

Today Software Engineering, Tomorrow the World...

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...or at least the Noosphere

- Homesteading the Noosphere
 - The territory that software expands into
 - “Category killers”: apps. that can’t be replaced within their domain

Summary...

- Software engineering (or information technology?) = constructive epistemology
 - Not a theory of knowledge, but the construction and marshaling of it
 - Inside many philosophers is a software engineer struggling to get out
 - (Most) philosophy may be academic, but (some) isn't of academic interest

Ontology & epistemology

- | | |
|------------------------------------|--------------------------------------|
| • Ontology: What there is | • Epistemology: How we know about it |
| – Categories of things and actions | – Encoding into representations |

What world....

- Searle: The construction of social reality
 - (Much of) the world as agreed-on conventions
- Mylopoulos & Yu: Need for broader ontology for IT
 - Thing-like concepts (easy: ER or OOA++)
 - Verb-like concepts (task analysis, etc.)
 - Intention (roles, dependencies, goals)
 - Social/cultural (???)

Jackson's Problem Frames...

- Transformations (JSP/pipes)
 - E.g. compiler, spell-checker
- Monitoring of state (IS)
 - E.g. alarm system, change logging
- Controlling(process control)
 - E.g. elevator control, change control
- Work product (editing)
 - E.g. text editing, etc.

Transformations

- Ontology: What there is
 - Symbols that might mean something
- Epistemology: How we know about it
 - The symbols & sensible transformations

Information systems

- Ontology: What there is
 - There's a real world with people and meetings or students and courses in it
- Epistemology: How we know about it
 - There's a schema that constrains the state of the IS
 - IS is surrogate for RW

Control

- Ontology: What there is
 - There are real, autonomous things
 - We can affect them
- Epistemology: How we know about it
 - Representation of state space
 - Representation of control laws

Work products

- Ontology: What there is
 - It's all in the system
- Epistemology: How we know about it
 - IT brings the world into existence

Things....

- Analytic philosophy & OOA
 - A penguin is (or isn't) a bird
- Down-home analytic philosophy (Kent)
 - A penguin is a bird and a type field
- Graded concepts (Rosch/Heider)
 - A penguin isn't a very good bird
- Family resemblances (Wittgenstein)
 - Of course penguins are birds, but why?
- Sorting things out (Bowker & Starr)
 - Penguins are birds, but what about archaeopteryx?

Ecology (i.e. interaction)...

- Dialectic (K.M., Dahlbom)
- Knowledge in the world -v- in the head (Vygotsky, Hutchins)
- Registration (Smith)
- Epistemology in the flesh (Lakoff & Johnson)

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