



MONASH University

Information Technology

# FIT5190 Introduction to IT Research Methods

## Lecture 12

### Qualitative Data Analysis in Case Study Research

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# Learning objectives

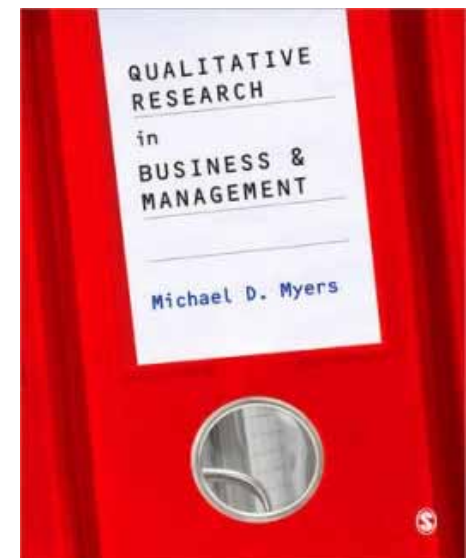
- Understand
  - The nature of qualitative data analysis
  - The process of collecting and analysing qualitative data
  - Major assumptions, methods and techniques used for conducting research with qualitative data

# Overview

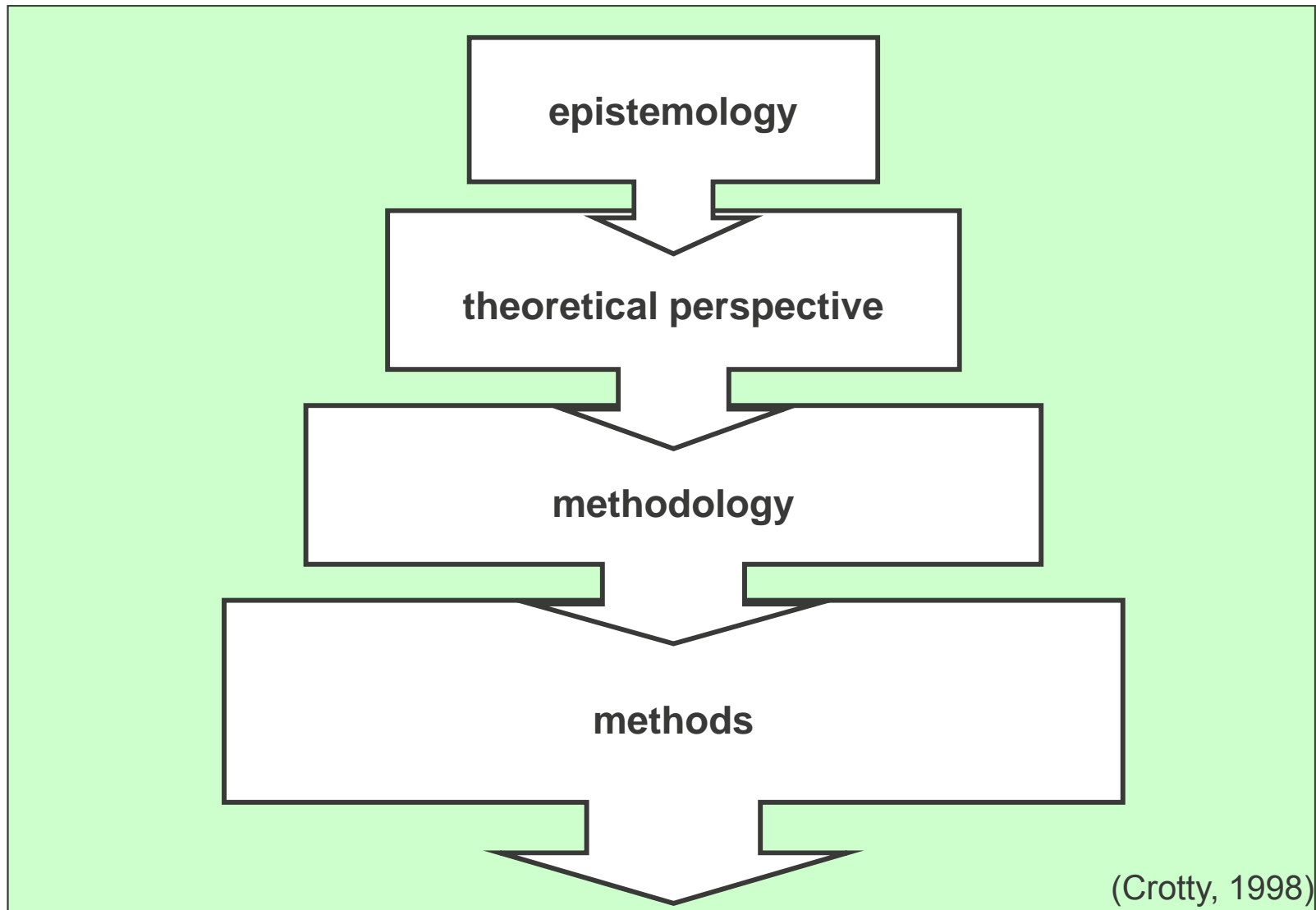
- This lecture introduces students to the nature and processes of collecting and analysing qualitative data.
- Qualitative (textual) data is more commonly used in social sciences; however, it is also widely used to investigate, so called soft, organisational, community and user/human issues in design, implementation and use of ICT.
- This lecture will cover major assumptions, methods and techniques used for conducting research with qualitative data.

