

# HUMAN-COMPUTER INTERACTION

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## GROUNDED THEORY ANALYSIS

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LAST WEEK



# LAST WEEK

When are qualitative methods most appropriate to use?

What are two outcomes of ethnography in the context of HCI?

Describe the difference between *generalization* and *representation*.

What is a setting?

What data collection methods are used in ethnography?

What is the point of participant observation?

What are three purposes interviews serve in the context of ethnography?

When does data analysis start with ethnography?

How do we attain rigor when field data is messy?

# GROUNDED THEORY



# QUALITATIVE DATA ANALYSIS

## Grounded Theory\*

One of the most widely used qualitative analysis framework in today's social sciences

Used to generate substantive theory from data

\* Glaser, B. G. and Strauss, A. The Discovery of Grounded Theory. Aldine DeGruyter, 1967.

\* Strauss, A. L. and Corbin, J. Basics of Qualitative Research. Sage Publications, 1990.

# KEY CONCEPTS

An **approach** to describe relationships where little is known or to provide a fresh take on existing knowledge

A **method** to systematically build integrated sets of concepts from systematically obtained empirical data

A **process** of composing knowledge through intimate contact with subjects and events under study

A **theory** that is shaped by data as well as by the researcher



# KEY CONCEPTS: INDUCTION

Theory is developed from within the data

An inductive approach

The researcher begins with an area of study and allows the theory to emerge from the data (as opposed to a pre-conceived theory in mind)

Theory is developed by moving from the specific to the more general

Resulting theory fits at least one dataset perfectly

# KEY CONCEPTS: FIT

A theory must fit, be relevant and adaptable

## Fitness

The categories (elements) of the theory must fit the data

Data should not be forced to fit pre-existing categories

Categories emerge from data and are modified by data

## Relevance

A theory should be able to explain what happened, predict what will happen and interpret what is happening

## Adaptability

A theory must be modifiable, based on new data



# KEY CONCEPTS: SUBJECTIVITY

Important to minimize subjectivity by:

Maintaining an open disposition, a willingness to be surprised

Think comparatively; comparing incident to incident

Study multiple viewpoints of the phenomena in question

Researcher should periodically step back and ask 'what is going on here?'

# THE PROCESS

Reading (and re-reading) a textual database (e.g., a corpus of field notes)

“Discovering” or labeling variables (called categories, concepts and properties)

Identifying interrelationships



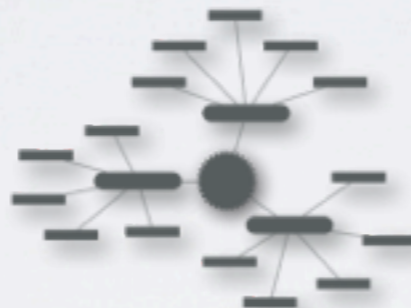
# THE PROCESS\*



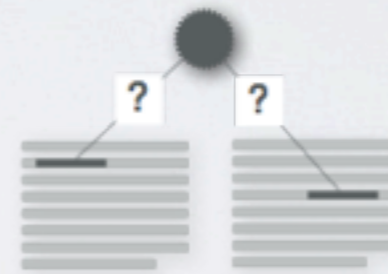
Open Coding



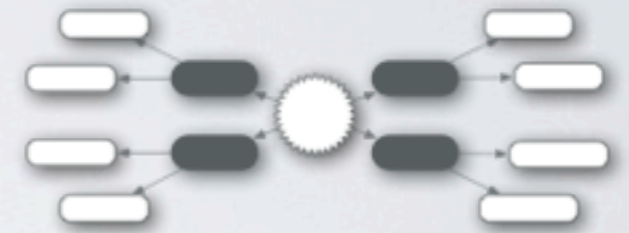
Axial Coding



Selective Coding



Comparative  
Analysis



Theory Building

\* Glaser, B. G. and Strauss, A. The Discovery of Grounded Theory. Aldine DeGruyter, 1967.

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# OPEN CODING

Coding for concepts that are significant in the data as abstract representations of events, objects, relationships, interactions, etc.

