

# Discussion

**Laura Dietz**

University of New Hampshire

**Alexander Kotov**

Wayne State University

**Edgar Meij**

Bloomberg

# Outline

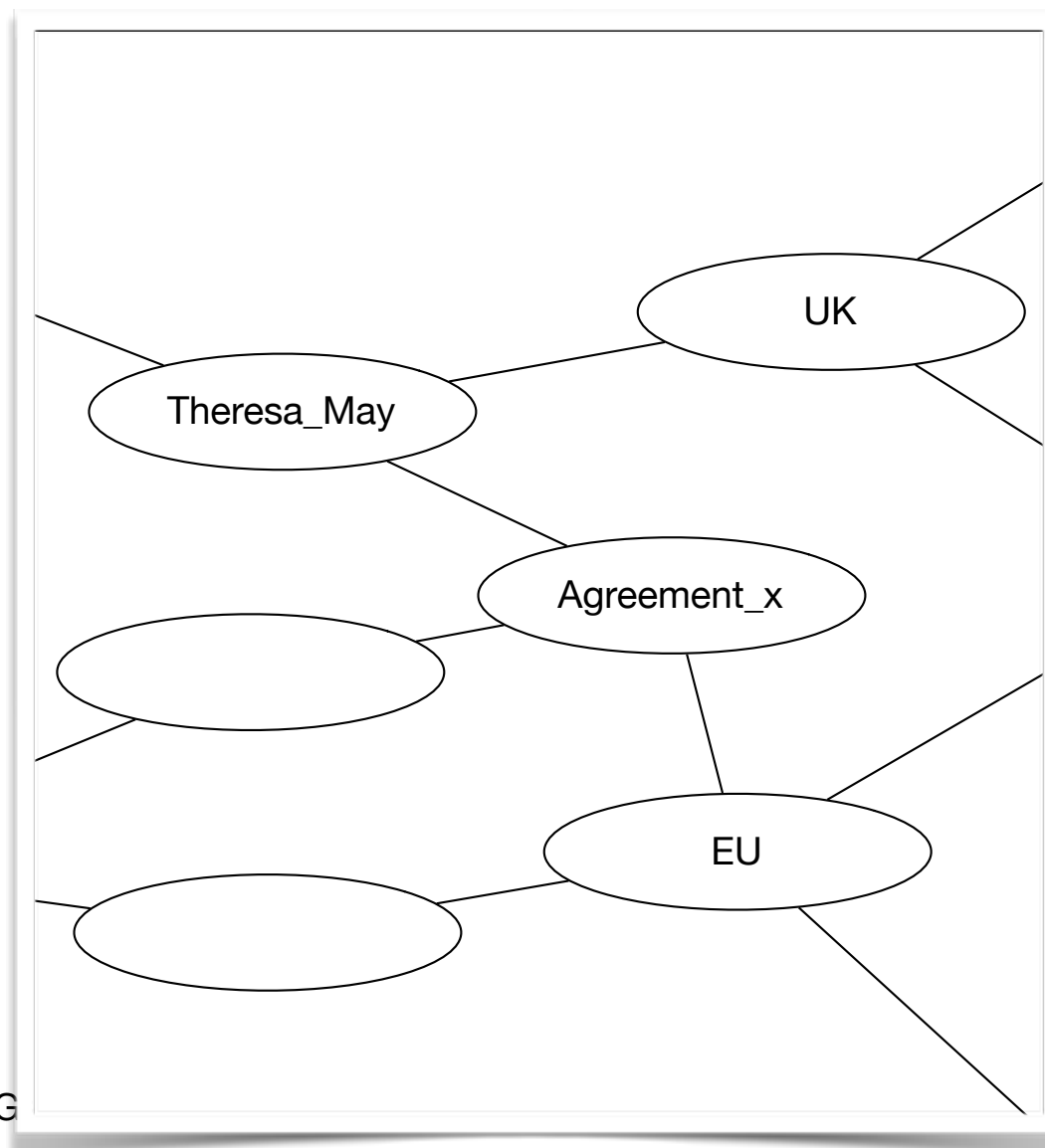
- Recap
  - outlook
  - open questions
- Q&A
- TREC CAR

