Analysis

Christopher Frauenberger

User-Research Methods VU 2017

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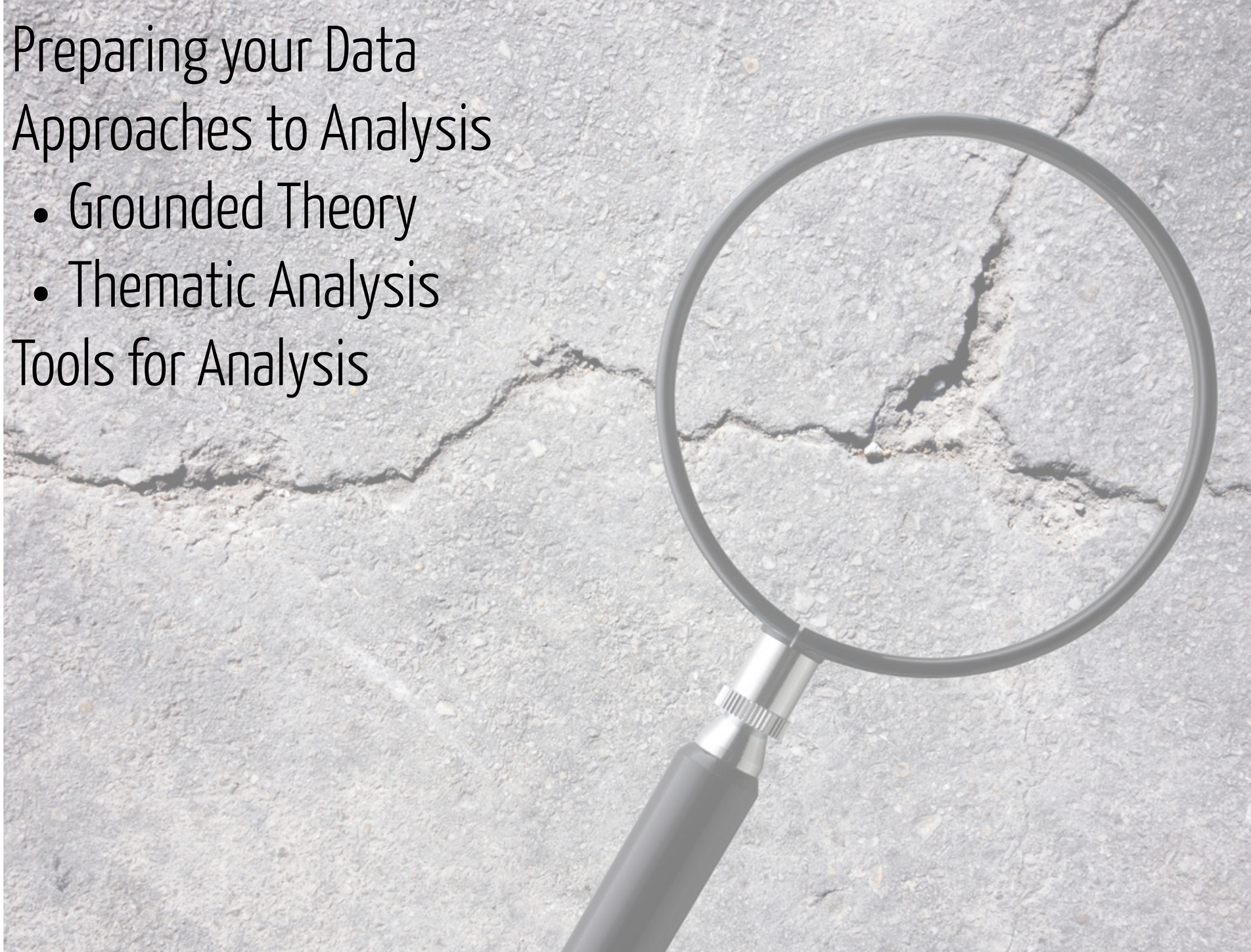
Learning Goals

Preparing your Data

Approaches to Analysis

- Grounded Theory
- Thematic Analysis

Tools for Analysis



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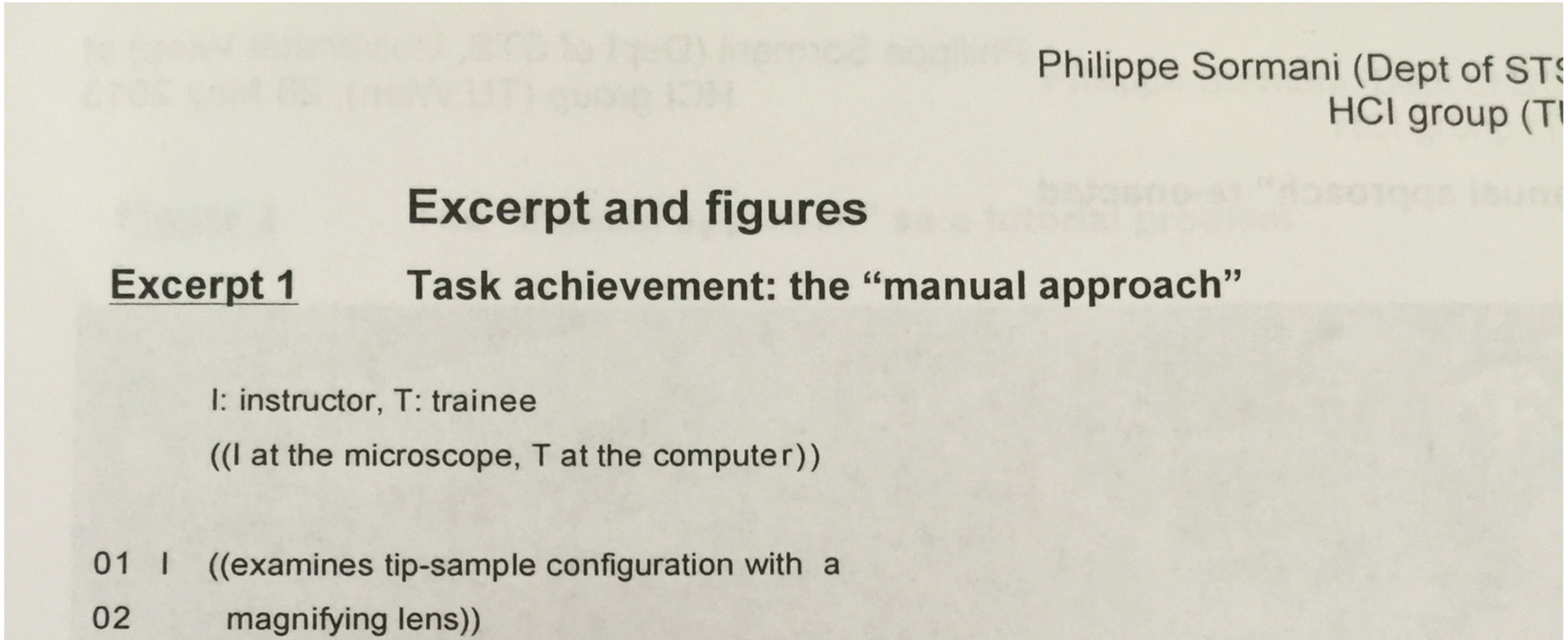
Preparing the Data

