Analog Experiences in Digital Transformation

Introduction

- Who am I?
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- Research interest(s)
  - How does information technology affect conditions for meaningful experiences?
  - How can IT be designed in order to cater for such experiences?
- PhD Thesis
  - Massification of the Intangible
    - An Investigation into Embodied Meaning and Information Visualization

Background problem

What are the conditions and possibilities of designing information visualization artifacts that retain or otherwise express the kind of information associated with the material characteristics of information objects?

Main problem

In what way can embodied realism serve as a theoretical foundation for design of information visualization artifacts?

Digital Transformation as Demassification

- Two interrelated aspects of demassification
  - Physical
  - Social
- Physical demassification
  - Lightness, mobility and adapability
- Social demassification
  - Different cost-structure
  - Potential for individualization
  - Fragmentation of common ground, shared experience and intersubjectivity (cf. Adaptive UIs, software agents, etc)

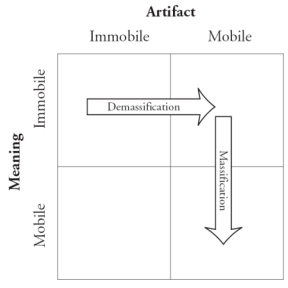


Figure 3.7: Massification design as mobilization of meaning

What is massification design?

- A design ideal that:
  - ” explicitly aims towards a design of information visualization artifacts that cater to the need of intersubjective understanding of abstract and intangible information, mediated through concrete user interface representations.”

Embodied Realism

- A theory that offers an account of how human’s come to have concepts of abstract phenomena
  - Mark Johnson, George Lakoff, m fl
- Characteristics of the theory
  - Human sensemaking and abstract reasoning in dependant on people’s bodily and environmental conditions
  - Abstract phenomena is made made sense of through metaphors
  - The abstract is concieved of in terms of the concrete
  - ”Embodied meaning” surface in language
- Image schemas

Example: Containment

They nominally hold positions of power *within* the organisation but often feel *locked out* of sections of the organisation where the computer, and its operators, have taken over. (Hasan, 1992)

This dependence on paper documents also reduces the amount of information that can be shared *within the organization*. (Komito, 1998, p. 235)

Instead, the case evidence suggests that the underlying reason for development of such systems was associated with participation or non-participation by intended users *from outside the sponsoring organization*. (Cavaye, 1995, p. 135)

Theories and IT artifacts: two alternative points of view:

- Artifacts as *embodiment* of theory
  - Artifacts as theory
  - Theory as an objective quality
  - Carroll & Kellog (1989)
  - Attractive, but difficult to maintain
- Artifacts as *expression* of theory
  - Introduces an interpreting obeserver
  - Theory as in (inter) subjective quality

What is the purpose of a prototype?

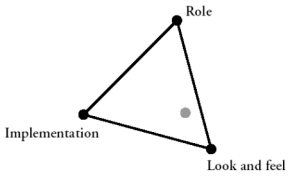
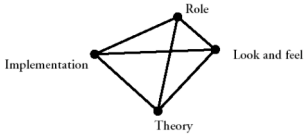


Figure 7.1: Different purposes of prototypes (Houde and Hill, 1997)

Expression of theory as a prototyping purpose



An extension of the model to incorporate theoretical underpinning

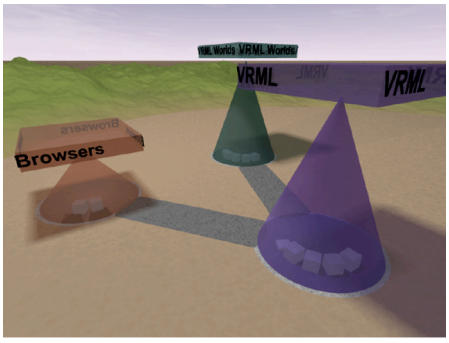
An example project: SchemaSpace

- Purpose:
  - To investigate if embodied realism can be used to substantially support and inform massification design
- SchemaSpace
  - A personal information space
  - A hierarchically organized collection of categorized webpages
- Information qualities
  - Quantity
  - Distiction
  - Organization/relation
  - Part-Wholeness

