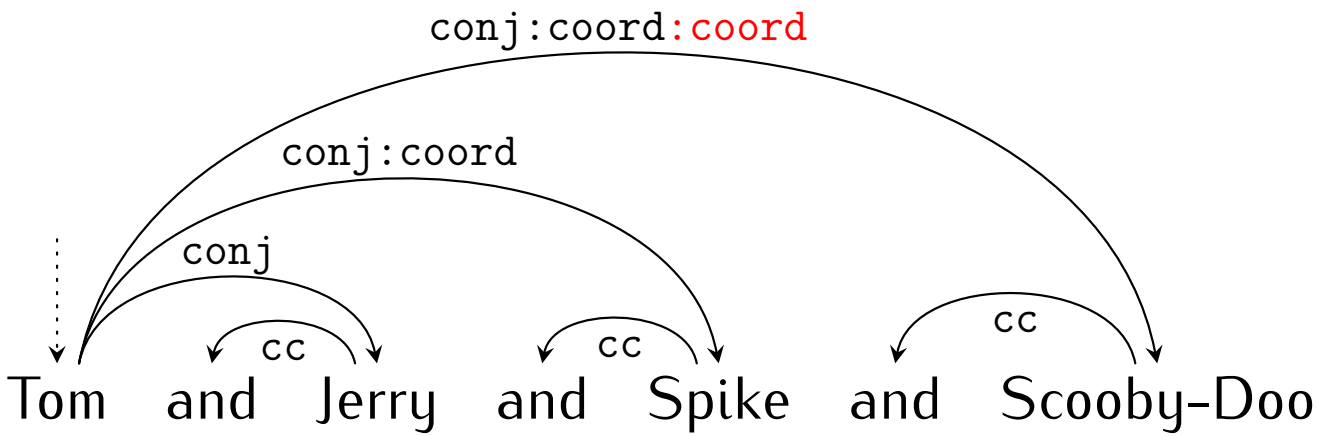
- 

Conjuncts as co-heads in enhanced representations 1

Retain basic tree representation, add **different enhanced representation**:

- Tom and Jerry and Spike and Scooby-Doo: (no nesting)

Idea: pairs of dependencies (in both directions) between neighbouring conjuncts.

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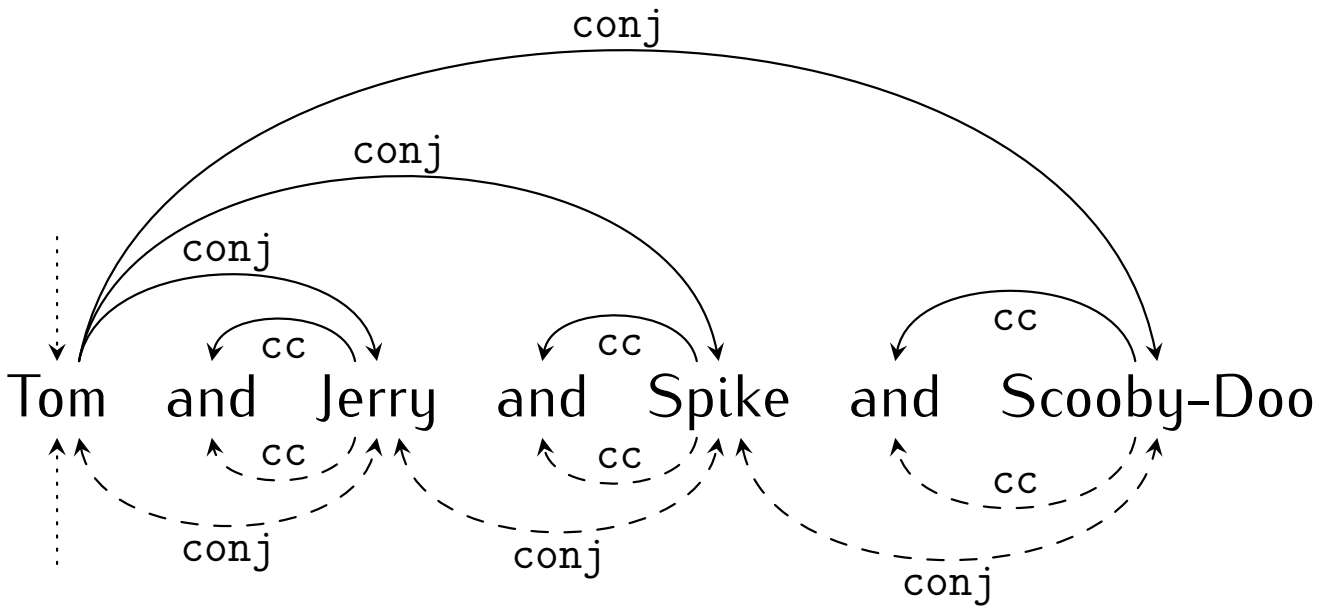

