

# DEANNA: Deep Answers for Naturally Asked Questions

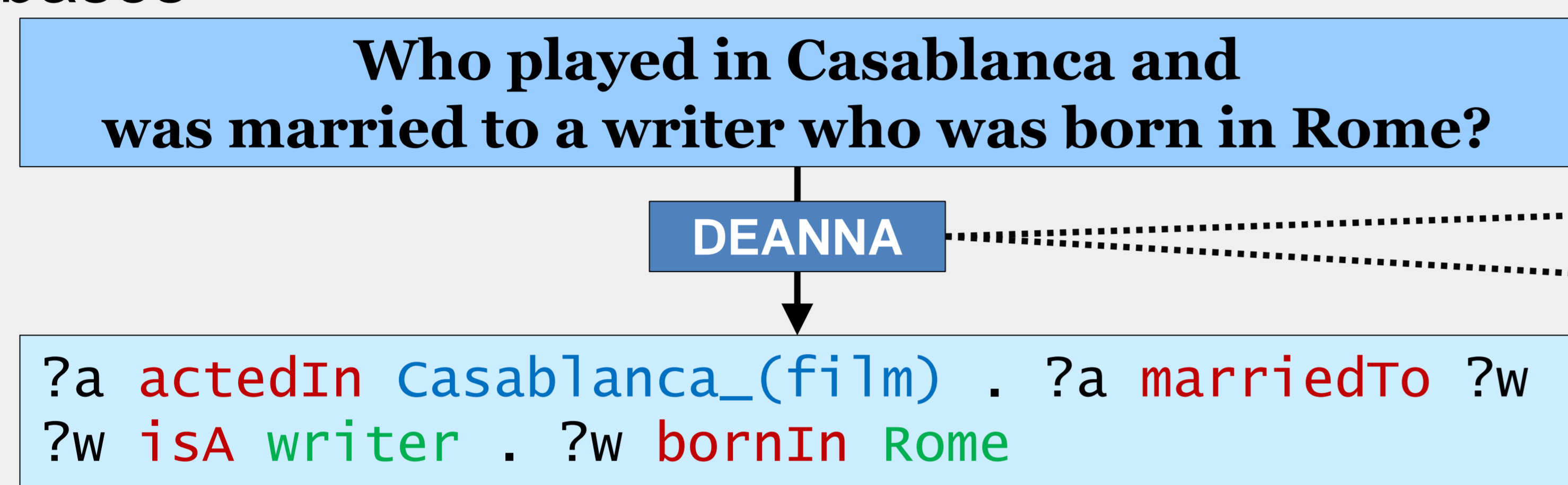
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## Motivation

- Natural language is more accessible to the average user. It also relieves the user from having to know the underlying schema.
- Knowledge bases contain crisp facts from which complex information needs can be answered, possibly by *joining* ( $\bowtie$ ) these facts.

## Goal

Automatically translate user's natural language questions to structured queries over knowledge bases



## Data

- A knowledge base with *instance* & *ontological* data



### Triples of entities, classes & relations

Rome	isa	city
city	subclassOf	location
Roberto_Rossellini	marriedTo	Ingrid_Bergman