You need to decide:

- Do I need to **transcribe** the data?
- Are there any **other codes** relevant?
  E.g., pauses, tool-use, body-language
- How to **anonymise** the data?



Philippe Sormani (Dept of STS
HCI group (TU

Excerpt and figures

Excerpt 1 **Task achievement: the "manual approach"**

I: instructor, T: trainee

((I at the microscope, T at the computer))

01 I ((examines tip-sample configuration with a
02 magnifying lens))

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Preparing the Data

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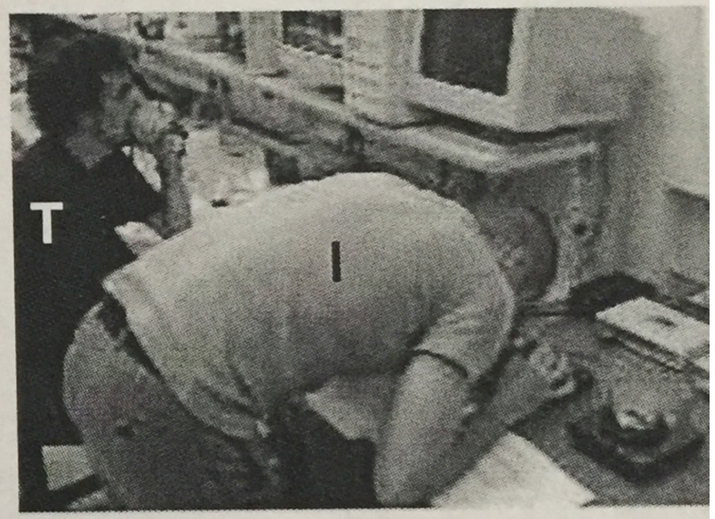
```
01  I   ((examines tip-sample configuration with  a
02        magnifying lens))
03  I   >okay=go ahead.< approa:ch.
04  T    '((presses and releases the  "approach button"
05         per mouse-click))
06        'tic  tac
07        #1
08  I   >go on,'=go on.<=
09  T            '((presses and releases the "approach
10                button"))
11               'tic tac (tic tac)
12  I   =>keep it pressed,='keep it pressed.<=
13  T                        '((keeps the button
14                            pressed))
```



#1 ((T presses the "approach" button))

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Preparing your data

Transcription conventions

[ ]	onset and end of overlap
=	latching, no discernible interval between adjacent utterances, or activities
(1s)	pause
(.)	micro-pause
he-	cut-off
so	emphasized stretch of talk
>so<	faster stretch of talk
°so°	quieter stretch of talk
?	rising intonation
.	falling intonation
,	"continuing" intonation
( )	incomprehensible passage
(go ahead)	uncertain hearing
((does))	description, comment
' |	comment on non-verbal activity, one sign per participant, if there is a verbal line, marked on t verbal line and again on the comment line

Ex.: **here |I let you have a look.**
|((hands the magnifier to the student))

#1	indication of film still placement in the transcribed activity
tic tac	computer mouse noise

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Preparing your Data

bill-dave-2.doc - Microsoft Word

Ben-Dan-1 – Version 2

Audio Transcription by AL 15/5/05; Updated by GF 22/8/05

B = Ben; D = Dan; G = Geraldine; .... = inaudible stretch
B/D/A or bda or D/A or or DA da = one of the team (different voices but I'm not sure who's who)

0:00 G: OK, so it does, I think it's recording this. Um, so, Dan and Ben, you're happy for me to be recording and ....
0:11 B/D/A: We are, I am. I am too.
0:16 G: All we do, is just ... it makes my notes look a little bit more intelligible, if I get to a point where I don't have a pen.
0:28 Um, ... where to start. .. headpiece is giving the master blog blog
0:35 B/D: Yes So this, this is what we eventually started looking at them and they said so many things but what, the thing that .. consistent is ...
[...]
1:28 G: But, the reason why we're doing it, because something that came up then that I never really got a chance to look at, and that is just wondering what happens when people use CVS, um, with Tickertape, compared to when they use CVS without Tickertape. And we, unfortunately, when we looked at the data we don't have enough data to really say what happens without Tickertape, because there's, most of what's here is with, there's only a little tiny bit, I think we only had about 500 CVS entries before Tickertape started to get used, apparently

BD: Well ... CVS. CVS would have been used. Tickertape would have been created ... part of the tape
G: there's the timeline that we think, ...this is what Dana did a couple of years ago. So we think ... Tickertape log started then, CVS got added then .... and Elvin starts over the page
2:36] BD: I know what 'email' is for; that's badly named isn't it.
2:40] G: What was that for?

Kinds of Data

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From Data to Analysis

Prepare the data to be **comprehensive** and **rich**, but **accessible** and **manageable**.

Analysis aims to make sense of the data with respect to

1. initial **focus** or research questions
2. the **target**, what you want to do with the findings (e.g., inform design, policy making, research paper)
3. **for whom** the analysis is made (e.g., designers, clients...)

Boundaries between **collecting**, **preparing** and **analysing** can be blurry - critically **reflect**!

Exercise

Meta-Analysis

On the tables, pick out the papers you have read and see how they analysed their data.

