



Grounded Theory

Advanced Decision Support Systems



Grounded Theory

Today I will answer the following questions:

- What is Grounded Theory?
- How do I do Grounded Theory research?*



What is it?

What is Grounded Theory?



What is it?

Grounded theory is a collection of systematic strategies for qualitative research practice



What is it?

“systematic strategies”

Grounded Theory provides methods for:

- how to collect qualitative data (interviews, observations)
- how to analyze that data (coding, memo writing, sorting)
- how to sample participants (theoretical sampling)
- how to create theories (comparative analysis, theory reconstruction)



What is it?

“collection of”

There are several types of Grounded Theory. The three main types are:

- Positivist (more structured, only report the facts, more pure theory development)
- Interpretive (more open for interpretation, can be confirmatory)
- Constructivist (structured like positivist, but aware that qualitative research is inherently subjective)



What is it?

“for qualitative research practice”

Grounded Theory is does not tell you what to look for

It tells you **how to look for it**

A benefit of this is that it applies to all kinds of topics

A potential drawback is that it is not replicable

e.g., two people doing the exact same interview can have completely different interpretations of the data

Constructivist grounded theorists embrace this ambiguity!



Applied to HCI

Grounded Theory is not an HCI research method by default

“Traditional” constructivist Grounded Theory studies
Symbolic Interactionism

How society, reality, and the self are constructed through
interaction

The HCI variant studies “computer-mediated symbolic
interactionism”

How computers influence this process and vice versa



Applied to HCI

However, even HCI Grounded Theory is not about a system or a feature!

It is about a process or phenomenon that is (or could be) supported by a system

We study how users use (or fail to use) a system as a **means** towards achieving a **goal**

The focus is on the goal, not on the system!



What do we study?

Goal: learn what our research participants' lives are like

How they achieve a goal

Method: study events and experiences

Focus on the process, not on the structure

Output: abstract theoretical explanations of social processes

Go beyond “what”, to “how” and “why”

Advantage: bring an open mind to what is happening

You will build theories, not confirm them



Example

Proposed topic: A recommender system to support retirees in finding volunteering opportunities

Research focus:

How do retirees find volunteering opportunities?

How do they decide which ones to pursue?

What are the key qualities they look for in a volunteering activity?



Example

Focus: How do retirees find volunteering opportunities?

Why?

- A process that is (or can be) supported by an application
- Focus on the goal (finding the opportunity), not the application (recommender system)
- Keeps an open mind on what is happening (build theories, not confirm them)

Recommendations may come up, but you may also find that something totally different stands out!



How is it done?

How do I do Grounded Theory research?



How is it done?

Steps:

- collect qualitative data
- analyze data
- iterate
- create a theory (or theories, plural)



Collecting data

Learn to see the world as participants do

Useful to have a mentor-apprentice (interested learner) relationship

Gather rich data

More data from fewer participants is better than less data from more participants!

Create a “thick” description

Record and take notes, transcribe, write memos (see later)



Collecting data

Main collection method: intensive, contextual interview

Combination between a deep interview and an ethnography

Several types:

Watch the person while they do activity and ask questions

Ask the person to recall past activities; walk through them

Use an artifact to guide the discussion

Goal: Focus on specific events (not “in general”)



Collecting data

Create an interview guide with questions that fulfill your research objectives

Reflect upon the questions:

- Are these questions understandable, clear and concise?
- Do they elicit views, concerns, and experiences?
- Do they reflect the research purpose?
- Do they not reflect my own opinions or assumptions?
- How do they sound to a participant?
- How can I probe further without being too intrusive?



Collecting data

Keep the conversation open:

- Let the participant lead, both in terms of depth of each question and order of questions
- Probe to get deeper answers (use the guide to return to under-explored topics)
- Don't try to answer all the questions
- Explore beyond the topics laid out (within scope)



Collecting data

Ask people to do the process while teaching you how they do it

- Let them lead

- Observe what they do and say

- Ask **open** questions when they stop talking

- Direct back to the task if they go on a “usability rant”

Create (and confirm) a **shared understanding** of the process

- Get not just the what, but also the how and why*



Collecting data

Conflict is interesting
(especially in HCI Grounded Theory)

You will learn more about collecting data
in the next lecture



Analyzing data

Analyzing the data consists of two parallel processes:

Microanalysis and coding

Engaging with the data

Memo-writing and sorting

Reflecting upon the data



Analyzing data

The coding track:

Step 1: A microanalysis of your transcript

Step 2: Open coding

Step 3: Axial coding

Step 4: Selective coding



Analyzing data

The memo track:

Step 1: Writing memos, which may contain:

Step 2: Sorting/diagramming your memos (later)



1. Initial coding

A microanalysis of your transcript

Go through the transcript line by line (even word by word)

Ex.: “When I heard the diagnosis, it was scary. I panicked.”

What is the most important word?

What does each word really mean?

Assess, compare, question, and hypothesize about each sentence!

How? Highlight and “tag” text



2. Open coding

Find the following things in the data:

- Concepts: happenings, events, or other instances of phenomena (e.g. “pick”, “choose”, “select”, “decide”)
- Categories: concepts grouped by phenomena (e.g. “choice”)
- Properties and dimensions: aspects of a category that are mentioned, and possible values of these aspects (e.g. “difficulty: easy – hard”)



Open coding steps

Concepts are actions, processes, feelings, events, situations

Their label should be an action (gerund)!

