Advanced Topics on Global Information Systems:

Research Assignment (2)

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Objectives

- Analyzing and evaluating recent research and development: State of the art in Global Information Systems
- Researching recent developments (“extended literature research”)
- Determining gaps and weaknesses of existing approaches
- Developing an own research plan / research concept
- Presenting results internally (and maybe externally)

Research & Practice

- Relevance vs. Rigor
  - Practical impact
  - Scientific contribution to the existing body of knowledge
- Discussion in the IS discipline for decades…
- Theory / methodology selection

The starting point…

- Choosing a topic
  - …from suggestions…
  - …by own interest…
  - …by inspiration of the special lectures ☺
- Developing a research problem / mini-project

Literature Review

- Searching relevant literature
  - How?
  - Limiting the search…
    - Databases, keywords, synonyms, alternative appraoches, people
- Summarizing the state of the art
- Presentation of recent research in the field

- Discussion and support!

Guiding questions

- Summarize the importance of your topic
  - General
  - In relation to globally distributed systems
- Describe the key approaches in the field
- How have the approaches been developed?
  - Theory-based
  - Empirical
  - Construction
  - …
- Where do you see the need to go further?
- Which support do you need?

Searching relevant literature

- Searching relevant journals and conferences
  - Think about the keywords: Synonyms, acronyms, …
  - http://www.nelliportaali.fi/
  - http://kirjasto.jyu.fi/index.php?lang=eng
  - http://scholar.google.com

  - BUT: there is more than online journals…

Summarizing the state of the art

- Abstracting / Summarizing
  - Key topics
  - Methodology
  - Key findings
  - Limitations and weaknesses
- Identifying exemplary works
  - Find contrasting approaches and topics
  - Find contrasting methodologies
  - Key actors
- Identifying “new” issues

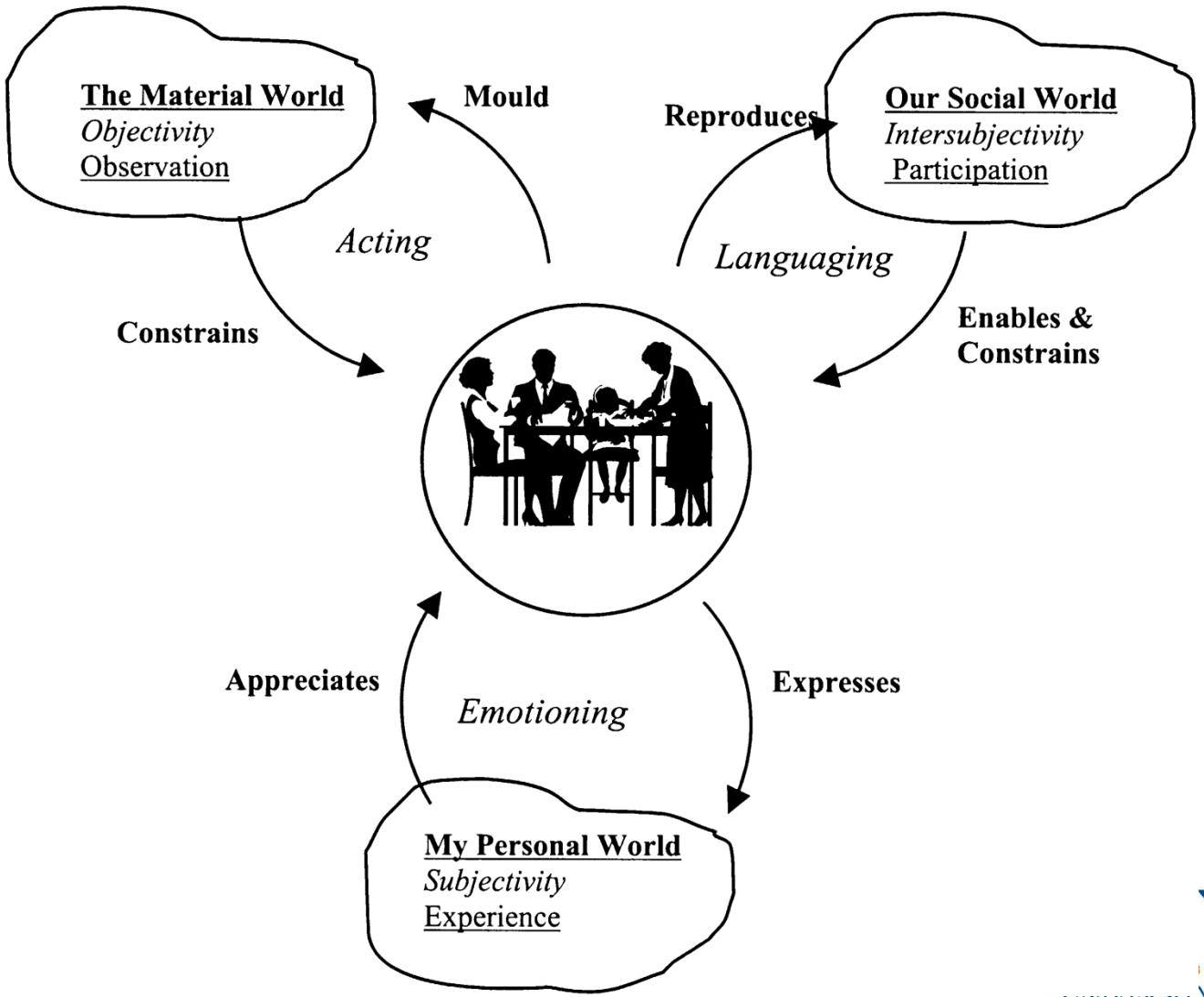
Presentation of recent research in the field

