A Comparative Introduction to XDG: The Deep Syntax Dimension

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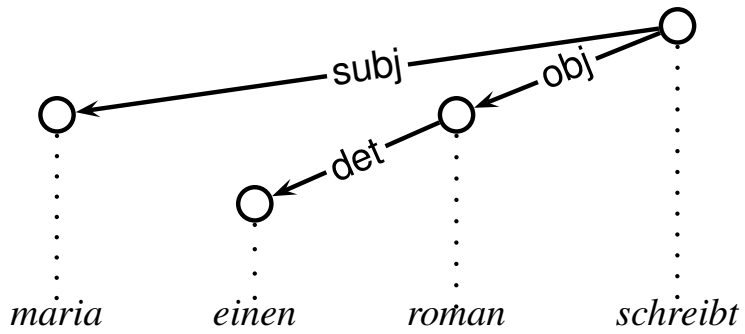
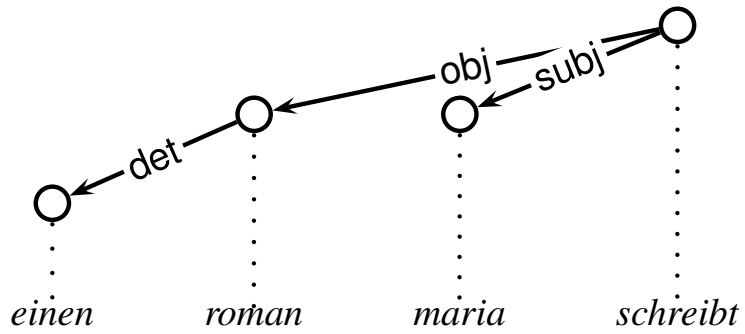
Introducing the Deep Syntax Dimension

- going towards semantics
- in particular: finding the predicates' arguments
- word order already factored out
- dependency trees (Immediate Dominance) already "semantic"

Factoring out word order

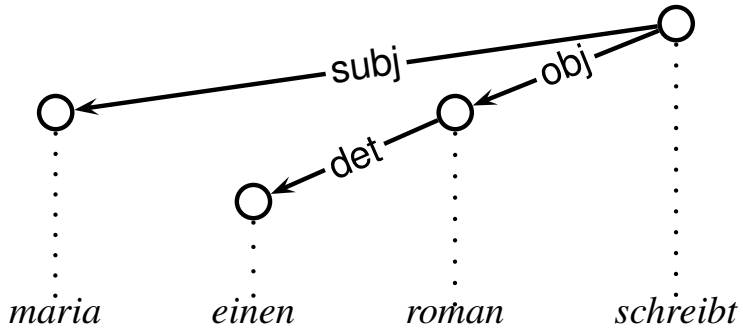




- different word order, same grammatical functions/predicate argument structure

Moving on to semantics

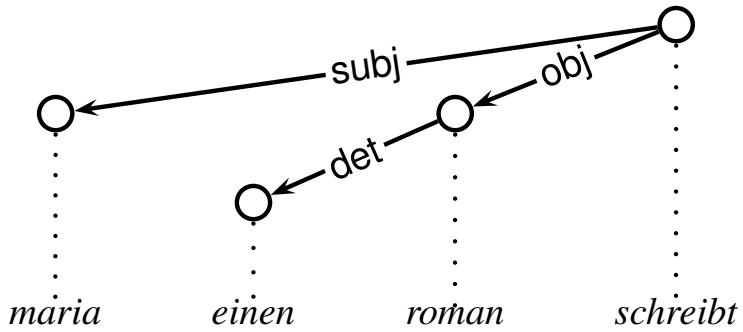
- it seems we can already move on to semantics/predicate-argument structure then:



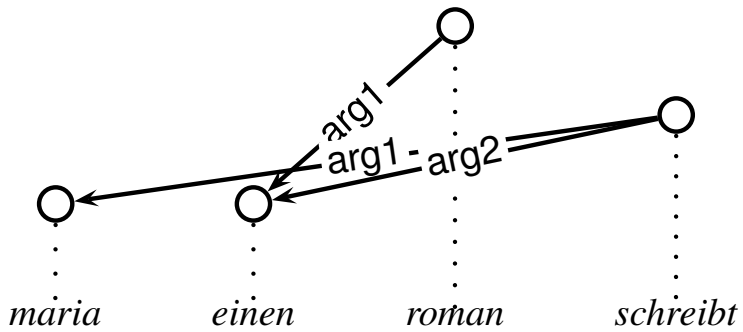
$$\mathsf{novel}'(x) \ \wedge \ \mathsf{write}'(m, x)$$

Moving on to semantics contd.

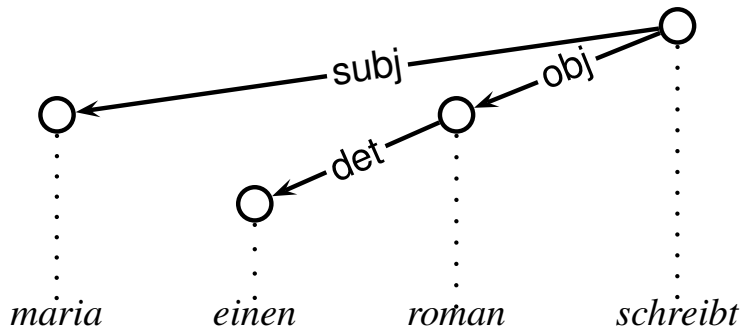
- it seems we can already move on to semantics/predicate-argument structure then:

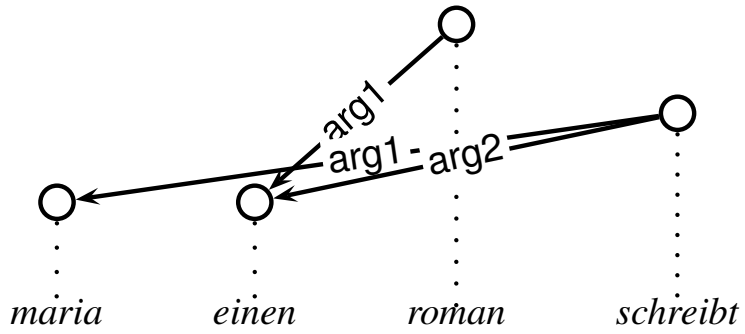


$$\mathsf{novel}'(x) \ \wedge \ \mathsf{write}'(m, x)$$



Linking theory





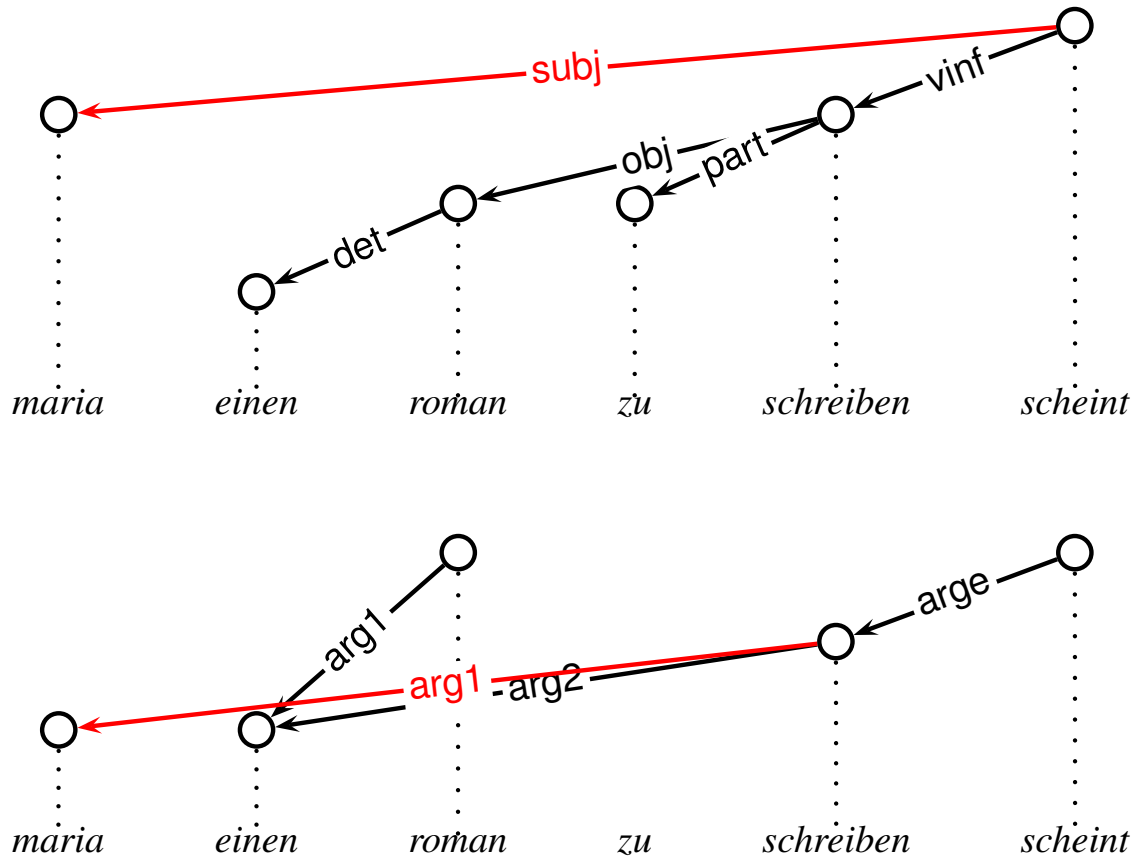
- idea: state how semantic arguments are realized in syntax:

$$\textit{schreiben} = \left[\text{multi} : \left[\text{link} : \left[\begin{array}{lcl} \text{arg1} & \mapsto & \{\text{subj}\} \\ \text{arg2} & \mapsto & \{\text{obj}\} \end{array} \right] \right] \right]$$

Raising and control

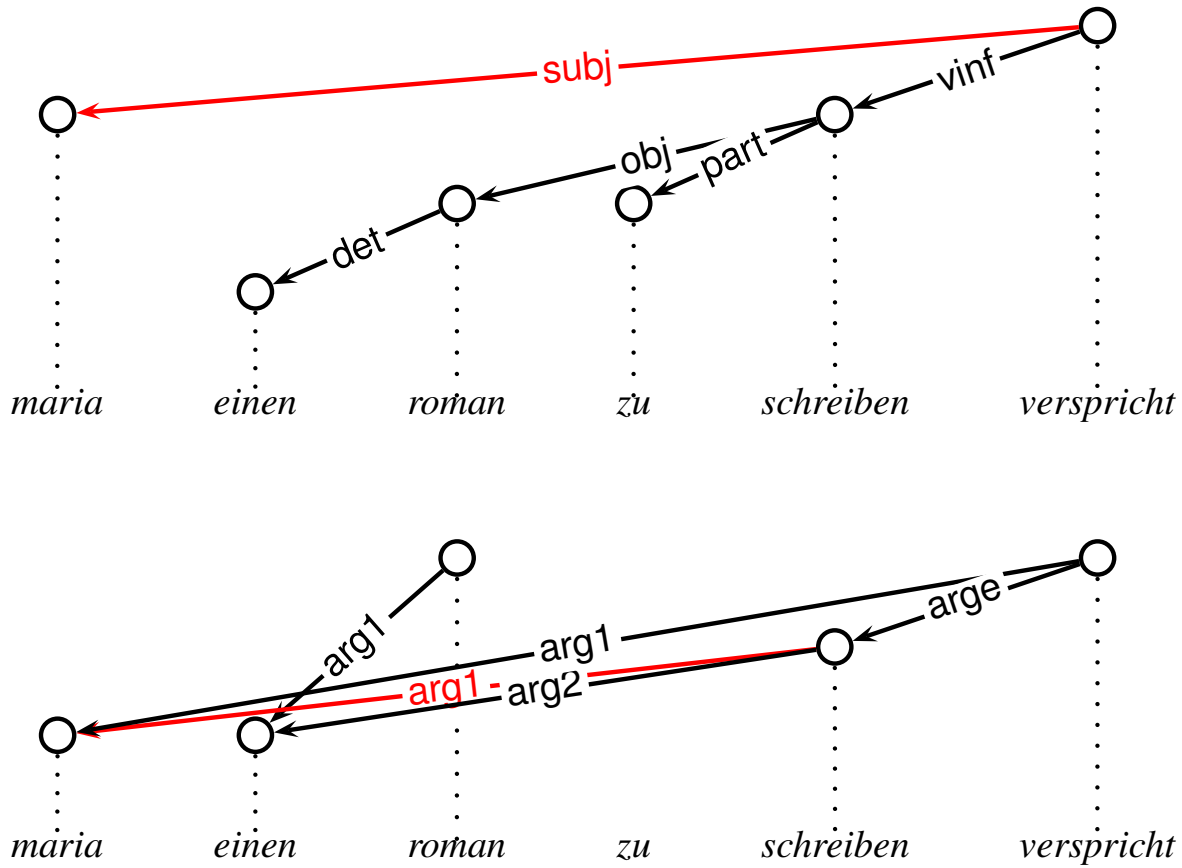
- Control
  1. subject control: *Maria einen Roman zu schreiben verspricht* (*promise*)
  2. object control: *Maria einen Mann überredet, einen Roman schreiben* (*persuade*)
  3. indirect object control: *Maria einem Mann hilft, einen Roman zu schreiben* (*help*)
- Raising
  1. subject raising: *Maria einen Roman zu schreiben scheint* (*seem*)
  2. object raising: *Maria einen Mann einen Roman schreiben sieht* (*see*)