How? Put your transcript into a two-column table (one row per paragraph); then put the text in one column, codes in the other

Categories are comparisons and aggregations of concepts

They often represent meanings, tacit assumptions, or implicit actions

How? Tag or color-code your concepts



Open coding steps

Dimensions/properties denote variations in a category

Describe the dimensions of variation and the different values

How? You can write them as an “arrow” in the color of the category: [easy] <— difficulty —> [hard]



In vivo codes

Sometimes participants' own words can become central codes

- They use a significant term that everyone knows
- They coin a relevant new term
- They provide a concise description of a category or theory

Such in vivo codes are powerful rhetoric tools in writing

Your theory can explain them further



Tips

Codes are our view of the data, not ultimate truth!

Go quick

This is kind of like brainstorming

Codes are provisional

Change them entirely, change the wording, or break them up as needed (e.g. is it choice or decision?)

Use short, simple codes

Preserve actions; don't abstract too much



Tips

Code for Fit (is it real) and Relevance (does it matter)

Compare

between events, participants, with your own expectations

Highlight any gaps in your understanding

This will guide your data collection



3. Axial coding

Axial codes describe how the dimensions of two or more categories relate to each other:

- Limited interaction -> second-hand news -> feeling left out
- Geographical OR emotional distance -> delaying disclosure
- Having many options -> difficult choice -> lower satisfaction

Axial coding will start happening naturally during initial coding



3. Axial coding

How do I get axial codes?

Take two dimension and relate them

E.g. if “options” “availability” is “many”, then “choice”
“difficulty” is “hard”

E.g. if “choice” “difficulty” is “hard”, then “outcome”
“satisfaction” is “low”

This can be done across categories, across incidents, and
across participants

Use mind maps, drawings, or sticky notes



4. Focused coding

Focused codes allow you to choose and label the most important codes

Example: Having many options -> difficult choice -> lower satisfaction

Focused code: “choice overload”

Focused codes are on a higher theoretical level

These are likely going to be the sections of your paper



4. Focused coding

How do I get focused codes?

Pick categories or groups of categories (created via axial coding) that have some theoretical importance AND/OR cluster categories and pick the most relevant ones

Avoid the following:

- Coding at too general a level of abstraction
- Identifying topics instead of actions/processes
- Using too many of your own words and ideas rather than the participants' words



The memo track

Step 1: Writing memos, which may contain:

- your higher levels thoughts and ideas
- ideas for theoretical sampling (who to interview next)
- diagrams
- results from the different coding steps

Step 2: Sorting your memos

Put everything together into theoretical “tracks”



Writing memos

Memos organize your thinking beyond and outside the codes

Expressing thought by “talking to yourself”

Writing things down requires you to be more specific

It may highlight assumptions and raise questions

Explore those in further analysis!



Types of memos

Operational memo: when you run into a problem during analysis

Write down the problem and your solution

Coding memo: when you feel like you want to say more about a certain incident or code

Write down a more detailed definition of a code

Analytical memo: when you feel like there are under-explored connections and evaluations

Write down a deeper evaluation



Types of memos

Discussion memo: when you have a discussion with your group

Write down the arguments and the outcome

Journal-style memo: after each activity (be it an interview, transcription, coding round)

Think about things that came up that you may not have captured sufficiently



Iterate

Do small batches (3-4 interviews) of data collection, analysis and even theory construction (to a certain extent)

An early theory may cause you to go back to your data

Try to confirm, qualify, or disprove the theory

You can even sample participants for this purpose!

This is called **theoretical sampling**





Creating a theory

Theories are practically the end product of selective coding and memo sorting

Criteria for theories: No theory exists without variations, and a description of the conditions under which they occur

not: “some people felt they had too much choice”

not: “choice overload reduces satisfaction”

but: “when choice is abundant, satisfaction is low, but when choice is limited, people seem to be more satisfied”

(followed by a detailed description of why!)



Creating a theory

How to create a theory?

The main goal is to define the logical flow of your theory

Usually related to the organization of your paper

Integrating diagrams through sorting and/or diagramming

Which method you end up doing the most kind of depends on your style and your research topic



Sorting

Start by comparing memos

Kind of like axial coding, but at a higher level, namely to outline your theory

Order them to create a story

It is okay to leave some of them out

Do this on a table*, and try a couple of arrangements

You've found the correct sorting when the story makes sense



Diagramming

Sometimes mapping your memos out in a diagram helps

One typical version of such a diagram takes the main concept, and maps the conditions and consequences surrounding it



Result: a theory

Final goal: a “grounded theory”

An abstract analytical understanding of the studied experience

An **explanation**, not just a description!

Directly supported by (contrasting) quotes from participants

Such a theory is a middle-range theory

A theory to describe a single phenomenon



Example

**Page et al. “Don’t Disturb My Circles!
Boundary Preservation Is at the Center of
Location-Sharing Concerns”**

<http://bit.ly/icwsm2012>



Example

“What consistently predicted the absence or presence of privacy concerns turned out not to be the relationship type itself. Rather, it was whether or not the situation would change existing offline relationship boundaries. However, boundaries (and thus the ensuing activities) change when the associated relationships change, even when the ‘who’ stays the same: when acquaintances become good friends sharing may increase, while sharing may slowly decrease when relationships dry up. In turn, what was once a privacy concern may no longer be, and new concerns may appear where they were absent.”



Example

“For instance [...] one interviewee explained how he turned off his Facebook wall to keep his coworkers from seeing unprofessional communications. This preserved his professional relationship boundaries. At a later point in time though, he “got over it” and turned the wall back on: “It’s fine now. I don’t really care [if they see it]...I’m not there anymore, I quit the job.” In this example, his ex-coworkers are still on Facebook with him, but his relationship with them has changed. In other words, the who is constant, but the relationship has changed from coworker to ex-coworker. This transition dispelled privacy concerns since he no longer had a professional relationship boundary to maintain.”



Example

Sinha et al. “Shopping for Clothes: From Meeting Individual Needs to Socializing”

<http://hci2017.bcs.org/wp-content/uploads/7.pdf>