1. What kind of data did they have?
2. How did they analyse it?
3. How did they derive their results?

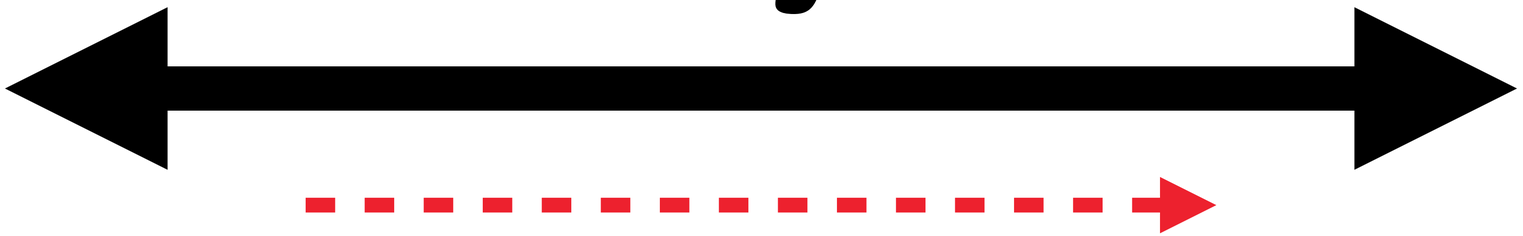
Analysis

Open
Exploratory

Fixed
Targeted

Analysis

Open
Exploratory



Fixed
Targeted

Induction versus **Deduction**

Open analytical methods are **iterative**, **inductive** processes that are **grounded** in the data and open to insights **emerging** from the data. The process can be more or less **framed** by a theoretical perspective or guiding, overall questions. Most data sources require an **interpretative** stance.

Open Analysis

Don't under-estimate

- How much **time** it takes
- The importance of **being immersed** in your data!
- Looking **beyond the obvious**
- Looking for **what is not there** as much as what is there

Always asking questions of the data

- What is going on?
- Why is it happening?
- How is unfolding?
- What does this mean?

Affinity Mapping
Thematic Coding

1. **Capture** understandings
   - Split into pairs or small groups
   - Observer reads through fieldnotes
   - Other writes one point per post-it

   Important: use same colour post-its

   Don't overly filter/analyse
2. **Structure** understandings
   - Pairs/groups join together
   - Look at post-its together
   - Cluster into related groups
   - Use a different colour post-it to label cluster
   - Review structure

See http://incontextdesign.com/contextual-design/#

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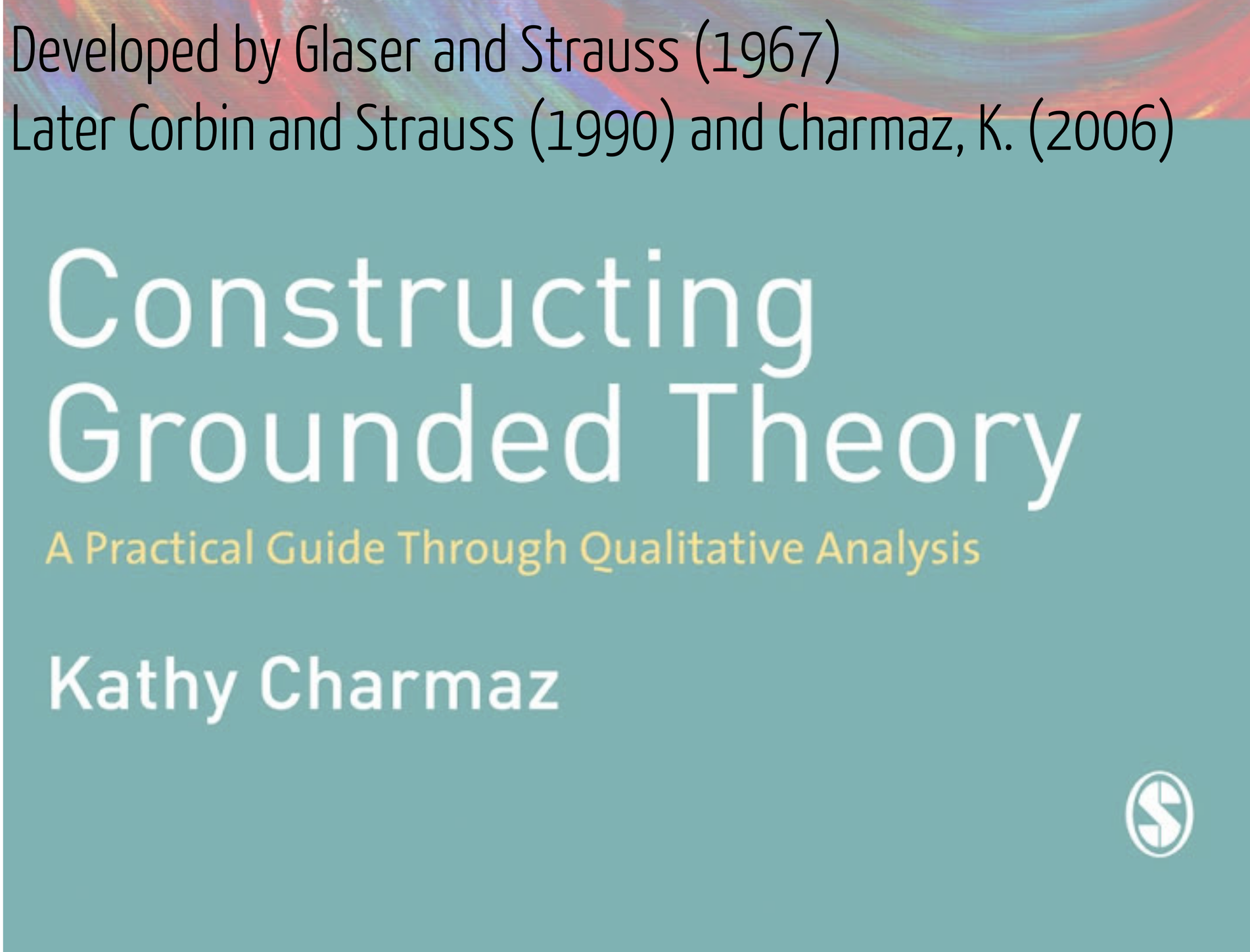
COMMUNICATION
3
WHY?
INSPIRATIONS
"IT IS VERY COMMON TO REQUEST CHANGES..."
"QUESTIONS JOIN THE PROCESS!"
CAN VIEW ANYWHERE
AMAZON
AT-A-GLANCE
"TEMPLATES HELP NON-TECHIES"
IT IS NOT "REJECTION"... IT IS "DO NOT APPROVE"
"I HAVE A QUESTION... HAS IT ALREADY BEEN ASKED?"
ASK A QUESTION, FORCE A REJECTION.
MAKE IT EASY TO TRACK CHANGES
ELIMINATE PAPER!
ALLOW ME TO EDIT
NOTES = QUESTIONS + REMINDERS TO THE NEXT PERSON
DIRECT COMMUNICATION TO 1 or MANY?
I WANT TO SEE EVERYTHING... PRINT IT OUT!
LOOK-UP
STATUS
4
NOTIFICATIONS
WHERE IS THE CAP?
WHO HAS SEEN IT?
INFLUENCE MY TO-DO LIST
"I WANT TO APPROVE CAPS STANDING IN LINE AT JEWEL"
SUCCESS
EFFICIENT
TELL THE STORY
ANALYTICS
WORK-AROUNDS
"WE NEED TO KNOW MORE OR LESS"
I TRACK MY CAPS IN AN XLS
I VIEW A DRAFT TO SOME UNSURE
Think about a COMMUNITY