# Tying everything together

- Entity linking/retrieval:  $q \mapsto \{(e, s)_1, \dots, (e, s)_n\}$

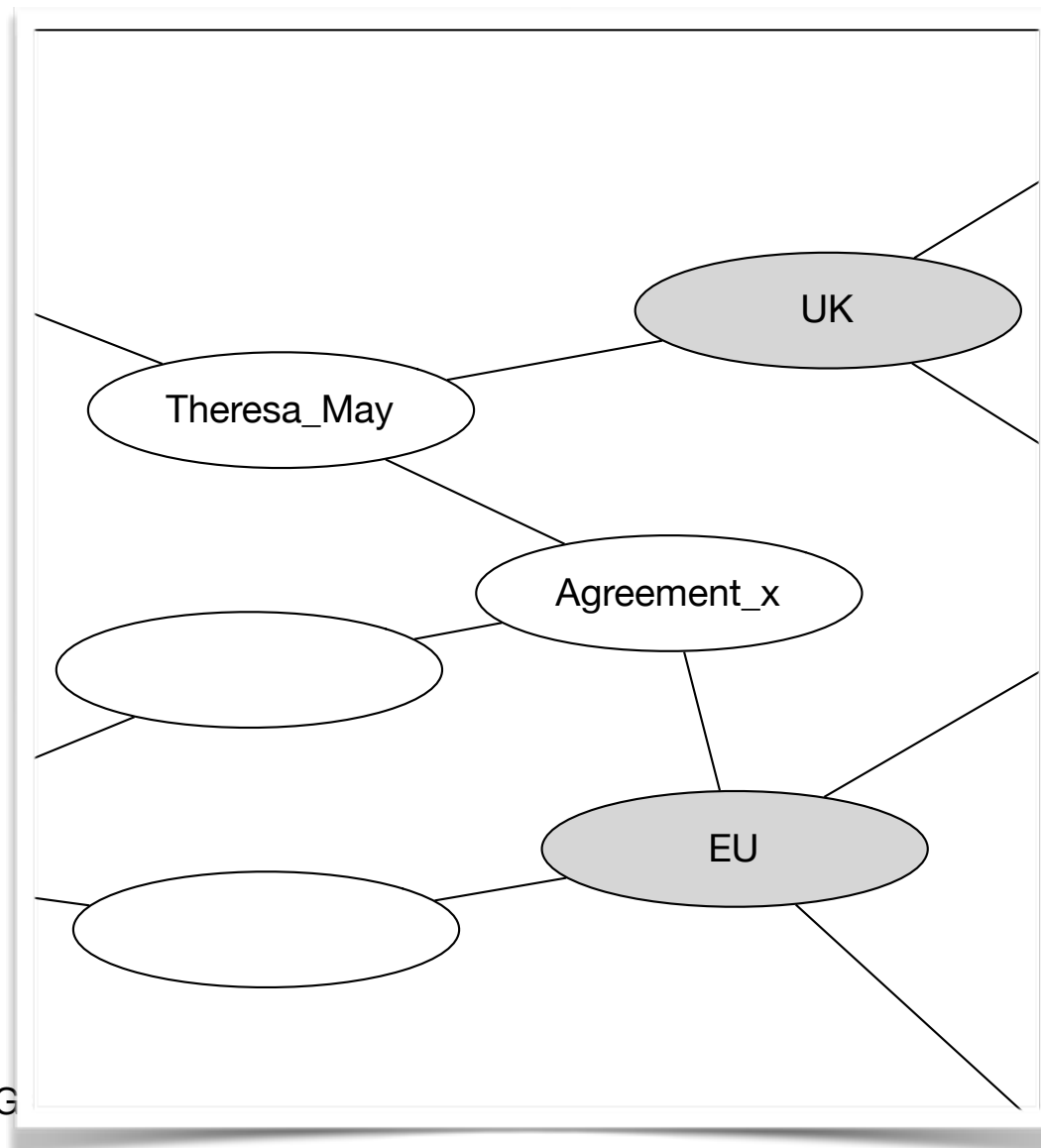
# Tying everything together

- Entity linking/retrieval:  $q \mapsto \{(e, s)_1, \dots, (e, s)_n\}$



# Tying everything together

- Q: “UK EU relationships”