Subject raising



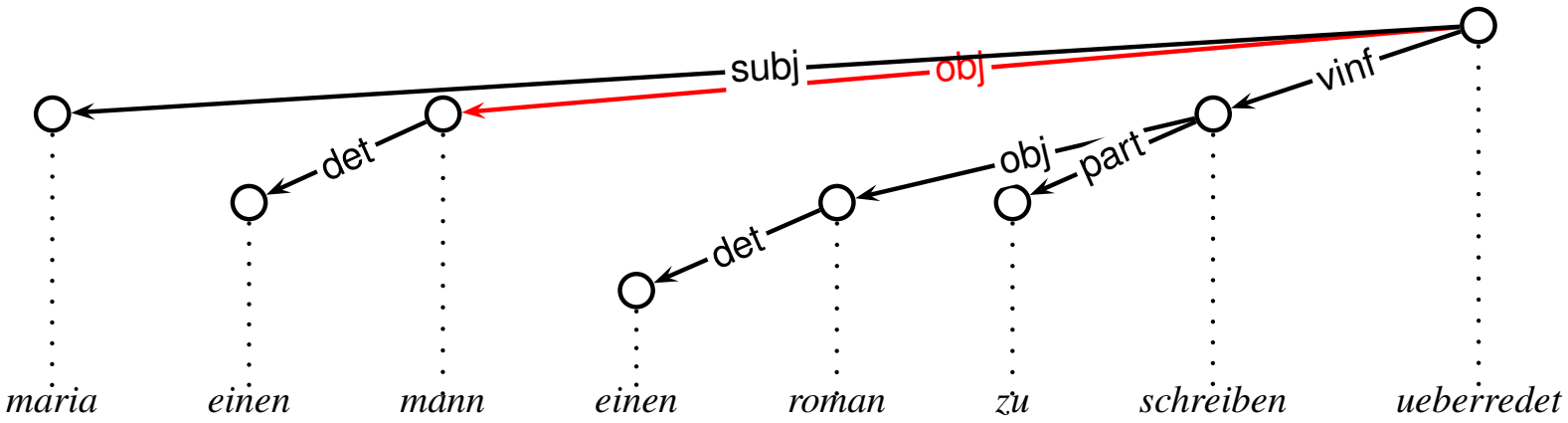
$$\textit{schreiben} = \left[\text{multi} : \left[\text{link} : \left[\begin{array}{lcl} \text{arg1} & \mapsto & \{\text{subj}\}(?) \\ \text{arg2} & \mapsto & \{\text{obj}\} \end{array} \right] \right] \right]$$

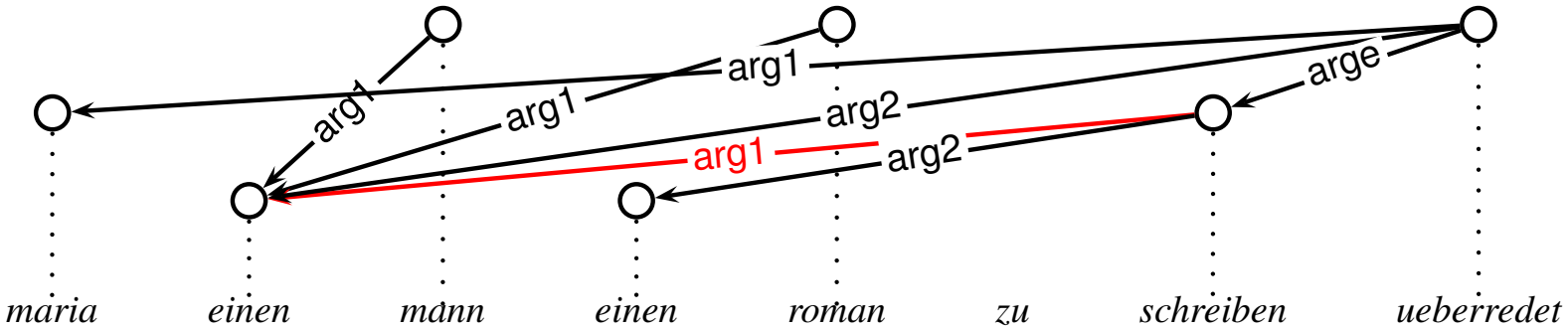
Subject control



$$\textit{schreiben} = \left[\text{multi} : \left[\text{link} : \left[\begin{array}{lll} \text{arg1} & \mapsto & \{\text{subj}\}(?) \\ \text{arg2} & \mapsto & \{\text{obj}\} \end{array} \right] \right] \right]$$

Object control





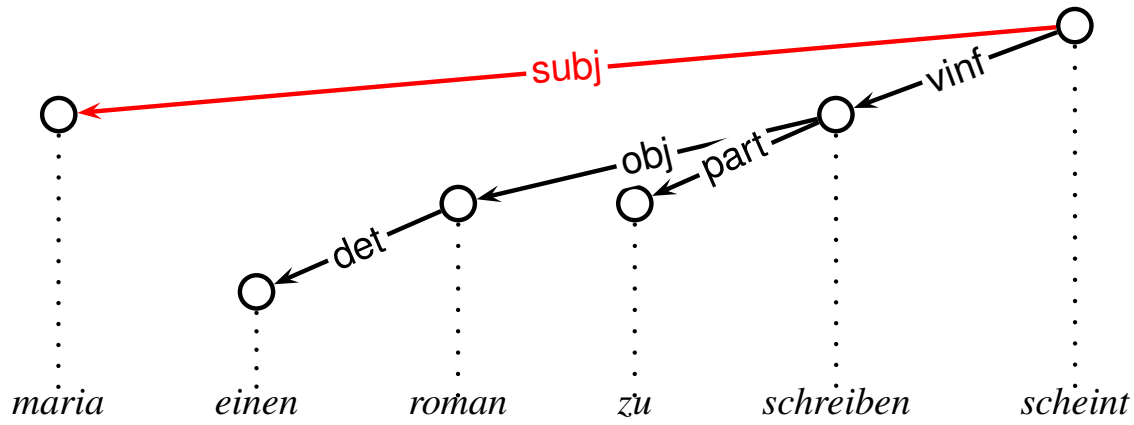
$$\textit{schreiben} = \left[\text{multi} : \left[\text{link} : \left[\begin{array}{lcl} \text{arg1} & \mapsto & \{\text{obj}\}(?) \\ \text{arg2} & \mapsto & \{\text{obj}\} \end{array} \right] \right] \right]$$

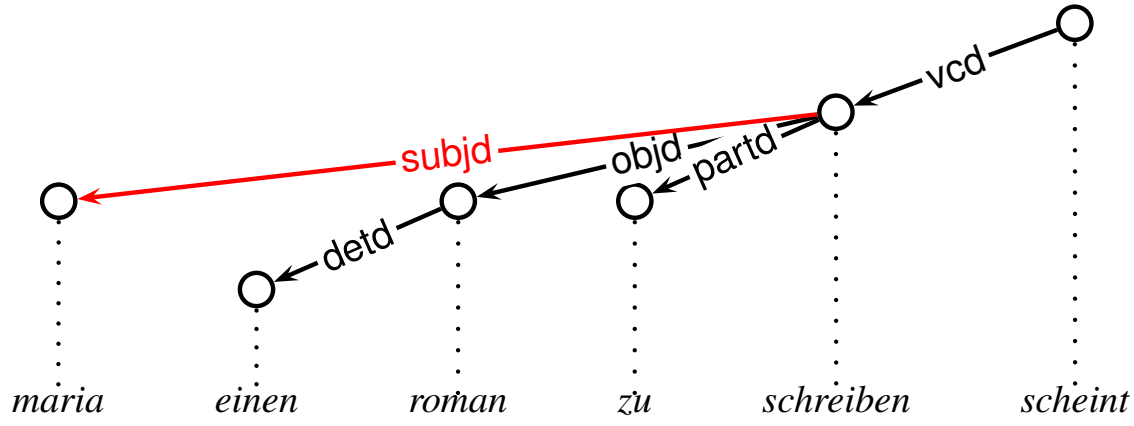
What's happening?