Grounded Theory

Developed by Glaser and Strauss (1967)
Later Corbin and Strauss (1990) and Charmaz, K. (2006)



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Grounded Theory

Inductive approach - **no** a priori theory or hypotheses

Constant **comparison** of data, codes and memos
Codes: identifying the components
Memos: notes in parallel with data collection and coding, explore the connections

Theory emerges from the data: **collection of explanations** regarding your research focus/question

Grounded Theory Coding

Example: Experience of working in libraries

- R1: "When I was a graduate student I **love**d working in Library A because it is such a **love**ly place to work. The difficulty here is – I hate working in Library B, I think it's a slum; it's an airport lounge, erm, I can't stand Library C which is even more of a slum; I don't care for Library D very much, so I don't like working there. But when I go abroad – I've just been to Washington; working in Library E there is very pleasant and I enjoy that, although you don't get much done because people come and talk to you and show you things, there's chat and you can't do long stints, at Library E, at 3.45 they ring a bell and you have to go and have tea."
- R2: "I **love** Library G to work in, it's a pain in the arse to get things out, because you know, you, everything is, you know, you have to go and order it, but its thirty minutes minimum you know, but I **love** going in there, sitting in there and working in there. I think it's just amazing as a building and I never really thought about the extent to which the environment affects me."

Feeling

Environment

Productivity

1. Open Coding
2. Axial Coding
3. Selective Coding
4. Theoretical Coding

Features of Grounded Theory

Charmaz (1995, 2002) identifies a number of features that all grounded theories have:

- simultaneous collection and analysis of data
- creation of analytic codes and categories developed from data and not by pre-existing conceptualisations (theoretical sensitivity)
- discovery of basic social processes in the data
- inductive construction of abstract categories
- theoretical sampling to refine categories
- writing analytical memos as the stage between coding and writing
- the integration of categories into a theoretical framework.

Grounded Theory Examples

- R1: "When I was a graduate student I **loved** working in Library A because it is such a **lovely** place to work. The difficulty here is – I hate working in Library B, I think it's a slum; it's an airport lounge, erm, I can't stand Library C which is even more of a slum; I don't care for Library D very much, so I don't like working there. But when I go abroad – I've just been to Washington; working in Library E there is very pleasant and I enjoy that, although you don't get much done because people come and talk to you and show you things, there's chat and you can't do long stints, at Library E, at 3.45 they ring a bell and you have to go and have tea."
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Source: Dominic Furniss, Sian Lindley, TUTOREM presentation

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-What is this work?
-What are work's requirements?
-What do they mean by slum and airport lounge?
-Who comes to talk to them?
-3.45? What is their normal working schedule?
-In what way does environment influence them? Being productive or enjoyment?

Source: Dominic Furniss, Sian Lindley, TUTOREM presentation

Grounded Theory Examples

"Mein Kinder sind sehr besorgt um mich. Ich glaube sie fühlen sich schlecht, weil sie so weit weg wohnen, und ich ja jetzt alleine bin, nicht"

"Ich kann ihnen ja schlecht sagen, ich will nicht, dass sie sich nicht um mich kümmern sollen..."

"Ich habe schon recht lange ein Handy, mein Sohn hat mir das damals gegeben, ich glaub ein altes von ihm. Er hats mir dann auch erklärt"

"Ich hab einen Weg gefunden, der alle glücklich macht - meine Kinder sorgen sich nicht, und ich muss mich nicht herumkommandieren lassen"

"Solange ich noch klar denken kann, brauch ich das nicht"

"Aber ich kenn jetzt den Jungen von oben... der ist sehr nett und freut sich über mein Bier"