- General presentation / paper structure
  - Contents / Introduction (Motivation)
  - Related research
    - Comparison grid
    - Contrast main findings (2 or 3 exemplary approaches in detail)
    - Shortcomings and potentials
  - Your Ideas
    - Motivation, relation to other works
    - Concept description and explanation
  - Conclusion and future research

Further steps

- Stating the research problem
- Developing a research question
- Methodology selection
- Executing (empirical) research
  - Data collection, data analysis
- Analysis
- Discussion

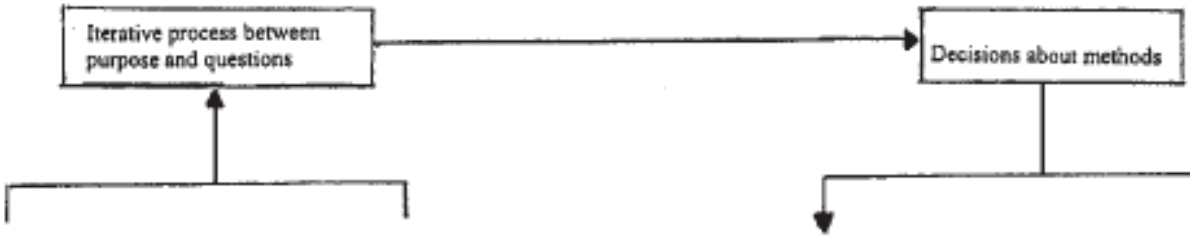
The different worlds (Mingers, 2001)



