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ELEC-E7861

Lecture 6: Research Strategy

2021
Antti Oulasvirta
Aalto University
userinterfaces.aalto.fi

Schedule

Jan 14: Introduction
Jan 21: Computational modeling
Jan 28: Analytical methods
Feb 4: User research
Feb 11: Literature review
Feb 18: Research strategy
Feb 25: No meeting
Mar 4: Research planning
Mar 11: Study design
Mar 18: Data analysis
Mar 25: No meeting
Apr 1: Scientific writing
April 8: No meeting
Apr 15: Scientific presentation
Independent study period
May 14: Submission of paper (PDF)
May 15: Dress rehearsal
May 16: Final presentations

AI and Human Memory seminar Tuesday Feb 23 at 15.00 Helsinki time

Programme:

14:00 – 14:10	**Welcome:** Albrecht Schmidt *Intro to HumaneAI Net and today's event*
14:10 – 14:45	**Guest Talk:** Zoya Bylinskii *Research Scientist at Adobe Research*
14:45 – 14:55	**Talk:** James Crowley *The Role of Emotion in Concept Formation and Recall when Solving Problems*
14:55 – 15:05	**Talk:** Robin Welsch *Understanding autobiographical memory in Virtual Reality*
15:05 – 15:15	**Talk:** Catharine Oertel *Memory Aware Conversational AI to Aid Virtual Team-Meetings*
15:15 – 15:25	**Talk:** Aurelien Nioche *Improving Artificial Teachers by Considering How People Learn and Forget*
15:25 – 15:55	**Panel discussion**
15:55 – 16:00	**Closing**

Today

Status check

Research strategy

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Status check

Your lessons in A5

Let's do a round of lessons learned

- ***What did you learn from peer feedback?***
- ***What did you learn from the related work exercise?***

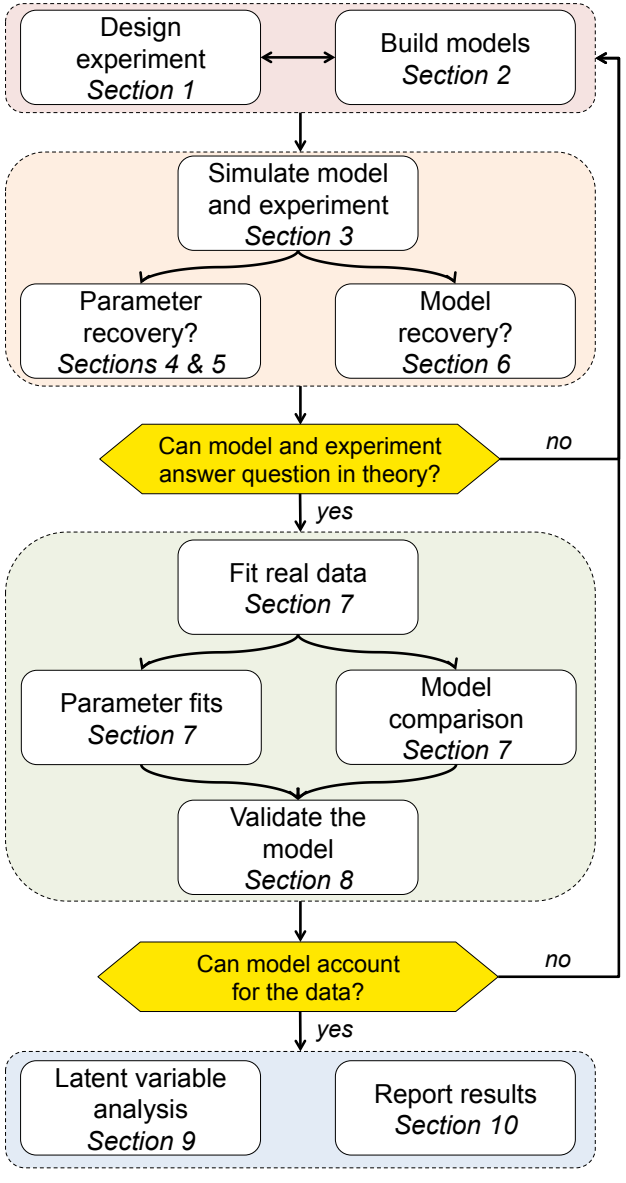
10 step workflow

Wilson & Collins 2019

(PDF in MyCourses)

Takeaways:

- Model validity is tested “in silico” prior to validation against human data
- Modeling is iterative: several modelling ideas are tried out



Can you find yourself here?

Constructing a model

Generate a model (done in our case)

Test model-generated data against existing findings

Test parameter recovery

Extend a model to improve performance or cover new phenomena

Validating a model

Assess parameter inference

Validate against a benchmark dataset

Assess generalization to other datasets or circumstances

Assess sensitivity

Applying a model

Integrate to a practioner tool or computational design algorithm

Test with practitioners or end users

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Research Strategy

A warm-up exercise

Solo exercise + discussion (15 mins)

1. **Pick** a paper from here: http://yangl.org

   Yang Li is an HCI researcher at Google Research

2. **Identify** justifications for method in text

   E.g., “In order to, ...”, “While [alternative way fails], we [a better approach]

   Copy them

3. **Paste**: At the end of the time period, paste the paper title and justifications to zoom chat

What is research strategy?