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Measures of Success

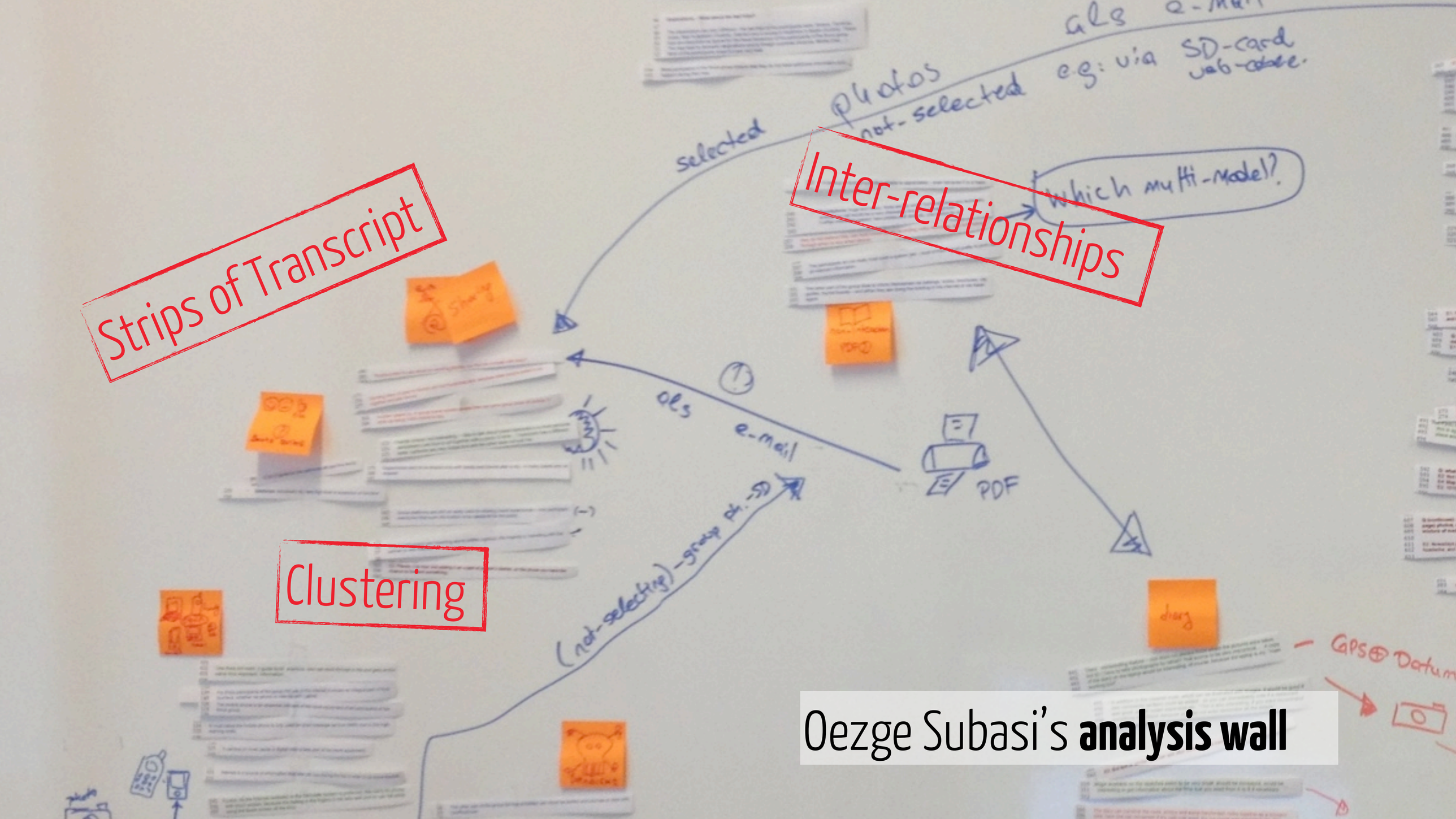
Thematic Analysis

A pragmatic method for **identifying**, **analysing** and reporting **patterns** (themes) in data, without subscribing to implicit **theoretical commitments** of Grounded Theory (supposedly). Sometimes, it is also argued that Grounded theory is more about constructing a theory that explains the data, while es thematic analysis **encapsulates themes** and reports on them.

Thematic Analysis
6 Phases

1. Familiarise yourself with data
2. Generate initial codes
3. Search for themes
4. Review themes
5. Define and name themes
6. Produce the report

Again, **keep close to the data**
initially, don't abstract
codes too early



Oezge Subasi's **analysis wall**

Naemi Luckner's **analysis wall**

Tools

Application	Type	License	Source	Last Release	Analyses	OS Supported	Tools
Aquad	Client	Free - GPL	Open	2015-07	Text, Audio, Video, Graphics	Windows	Coding, Sequnce Analysis, Exploratory Data Analysis
ATLAS.ti	Client	Proprietary	Closed	2017-05	Text	Windows, macOS, iPad, Android	Coding, Aggregation, Query, Visualisation
Cassandre	Client	Free - GPL	Open	2016-01	Text	All (java-based)	Coding
CLAN	Client	Free - GPL	Open	2017-08	Text	Windows, macOS, Linux	Coding
Coding Analysis Toolkit (CAT)	Web-based	Free - GPL	Open	2014-06-28[3]	Text	All (web browser)	Coding
Codit.co	Web-based	Proprietary	Closed	2017-10-11[4]	Text	All (web browser)	Coding
Compendium/CompendiumNG[5]	Client	Free - LGPL	Open	2014-02	Text	All (java-based)	Coding
Dedoose	Web-based	Proprietary	Closed	2016-12	Text, Audio, Video	All (web browser)	Coding, Query, Visualisation, Statistical Tools
ELAN	Client	Free - GPL	Open	2017-01-09	Video Audio	Windows, macOS, Linux	Coding
f4analyse	Client	Proprietary	Closed	2017-07	Text	Windows, macOS, Linux, iPad, Android	Coding
HyperRESEARCH	Client	Proprietary	Closed	2017-07-20[6]		Windows, macOS	
KH Coder	Client	Free- GPL	Open	2015-12-29[7]	Text	Windows, Linux, macOS	
MAXQDA	Client	Proprietary	Closed	2017-03-28	Text, Images, Audio, Video	Windows, macOS	Coding, Aggregation, Query, Visualisation, Statistical Tools
NVivo	Client	Proprietary	Closed	2017-02	Text	Windows, macOS	Coding, Aggregation, Query, Visualisation
QDA Miner	Client	Proprietary	Closed	2016-11		Windows	
QDA Miner Lite	Client	Proprietary	Closed	2017-01-12	Text	Windows	Coding
Qiqo	Client	Proprietary	Closed	2016-09		Windows, Android	
QDAP: Qualitative Data Analysis Package (qdap) (R package)	Client	Free- GPL	Open	2017-09 [8]	Text	Windows, macOS, Linux	Word clouds, statistical analysis, visualization
Quirkos	Client	Proprietary	Closed	2017-08-29	Text	Win, macOS, Linux,[9] Android	Coding, Query, Visualisation
RQDA (R package)	Client	Free- GPL	Open	2017-07[10]	Text	Windows, macOS, Linux	Coding, Aggregation, Query, Visualisation

https://en.wikipedia.org/wiki/Computer-assisted_qualitative_data_analysis_software

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Tools

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  - Planning for Software Use
  - Team working
  - Analytic Tasks & Software
  - Analysing Survey Data
  - Analysing Visual Data
  - Programming Support
  - CAQDAS Support
- Conferences

CAQDAS

ESRC National Centre for Research Methods

QUIC - Qualitative Innovations in CAQDAS

Choosing an appropriate CAQDAS package

We provide a range of information about CAQDAS packages and these materials are designed to help researchers make informed choices between packages, to plan for their effective use and to manipulate their tools in creative ways to meet methodological and practical needs.