- idea: linking theory relates predicate-argument structure to a more abstract syntactic system
- Immediate Dominance dimension: cannot properly reflect this abstract system
- e.g. cannot directly verbalize re-entrancies
- so: add this abstract syntactic level, called Deep Syntax:

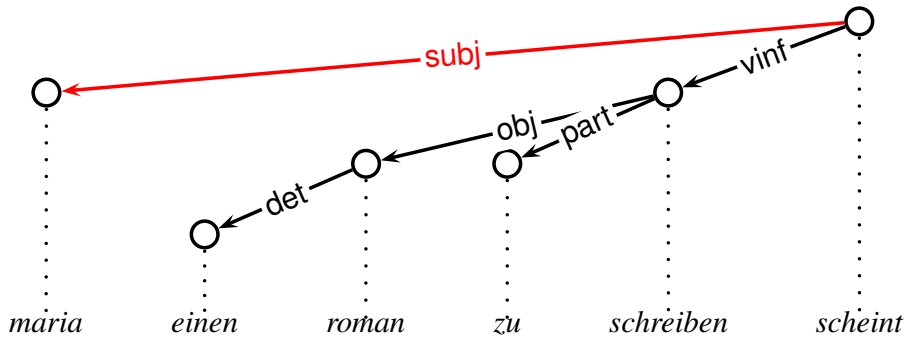
$$\textit{Predicate-Argument Structure} \quad \rightarrow \quad \textit{Deep Syntax} \quad \rightarrow \quad \textit{Immediate Dominance}$$

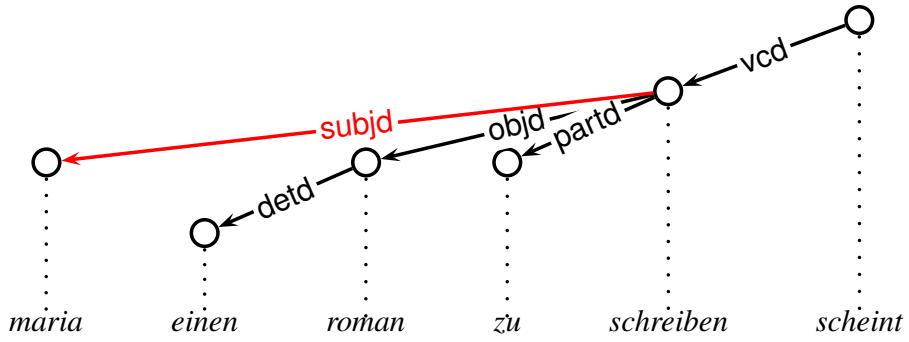
Deep Syntax: Subject raising

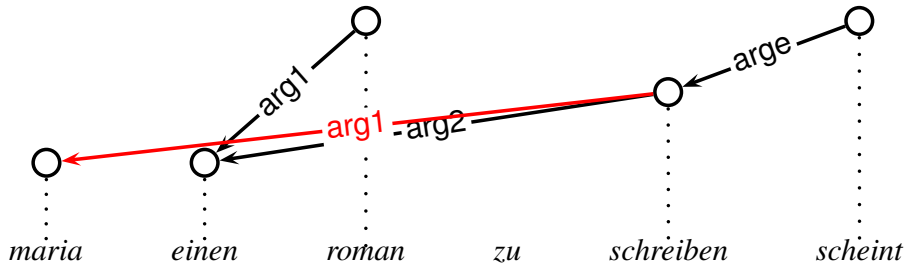




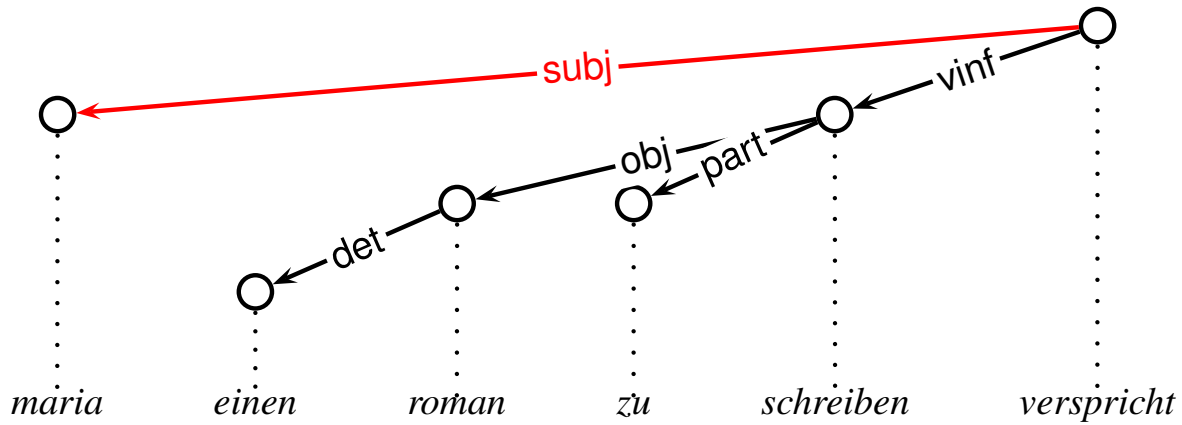
Deep Syntax: Subject raising contd.