Research strategy refers to the analysis and choice of the most appropriate

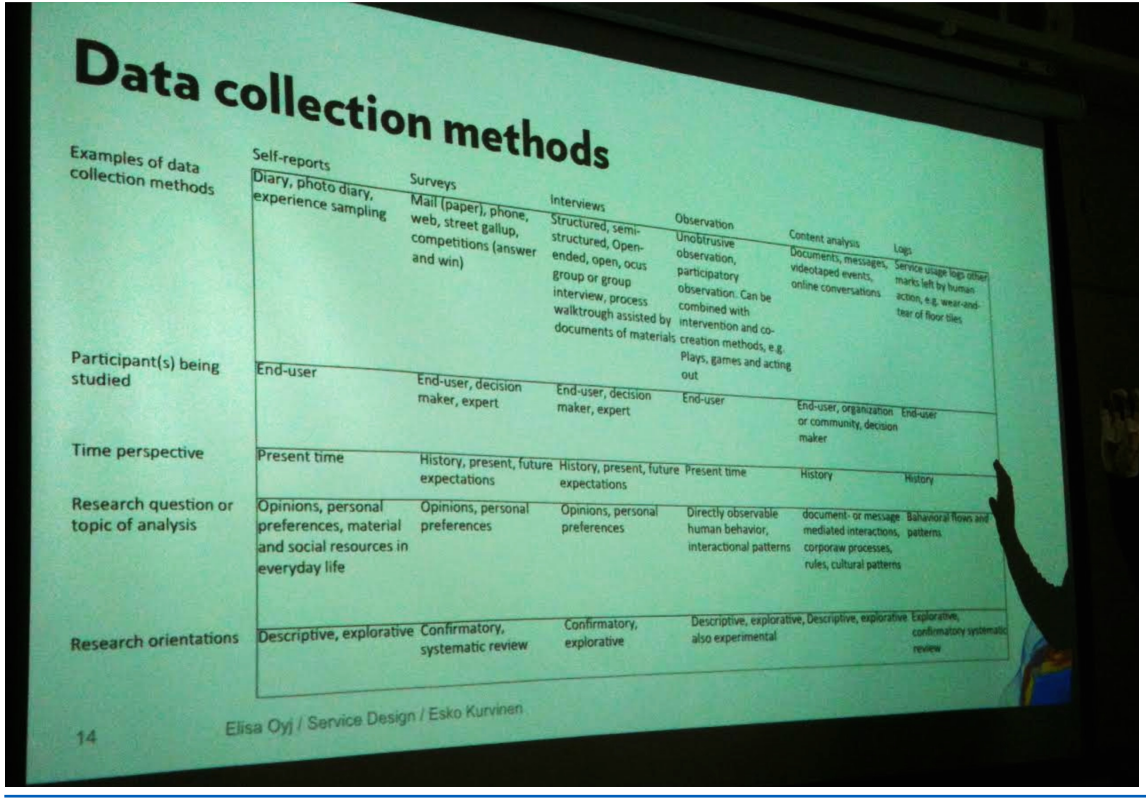
- research method

for given

- objectives
- resources

in the light of what is known

Esko Kurvinen (Elisa)



Data collection methods

Examples of data collection methods	Self-reports	Surveys	Interviews	Observation	Content analysis	Logs
	Diary, photo diary, experience sampling	Mail (paper), phone, web, street gallup, competitions (answer and win)	Structured, semi-structured, Open-ended, open, ocus group or group interview, process walktrough assisted by documents of materials	Unobtrusive observation, participatory observation. Can be combined with intervention and co-creation methods, e.g. Plays, games and acting out	Documents, messages, videotaped events, online conversations	Service usage logs other marks left by human action, e.g. wear-and-tear of floor tiles
Participant(s) being studied	End-user	End-user, decision maker, expert	End-user, decision maker, expert	End-user	End-user, organization or community, decision maker	End-user
Time perspective	Present time	History, present, future expectations	History, present, future expectations	Present time	History	History
Research question or topic of analysis	Opinions, personal preferences, material and social resources in everyday life	Opinions, personal preferences	Opinions, personal preferences	Directly observable human behavior, interactional patterns	document- or message mediated interactions, corporaw processes, rules, cultural patterns	Behavioral flows and patterns
Research orientations	Descriptive, explorative	Confirmatory, systematic review	Confirmatory, explorative	Descriptive, explorative, also experimental	Descriptive, explorative	Explorative, confirmatory systematic review

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Elisa Oyj / Service Design / Esko Kurvinen

Scientific research strategy

Science demands the use of best possible approach

There is an infinite number of approaches, you can never try out all of them

Each approach has its pros and cons

- There's no perfect approach!

