

# Coreference: Current and outlook

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Companions Semantic Representation  
and Dialog Interfacing Workshop

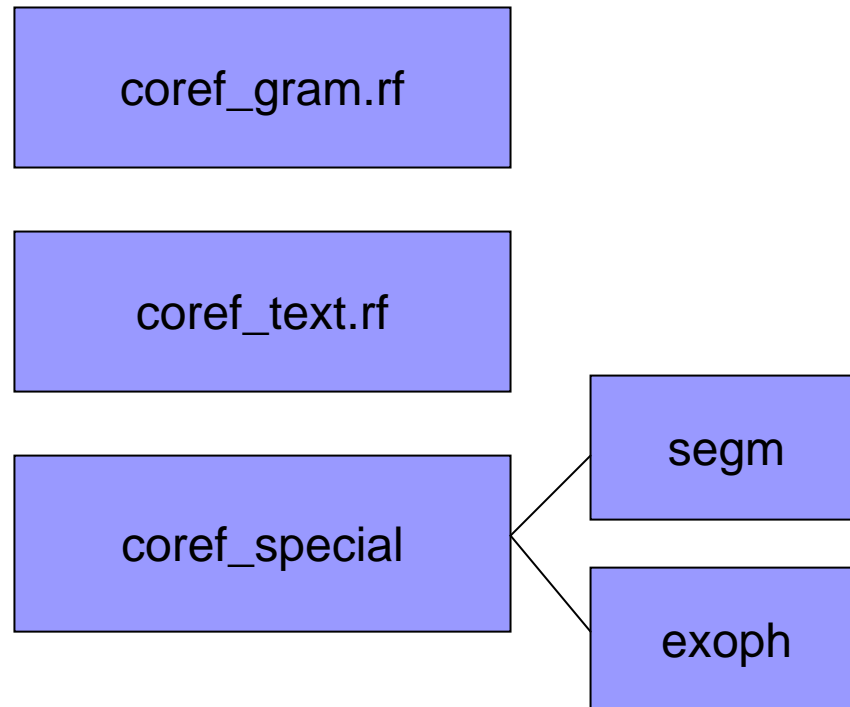
Edinburgh, March 5, 2008

# What is coreference?

- referring to the same entity
- a binary relation between an anaphor and an antecedent:
  - antecedent in different tree
  - antecedent not represented in any tree
- 2 kinds of coreference
  - grammatical
  - textual