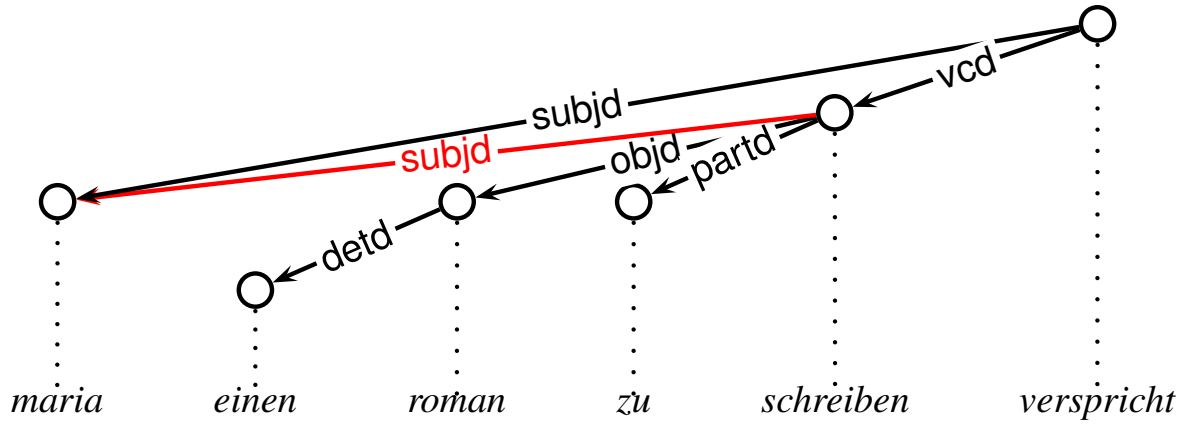




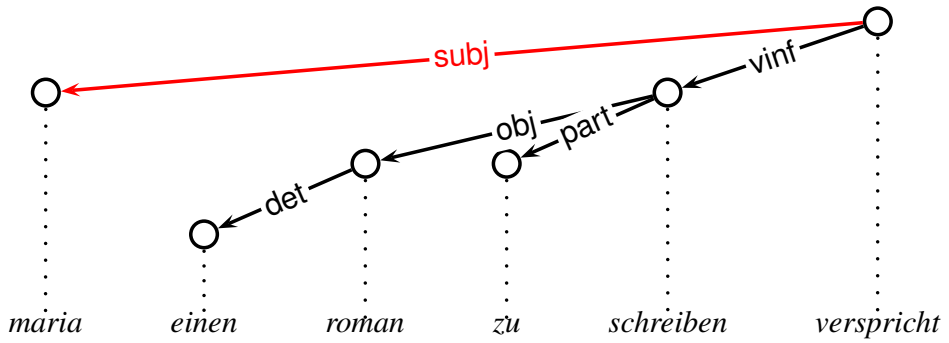


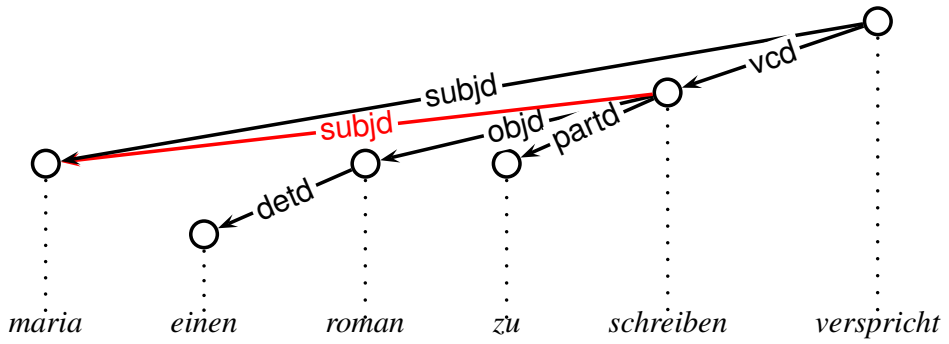
Deep Syntax: Subject control

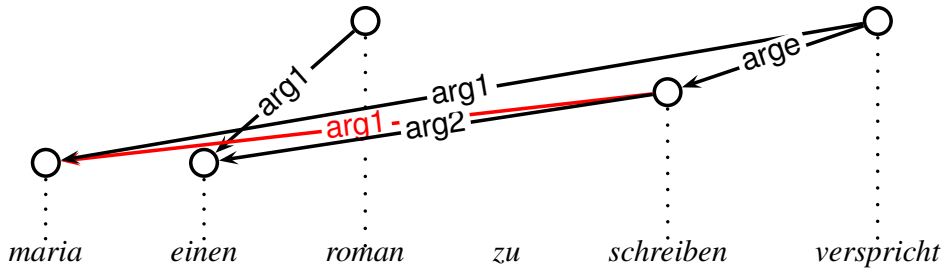




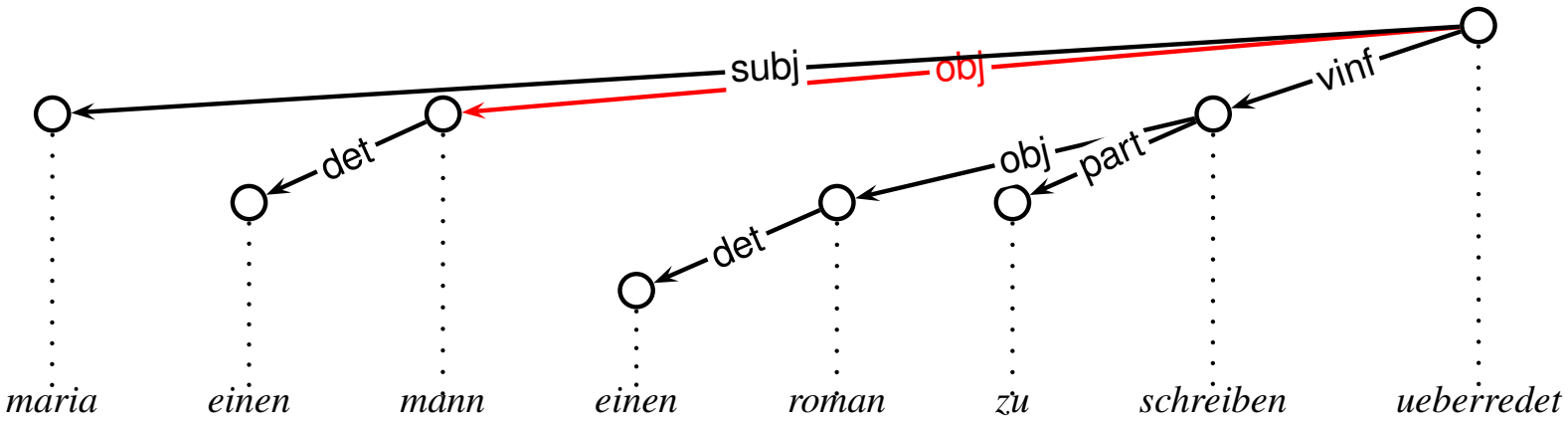
Deep Syntax: Subject control contd.