The approach should be chosen based on best available knowledge

Problem: The value of an approach can be thoroughly assessed only after seeing the results

Often we have to use several approaches

Common student mistakes

Bandwagon fallacy

- Choosing a commonly used method without thinking if it is the best for your own problem

Letting the practical problem off hook

- Overlooking how your research supports practical aims

On-the-go planning

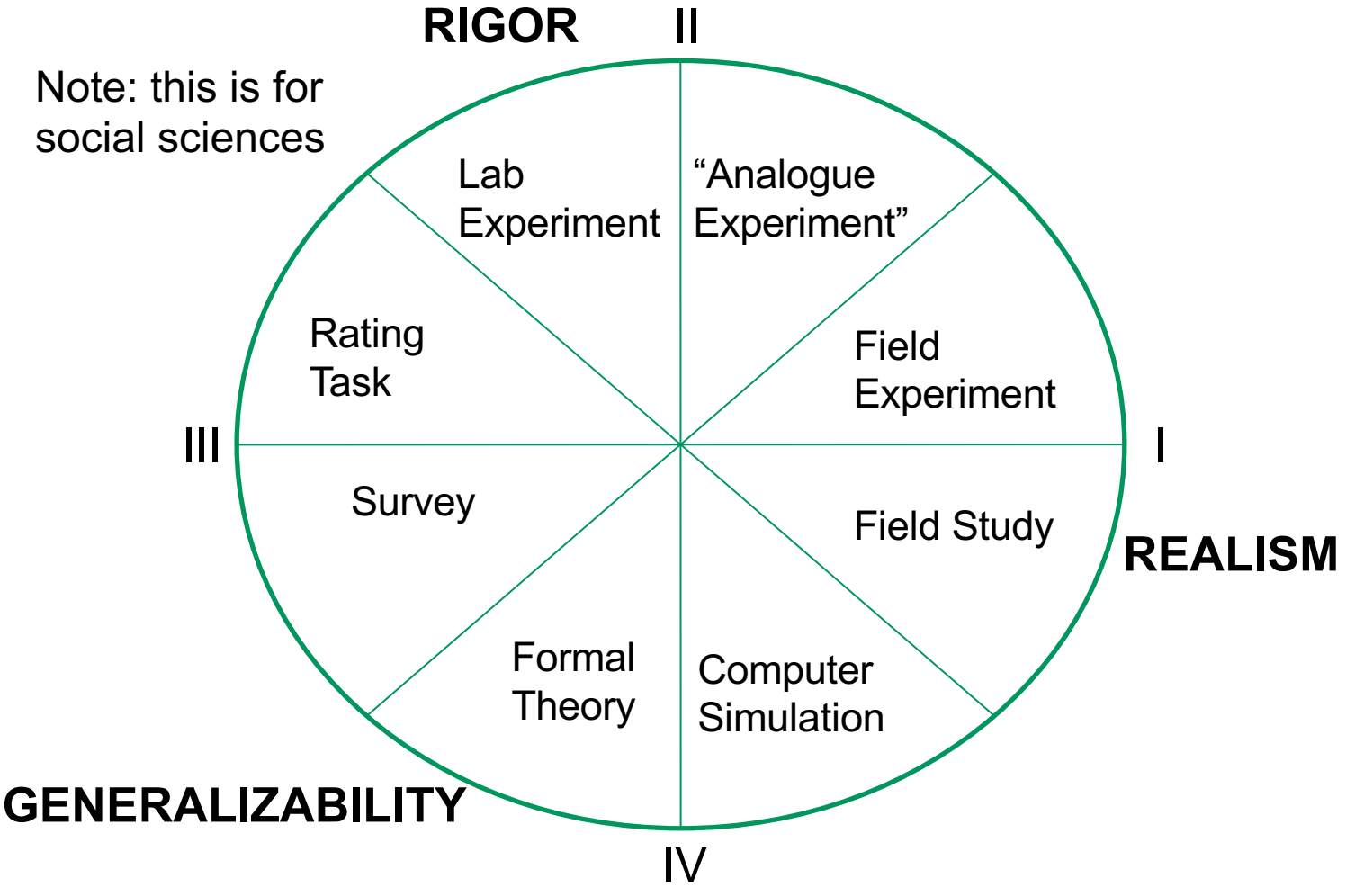
- Failing to plan *all* details before execution increases expenses and slows down work

How could you study this?

Propose two alternative methods:

1. **How do people assume that Google search works?**
2. **What will users most likely attend to on a web page?**
3. **Is a new programming environment too complex for novice programmers?**
4. **How does an FPS gamer experiences the death of his/her character?**
5. **What is the best visualization for architectural drawings?**

McGrath Research Strategy Circumplex



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Assignment 6

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Consider our March 4 meeting an intermediate check: At this point all should have a clear problem definition, approach, and statement about related work

By Wednesday March 3

- **Introduction**: Add one paragraph on *how* you are going to approach your problem. Include *justifications* (max 2-3 sentences). “This approach allows.. “, or “Instead, [an alternative approach would fail]...”, or “
- **Add Method or Approach section**. Write the two first paragraphs of that section. Here, *expand* the argument you gave in Introduction