# Qualitative Research

- Aim is to understand what people do within their relevant contexts
- Questions
  - What is happening?
  - Why is it happening?
  - How has it come to happen this way?
  - When did it happen?
- A useful text



# The research process



# Myer's Framework of Qualitative Research

Philosophical Assumptions

(positivist, interpretive, critical)



Research Methods

(action research, case studies, ethnography, grounded theory)



Data collection technique

(interviews, fieldwork, using documents)



Data analysis approach

(hermeneutics, semiotics, narrative analysis, etc)



Written record

(thesis, book, journal article, research report, etc)

# Philosophical Assumptions

- **Critical**
  - Reality is historically constituted, produced and reproduced through people
  - Action is constrained by social, political, cultural norms
  - Main task is social critique
    - > Challenge prevailing beliefs, values, assumptions
- **Interpretivist**
  - Reality is social constructed
  - Don't predefine independent & dependant variables, focus on sense-making as the situation emerges
  - Understand phenomena through meanings people assign to them

# Philosophical Assumptions (1)

- **Positivist**
  - Reality is objectively given, can be described by measureable properties which are independent of the researcher
  - Often tests a theory in attempt to increase predictive understanding
  - Natural science model



# Positivist or Interpretivist?

- **IS research 81% positivist**
  - Chen & Hirschheim (2004)
- **DSS research 92% positivist**
  - Arnott & Pervan (2008)
- **Computer Science?**
- **Information Management?**

# Interpretive research

- Is concerned with developing an understanding of how people live, society. To “discover how people construct meaning in natural settings.” (Neuman)
- It is about learning what is meaningful and/or relevant to people being studied. The researcher takes into account the reasons and social context for action.
- There can be many "interpretations" of the data gathered. Some will have more resonance or be grounded in theory making them more compelling than other interpretations.
- Most of the analysis will be based on the words people use.