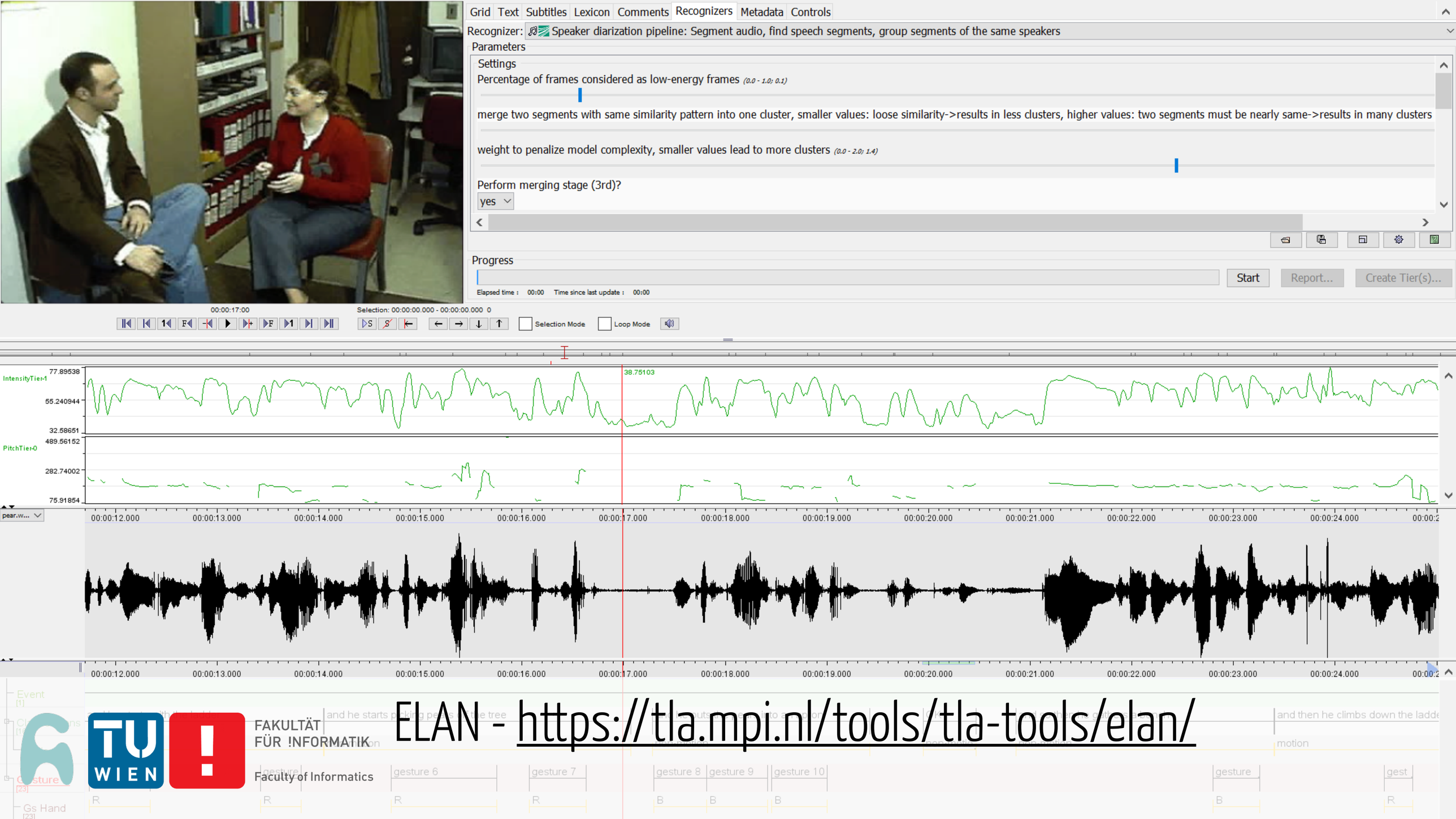
You can access material by clicking on the links below. If you are new to the area of Computer Assisted Qualitative Data Analysis (CAQDAS), we recommend you read the CAQDAS definition and Choosing a CAQDAS Package pages first.

CAQDAS definition: our description and use of the term CAQDAS

Choosing a CAQDAS Package: Overview of Common Functionality - a summary of software as a starting point for thinking about which package may be most suited to the type of project and data you are working with and the way you like to work. . It focuses mainly on those traditionally categorised as CAQDAS packages and highlights some key distinguishing elements in order to provide you with an early impression of each package. It is meant to be read ahead of the individual software reviews.

The following reviews provide up-to-date comparative information about selected CAQDAS packages. We review both commercially available and freeopen source products and aim to raise awareness about the less well-known options as well as the leading packages which are well established in the field. The individual software reviews are intended to be read in conjunction with the 'Choosing a CAQDAS Package Working Paper' which provides a more general commentary of common CAQDAS functionality. Review documents do not provide an exhaustive account of all the features and functions provided by the software but are designed to highlight some of

https://www.surrey.ac.uk/sociology/research/researchcentres/caqdas/support/choosing/