Reliability analysis ensures objectivity of coding

Cohen's Kappa,  $>.70$  acceptable

{abusing the robot}

I kicked it before and I was told not to...  
[laughs]...when it first came.

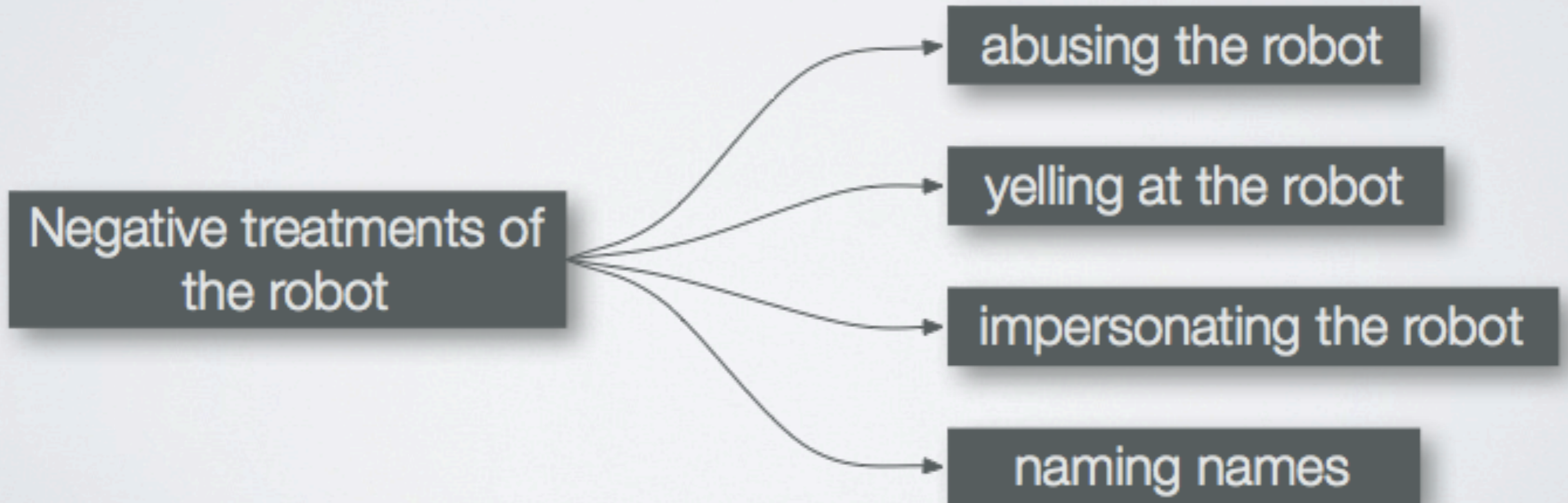
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\* Mutlu, B. & Forlizzi, J. (2008). *Robots in Organizations: Workflow, Social, and Environmental Factors in Human-Robot Interaction*. In Proceedings of HRI'08 — Winner of the best paper award.