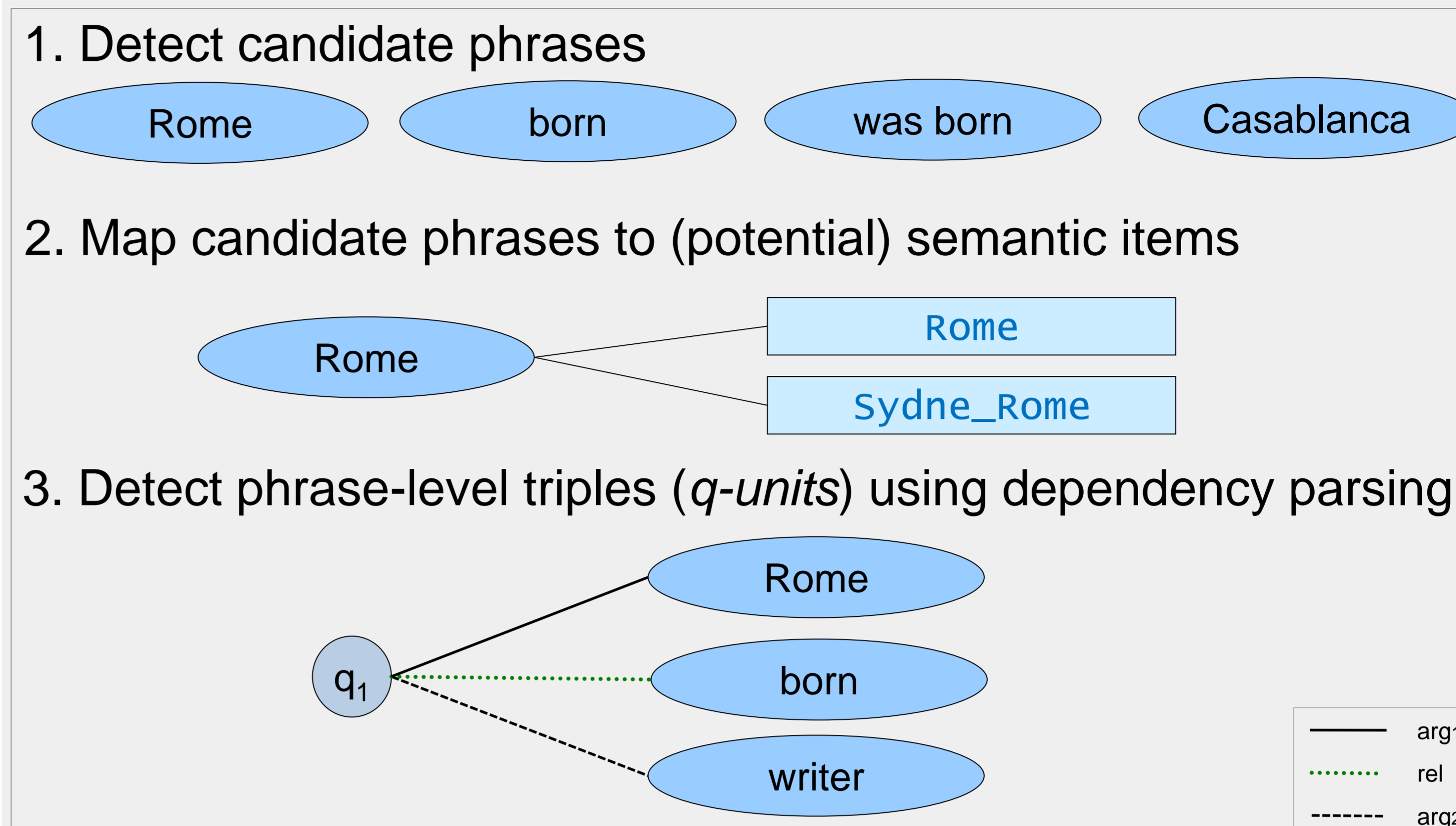
- Surface forms for entities, classes & relations

{'Rome', 'eternal city', 'Roma'} → Rome  
 {'Casablanca'} → casablanca\_(film)  
 {'Casablanca', 'Ad Dar al Bayda'} → Casablanca  
 {'play', 'star in', 'act', 'leading role'} → actedIn  
 {'play', 'perform'} → hasMusicalRole  
 {'married', 'spouse', 'wife'} → marriedTo  
 {'film', 'movie'} → movie

