



Systemic Paradigm



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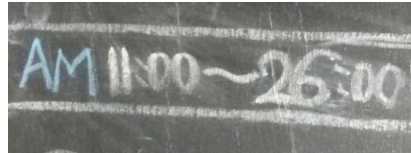
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Cultural Principles



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Paradigm / Kühn



- Paradigm : thought pattern (often implicit)
- Science changes through paradigm changes and not evolution
- Example: relativity, quantum physics

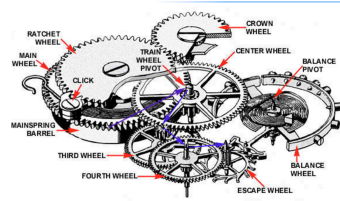
<http://en.wikipedia.org/wiki/Paradigm>

http://en.wikipedia.org/wiki/Paradigm_shift

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Complex / Complicated



<http://www.neazoi.gr/>



<http://www.scriptgodsmustdie.com>

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Paradigm Shift

Mechanistic Paradigm (complicated)

- Closed systems
- Non-emergent properties
- Linear
- Predictable
- “Mechanical”, man-made
- Involve technology

Systemic Paradigm (complex)

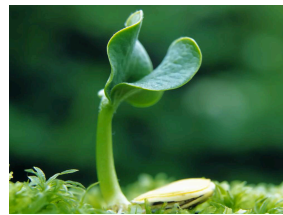
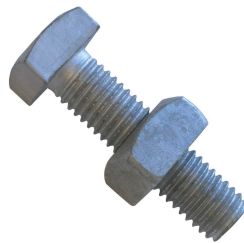
- Open systems
- Emergent properties
- Non-linear
- Largely non-predictable
- “Living”
- Involve humans

http://en.wikipedia.org/wiki/Complex_system

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SEAM Claim

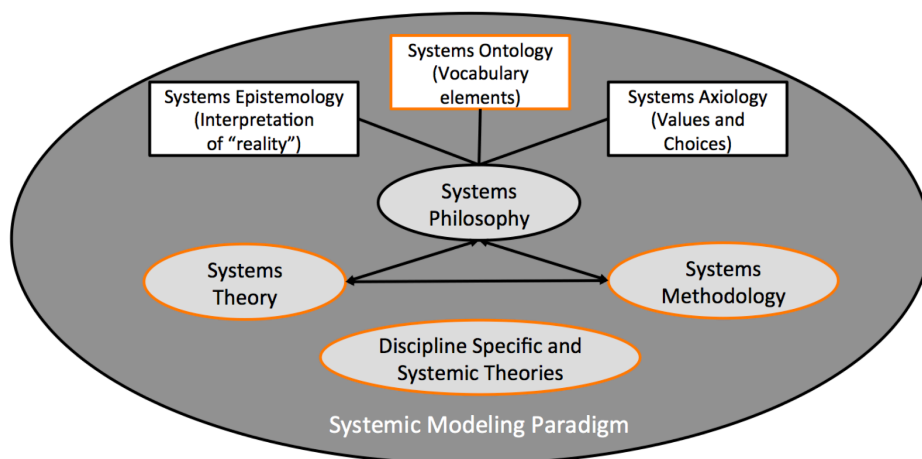
- To understand enterprise architecture, we must switch from a mechanistic view (often implicit) to a systemic view (explicit)



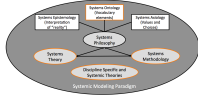
<http://grandaspirations.org>

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Systemic Paradigm



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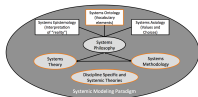
1. Systems Philosophy



- 1.1 Systems epistemology
 - “philosophy”, linguistics, cognition
- 1.2 Systems ontology
 - logic
- 1.3 Systems axiology
 - Aesthetics

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1.1 Epistemology



- branch of philosophy concerned with the nature and scope of knowledge, "theory of knowledge".
- what knowledge is and how it can be acquired

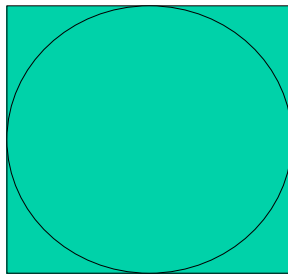
<http://en.wikipedia.org/wiki/Epistemology>

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What is this Form?

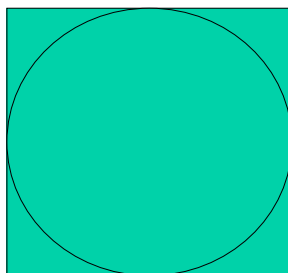
- Fast change



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What is this Form?