# AXIAL CODING

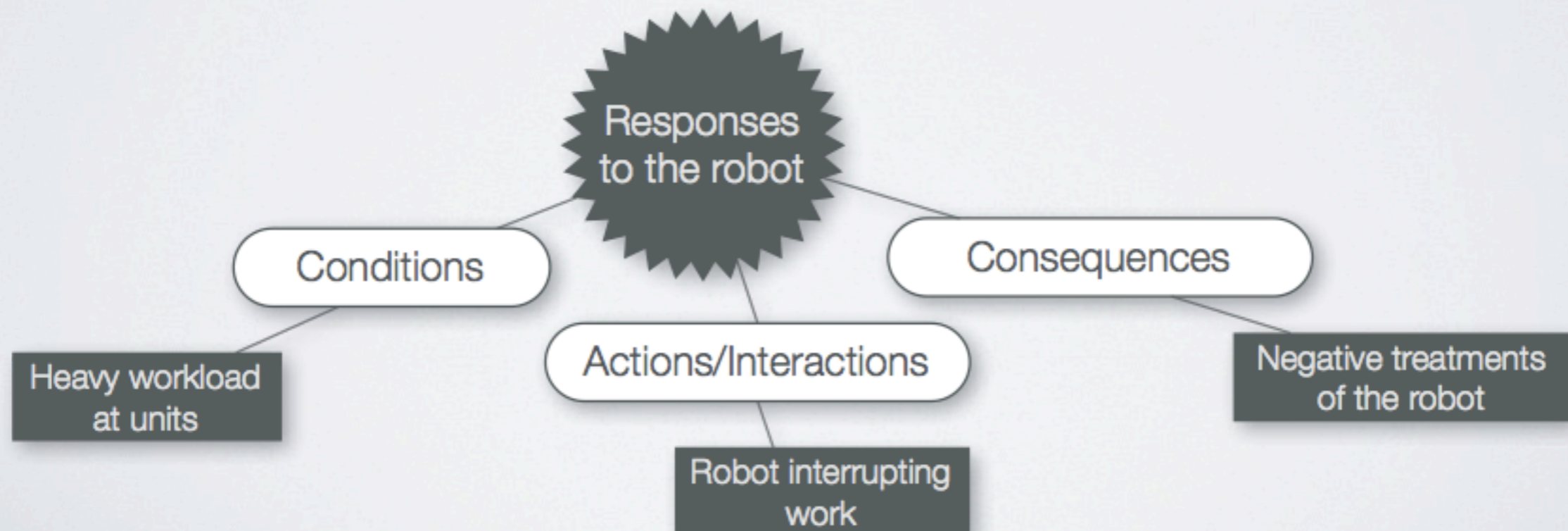
Concepts are categorized into explanations of arising phenomena (e.g., repeated events, actions, and interactions)



# SELECTIVE CODING

Integrate categories into a central paradigm—a “big picture” of the findings through building relationship across categories and contextualizing phenomena in data

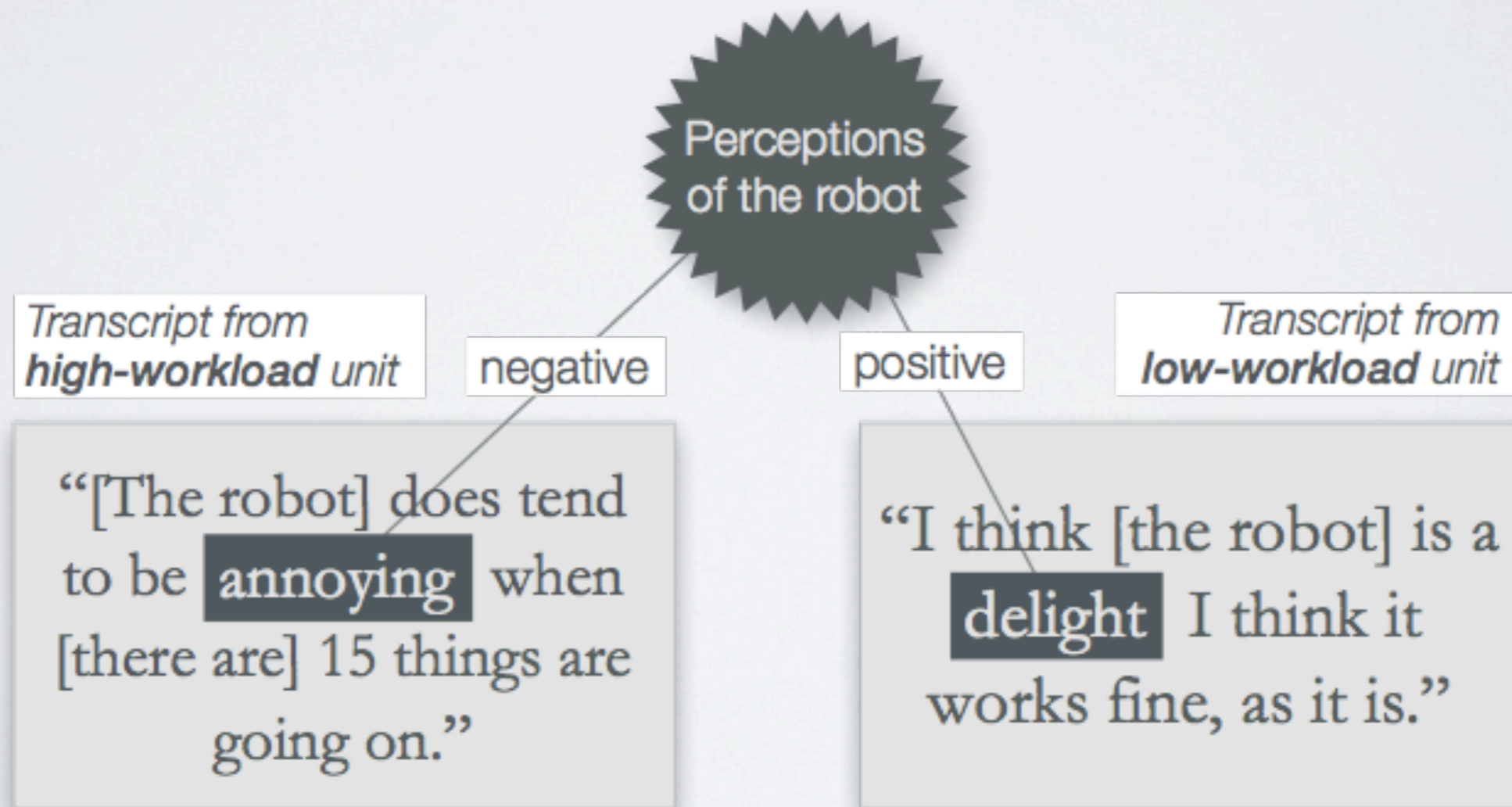
Diagramming or tables could be used to build relational models