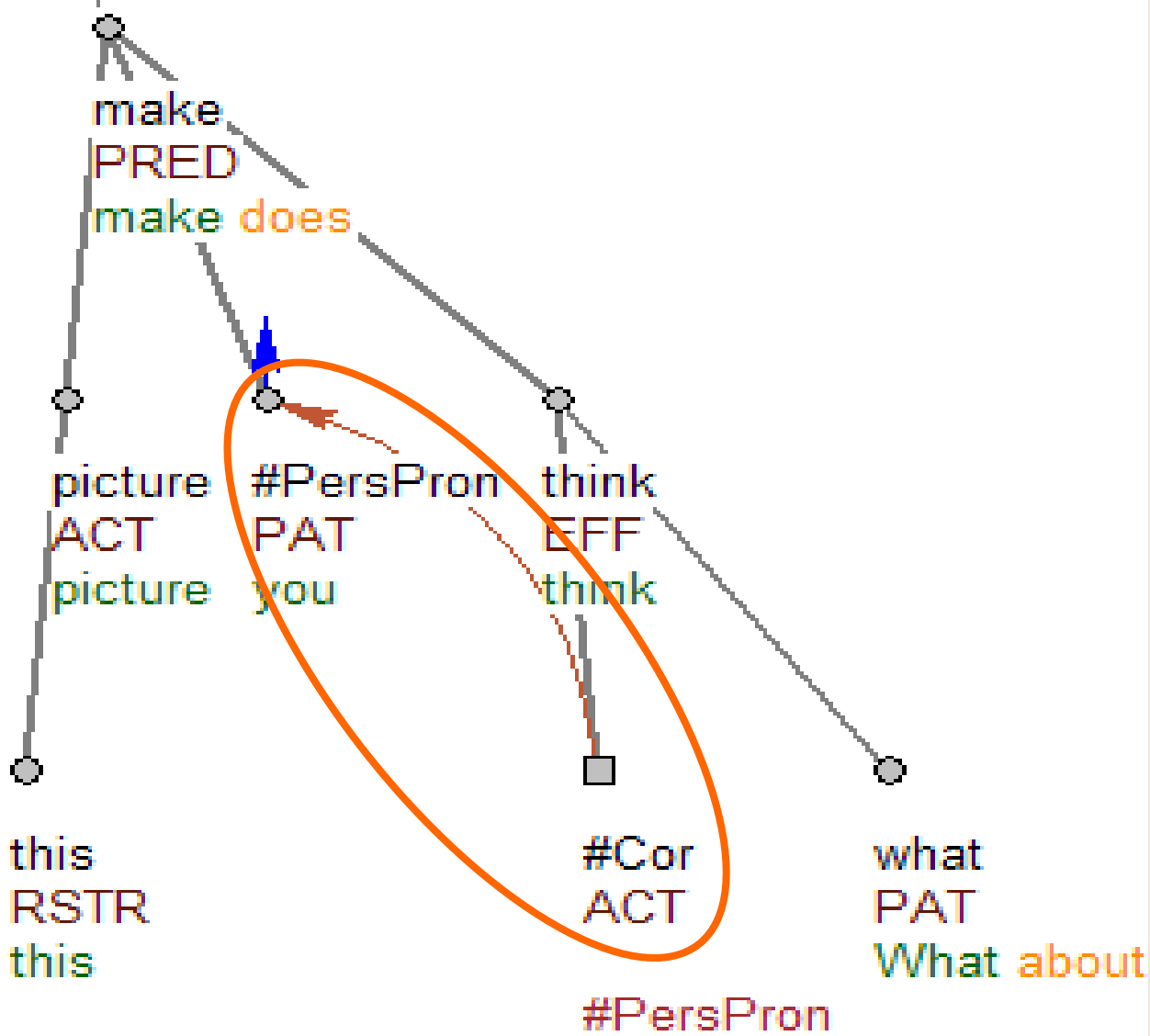
# Annotation scheme

- coreference links: reference from anaphor t-node to antecedent t-node(s)



