Models and Domains

Jodi Schneider (based on slides from Dave Dubin)

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- or modeling for purposes of keeping track of information.

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- Today I'll introduce you to a diagrammatic notation that we'll come back to in later presentations.

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- For today, we'll define a domain of discourse as some part of reality that we wish to represent in a model.
- Consider three categories of things we might believe are real: physical things, abstract things, and social things (Ferraris, 2011; Jubien, 1997).

Physical things

Physical things exist in space and time: if they exist, then there is some place and time where we can find them. Examples include:

- The particular chair you're sitting in right now.

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- The seat back that is part of your chair.
- Any specific atomic particle from which the chair is composed.

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- The University of Illinois School of Information Sciences.

Abstract things

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- The relationship "employed by the University of Illinois."
- The state of affairs "Jodi's being employed by the University of Illinois."
- The state of affairs "Dave's being employed by the University of Illinois."

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- married
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- soluble
- "having been a female US President before 1997"

Relationships

Jubien uses the term "relation" for a part of abstract reality that I'll call "relationship," so as to keep it distinct from a mathematical object that might or might not be the same thing. Jubien's examples of relation(ships) include:

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- the "betweenness" relationship that can obtain among physical objects in space;
- the instantiation relationship that can link a property to a particular thing that exemplifies the property;

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- In models such as RDF, these relational properties can only obtain between exactly two individuals (binary relationships only).

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- That is to say, they're the kinds of things that can be true or false.
- Propositions are language-independent entities. You can think of them as the information content of simple declarative sentences.
- The Platonistic conception of propositions has them outside of time and space.
- So a proposition is not in your mind: it's the kind of thing with respect to which you can stand in a relationship such as belief or desire.

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- Also called "situations"

State of affairs diagram

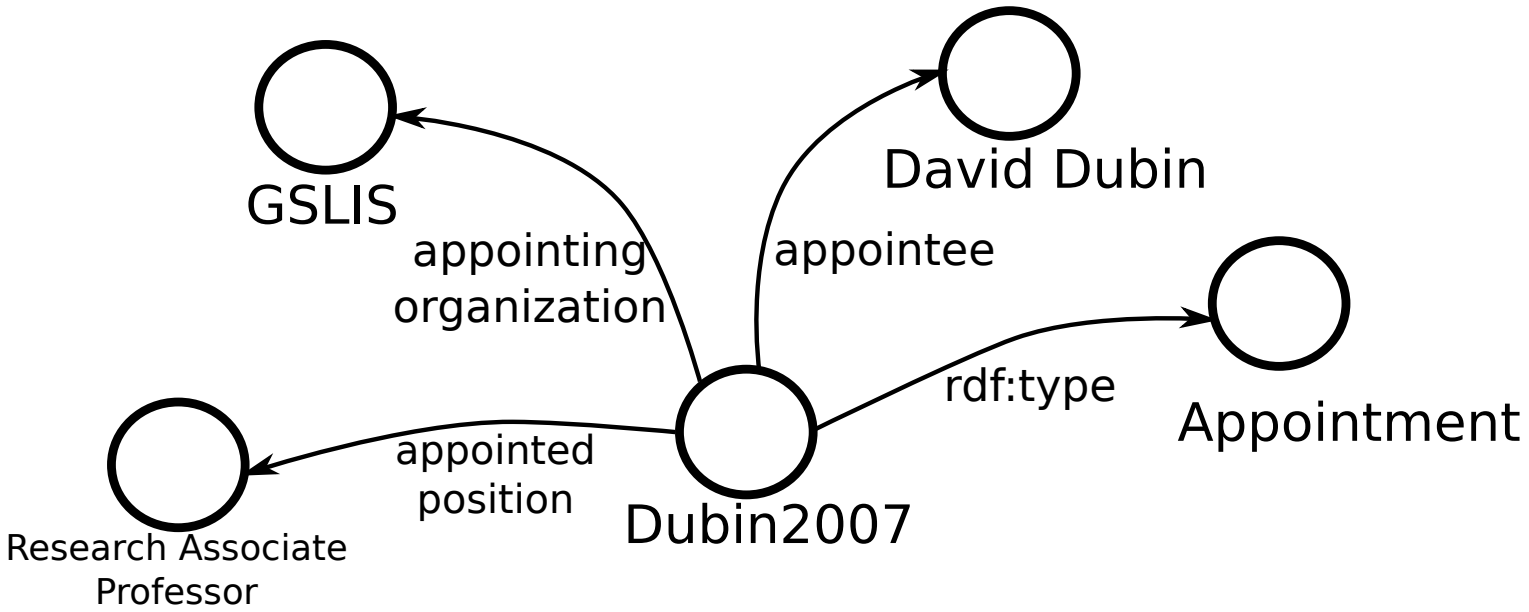

Figure 1: Dave's being employed by the University of Illinois

States of Affairs (2)

- Maria E. Reicher (2009) characterizes the "standard conception" of states of affairs as: "complex entities, consisting of particulars, (universal) properties and relations, such that an atomic state of affairs is a particular's exemplifying a property (or one or more particulars' exemplifying a relation)."

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- **Social thing**: Something bounded in time, but not space, and is essentially connected to the context of its creation.

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- **Proposition**: A language-independent bearer of truth values and object of propositional attitudes like belief.
- **State of affairs**: A particular's exemplifying a property, or one or more particulars' exemplifying a relation.

Further Reading

Ferraris, M. (2011). Social Ontology and Documentality. In G. Sartor, P. Casanovas, M. Biasiotti, & M. Fernández-Barrera (Eds.), *Approaches to Legal Ontologies: Theories, Domains, Methodologies* (pp. 83–97). Dordrecht: Springer.

Jubien, M. (1997). Platonism. In *Contemporary Metaphysics: An Introduction* (pp. 36–62). Cambridge MA: Blackwell.

Reicher, M. (2009). Introduction. In *States of Affairs* (pp. 7–37). Frankfurt: Ontos Verlag.