# COMPARATIVE ANALYSIS

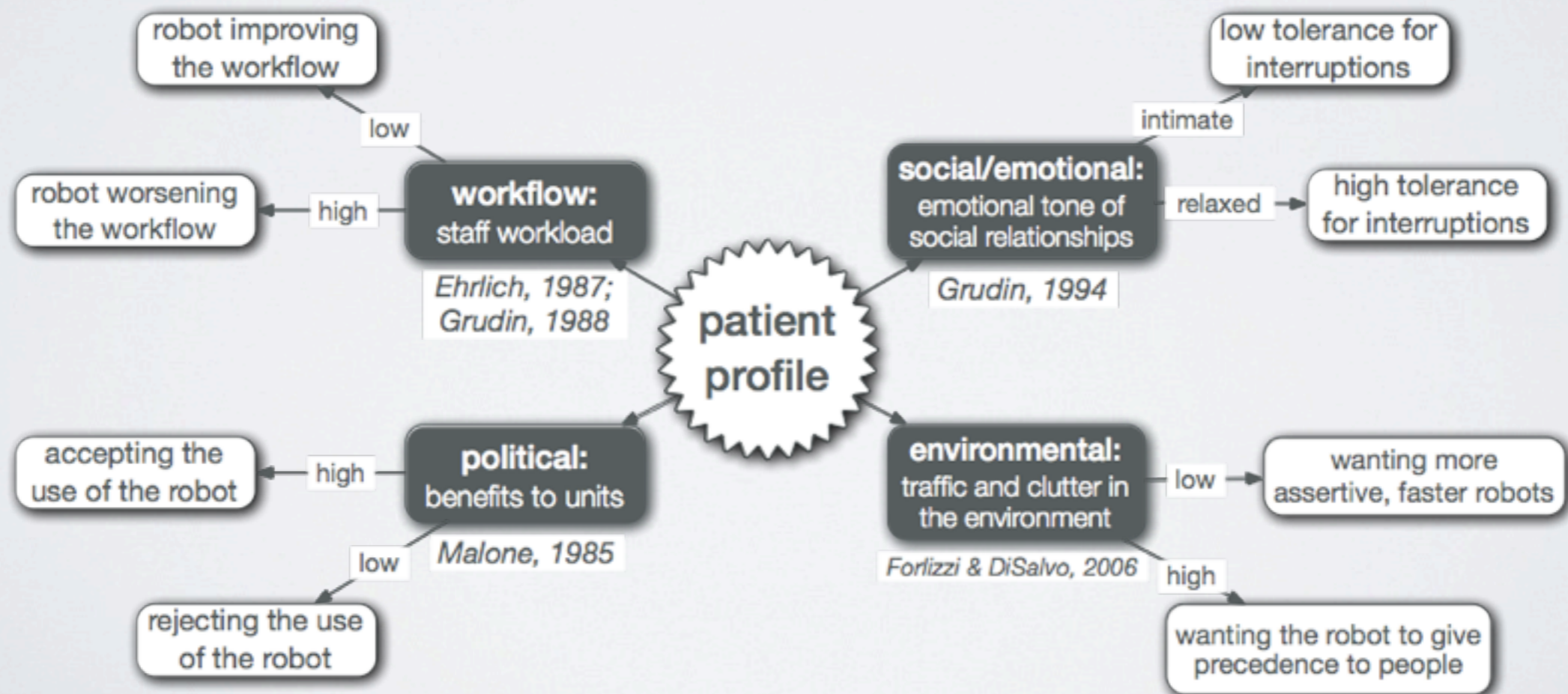
Compare the central phenomenon across several dimensions to understand how it is affected by social, physical, or organizational structures