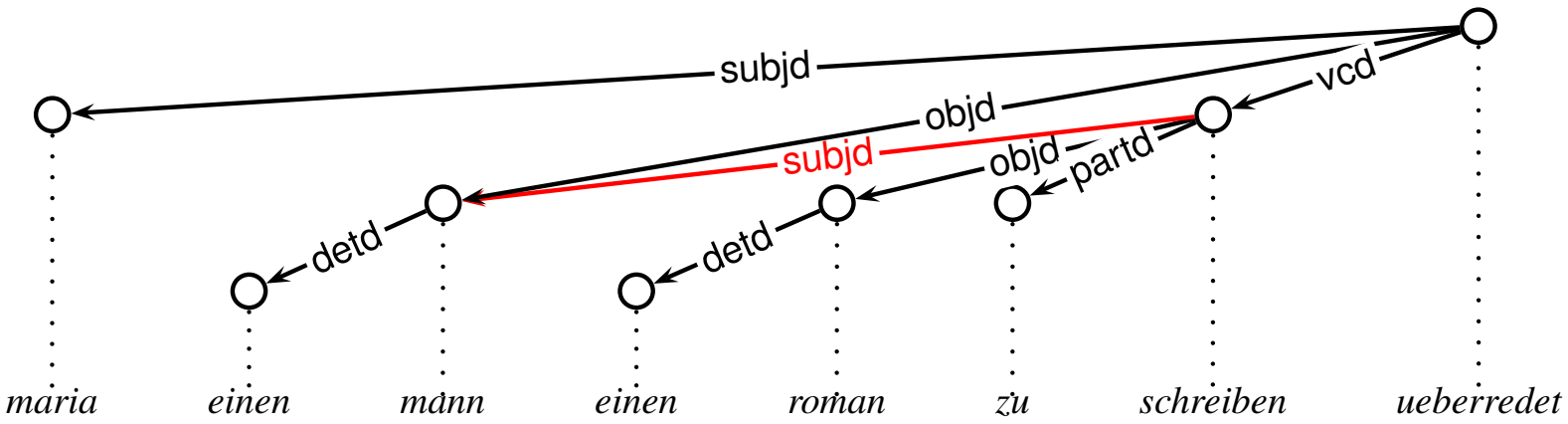




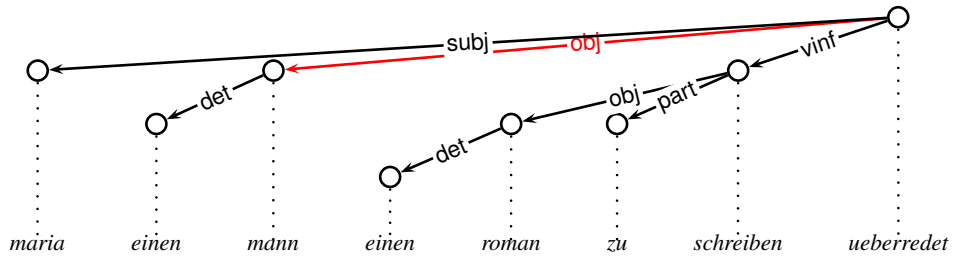


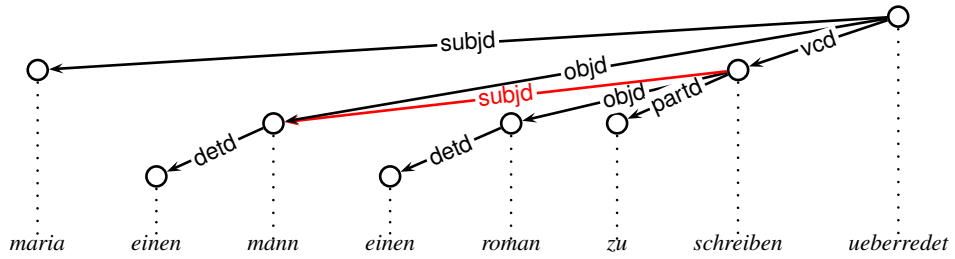
Deep Syntax: Object control

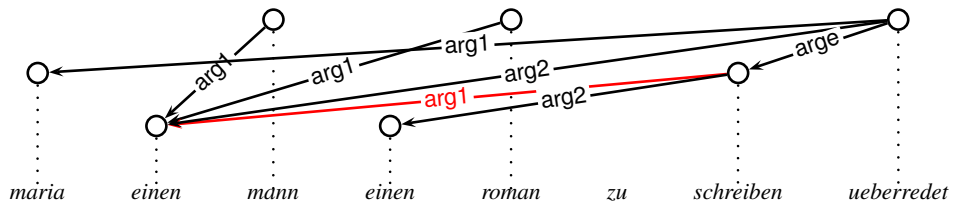




Deep Syntax: Object control contd.







Deep Syntax: Linking

- linking of semantic to syntactic arguments kept simple, intuitive:

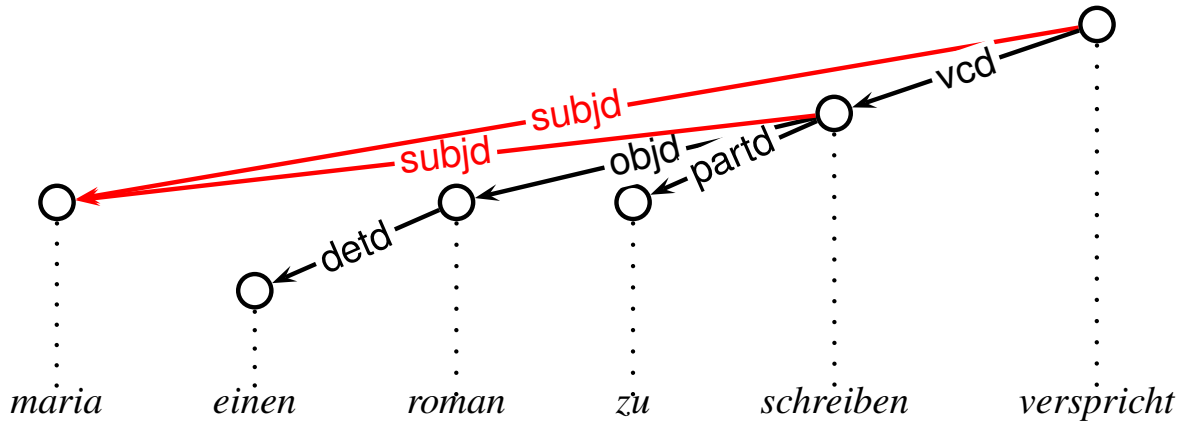
$$\textit{schreiben} = \left[\begin{array}{lll} \mathsf{multi} & : & \left[\begin{array}{lll} \mathsf{link} & : & \left[\begin{array}{lll} \mathsf{arg1} & \mapsto & \{\mathsf{subjd}\} \\ \mathsf{arg2} & \mapsto & \{\mathsf{objd}\} \end{array}\right] \end{array}\right] \end{array}\right]$$

- passives would look like this:

$$\textit{schreiben} = \left[\begin{array}{lll} \mathsf{multi} & : & \left[\begin{array}{lll} \mathsf{link} & : & \left[\begin{array}{lll} \mathsf{arg1} & \mapsto & \{\mathsf{objd}\} \\ \mathsf{arg2} & \mapsto & \{\mathsf{subjd}\} \end{array}\right] \end{array}\right] \end{array}\right]$$

