Ontology Summit 2019
Narrative Track Summary

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Successful explanations require understanding how humans explain

“Much of [XAI] research is focused on explicitly explaining decisions or actions to a human observer, and it should not be controversial to say that looking at how humans explain to each other can serve as a useful starting point for explanation in artificial intelligence.”

Miller (2018)
Humans build explanations on the fly leveraging knowledge from each other

“Although explanations are necessarily incomplete — often dramatically so in laypeople — … people do have skeletal explanatory senses, often implicit, of the causal structure of the world. They further leverage those skeletal understandings by knowing how to access additional explanatory knowledge in other minds and by being particularly adept at using situational support to build explanations on the fly in real time ...”

Keil (2006)
Explanation heuristics identified in the social sciences

• Explanation is contrastive, answering “Why P rather than Q”?
• Causal attribution of social behavior relies on theories of beliefs, desires, intentions and traits
• General causal connections use selective counterfactual simulations
• Explanation selection tends to not be comprehensive, but identifies a few causes as the (adequate) explanation

Miller (2017)
Explanation heuristics identified in the social sciences

- Explanations are evaluated for **relevance and usefulness** as well as trustworthiness.
- Explanations are **interactive conversations** and must abide by rules and maxims of discourse, such as those identified by Grice:
  - Quality
  - Quantity
  - Relation
  - Manner

Miller (2017)
Narrative is a strategy for sense-making

“Narrative theory starts from the assumption that narrative is a basic human strategy for coming to terms with fundamental elements of our experience, such as time, process, and change, and it proceeds from this assumption to study the distinctive nature of narrative and its various structures, elements, uses, and effects.”

The Project Narrative
Systematic study of narrative begins with separation of fundamental elements

• Narrative theorists generally agree on the need for a distinction between
  • **Story** — a sequence of actions or events conceived as independent of their manifestation in discourse, and
  • **Discourse** — the discursive presentation or narration of events.

  Culler (2005)
Explanation Ontology Design Pattern

• An Explanation requires
  • An explanans or antecedent event
  • An explanandum or posterior event
  • A context that relates the two
  • Some theory or “a description that represents a set of assumptions for describing something, usually general. Scientific, philosophical, and common-sense theories can be included here”. (per DOLCE+DnS Ultralite ontology)
• An agent producing the explanation

Explanation Ontology Design Pattern

Figure 2: The Explanation Ontology Design Pattern.

Tiddi, et al. (2015)
Explanation logic

• ‘Proof as explanation’ has limitations
• ‘Explanation as proof’ promises to overcome those limitations,
  • Ensuring complete formalization
  • Providing a basis for better narratives

Baclawski (2019)
Using ontologies for interoperability in the cultural heritage domain

• Arches uses CIDOC Conceptual Reference Model to formally describe the explicit and implicit concepts and relations underlying the documentation structure used for cultural heritage.

• Allows for interoperability despite heterogeneous data and data sources, cultural variations

• Example application: must explain multiple views of why resources are significant

Wuthrich (2019)
Cross-track questions

• Relating issues of **narrative** (story, discourse, conversation rules, context, agency, beliefs, desires, intents, etc.) and **explanatory theories** (requiring **ontologies**) in
  • Commonsense explanations
  • Financial explanations
  • Medical explanations
  • XAI
Narrative References (1)

Ontology Summit 2019 Presentation Slides

• Ken Baclawski. Proof as Explanation and Narrative, 1/30/2019.
Narrative References (2)

Articles

Narrative References (3)


• The Project Narrative, https://projectnarrative.osu.edu/about/what-is-narrative-theory.