ELAN - https://tla.mpi.nl/tools/tla-tools/elan/

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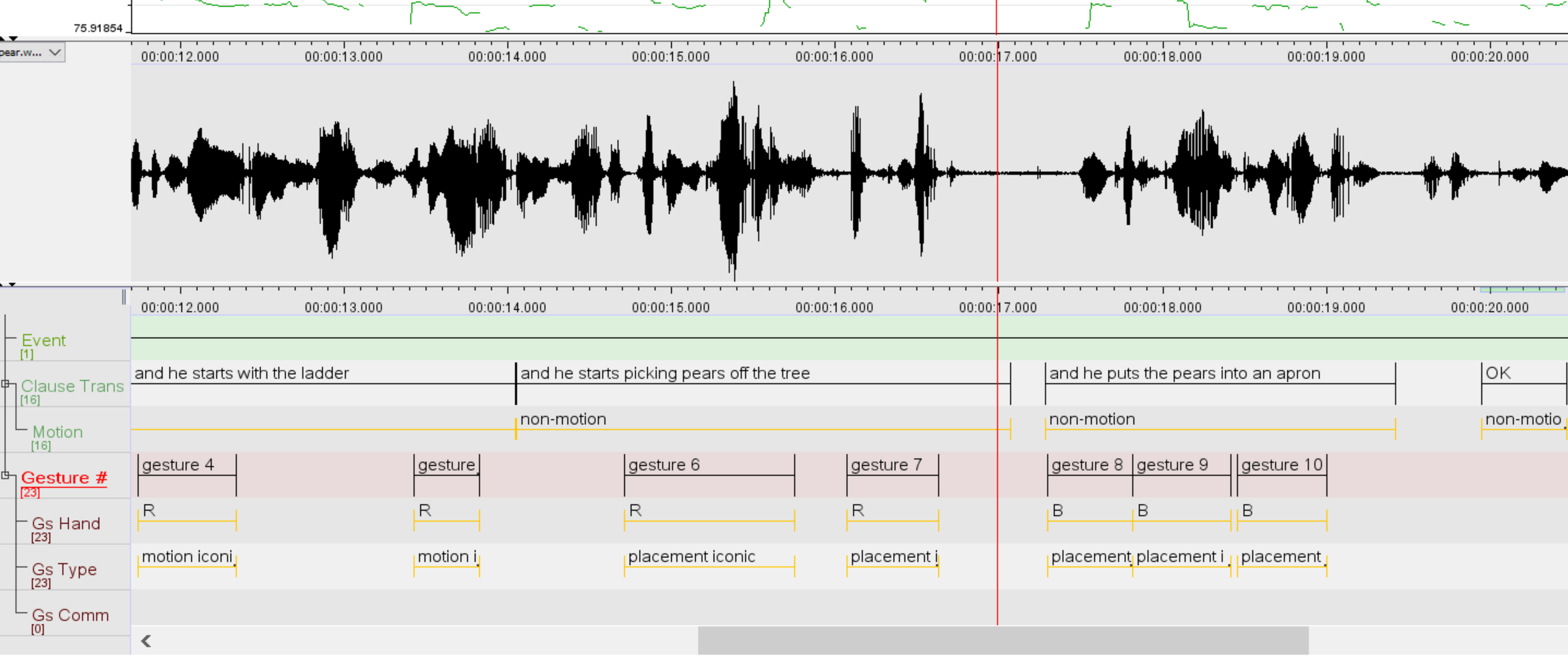

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ELAN - https://tla.mpi.nl/tools/tla-tools/elan/

1. Right Tool for the Job
2. Reflect on the Impact of Tools

Case Study

Muße

URM PR 2013

Gerfried Mikusch
Janis Mena Meißner
Jakob Frohnwieser
Stefan Paula

Focus

1. What is **Muße** to digital natives in the Austrian urban environment?
2. What role does technology play in common leisure activities?

Methods

1. **Observations**: 8 locations around Vienna
2. **Interviews**: 12 semi-structured interviews
3. Image-based **experience sampling**: 3 participants, 1 week, follow up interviews
4. Survey

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Thematic Analysis

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Methods

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4. Survey

Thematic Analysis

Descriptive statistics

Analysis

Step 1: statements from transcribed interviews written on coloured post-its (yellow: umbrella terms; green: participant quotes; pink: emotional descriptions)

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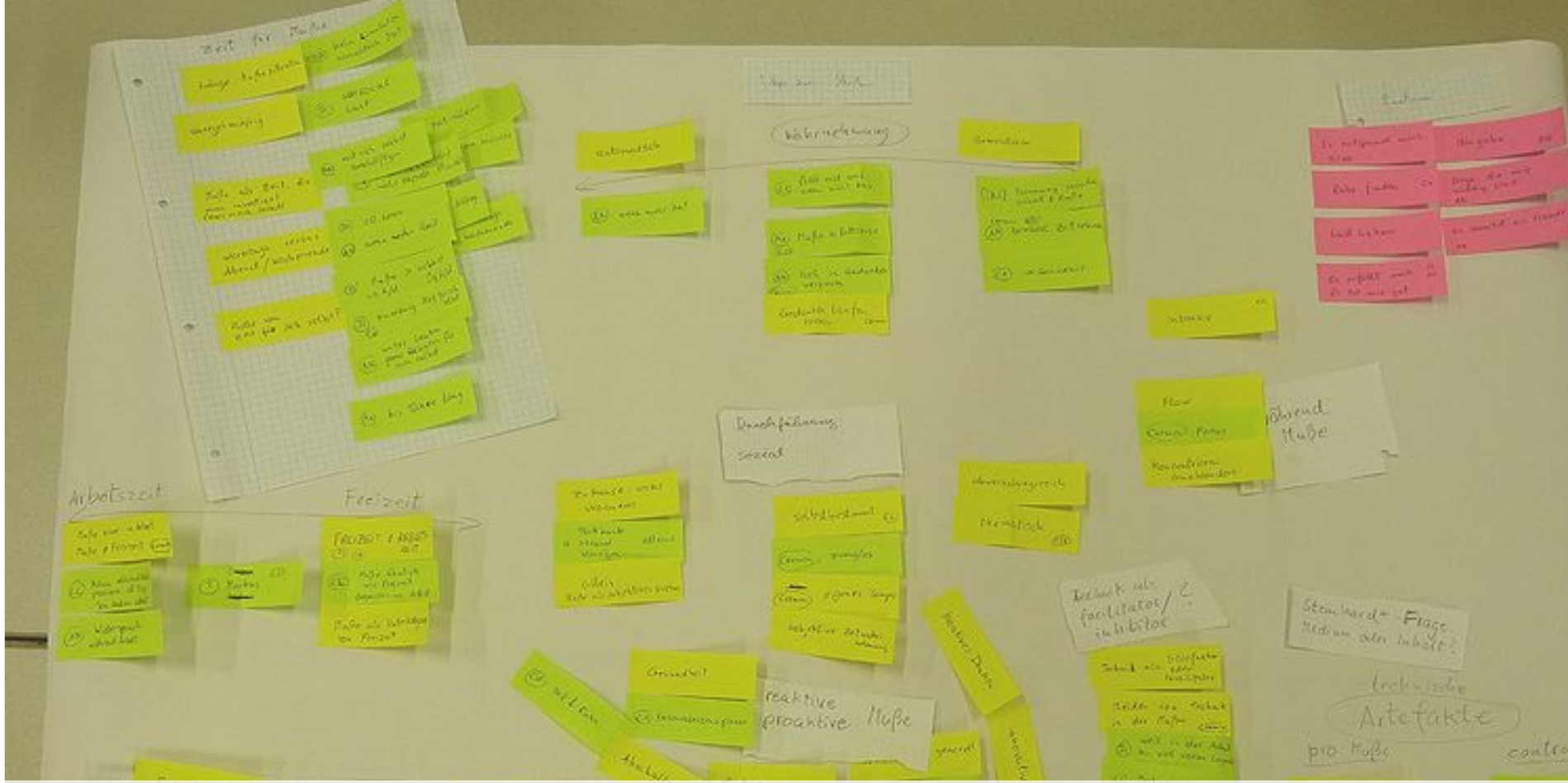