Information Systems Research Methods: Some key aspects

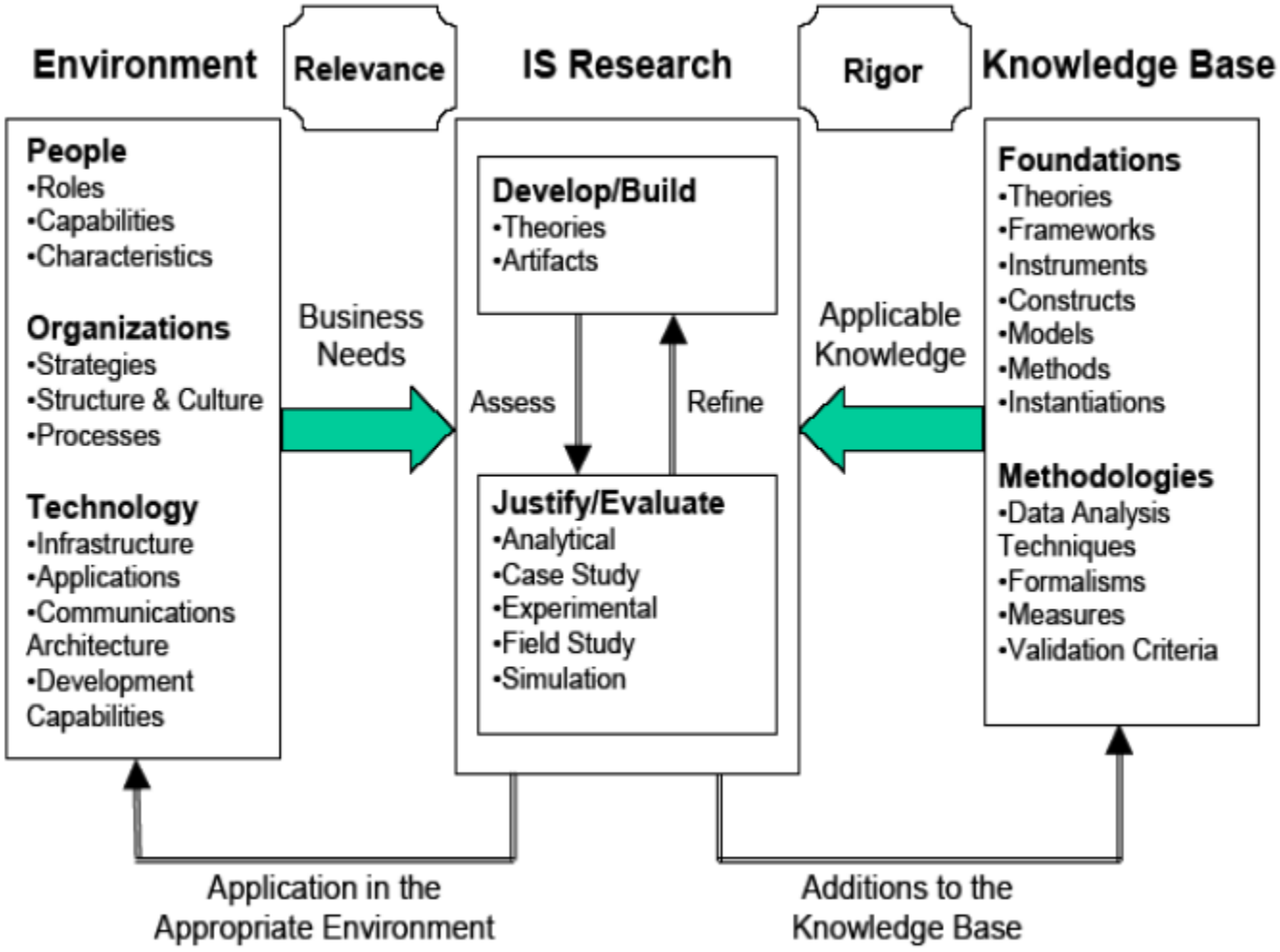
- Epistemology
  - Positivist, interpretivist, critical
- Type
  - Purpose: Descriptive, explanatory, comparative, hypothesis testing, …
  - Empirical vs non-empirical
  - Data: Quantitative vs qualitative
  - Mixed methods
- Method
  - Survey
  - Case Study
  - (Laboratory) Experiment
  - Simulation
  - Protocol analysis
  - Ethnographic study…
- Potential methodologies in our context
  - Design Science
  - Action research
  - Phenomenology
  - …

Method vs Purpose (Newman et al, 2003)