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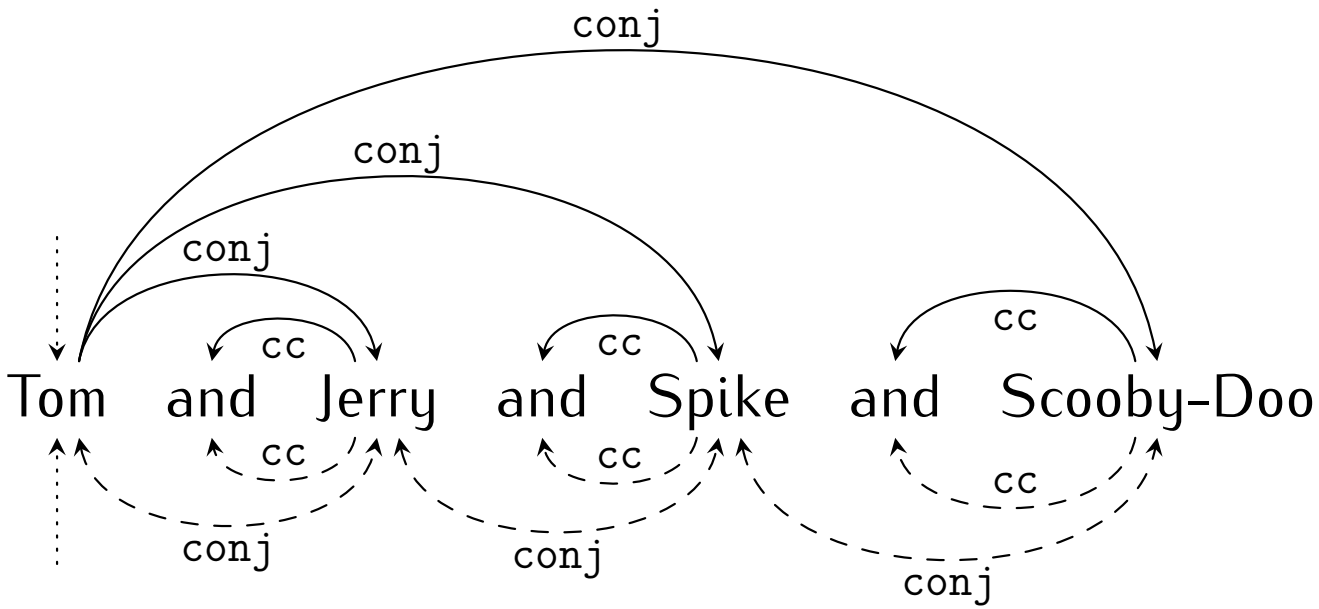

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Conjuncts as co-heads in enhanced representations 2

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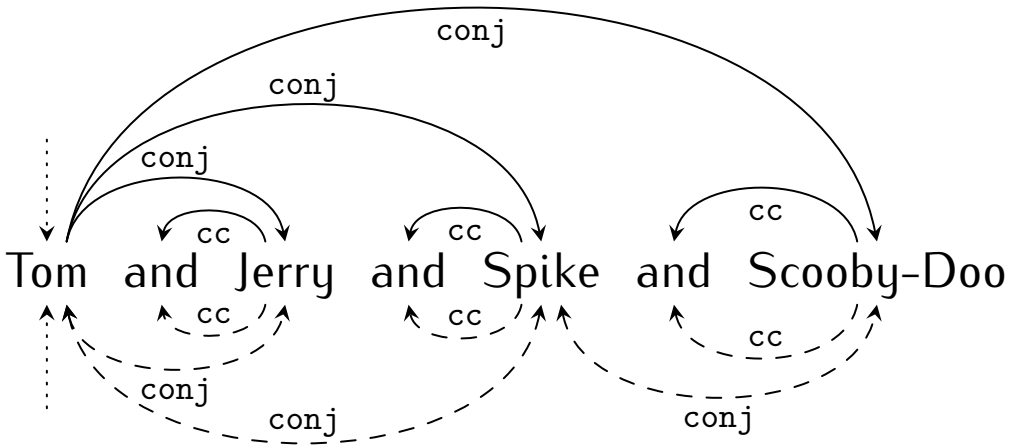

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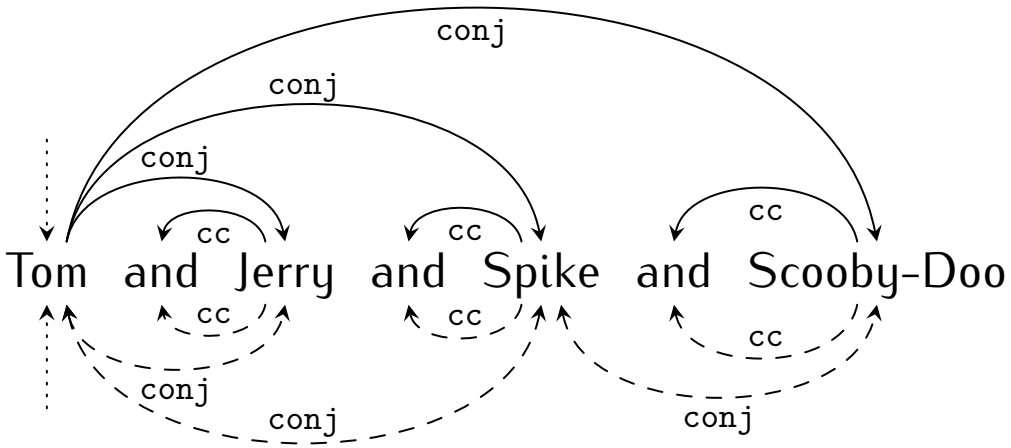

