



INF5020  
*Philosophy of Information:*  
*Weber's Ontology*



THIS SESSION – *The goal*

History:

- We first talked about computation, complexity and looked at several definitions of information.
- Later, we also tried to understand information within the context of data, knowledge, communication and language.
- We attempted to get a feel of the relation between computing and information processing.
- We then looked at Ontology and ontology in relation to philosophy, information and information systems, noting that ontology is an ontobase with a specific structure etc.

Goal:

- We now want to look at one plausible ontology – actually proposal for the structure and content of an ontobase, proposed by Ron Weber for IS



## Some notes – *Use of ontology (still continued)*

- **Why has ontology become so important in IS?**
- Simple:

Ontologies "... interweave human understanding of symbols with their machine processability.

"Ontologies were developed in artificial intelligence to facilitate knowledge sharing and re-use" not only for machines or only for humans but both!

J. Davies, D. Fensel, F. van Harmelen (eds.), "Towards the Semantic Web: Ontology-Driven Knowledge Management", John Wiley & Sons Ltd., 2003



## Some notes – *The alignment problem #1*

Try to answer the following question:

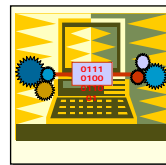
**What is a pipe?**



A short narrow tube with a small container at one end, used for smoking eg. tobacco.



A long tube made of metal or plastic that is used to carry water or oil or gas.



A temporary section of computer memory that can link two different computer processes.

Fabien Gandon, Ontology Engineering: A Survey and a Return on Experience, Research Report No. 4396, INRIA, March 2002 (ISSN 0249-6399)



## Some notes – *The alignment problem #2*

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- The **alignment problem** manifests itself as one concept (or meaning) mapped onto several symbols, or one symbol mapped onto several concepts (meanings)
- This has the potential to introduce “noise” if not handled properly
- One clear message is that we should at least agree on the structure of “things” and how “Things” are going to be represented in the ontobase.
- Another important issue is to **ensure that the representation is not too “far” from the human mind nor the executing machinery**



## An intermediary conclusion – *Representation of information*

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- The representation of information is important on all accounts!
- Information needs to be (at least) both cognitively and computationally appropriate.
- At least, because “at most” would include political appropriateness, appropriateness to belief systems etc...



### Weber's ontology – *An introduction, the basic assumptions*

- “The world is made up of things.”
- “We know about the things in the world via their properties.”
- “All things have properties; there are no propertyless things.”
- “We assume... that that things and their properties really exist in the world.”
- “We know about things and their properties, however, only via the models of things and their properties that we creat.”

Ron Weber, “Ontological Foundations of Information Systems”, Coopers & Lybrand, 1997. (Coopers & Lybrand Accounting Research Methodology Monograph No. 4)



### Weber's ontology – *A pointer to something recognizable*

- Then Weber talks about the terms with which a system more specifically “information system” is to be represented...
- In terms of:  
things, properties of things, attributes of things, types of properties, state of a thing, classes of things, events, history, coupling, systems and sub-systems (decompositional/aggregational structure), input/output, transfer functions, equilibrium etc...
- Is any of this familiar, maybe in terms of something else?
- Let's look at this “something else”...

Ron Weber, “Ontological Foundations of Information Systems”, Coopers & Lybrand, 1997. (Coopers & Lybrand Accounting Research Methodology Monograph No. 4)



## Weber's ontology – *Things and their properties*

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- Properties of things  
(discuss)
- Attributes  
(discuss)
- Behavior  
(discuss)

Ron Weber, "Ontological Foundations of Information Systems", Coopers & Lybrand, 1997. (Coopers & Lybrand Accounting Research Methodology Monograph No. 4)



## Weber's ontology – *Things and their properties*

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- Types  
(discuss)
- Classes  
(discuss)
- State  
(discuss)

Ron Weber, "Ontological Foundations of Information Systems", Coopers & Lybrand, 1997. (Coopers & Lybrand Accounting Research Methodology Monograph No. 4)



**NEXT TIME:**

A few words on information representation,  
storage, processing and retrieval.



**ANY QUESTIONS SO FAR?**