1	2	3	4
Purpose of the Research	**Research Questions**	**Traditionally, purposes in column 1 have led to these approaches**	**Opportunities for moving beyond the traditional approaches to a Holistic (Mixed Methods) approach**
1. Predict	***Research questions are impossible to represent on this table. The iterative process between the purpose (column 1) and the research question (column 2) is the key to deciding what methods to use. The***	Quantitative research (traditional "scientific method," positivistic)	Traditional
2. Add to the knowledge base	***research purpose can be reflected in many questions, as demonstrated in the example of the public's knowledge of***	Quantitative research (generalizable)	Traditional plus qualitative (mixed) research can aid in developing theory to add to the tentative knowledge base of theories to be tested
3. Have a personal, social, institutional, and/or organizational impact	***science. These research questions should not be interpreted independent of the purpose as the researcher***	Qualitative research (context-bound; value-laden; politically contextualized)	Traditional plus quantitative (mixed) research can be used to test hypotheses related to values idiosyncratic to the context
4. Measure change	***decides which methods to be used. Linking the purpose to***	Quantitative research (determining treatment effects)	Traditional
5. Understand complex phenomena	***the question is an iterative process. The goal is to acknowledge all the possible purposes, all possible questions,***	Qualitative research (holistic; inductive studies of settings, cultures, and people)	Traditional plus quantitative (mixed) research that uses multivariate techniques, for example, and takes into account multiple stakeholders
6. Test new ideas	***and to make decisions about methods contingent on this process. Traditionally, some purposes have been linked to***	Quantitative research (hypothesis testing)	Traditional plus qualitative (mixed) research such as focus groups that can "float" new ideas on a tentative basis but not test them for confirmation
7. Generate new ideas	***either qualitative or quantitative research (column 3). Mixed***	Qualitative research (holistic; naturalistic: hypothesis generating)	Traditional
8. Inform constituencies	***methods opportunities exist as options for many purposes; these are shown on column 4.***	Quantitative or qualitative descriptive research (mixed methods)	Traditional – mixed methods
9. Examine the past		Qualitative research (historiographic)	Traditional

IS Research Framework (Hevner et al., 2004)



IS Design-Science Research Guidelines (Hevner et al., 2004)

Guideline	Description
Guideline 1: Design as an Artifact	Design-science research must produce a viable artifact in the form of a construct, a model, a method, or an instantiation.
Guideline 2: Problem Relevance	The objective of design-science research is to develop technology-based solutions to important and relevant business problems.
Guideline 3: Design Evaluation	The utility, quality, and efficacy of a design artifact must be rigorously demonstrated via well-executed evaluation methods.
Guideline 4: Research Contributions	Effective design-science research must provide clear and verifiable contributions in the areas of the design artifact, design foundations, and/or design methodologies.
Guideline 5: Research Rigor	Design-science research relies upon the application of rigorous methods in both the construction and evaluation of the design artifact.
Guideline 6: Design as a Search Process	The search for an effective artifact requires utilizing available means to reach desired ends while satisfying laws in the problem environment.
Guideline 7: Communication of Research	Design-science research must be presented effectively both to technology-oriented as well as management-oriented audiences.

Summary

- Find your topic and ideas
- Formulate and refine research problem and questions
- Identify background material
  - Literature, databases, web, colleagues
- Evaluate, analyze, summarize
- Plan the process and methodology
- Realize
  - Data collection and analysis
- Analyze and discuss
- Publish, get feedback, discourse

Paper

- Research Methods
  - http://www.socialresearchmethods.net/kb/
- Some useful readings and links
  - Online Writing Lab Purdue http://owl.english.purdue.edu/workshops/hypertext/ResearchW/index.html
  - Helsinki University http://www.opiskelijakirjasto.lib.helsinki.fi/koulutus/libtut/index.html
- Citations
  - See also the Online Writing Lab
- Ethics
  - http://www.tenk.fi/ENG/Publicationsguidelines/htkeng.pdf

References

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Newman, I., Ridenour, C.S., Newman, C., & DeMarco, G.M.P. (2003). A typology of research purposes and its relationship to mixed methods. In A. Tashakkori & C. Teddlie (Eds.), Handbook of mixed methods in social and behavioral research, pp. 189-208. Thousand Oaks, CA: Sage.

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