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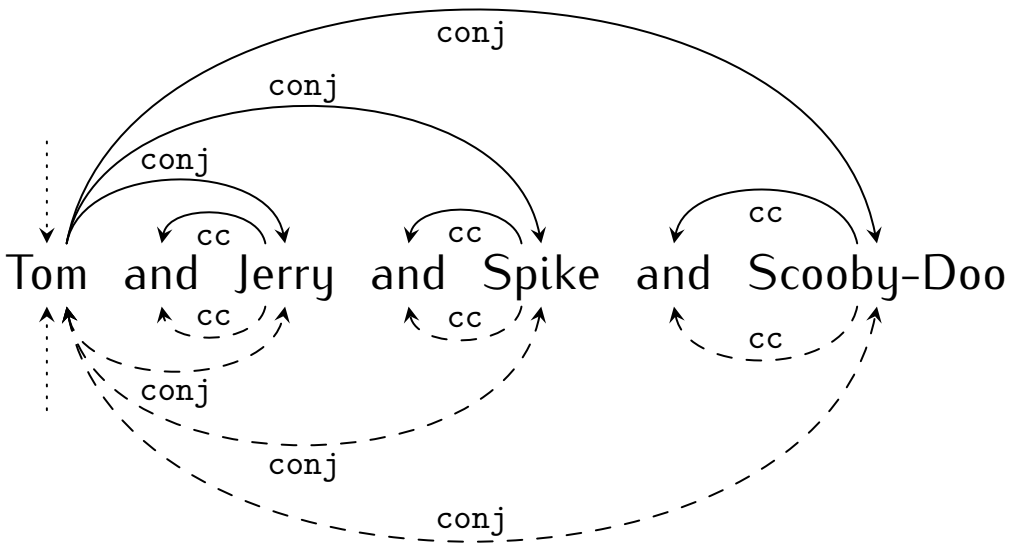

Conjuncts as co-heads in enhanced representations 2

Pros:

- it can be shown that **representations of different nestings differ**
- enhanced graph implements the common idea that **conjuncts are co-heads**
  - in dependency approaches: Tesnière 1959 (similar sentiments expressed by Hudson)
  - in constituency approaches: Gazdar *et al.* 1985 (similar sentiments in some HPSG work)
  - in combined approaches: Kahane 1997, Kahane and Mazziotta 2015

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- **basic trees and enhanced graphs must be inspected together** to reveal full structure
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Distribution in enhanced representations 1

Recall **standard UD treatment of coordination**:

- I like funny cats and mice.
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In **enhanced representation**:

- distribute dependencies **to** coordinate structure (cf. obj above),
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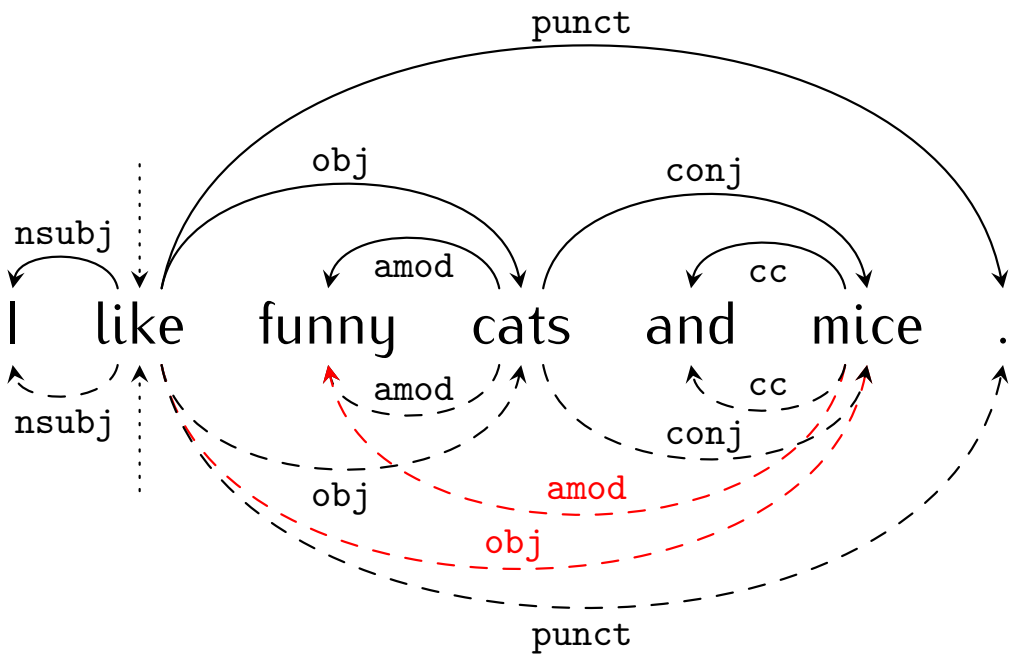
- 