# Grammatical Coreference

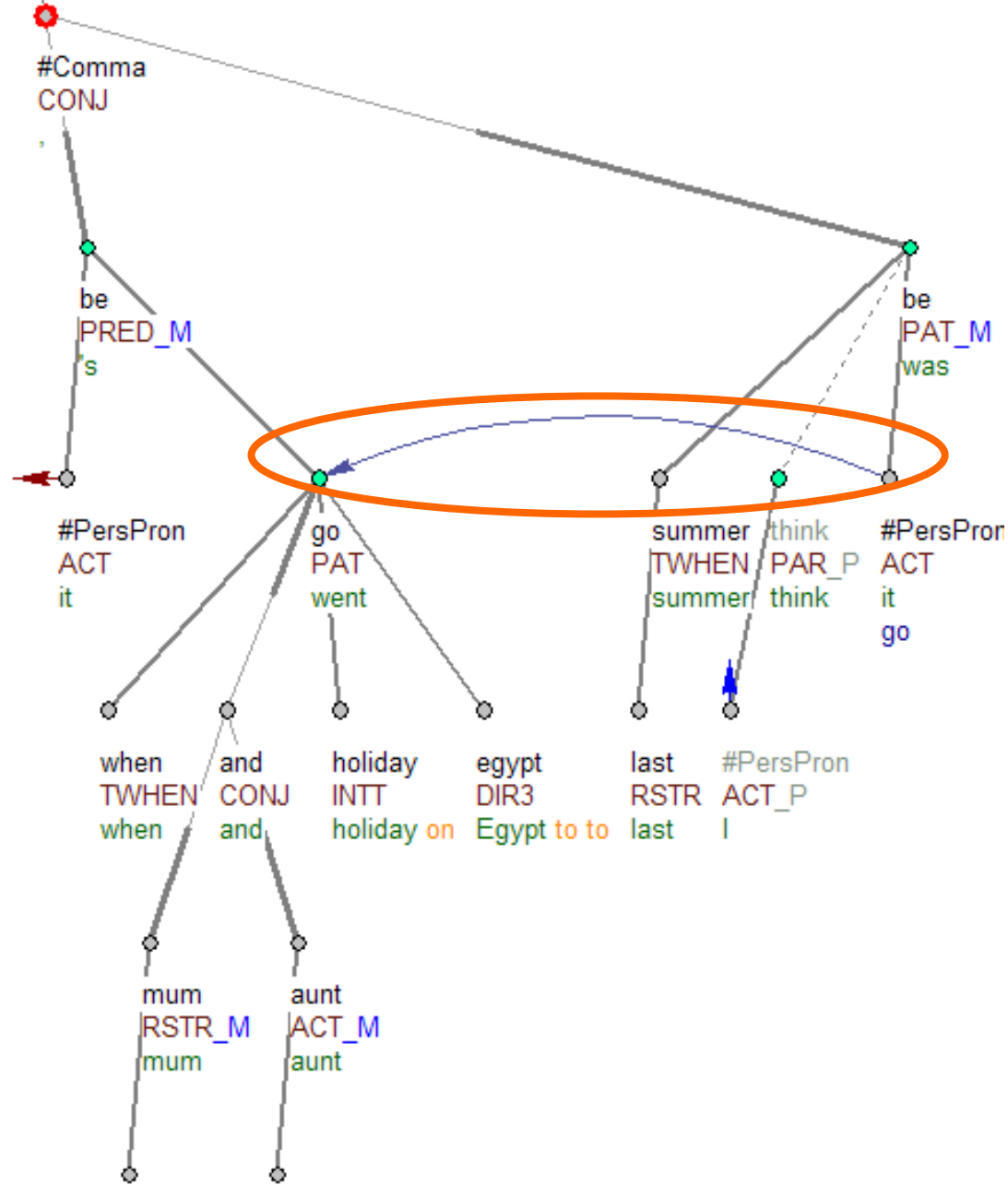
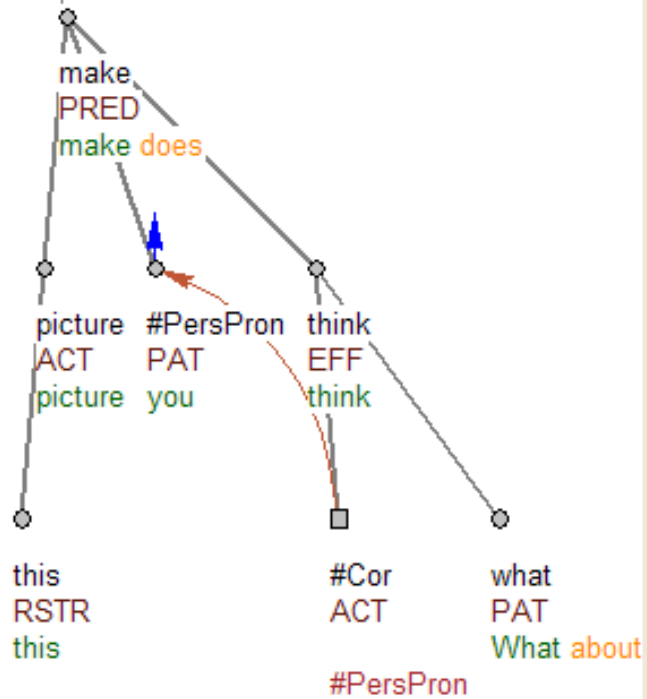
- **verbs (nouns, adjectives) of control**
  - *John asked Mary to [0] come.*
- **reflexive pronouns**
  - *John shaved **himself**.*
- **relative pronouns**
  - *John, [who] came late, apologized.*
- **participles as verbal complements**
  - *John, [0] insulted, left.*
- **adjectives as verbal complements**
  - *John came bare-footed[->John].*
- **reciprocity**
  - *John and Mary kissed [0].*
  - *John and Mary kissed **each other**.*



