What it Boils Down to... The Case for Event Analogies to Combat Complexity in Digital Libraries

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20 years ago…

• … the 9/11 attack happened – the aftermath is still palpable

• How to make sense of (not only) such events?
  – Create a mental model of the event
    • What happened?
    • What is the event context?
    • How is this event comparable to other events I already understood?
Analogies try to transfer some high-level meaning from a base to a target

– Often cited as analogy to 9/11: the Pearl Harbor attack in 1941

In a DL context with vast amounts of information reg. events: analogies can reduce the complexity by offering a ‘mental hook’ for the user
• Most research in computer science has been performed on 4-term analogies
  – E.g. Paris::France $\sim_a$ Berlin::Germany
  – Mostly by utilizing statistical models based on the distributional hypothesis… with minor success

\[ \text{Norway} - \text{Oslo} + \text{Havanna} \approx \text{Cuba} \]
Based on psychology we identified two components for finding event analogies:

- **Event Structure Similarity (ESS):** Two events should share a common prototype, i.e. a battle between two countries and a competition between sport teams are both confrontations.

- **Event Perception (EP):** How are participants of a certain event are perceived? E.g. as an aggressor in a conflict or an underdog in a football game.
• Kroll et al. (2020) introduced the narrative overlay for heterogeneous knowledge repositories
  – We enhance this work by ESS and EP
Narrative Prototypes

A narrative prototype can be bound against an event instance if the event prototypes and the perceived roles fit.

- Two instances matching the same n. prototype are considered to be analogous.
• Given the structure of narrative prototypes a analogy-enabled query engine can be sketched
• Open questions:
  – How can event prototypes be defined and how to measure distances between prototypes and events in respective taxonomies?
  – How can narrative roles and event participants be matched and substituted?
  – What is the exact connection between narrative roles and viewpoints in a narrative prototype?
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• Pearl Harbor
  – Public Domain
    [https://en.wikipedia.org/wiki/Attack_on_Pearl_Harbor#/media/File:USS_West_Virginia2.jpg]