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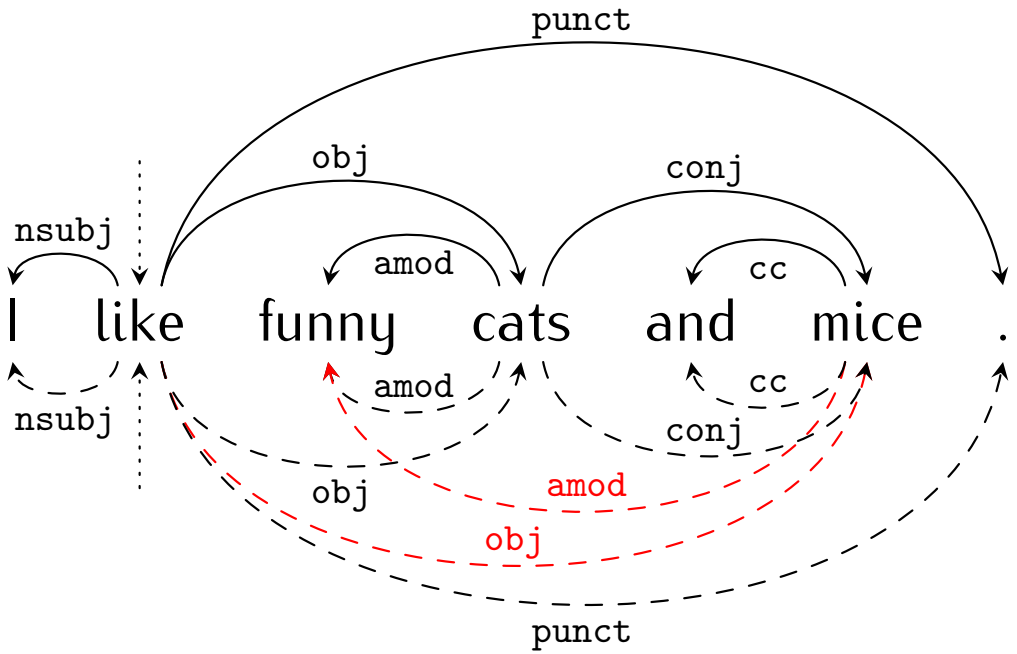
- 

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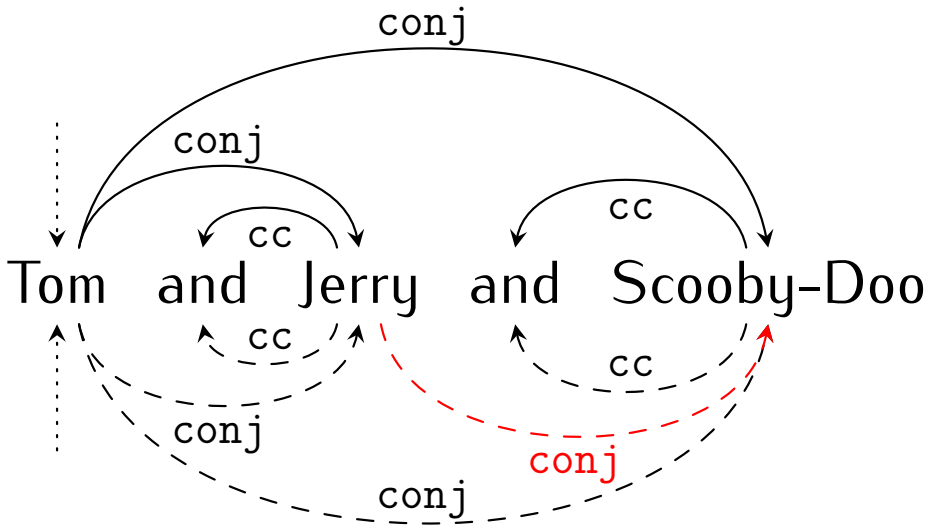

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Pros:

- maximally conservative solution

Cons:

- requires inspecting both levels (basic trees and enhanced graphs)
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- (does not encode the co-heads idea)

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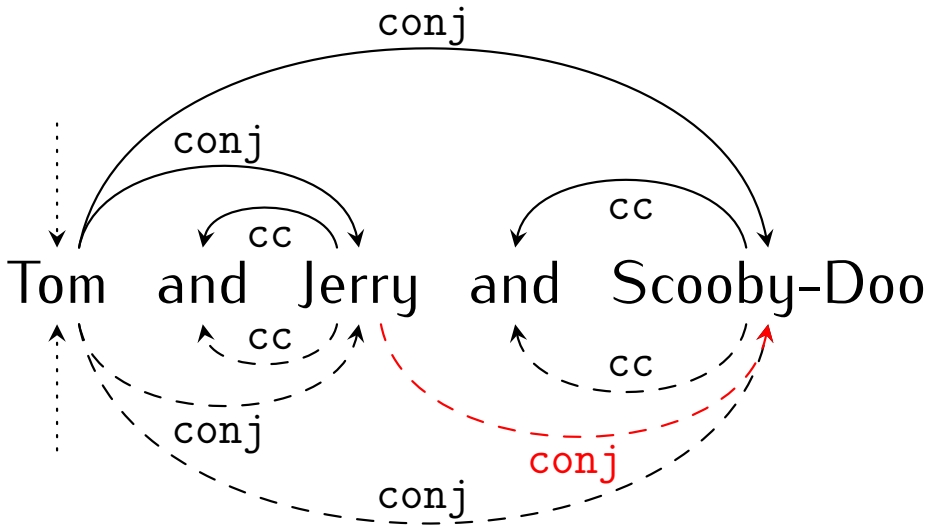