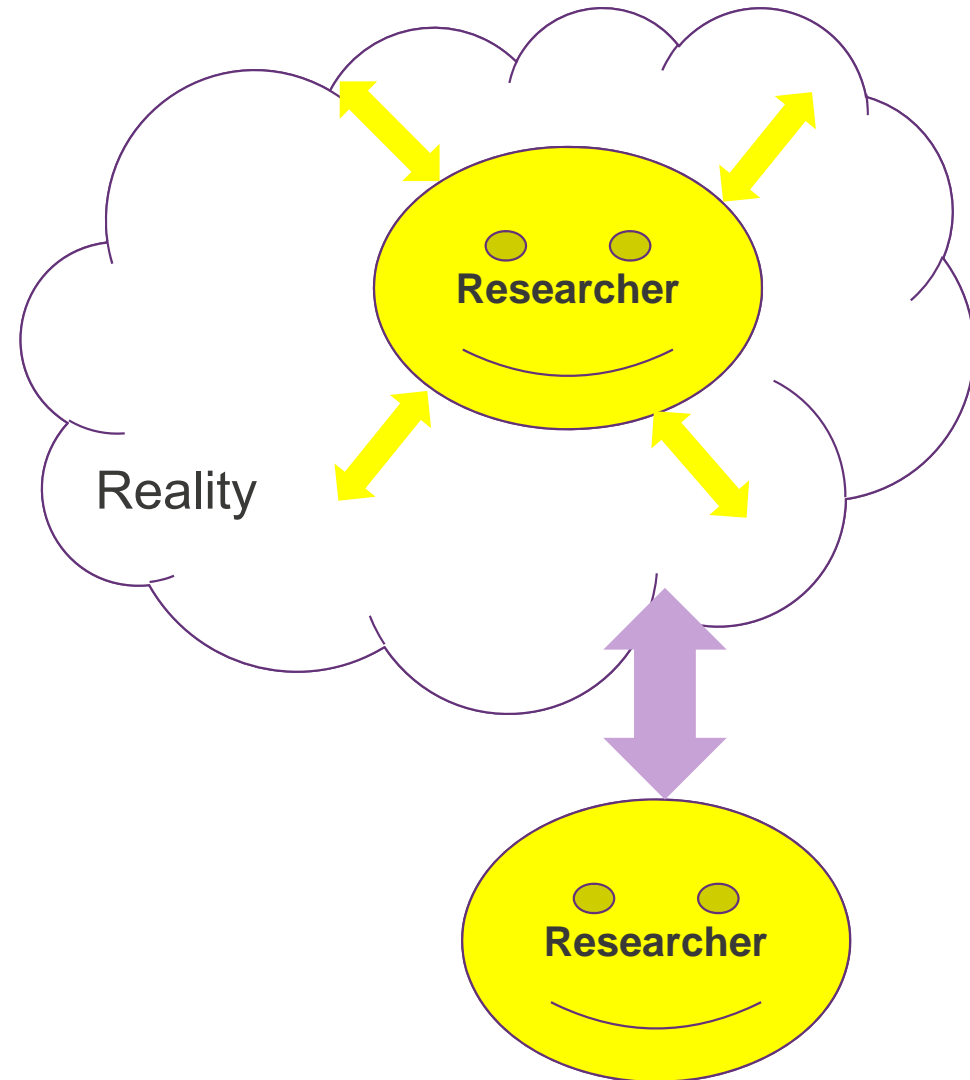
# Qualitative research

- Qualitative researchers generally work within an interpretivist paradigm. That is they are looking for meaning (deeper meaning) from data.
- The techniques for data gathering will be different, will rely on words, observations, field notes.
- The researcher may be on the outside of the researcher – looking in. The researcher may be involved -contributing to change (action research) and observing outcomes.

# Qualitative/Interpretive Research

- Interpretive research requires mostly qualitative evidence to be collected and analysed.
- Many sources refer to interpretive research as qualitative
- Interpretive/qualitative research is conducted in humanities, social and even physical sciences.
  - ❑ Quite often it is an interdisciplinary, transdisciplinary, and sometimes counterdisciplinary field.
  - ❑ ... is “many things at the same time”. It has multiparadigmatic in focus.

# Research Methods based on [mostly] qualitative data



# Klein and Myers: Principles for Interpretive Field Research

- Interpretive research is still sometimes perceived as an “easy” option of research
- These seven principles were formulated to argue and judge the quality of interpretive research
- If you conduct interpretive research this is a “must read” article:
  - Heinz K. Klein and Michael D. Myers. A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems. *MIS Quarterly*, 23(1), pp. 67-93.

# Klein and Myers: Principles for Interpretive Field Research

## *1. The Fundamental Principle of the Hermeneutic Circle*

- Human understanding is achieved by iterating between considering the interdependent meaning of parts and the whole that they form. This is fundamental to all the other principles.
- Example: Lee's (1994) study of information richness in e-mail communications. It iterates between the separate message fragments of individual e-mail participants as parts and the global context that determines the full meanings of the separate messages to interpret the message exchange as a whole.

# Klein and Myers: Principles for Interpretive Field Research

## 2. *The Principle of Contextualization*

- Requires critical reflection of the social and historical background of the research setting, so that the intended audience can see how the current situation under investigation emerged.
- Example: After discussing the historical forces that led to Fiat establishing a new assembly plant, Ciborra et al. (1996) show how old Fordist production concepts still had a significant influence despite radical changes in work organization and operations.



# Klein and Myers: Principles for Interpretive Field Research

## ***3. The Principle of Interaction Between the Researchers and the Subjects***

- Requires critical reflection on how the research materials (or "data") were socially constructed through the interaction between the researchers and participants.
- Example: Trauth (1997) explains how her understanding improved as she became self-conscious and started to question her own assumptions.

# Klein and Myers: Principles for Interpretive Field Research

## ***4. The Principle of Abstraction and Generalization***

- Requires relating the idiographic details revealed by the data interpretation through the application of principles one and two to theoretical, general concepts that describe the nature of human understanding and social action.
- Example: Monteiro and Hanseth's (1996) findings are discussed in relation to Latour's actor network theory.

# Klein and Myers: Principles for Interpretive Field Research

## *5. The Principle of Dialogical Reasoning*

- Requires sensitivity to possible contradictions between the theoretical preconceptions guiding the research design and actual findings ("the story which the data tell") with subsequent cycles of revision.
- Example: Lee (1991) describes how Nardulli (1978) came to revise his preconceptions of the role of case load pressure as a central concept in the study of criminal courts several times.