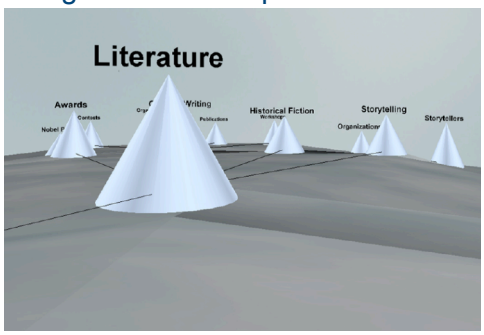
Theoretical grounding

- Aim
  - To allow as much as possible to be theoretically motivated
  - Algorithmic (rather than manual) transformation av input to visual, interactive expression
- Main principle:
  - Identify what can be learnt from the underlying theory
  - Find reasonable visual, interactive *renditions* of abstract image schemas

Design of SchemaSpace



Design of SchemaSpace



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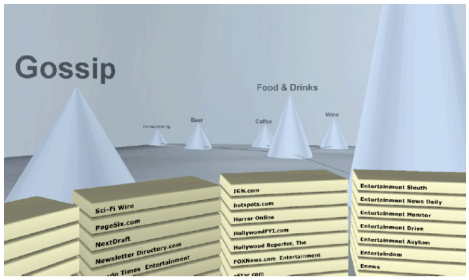
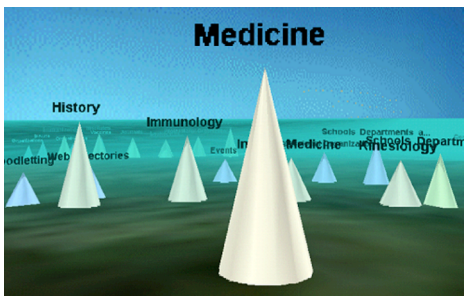


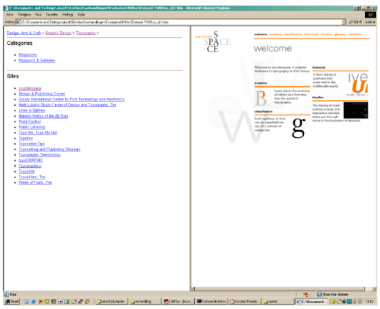
Design of SchemaSpace



Evaluation

- Not with respect to general usability
- Evaluation with respect to expression of theory
  - Did the embodied realist point of departure affect the *experience of using SchemaSpace*?
- How to assess the experience?
  - Theoretical implication: if SchemaSpace is experienced as predicted it would be reflected in the participants way of expressing themselves
  - Comparison with ”traditional” ways of presenting hierarchically organized data

Evaluation



Slutsatser

- Kan användarnas upplevelser tillskrivas den teori som informerade designen?
  - Kvantitativt så var SchemaSpace rikare på bildschemauttryck, men...
  - Båda prototyperna tycks ha upplevts i termer av bildscheman om än på olika sätt.
  - Exempel: Kategorier som volymer vs ytor

Slutsatser

- SchemaSpace – kategorier som volymbehållare. Ex.:
  Then I was *inside* somewhere where there were awfully many web pages. Where was that? One can go in and have a look just briefly. Here it was a bunch. (P5)

  And I saw a cone that *contained* many more such stacks and slices. So it seems like one has to drive around for a while and search *in* each cone or perhaps one can look at the height. (P6)

- Hypertext – kategorier som ytbehållare. Ex.:
  Okay, then I go back to entertainment, *going in on* [in Swedish, "går in på"], *going in on* lyrics, and then there is a category called misunderstood lyrics and there I go in. (P16)

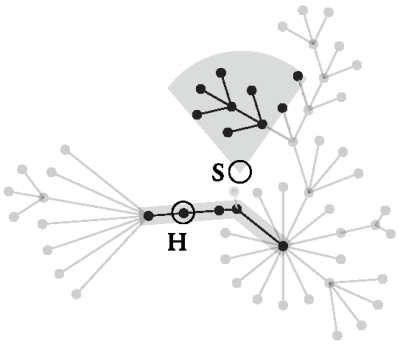


Figure 9.7: Moving observer rendition