# THEORY BUILDING

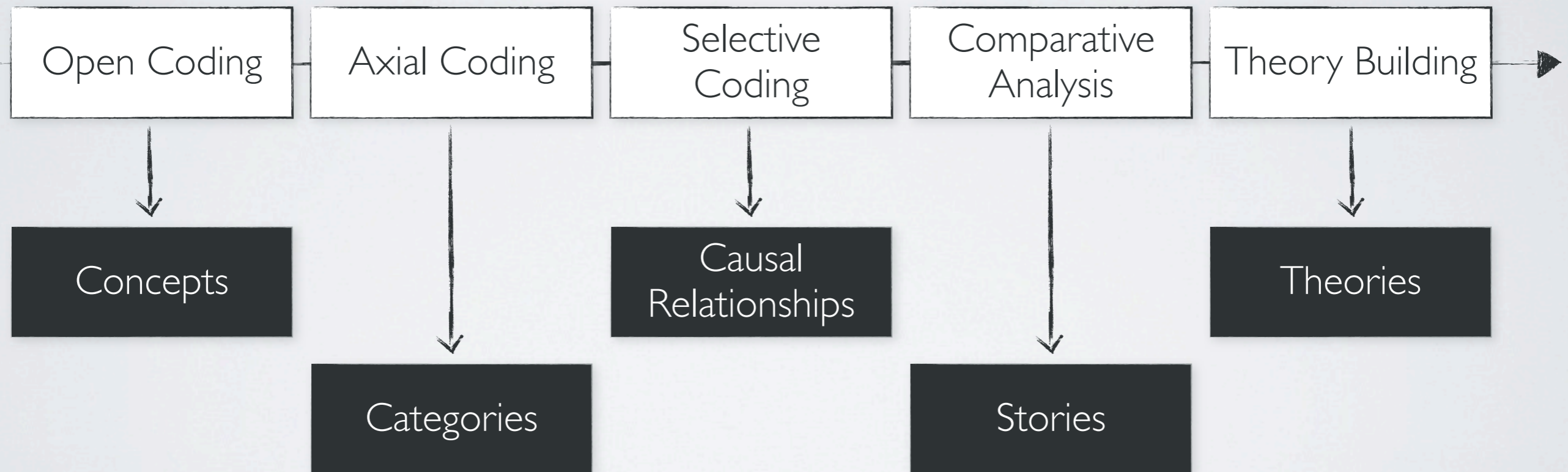
Build a final theoretical model based on the results of the comparative analysis

“Embed” existing theory in this model





# RECAP OF PROCESS





THANKS!

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