Philosophical aspects of modelling information

Contents

- Research report
- Pitfalls
- What is information?
- Next weeks reading!

Research report

Write a 2000 – 2500 word report on:
- In what way did the application development for the Internet change modelling?
- The report should include:
  - Theory about modelling and methodologies
  - How does it relate to the idea that information systems development is social or technical?
  - What are the problems?

Basic starting point for the research report

- Lecture 2 reading list (Mathiassen et al. and Hirschheim et al.)
- Andrew Dixon from the library
- Proquest

Pitfalls

- Plagiarism !!!!!
- Not starting early
- Role of synopsis

The nature of information?

- What is information?
  Commonly described as “data that is transformed into information by data processing”
- What is data?
  - “Data are interpreted raw statements of fact”
  - “Data are the result of measurement or observation”
  - “A general term denoting all facts, numbers, letters and symbols that refer to or describe an object, idea, condition, situation or other factors”
- Information production process?
The nature of information

- Correct???

Source \[\rightarrow\] Transformation process \[\rightarrow\] Recipient

- Data \[\rightarrow\] Information

The hermeneutic circle: Arriving at understanding

Text \[\leftrightarrow\] Context

The nature of information

Source \[\rightarrow\] Recipient

Context \[\rightarrow\] Background Knowledge

Information \[\rightarrow\] Application

SOOO??

- The transformation process does not create information
- Information is created as the recipient appropriates the data and gives it meaning by understanding the data in a particular context leading to insight and even to judgement and knowledge
- To produce information we have to interpret what we experience and make explicit what we know
- Information cannot exist independently from its producer or consumer—data can

Does this help us with answering the following?

- Why do we need information?
- Do information systems really provide information to managers or users?
- Can information be managed?
- How does this view affect the way in which systems are modelled?

Making knowledge explicit

- When we design an information system, we require knowledge about a human practice which the system should replace
- This knowledge we need to make explicit in order to ‘feed’ into rational rules and algorithms
- Can all knowledge be made explicit?
- Much of what we know is tacit and intuitive
- Therefore we are faced with a dilemma: we can only formalise that which we can make explicit
- Information is therefore not a mechanistic concept
Mechanistic worldview

- Based on rational, objective thinking
- Very prevalent in modern (Western) society
- Assumes world is orderly and unchanging
- Leads to utopian thinking about technology

Romantic worldview

- Reaction to extreme rationalism
- Reaction to technological determinism
- Technology seen as threat to culture
- Technology associated with a calculative and analytical style of thinking
- Technology seen as autonomous and no longer under human control

Contrasting the two world views

- **Mechanistic worldview**
  - Rational thinking about the world
  - Formal representation
  - Technology can be used to change society
  - Knowledge is power
- **Romantic worldview**
  - World should be interpreted rather than understood
  - Researchers of social systems cannot be completely objective
  - World is ‘chaotic’
  - Technology should be resisted

A dialectic synthesis

- We live in a world of mechanistic rules and romantic ideals
- Scientific understanding and romantic interpretation
- We need both concepts and have to reconcile them
- Implementation of information systems means applying rational machines in chaotic environments
- We have to formalise in order to make computers work
- We cannot formalise everything
- Challenge is to find appropriate degree of formalisation

Why do we develop information systems?

- Information the lifeblood of the organisation
- Use of computers for processing information
- Competitive edge
- Ect.

ISD

- **Comments**
  - Development group
  - Object system
  - Change process
  - Object system
  - Environment
  - Objectives
### History of ISD methodologies

<table>
<thead>
<tr>
<th>Generation</th>
<th>Principle management and organisational issues</th>
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</thead>
<tbody>
<tr>
<td>Formal life-cycle approaches</td>
<td>Control of SDLC; guidance through standardization</td>
</tr>
<tr>
<td>Structured approaches</td>
<td>Productivity, better maintainable systems, control over analyst/programmer</td>
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<tr>
<td>Prototyping and evolutionary approaches</td>
<td>Speed and Flexibility, overcome communication gap, right kind of system instead of getting system right</td>
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### History of ISD methodologies(2)

<table>
<thead>
<tr>
<th>Generation</th>
<th>Principle management and organisational issues</th>
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<tbody>
<tr>
<td>Socio-technical, participatory approaches</td>
<td>Control of ISD by users through participation; conflict management; joint optimisation</td>
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<tr>
<td>Sense-making and problem formulation approaches</td>
<td>Multiple perspectives in problem framing; software development as social reality construction</td>
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### History of ISD methodologies(3)

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<thead>
<tr>
<th>Generation</th>
<th>Principle management and organisational issues</th>
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<tr>
<td>Trade-Union led approaches</td>
<td>Labour: management conflict; workers rights; industrial democracy</td>
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<tr>
<td>Emancipator approaches</td>
<td>Improve communication; furthering emancipatory effects of ISD</td>
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### Summary

- We live in a social world
- Information systems are socially constructed
- Need to develop a system – mechanistic
- Dilemma – Dialectics
- What have we seen up until now

### Classification of methods

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<tr>
<th></th>
<th>Problem oriented</th>
<th>Product oriented</th>
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<tr>
<td>Conceptual</td>
<td>Structured analysis</td>
<td>Structured design</td>
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<td>Entity relationship modelling</td>
<td>Object oriented design</td>
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<td></td>
<td>Logical construction of systems</td>
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<td></td>
<td>Modern structured analysis</td>
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<td></td>
<td>Object oriented analysis</td>
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<tr>
<td>Formal</td>
<td>PSL/PSA</td>
<td>Levels of abstraction</td>
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<td>JSD</td>
<td>SOAP</td>
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<td>VDM</td>
<td>Proof of correctness</td>
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<td>Data abstraction</td>
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<td>Object oriented programming</td>
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Reading for next week

- Underpinnings of requirements analysis [chapter 2] p29-54