# Klein and Myers: Principles for Interpretive Field Research

## *6. The Principle of Multiple Interpretations*

- Requires sensitivity to possible differences in interpretation among the participants as are typically expressed in multiple narratives or stories of the same sequence of events under study. Similar to multiple witness accounts even if all tell it as they saw it.
- Example: Levine and Rossmore's (1993) account of the conflicting expectations for the Threshold system in the Bremerton Inc. case.

# Klein and Myers: Principles for Interpretive Field Research

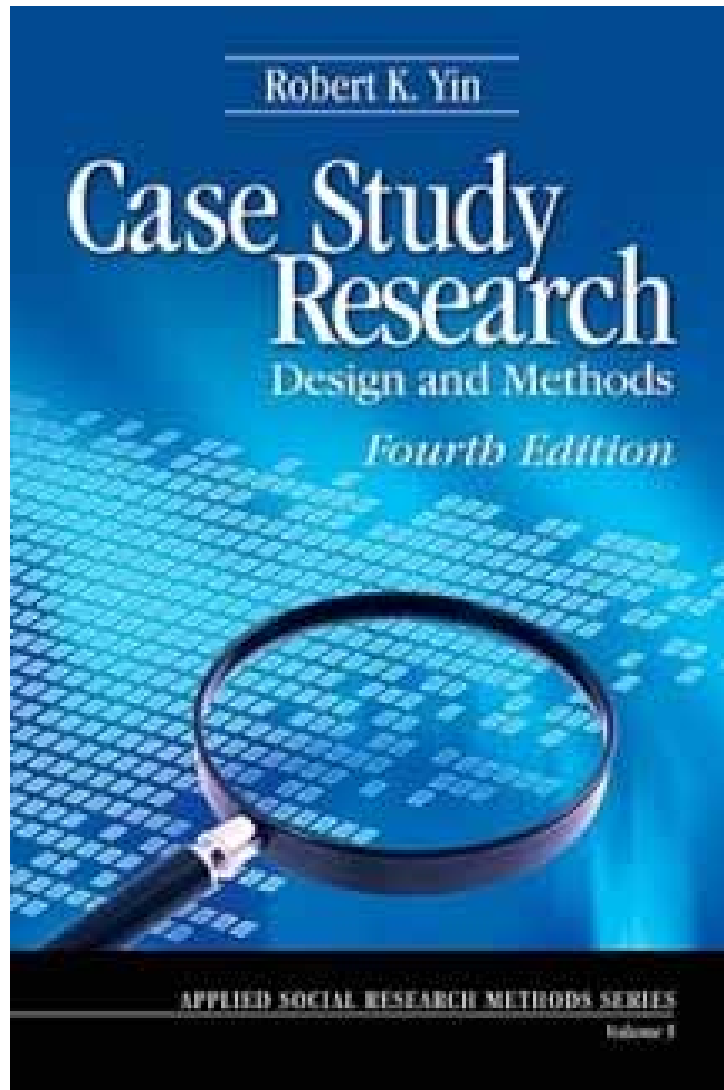
## *7. The Principle of Suspicion*

- Requires sensitivity to possible "biases" and systematic "distortions" in the narratives collected from the participants.
- Example: Forester (1992) looks at the facetious figures of speech used by city planning staff to negotiate the problem of data acquisition.

# Relevant situations for different methods

Method	Form of research question	Requires control of behavioural events?	Focuses on contemporary events?
Experiment	How, why?	Yes	Yes
Survey	Who, what, where, how many, how much?	No	Yes
Archival analysis	Who, what, where, how many, how much?	No	Yes
History	How, why?	No	No
Case study	How, why?	No	Yes

# Case Study Research



“a case study is an in depth study of a particular situation rather than a sweeping statistical survey. ...

It is a method used to narrow down a very broad field of research into one easily researchable topic”.

- If you are doing a case study, read this book!
- Read more: <http://www.experiment-resources.com/case-study-research-design.html#ixzz27uylcxXC>

# Myers Definition: Interpretivist case study

- Case study research uses empirical evidence from one or more organisations where an attempt is made to study the subject matter in context.
- Multiple sources of evidence are used, although most of the evidence comes from interviews and documents.



