

# Grounded Theory as a Research Method

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# Outline of Presentation

- Grounded Theory techniques for data analysis
  - ◆ Open Coding - *for conceptual understanding*
  - ◆ Constant comparison
  - ◆ Memoing
- Discovering the Core Category - *research focus*
  - ◆ Selective coding
- Theoretical coding - *relationships between categories leads to emergent theory*
- Generalizability
- Difficulties with the method

# Coding

- What is it ?
- How to do it ?

## Strengths

- ◆ Insight into the underlying issues
- ◆ Forces deep consideration

## Weaknesses

- ◆ Time consuming
- ◆ Tendency to lose focus

# Key Point Coding

- Identify key points in the data
- P indicates 'key point'
- P 1, P 2, etc
- $P_X$  1,  $P_X$  2,  $P_X$  3 etc.
- Coding with an open mind
  - ◆ No preconceived ideas
  - ◆ No mental baggage
- $P_X$  3a,  $P_X$  3b – indicates a revisit to data

# Key Point Coding

Id	Key Point	Code
P <sub>x</sub> 1	CM was set up for better control of in-house software development.	control of software S/W development
P <sub>x</sub> 2	We need a CM system at minimum cost	company req'ment for CM system
P <sub>x</sub> 3	Maestro II was selected as CM tool	CM as tool
P <sub>x</sub> 4	Controlling changes was regarded as an integral part of the software process	S/W changes control of software
P <sub>x</sub> 5	CM Projects Department has been officially formed	recognition of CM
P <sub>x</sub> 5a	All future work will mandate CM on all data streams	recognition of CM support for CM

# What to do next

- In traditional qualitative data analysis
  - ◆ Collect all the data from  $N$  replicates
  - ◆ Analyse all the data

# Turning information into meaning



*What to do with that meaning*

*Restructure it into new meaning*

# What to do next in GTM

- Constant Comparison
- Compare each code with predecessors
- Looking for patterns
- $P_x2$  with  $P_x1$

# Key Point Coding

Id	Key Point	Code
P <sub>x</sub> 1	CM was set up for better control of in-house software development.	control of software S/W development
P <sub>x</sub> 2	We need a CM system at minimum cost	requirement for CM system

# What to do next in GTM

- Constant Comparison
- Compare each code with predecessors
- $P_x3$  with  $P_x1$
- $P_x3$  with  $P_x2$

# Key Point Coding

Id	Key Point	Code
P <sub>x</sub> 1		control of software S/W development
P <sub>x</sub> 2		requirement for CM system
P <sub>x</sub> 3		CM tool

# What to do next in GTM

- Constant Comparison
- Compare each code with predecessors
- Looking for patterns
- $P_x4$  with  $P_x1$
- $P_x4$  with  $P_x2$
- $P_x4$  with  $P_x3$

# Key Point Coding

Id	Key Point	Code
P <sub>x</sub> 1		control of software S/W development
P <sub>x</sub> 2		requirement for CM system
P <sub>x</sub> 3		CM tool
P <sub>x</sub> 4		changes control of software

# Memoing

- The use of memos – makes Researcher think reflectively about meaning
- Their contribution – builds a repository of meaning

# What to do next in GTM

- Compare each (and every) code
- Find patterns
- $P_X1$ ,  $P_X4$ ,  $P_X11$ ,  $P_X22$ ,  $P_X27$
- Code = 'Used for control of software development'

# Emergence of Concepts

Used for control of software development – P<sub>X</sub>1, P<sub>X</sub>4, P<sub>X</sub>11, P<sub>X</sub>22, P<sub>X</sub>27

Perceived as extra work – P<sub>X</sub>12, P<sub>X</sub>13, P<sub>X</sub>13a

Recognised need for a CM system – P<sub>X</sub>2, P<sub>X</sub>3

CM recognised by company – P<sub>X</sub>5, P<sub>X</sub>5a, P<sub>X</sub>17, P<sub>X</sub>19, P<sub>X</sub>23, P<sub>X</sub>24, P<sub>X</sub>29

Use of established CM processes – P<sub>X</sub>6, P<sub>X</sub>7, P<sub>X</sub>8, P<sub>X</sub>30

# Emergence of Categories

- Compare each concept in turn
- Constant comparison
- Glaser & Strauss (1967, pp. 105-115)
  - ◆ *Used for control of software development*
  - ◆ *Used for control at system level*
  - ◆ *Proof of control*
  - ◆ *Need to control the introduction of software*

# Open Coding Rules

- Rule 1 – ask these 3 questions
  - ◆ What is this data a study of?
    - ◆ reminds the researcher of original intention.
  - ◆ What concept or category does this incident indicate?
    - ◆ stops researcher getting lost.
  - ◆ What is actually happening in this data?
    - ◆ identifies the social, structural, psychological processes driving the events.

# Open Coding Rules

- Rule 2 – analyse data sentence-by-sentence not paragraphs, not pages. Use constant comparison to existing codes and incidents.
- Rule 3 – do your own coding with no preconceived codes.
- Rule 4 – interrupt coding often to write memos – promotes thinking and idea clarification – emergent concepts.
- Rule 5 – stay within substantive area until core variable is saturated.
- Rule 6 – no face-sheet variables.

# Other considerations in GT

## ■ Use of literature

- ◆ Field work before literature search
- ◆ A basis of professional knowledge (Strauss & Corbin, 1998)
- ◆ Accumulated knowledge (Dey, 1993)
- ◆ Use any material bearing in the area (Glaser & Strauss, 1967)

# GT and Case Study

- investigate contemporary phenomena
- real-life contexts
- boundaries between phenomena and contexts are not clear

# Difficulties with GT Coding

- Coding by Micro-Analysis
- Strauss & Corbin (1998, pp. 65-68)
- Line by line
- Word by word

# Difficulties with Micro-Analysis Coding

- Two drawbacks
  - ◆ Very time consuming
    - ◆ Each interview = mass of data
    - ◆ Data + noise
  - ◆ Confusion at times
    - ◆ lost in all the minutia data

# Interview Text

“From my perspective, the main challenge is in the changes in technology and the product improvement done by the COTS component suppliers.

You can never guarantee that if you are buying several components, they will all be the same”.

Interview Text	Codes
From my perspective	
the main challenge is	
in changes in technology and	
the product improvement	
done by the COTS supplier.	
You	
can never guarantee that	
if you are buying several components,	
it's like buying	

Interview Text	Codes
From my perspective	Personal view
the main challenge is	Assertion
in changes in technology	Changes in technology
the product improvement	Changes in product
done by the COTS supplier.	Changes by Supplier
You	Pronoun shift
can never guarantee that	Assertion: Uncertainty
if you are buying several components,	Procurement
they will all be the same.	Product consistency Necessary condition

# Difficulties with Axial Coding

- Two drawbacks
  - ◆ Coding paradigms
    - ◆ Very time consuming
    - ◆ Theory becomes descriptive
  - ◆ Confusion at times
    - ◆ lost in the coding paradigm

# Conclusions

- GT is an acquired skill
- GT uncovers deep issues
- GT must be handled carefully
- GT is powerful

# Grounded Theory

is a powerful research method for  
collecting and analysing  
research data.

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