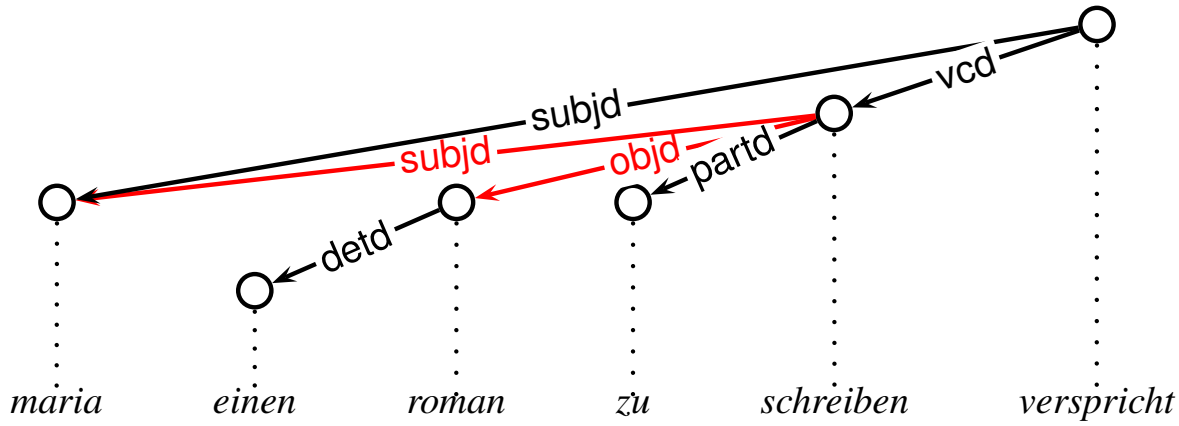
Dags

- Deep Syntactic structures are dags (re-entrancies):



Valency

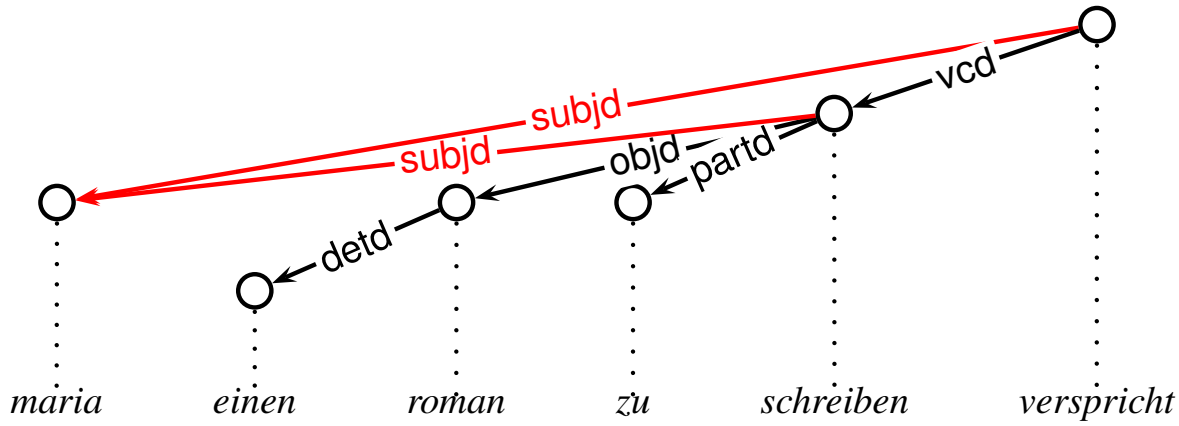
- valency (deep subcategorization):



$$\textit{schreiben} \quad = \quad \left[\; \text{ds} \quad : \quad \left[\; \text{out} \quad : \quad \{\text{subjd!}, \text{objd!}\} \; \right] \; \right]$$

Valency contd.

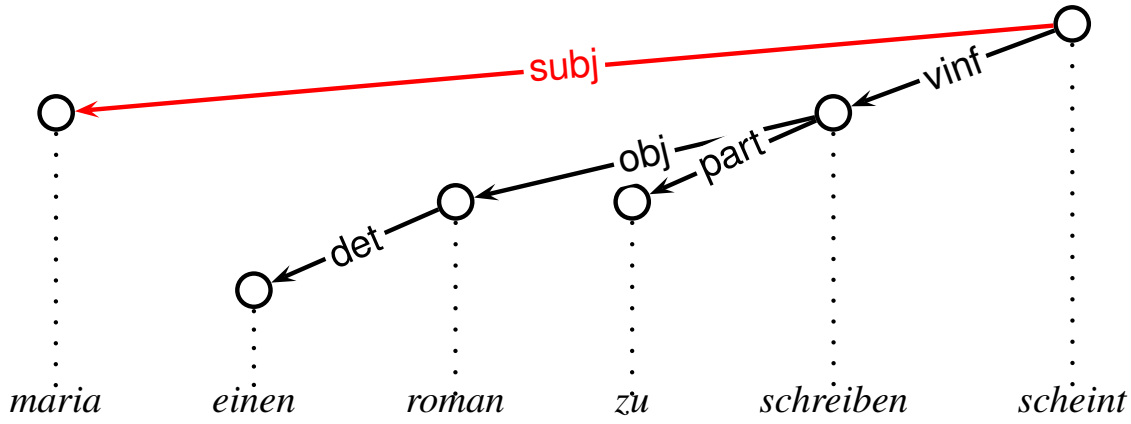
- only deep subjects can be raised or controlled:

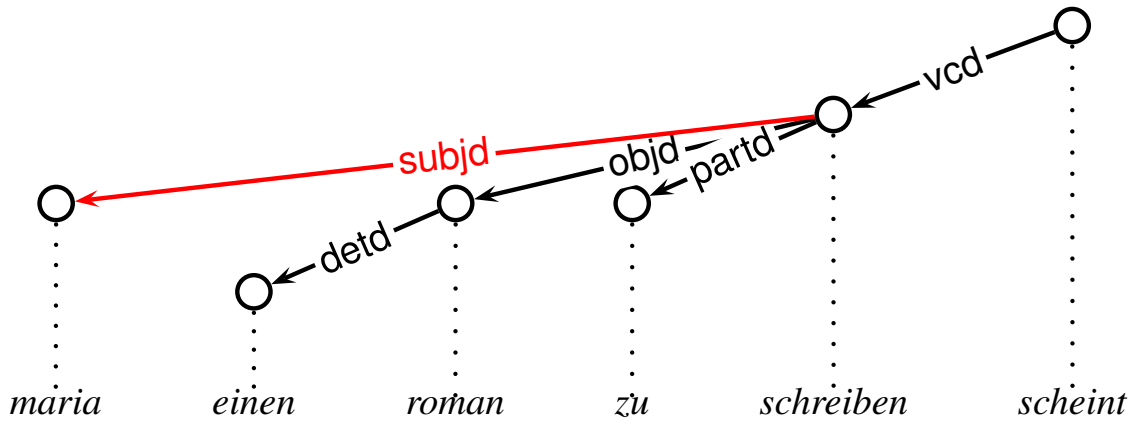


$$\textit{Maria} = \left[\text{ds} : \left[\text{in} : \{\text{subjd}*, \text{objd}?\} \right] \right]$$

Climbing

- dependents can “climb up” from the DS to the ID dimension





Linking

- how are the deep syntactic arguments realized in the surface syntax:

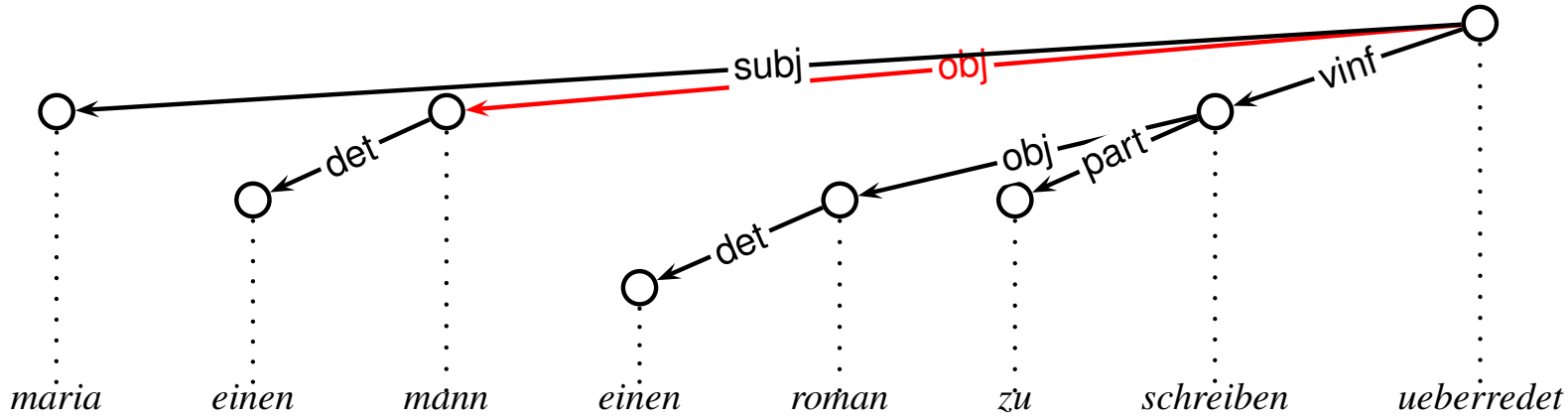
$$\textit{schreiben} \quad = \quad \left[\begin{array}{rcl} \mathsf{ds} & : & \left[\begin{array}{lcl} \mathsf{out} & : & \{\mathsf{subjd!}, \mathsf{objd!}\} \end{array} \right] \\ \mathsf{multi} & : & \left[\begin{array}{lcl} \mathsf{link} & : & \{\mathsf{objd} \mapsto \{\mathsf{obj}\}\} \end{array} \right] \end{array} \right]$$

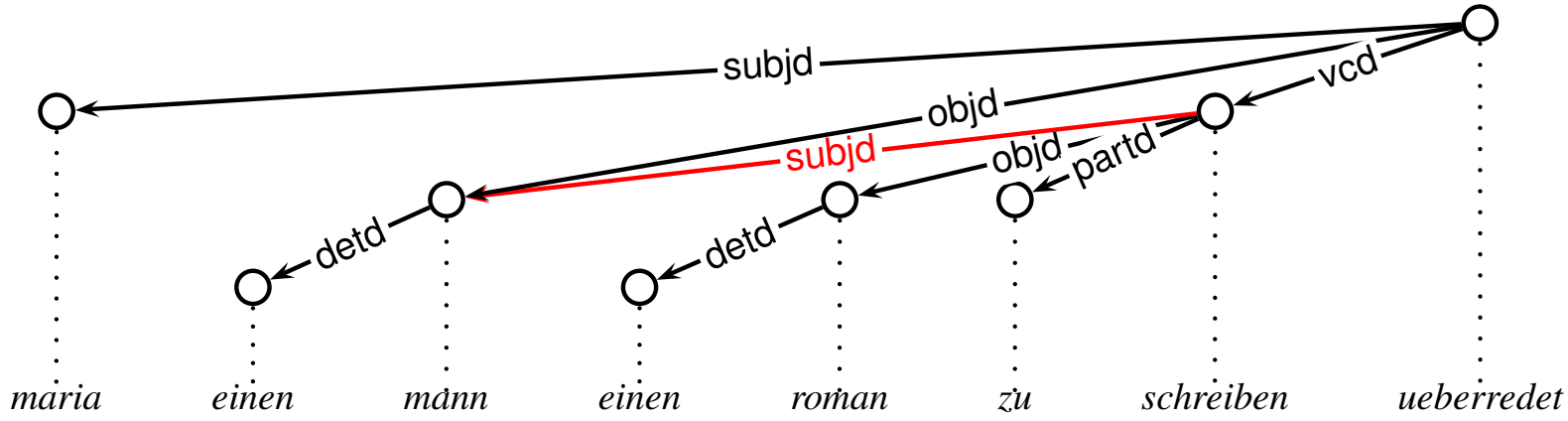
- idea: deep objects are locally realized as surface objects
- declarative semantics:

$$\forall h \rightarrow^{l}_{\mathsf{DS}} d \quad : \quad \rightarrow^{l'}_{\mathsf{ID}} d \wedge l' \in \mathsf{link}(h)(l)$$

Linking contd.

- deep subjects need to be realized locally, and not as surface subjects:





Linking^{-1}

- which surface dependents realize embedded deep subjects?
- subject raising:

$$\textit{scheint} = \left[\begin{array}{rcl} \mathsf{id} & : & \left[\begin{array}{rcl} \mathsf{out} & : & \{\mathsf{subj!}, \mathsf{vinf!}\} \end{array}\right] \\ \mathsf{ds} & : & \left[\begin{array}{rcl} \mathsf{out} & : & \{\mathsf{vcd!}\} \end{array}\right] \\ \mathsf{multi} & : & \left[\begin{array}{rcl} \mathsf{link}^{-1} & : & \{\mathsf{subj} \mapsto \{\mathsf{subjd}\}\} \end{array}\right] \end{array}\right]$$

Linking^{-1} *contd.*

- subject control:

$$\textit{verspricht} = \left[\begin{array}{rcl} \mathsf{id} & : & \left[\begin{array}{rcl} \mathsf{out} & : & \{\mathsf{subj!}, \mathsf{vinf!}\} \end{array}\right] \\ \mathsf{ds} & : & \left[\begin{array}{rcl} \mathsf{out} & : & \{\mathsf{subjd!}, \mathsf{vcd!}\} \end{array}\right] \\ \mathsf{multi} & : & \left[\begin{array}{rcl} \mathsf{link}^{-1} & : & \{\mathsf{subj} \mapsto \{\mathsf{subjd}\}\} \end{array}\right] \end{array}\right]$$

Linking^{-1} *contd. contd.*

- object control:

$$\textit{überredet} = \left[\begin{array}{rcl} \mathsf{id} & : & \left[\begin{array}{lcl} \mathsf{out} & : & \{\mathsf{subj!}, \mathsf{obj!}, \mathsf{vinf!}\} \end{array}\right] \\ \mathsf{ds} & : & \left[\begin{array}{lcl} \mathsf{out} & : & \{\mathsf{subjd!}, \mathsf{objd!}, \mathsf{vcd!}\} \end{array}\right] \\ \mathsf{multi} & : & \left[\begin{array}{lcl} \mathsf{link}^{-1} & : & \{\mathsf{obj} \mapsto \{\mathsf{subjd}\}\} \end{array}\right] \end{array}\right]$$