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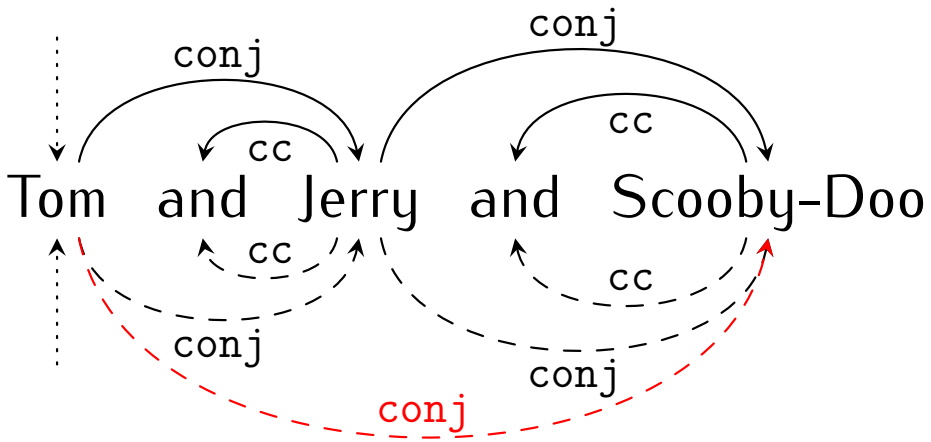

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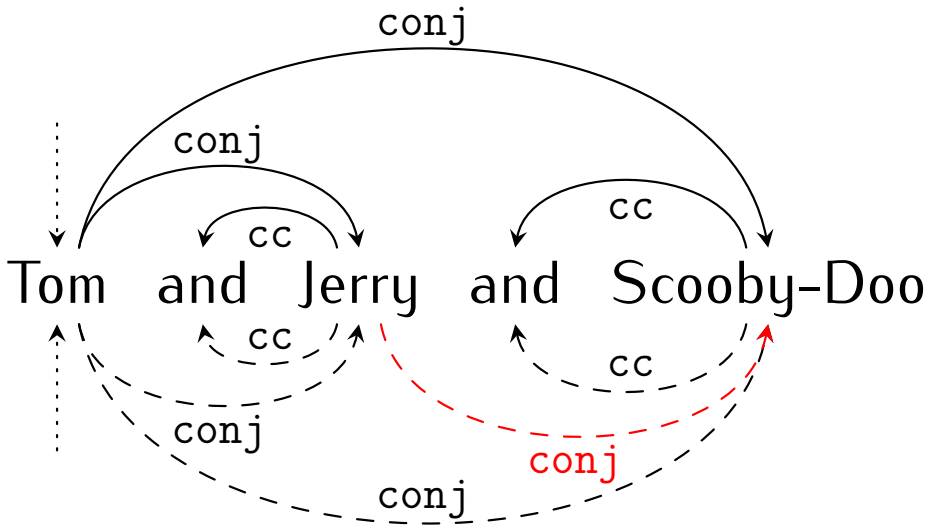

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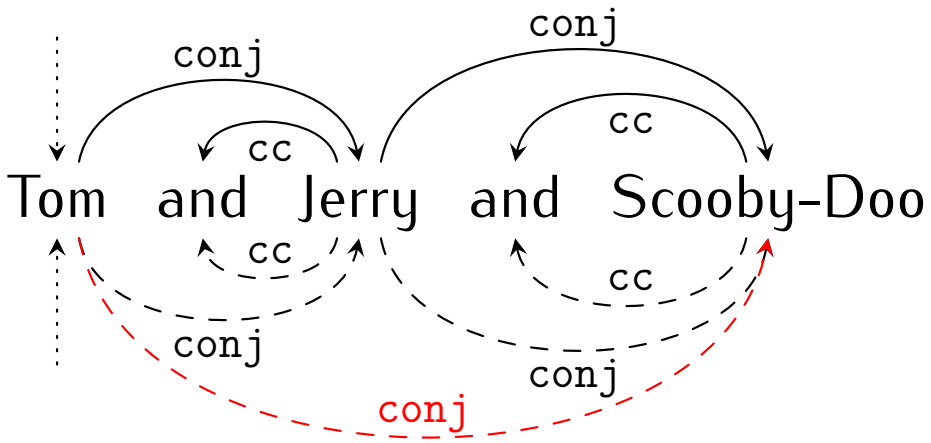

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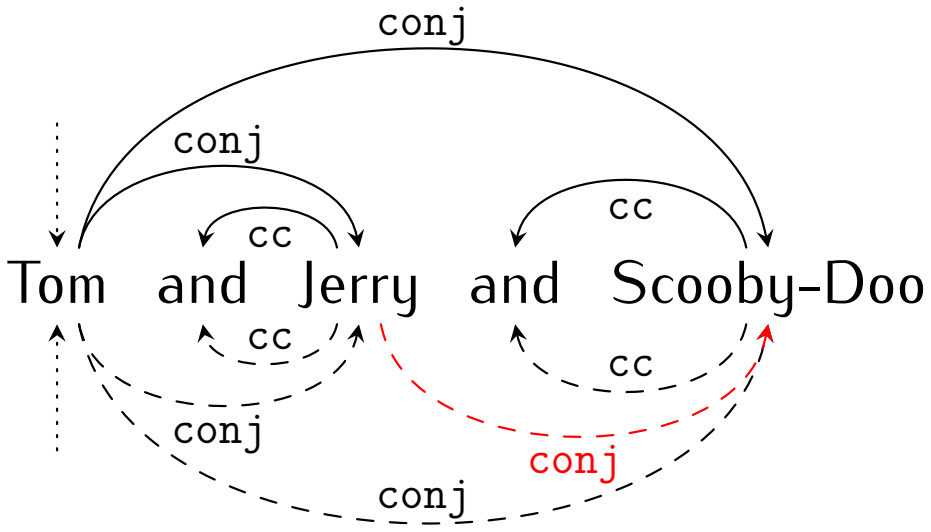