Step 2: structuring the understanding, reviewing/iterating on emerging groupings

Analysis

Step 3: final overview/structure of the themes & issues

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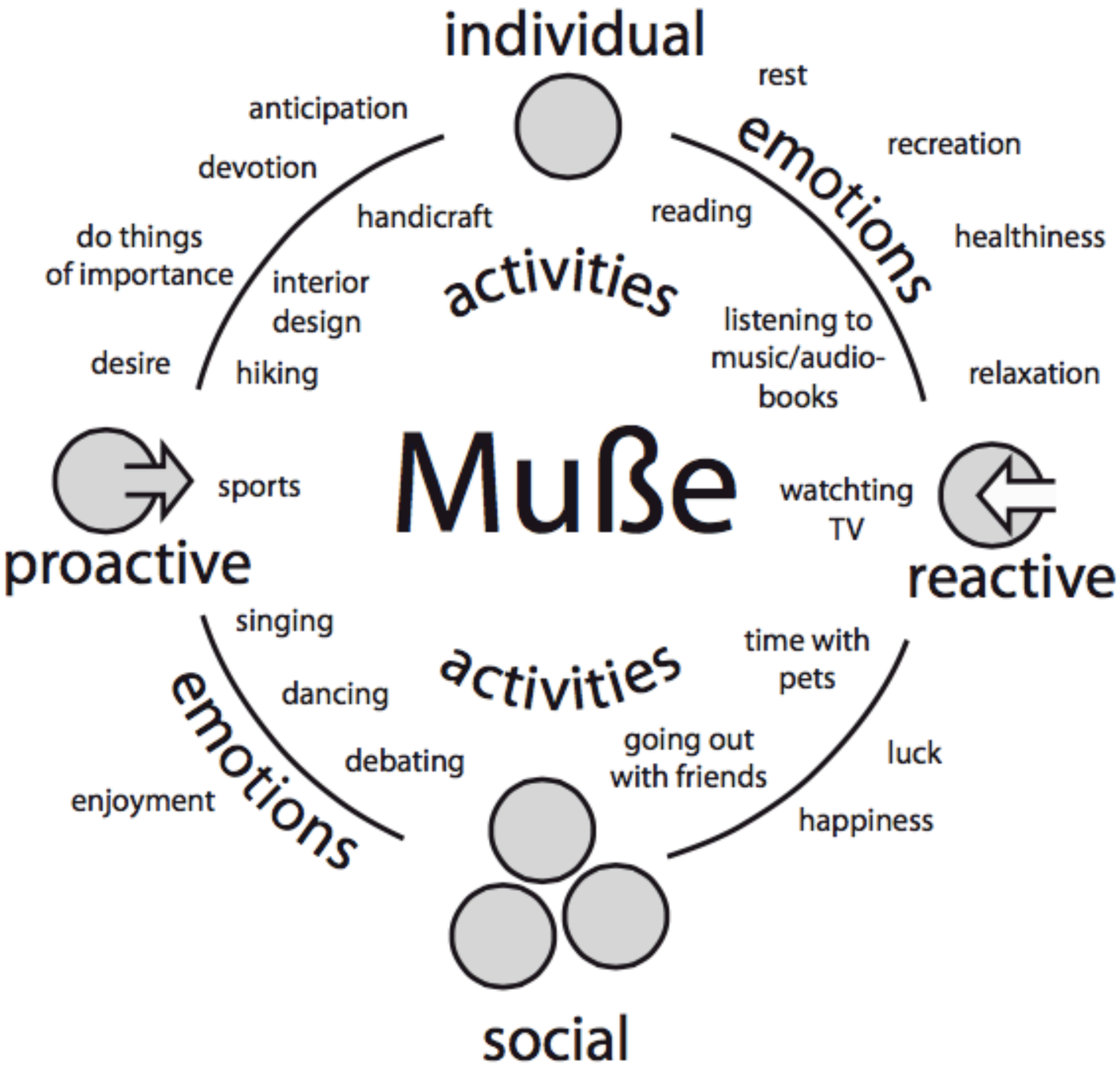
individual
rest
recreation
healthiness
relaxation
emotions
reading
listening to music/audio-books
activities
anticipation
devotion
handicraft
do things of importance
interior design
desire
hiking
Muße
proactive
sports
reactive
watchting TV
singing
dancing
debating
enjoyment
emotions
activities
time with pets
going out with friends
luck
happiness
social

Paper

De Otio Technologico.
About Muße and Leisure in the Information Age.

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ABSTRACT
This paper is about *Muße*, a German word hardly used nowadays and even considered as somehow old-fashioned especially by the younger generation. Nevertheless, the goal of this work is to portray *Muße* and its meaning from a modern-day users perspective. We explore the influence of technology in situations of *Muße*, which along with a clear distinction between *Muße* as a reflective proactive and reactive practice contrasting to regular free time introduces a new angle on this topic within the HCI domain. By conducting multiple user research methods we gained up-to-date insights and a profound understanding of the concept of *Muße*. In the first phase rich qualitative data was collected and analyzed as basis for a subsequent quantitative phase comprising an online survey. The results suggest that *Muße* is still an important part of everyday-life which has been surprisingly consistent over the course of the last centuries.

Author Keywords

INTRODUCTION
The paper at hand is about leisure. Not about any arbitrary free time but instead it focuses on a very certain kind which the ancient Greeks named schole, the Romans called otium and the German-speakers still title *Muße* while the English language omits to have a specific word for. The following introductory consideration of its relevance within cultural history shall provide a better understanding for the notion of *Muße* (especially for non-German speakers) as well as outline our motivation to examine it as a still highly relevant topic, even in the age of digital natives which we understand according to Prensky [11] as an technology-affine generation born after 1980.

Culture Historical Background
In the ancient world leisure used to be a desirable ideal. The Greek gentlemen engaged primarily in schole since it was one of the major characteristics that distinguished them from their slaves who had to do the disagreeable a-scholia (work) for

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