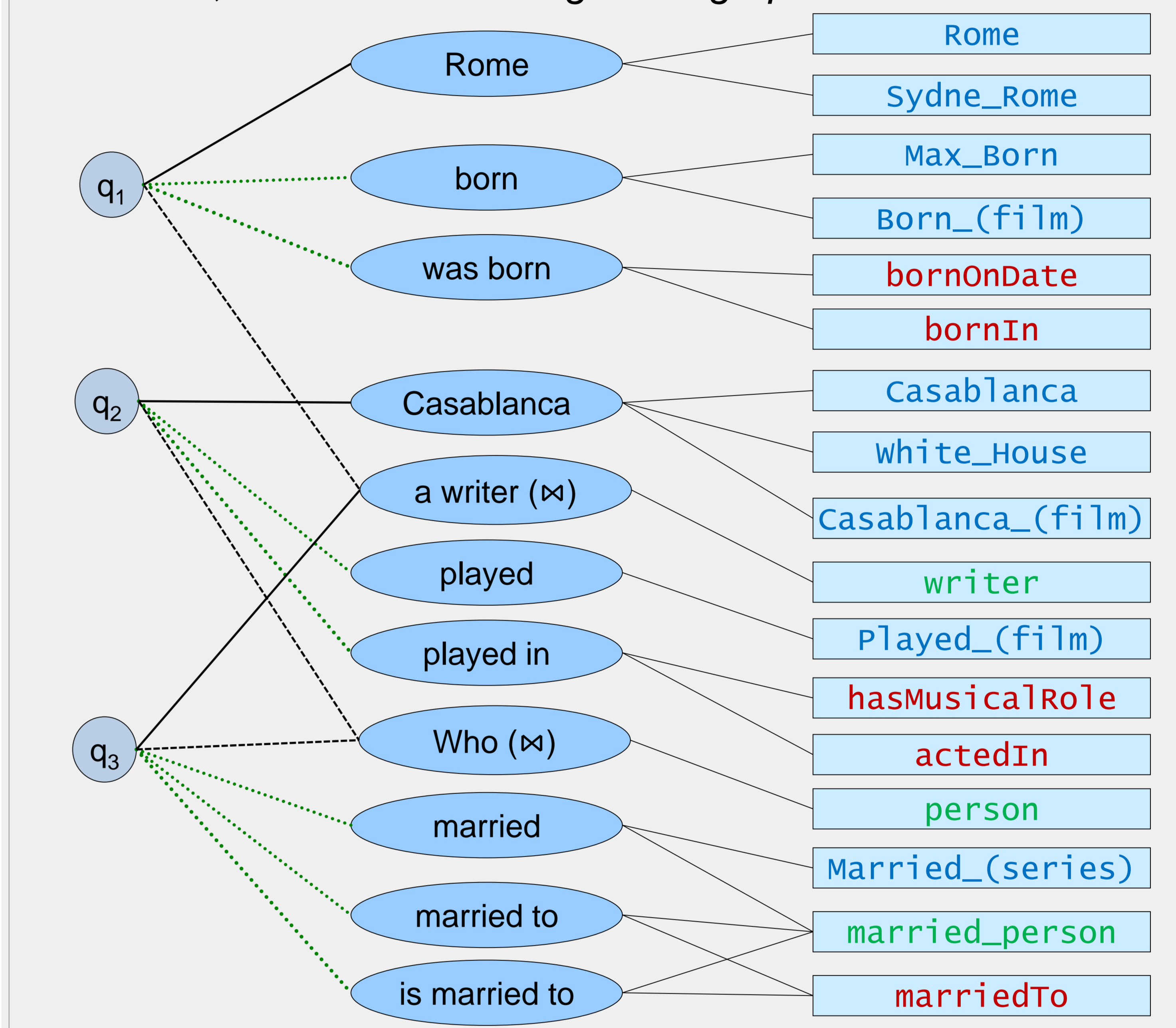
## Challenges

- Detection and mapping of entities, classes & relations
- Joint disambiguation of entities, classes & relations
- Structured query generation

## Construct a Disambiguation Graph



### Result of 1, 2 and 3: a disambiguation graph



## Perform Disambiguation

4. Joint disambiguation via a constrained dense subgraph computation using ILP.



## Generate Query

5. Translate subgraph to structured query: classes are type constrained variables, joins expressed by common phrases between q-units.

### More Information

Demo session 3: Thursday, 14:00-15:30 in Bellecour # -1  
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