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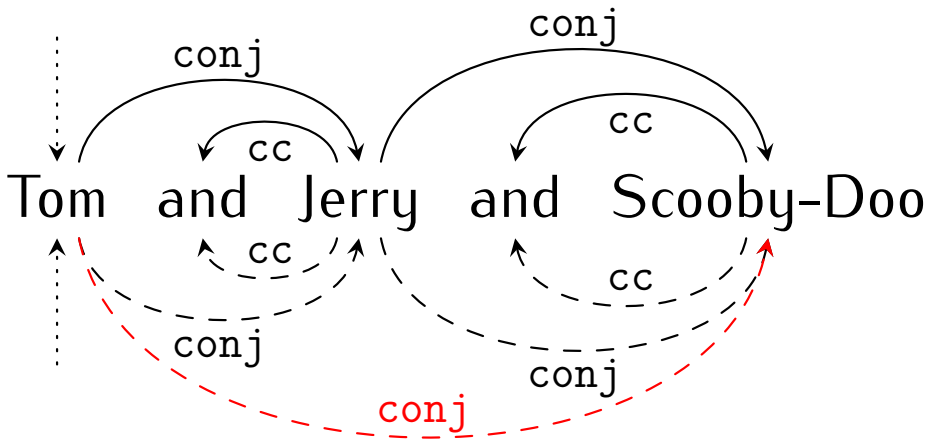

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- **maximally conservative** solution

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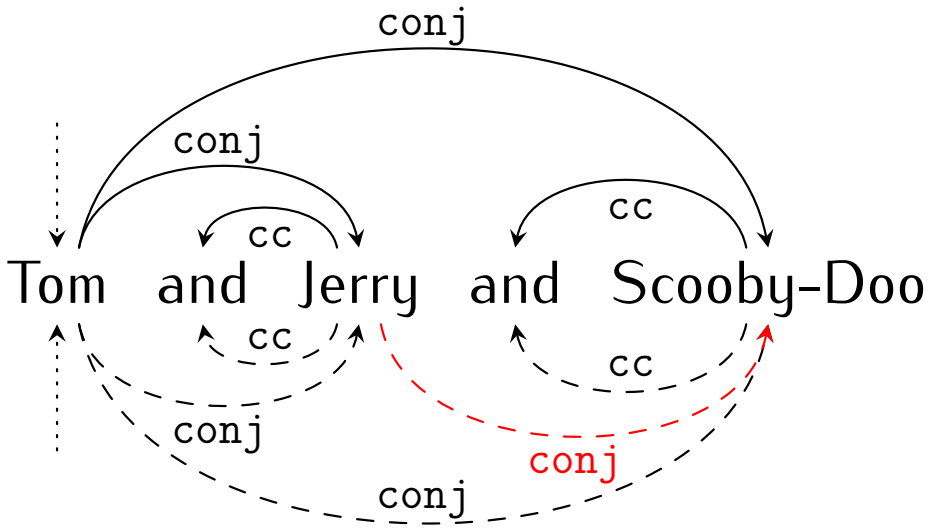

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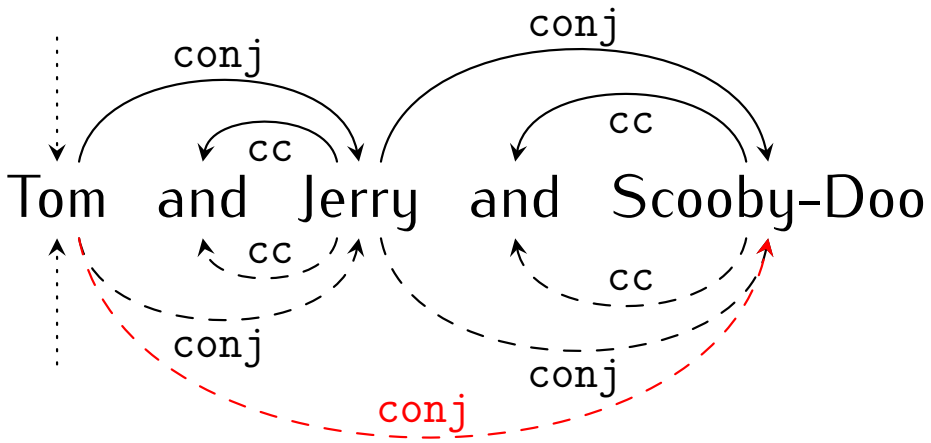