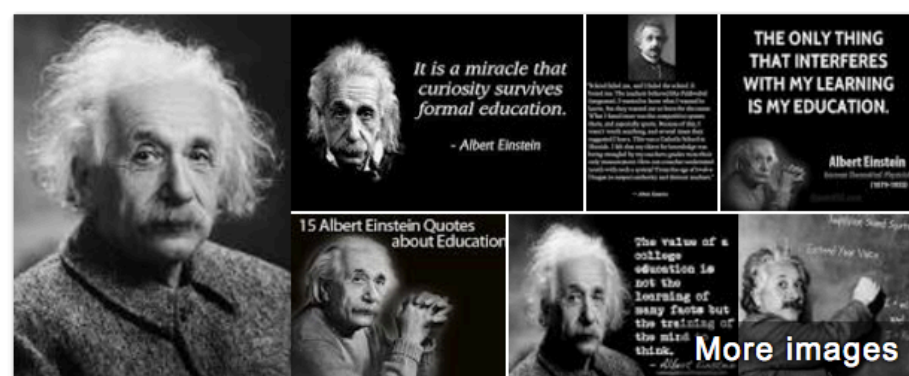


# Tying everything together

- Leverage obtained, possibly weighted, query relations and entities
  - as units of retrieval
  - to steer passage extraction
  - to guide a new round of retrieval
  - combine with document annotations
  - etc.

# Entity cards

- Ranking entities, attributes, facts for query entities
  - [\[Hasibi et al. 2017\]](#), [\[Voskarides et al. 2018\]](#)



## Albert Einstein

Theoretical Physicist

Albert Einstein was a German-born theoretical physicist. He developed the general theory of relativity, one of the two pillars of modern physics. Einstein's work is also known for its influence on the philosophy of science. [Wikipedia](#)

**Born:** March 14, 1879, [Ulm, Germany](#)

**Died:** April 18, 1955, [Princeton, New Jersey, United States](#)

**Education:** [University of Zurich \(1905\), more](#)

**Awards:** [Barnard Medal for Meritorious Service to Science, more](#)

**Influenced:** [Satyendra Nath Bose, Wolfgang Pauli, Leo Szilard, more](#)

### Quotes

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*Imagination is more important than knowledge.*

*The important thing is not to stop questioning. Curiosity has its own reason for existing.*

*Anyone who has never made a mistake has never tried anything new.*

(a) “einstein education”



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**Siblings:** [Maja Einstein](#)

**Spouse:** [Elsa Einstein \(m. 1919–1936\), Mileva Marić \(m. 1903–1919\)](#)

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(b) “einstein family”





## Barack Obama

4,689,620 followers on Google+

Barack Hussein Obama II is the 44th and current President of the United States, and the first African American to hold the office. [Wikipedia](#)

**Born:** August 4, 1961 (age 53), [Honolulu, Hawaii, United States](#)

**Spouse:** [Michelle Obama](#) (m. 1992)

**Office:** [President of the United States](#) since 2009

**Presidential term:** January 20, 2009 –

**Parents:** [Ann Dunham](#), [Barack Obama, Sr.](#)

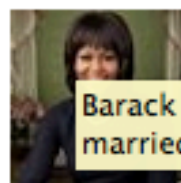
**Siblings:** [Maya Soetoro-Ng](#), [Mark Okoth Obama Ndesandjo](#), [more](#)

### Recent posts

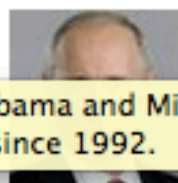
The economy is stronger since the financial crisis hit six years ago today, but there's still more work to do: <http://ofa.bo/f0uq> 15 Sep 2014

### People also search for

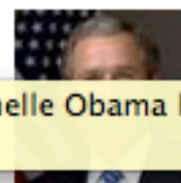
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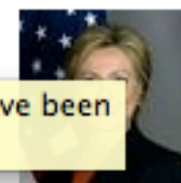
[Michelle Obama](#)  
Spouse



[Vladimir Putin](#)



[George W. Bush](#)



[Hillary Rodham Clinton](#)



[Mitt Romney](#)

Barack Obama and Michelle Obama have been married since 1992.