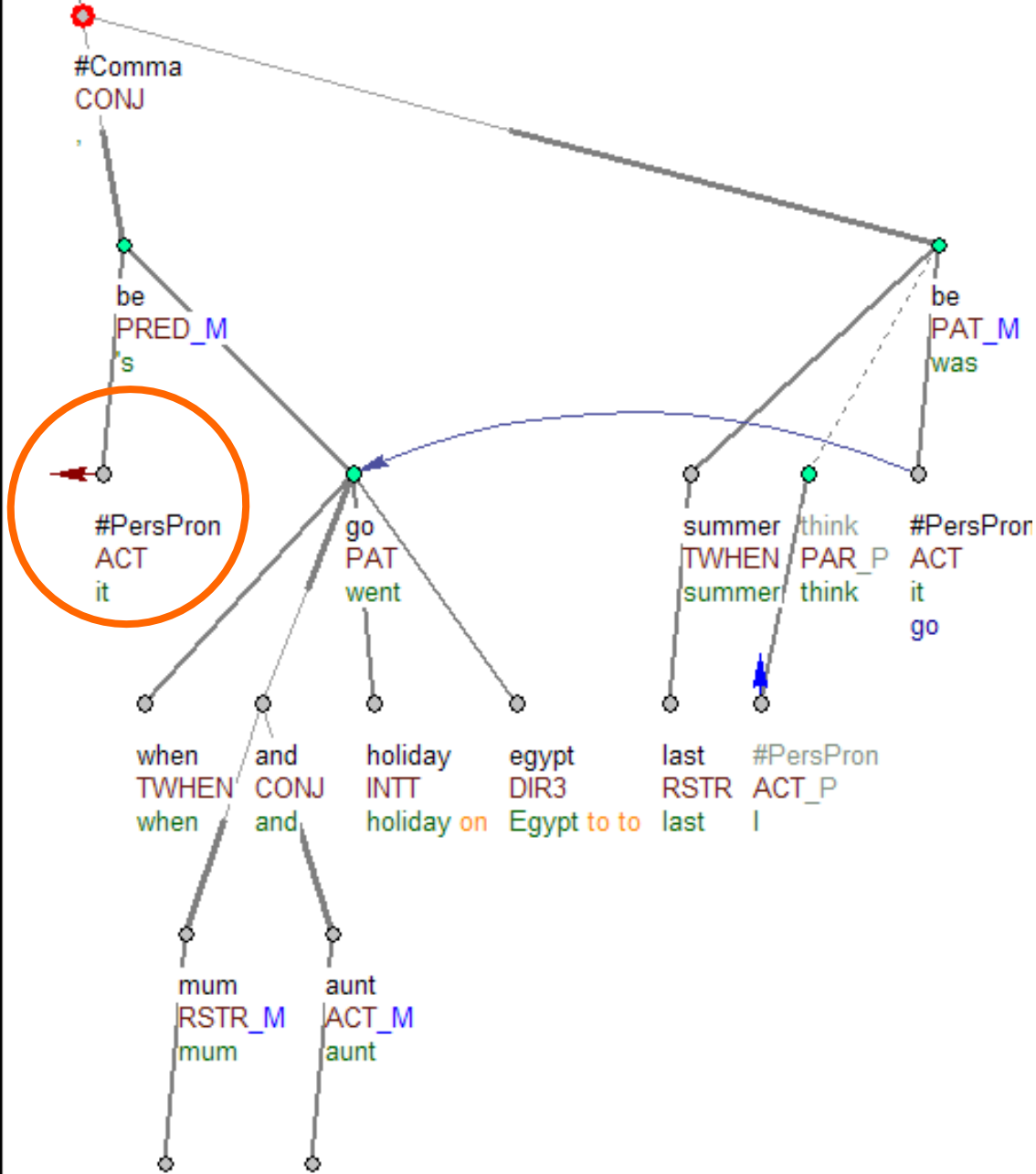
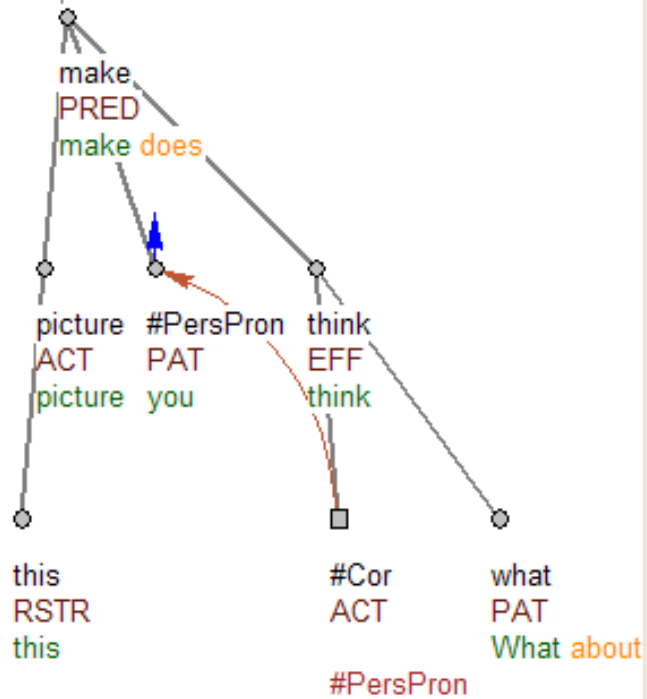
"What does this picture make you think about?"