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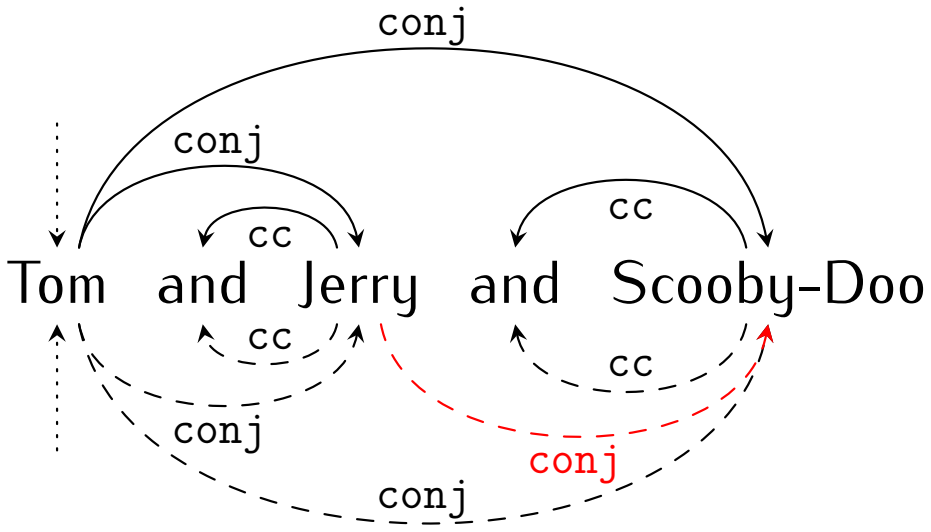

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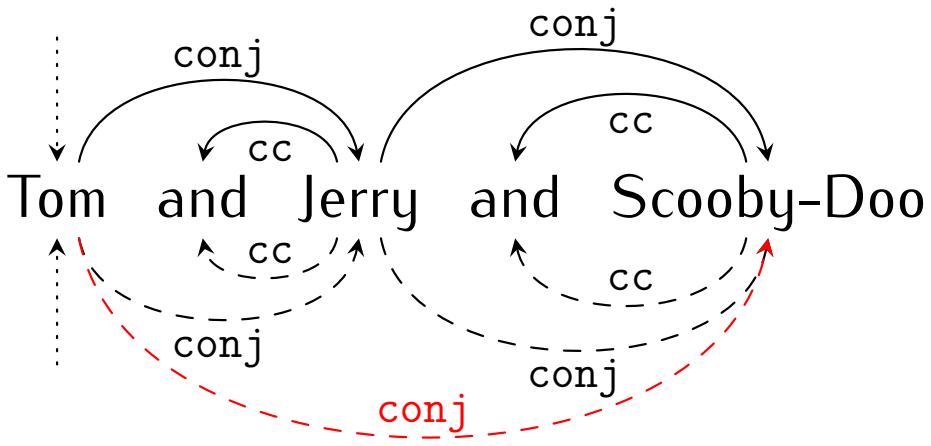

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Better solution: only distribute dependencies **from** coordinate structures:

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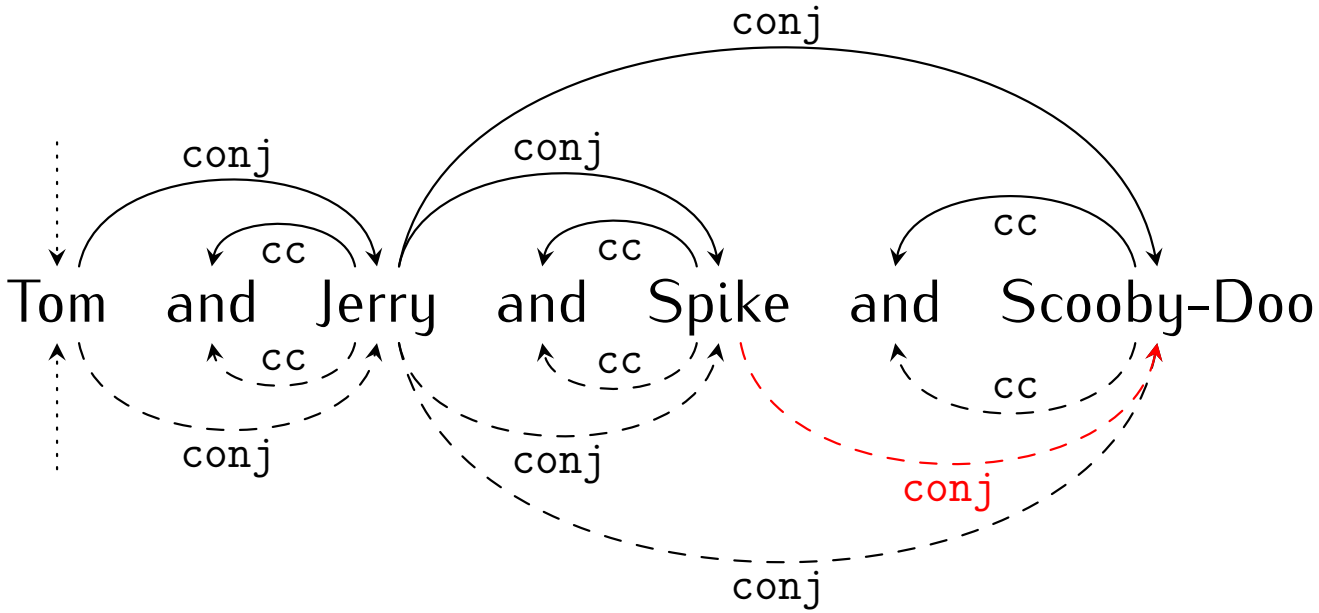