# KGs for conversational search

- QA++
- “Personalized” vs “Global” (background) knowledge
  - hyperlocal
- Also: procedural?

# Outlook / Open questions

- KG incompleteness and closed world assumptions
- How to best use graph structure?
- Federated search and federated KGs: how to represent verticals, merge information, etc. Evaluation?
- Long-tail and out-of-KG entities. On the fly information extraction?
- KGs are not static things: how do you decide the KG does not contain the “required” information? Does it not exist or is the representation inaccurate/insufficient/...?
- Explainability: how did the system arrive at a ranking using KGs?
- Multi-linguality: documents, queries, KGs
- Searching beyond entities, e.g., relations, attributes/properties, etc.,
- And beyond “ad hoc” retrieval: how to represent users, tasks, and context? Aspects?
  - Query “subtopics”

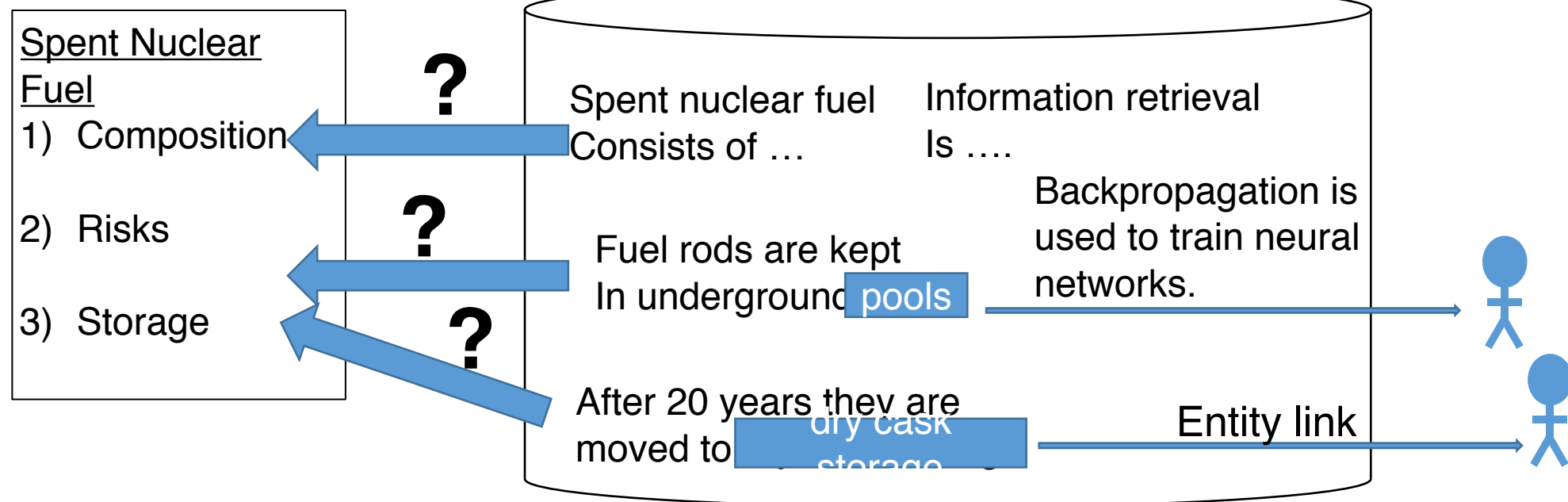
# TREC Complex Answer Retrieval (CAR)

- [trec-car.cs.unh.edu](http://trec-car.cs.unh.edu)

Given Outline (=Q)

Given a corpus of passages

with entity links



Your task:

- Which passages should go in this article?
- Which section should they go in?

# Q&A

# Wrap-up

Slides at <http://github.com/laura-dietz/tutorial-utilizing-kg>

Bibliography at <https://www.mendeley.com/community/entity-linking-and-retrieval/>

**Laura Dietz (@lauradietz99)**

**Alexander Kotov (@rusillini)**

**Edgar Meij (@edgarmeij)**