# Textual coreference in PDT

- pronominal anaphora:
  - personal and possessive pronouns – 3<sup>rd</sup> person only
  - demonstrative pronouns (non-attributive position)
  - restored pronouns included!

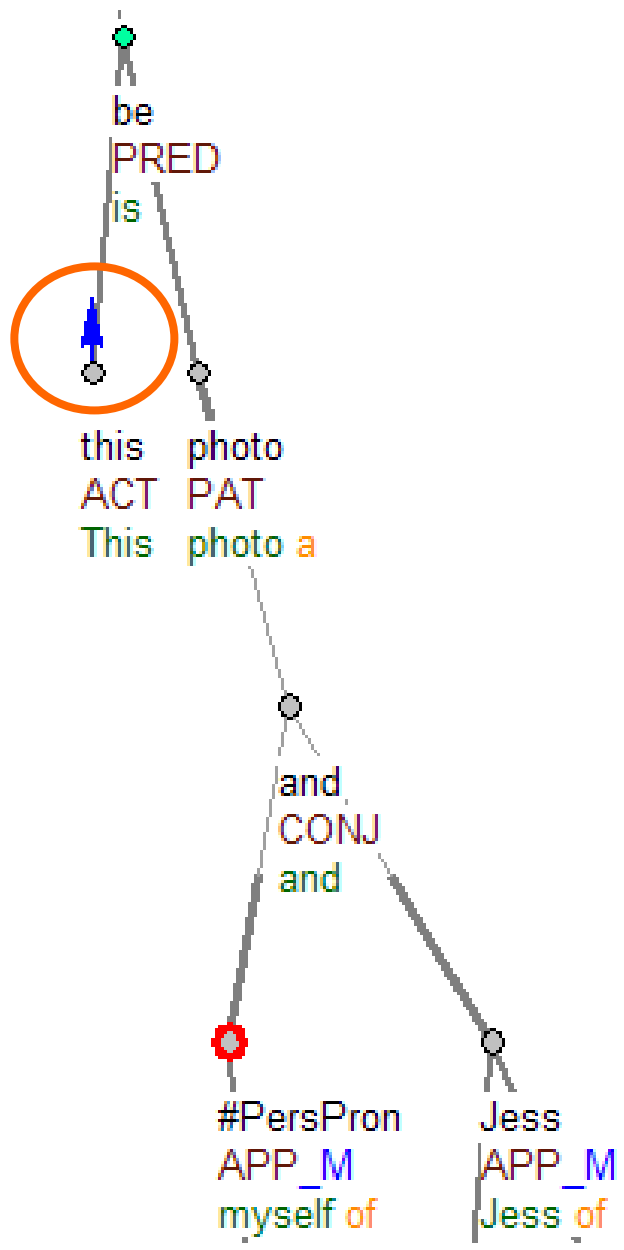


"What does this picture make you think about?" "It 's when my mum and my aunt went on holiday to Egypt, last summer I think it was."



"What does this picture make you think about?" "It 's when my mum and my aunt went on holiday to Egypt, last summer I think it was."