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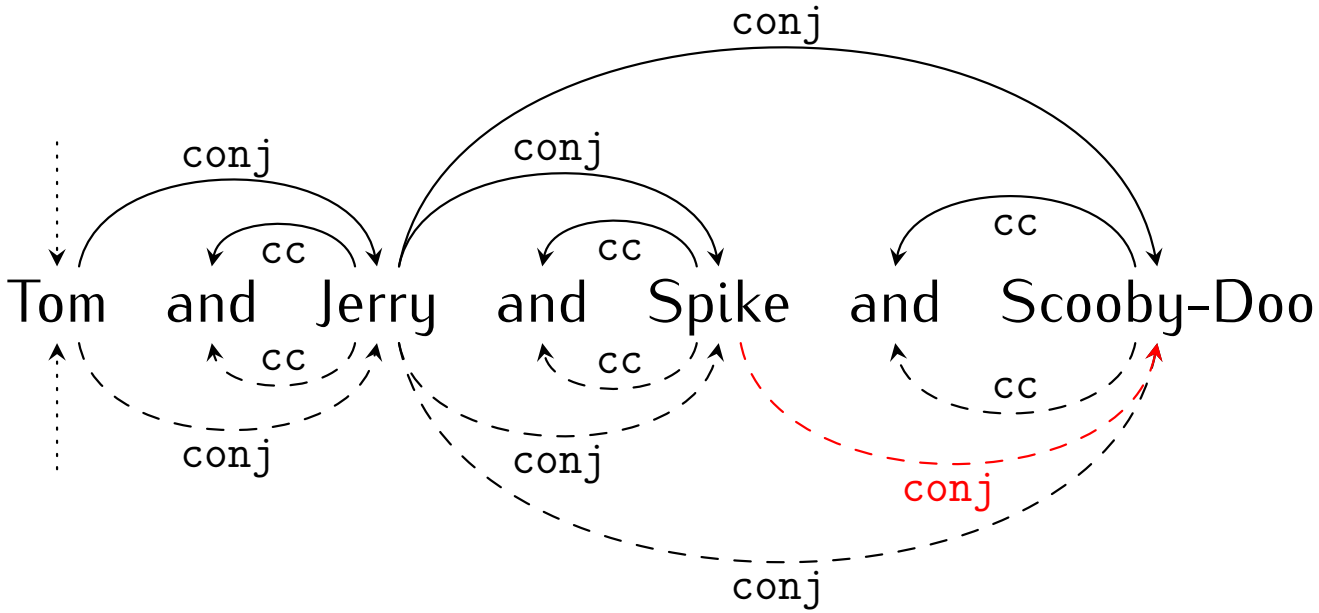

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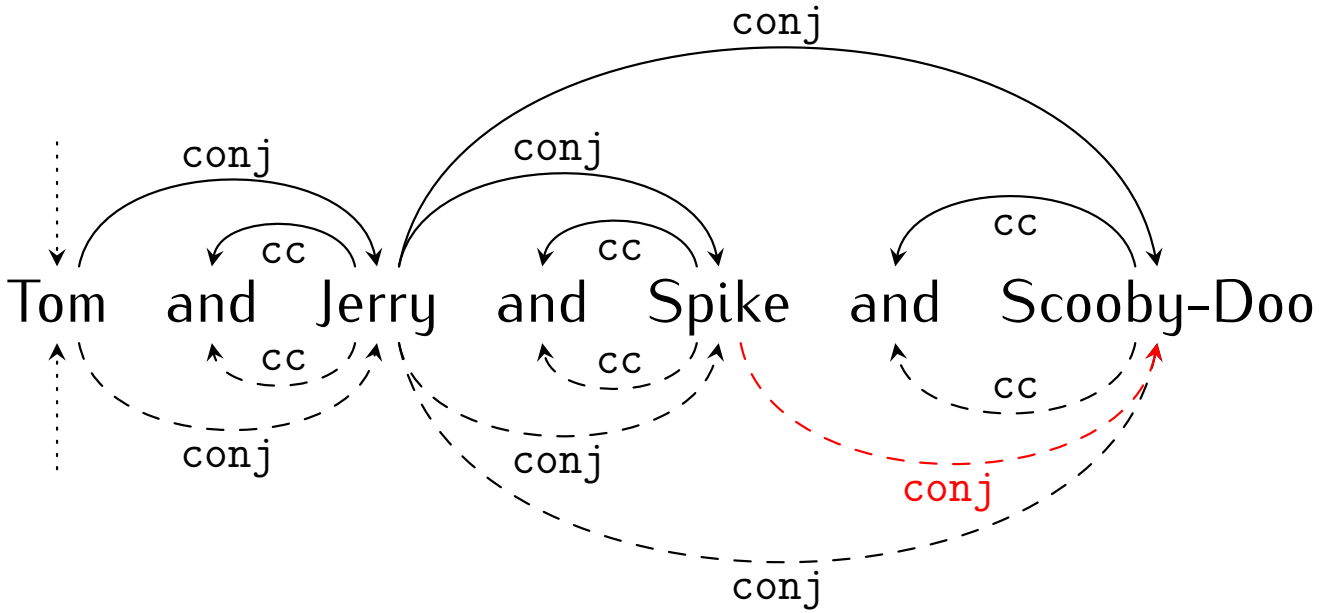

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Solutions – summary

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co-heads	• conjuncts as co-heads • may be made to work at the enhanced level	• basic version requires inspecting both levels
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Thank you
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- see Stanley 1997 for the history of these numbers, and their other interpretations

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