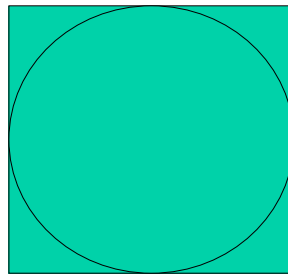
- Less change



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What is this Form?

- No Change?

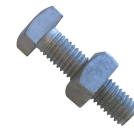


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System Definition

- **System** = set of interrelated entities
- **System** = set of interrelated entities that exhibit emergent properties perceived by an observer



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Constructivism Principle

- Natural science consists of mental constructs that are constructed with the aim of explaining sensory experience (or measurements) of natural world.
- Scientific knowledge is constructed by the scientific community, seeking to measure and construct models of the natural world.

<http://en.wikipedia.org/wiki/Constructivism>

http://en.wikipedia.org/wiki/Constructivist_epistemology

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Embodied Cognition

- Cognition process based on past experience and emotion and not on rational deductions
- Example: prototypical instances (Lakeoff)



[http://commons.wikimedia.org/wiki/File:CRS_\(Police_française\).jpg](http://commons.wikimedia.org/wiki/File:CRS_(Police_française).jpg)

<http://www.interet-general.info/>

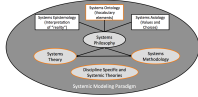


<http://www.contrepoints.org/2011/10/24/51941-le-flic-au-carrefour>



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1.2 Systems Ontology

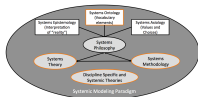


- Ontology is the philosophical study of the nature of being, becoming, existence, or reality, as well as the basic categories of being and their relations.
- Part of metaphysics (what exists in reality)
- Part of computer science (what exists in representation of reality)

<http://en.wikipedia.org/wiki/Ontology>

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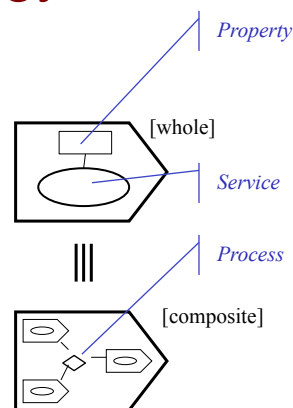
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1.2 Systems Ontology

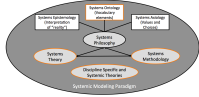


- Kind of model elements and their relations
- Often expressed w/ a meta-model & well-formness rules



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Systems Axiology

- Aesthetics - practicality and simplicity of what is analyzed / designed
- Ethics – societal / human values related to what is analyzed / designed (“goodness”)

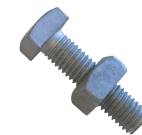
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Occam Razor vs Poka-Yoke Principle



- Occam razor :
 - Principle of parsimony, economy, or succinctness used in logic and problem-solving.
 - Among competing hypotheses, the hypothesis with the fewest assumptions should be selected.
- Poka-Yoke:
 - mechanism in a lean manufacturing process that helps an equipment operator avoid (yokeru) mistakes (poka).



http://en.wikipedia.org/wiki/Occam's_razor

<http://en.wikipedia.org/wiki/Poka-yoke>

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Systemic Paradigm

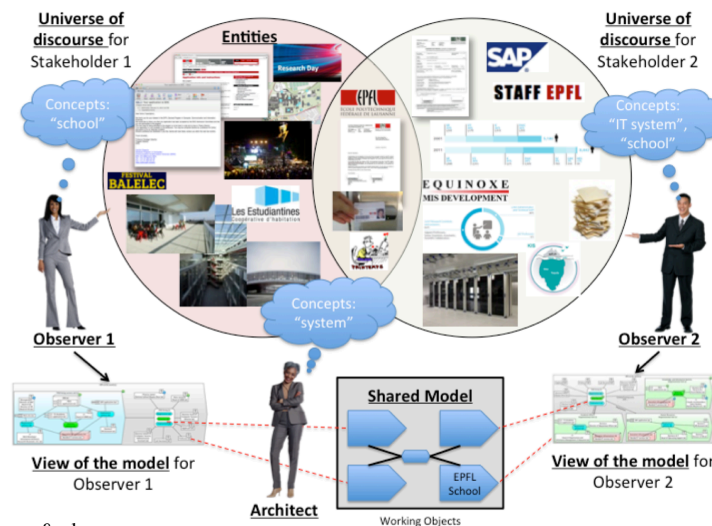


- Systems Philosophy
 - Epistemology
 - Constructivism Principle
 - Embodied Cognition
 - Ontology
 - Working objects / Services / Processes
 - Axiology
 - Aesthetics / ethics
- Systems Theory
 - Identity Principle / Homeostasis
 - Life Cycle Principle
- Systems Methodology

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Model / Reality



Regev & al,
A philosophical foundation for business and IT alignment in enterprise architecture,
BMSD 2014

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