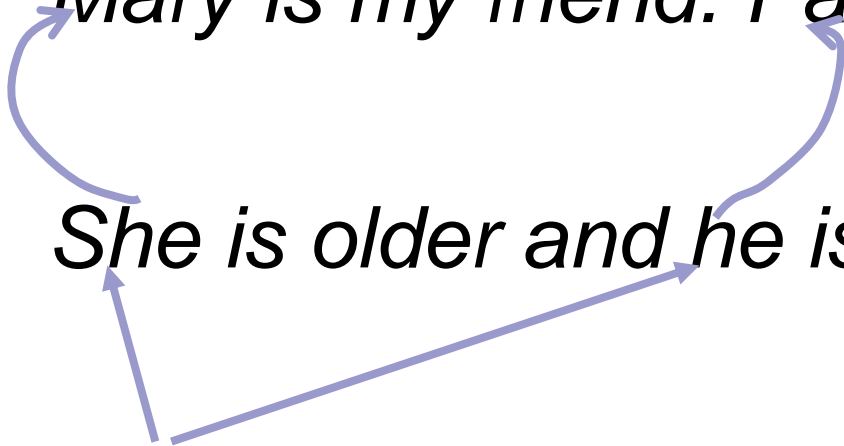
This is a photo of myself and Jess.

# Coreference chain

*Mary is my friend. Paul is my friend, too.*

*She is older and he is younger than me.*

*Their Mother's name is Sarah.*



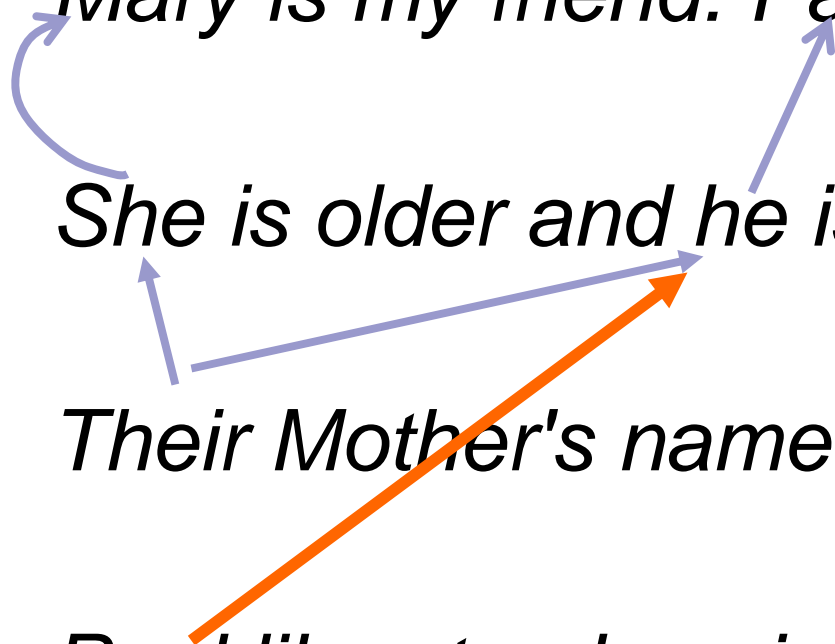
# Challenge 1: Closing the coreference chain

*Mary is my friend. Paul is my friend, too.*

*She is older and he is younger than me.*

*Their Mother's name is Sarah.*

*Paul likes to play piano.*



# Challenge 2:

## 1<sup>st</sup> and 2<sup>nd</sup> person in dialog

- in turn switching:
  - arrows from *you* to *I* or exophora?
- "user-speaker" vs. "user-in-narrative"?
- *we(speakers)* vs. *we(speaker+others)*?

# Challenge 3:

## Nominal anaphora

- *Mary.... my Aunt... Auntie Mary... the old witch*

# Challenge 4: Bridging anaphora

## ■ **set\_member**

□ *Mary... all guests at my party*

## ■ **part\_whole**

□ *IBM got a new building. The offices are larger than in the old one.*

## ■ ... ?

# Task-specific questions

- List of entities to keep track of?
- Groups get their own IDs – exophor or bridging?
  - *Who are **these people**? **My class**, here **me** and **Bob**. **We** (I+?) had a nice teacher.*
- ID of objects changing with each photo?

# Conclusion

- Grammatical coreference
  - satisfactory
- Current textual coreference
  - too little for spoken dialog
- New textual coreference
  - knowledge representation info needed