# Yin's Definition- Positivist case study

## Two part definition

### 1. A case study is an empirical inquiry that:

- Investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident

### 2. The case study inquiry :

- Copes with the technically difficult situation in which there will be many more variables of interest than data points
- Relies on multiple sources of evidence, with data needing to converge in a triangulating fashion
- Benefits from the prior development of theoretical propositions to guide data collection and analysis

# Unit of Analysis

- **What you are studying**
- **Consistent with the research question or problem**
  - Determines the conclusions and claims you can make
- **Common IT research Unit of Analysis**
  - Organisation
  - Division, department
  - Type of worker or user
  - Technology
  - Project
  - Application
  - Process
  - Decisions

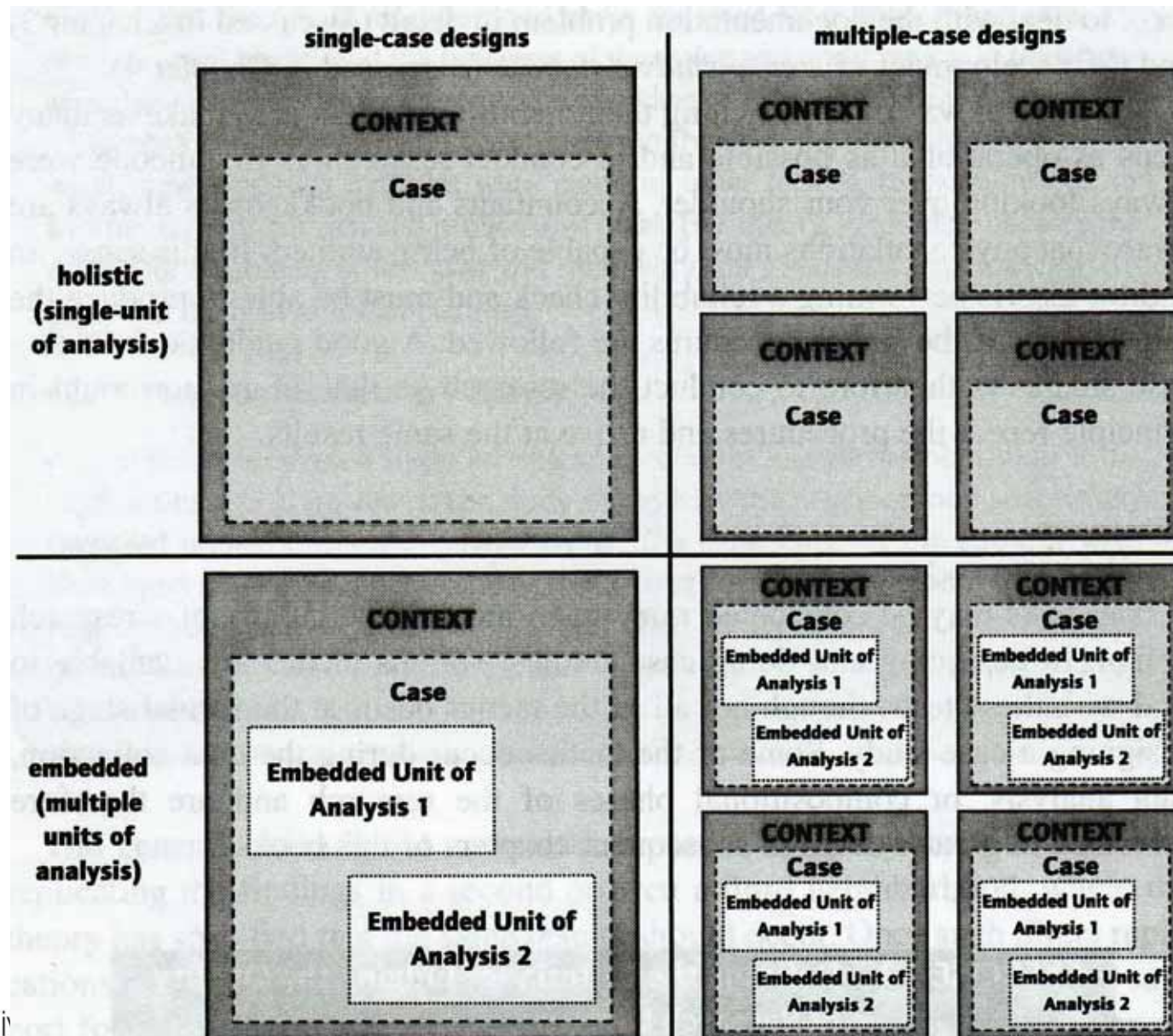
# Case study designs

- **Single or multiple cases**
- **Single or multiple units of analysis**
  - Holistic or embedded
- **One-shot or longitudinal**
  - Cross sectional, snapshot

# Multiple case studies

- **Replication not sampling logic**
  - *literal*: predicts similar results
  - *Theoretical*: predicts contrasting results for anticipated reasons
- **How many cases**
  - Literal replication: 2 or 3
  - Theoretical replication: 4 or more

# Basic case study design types

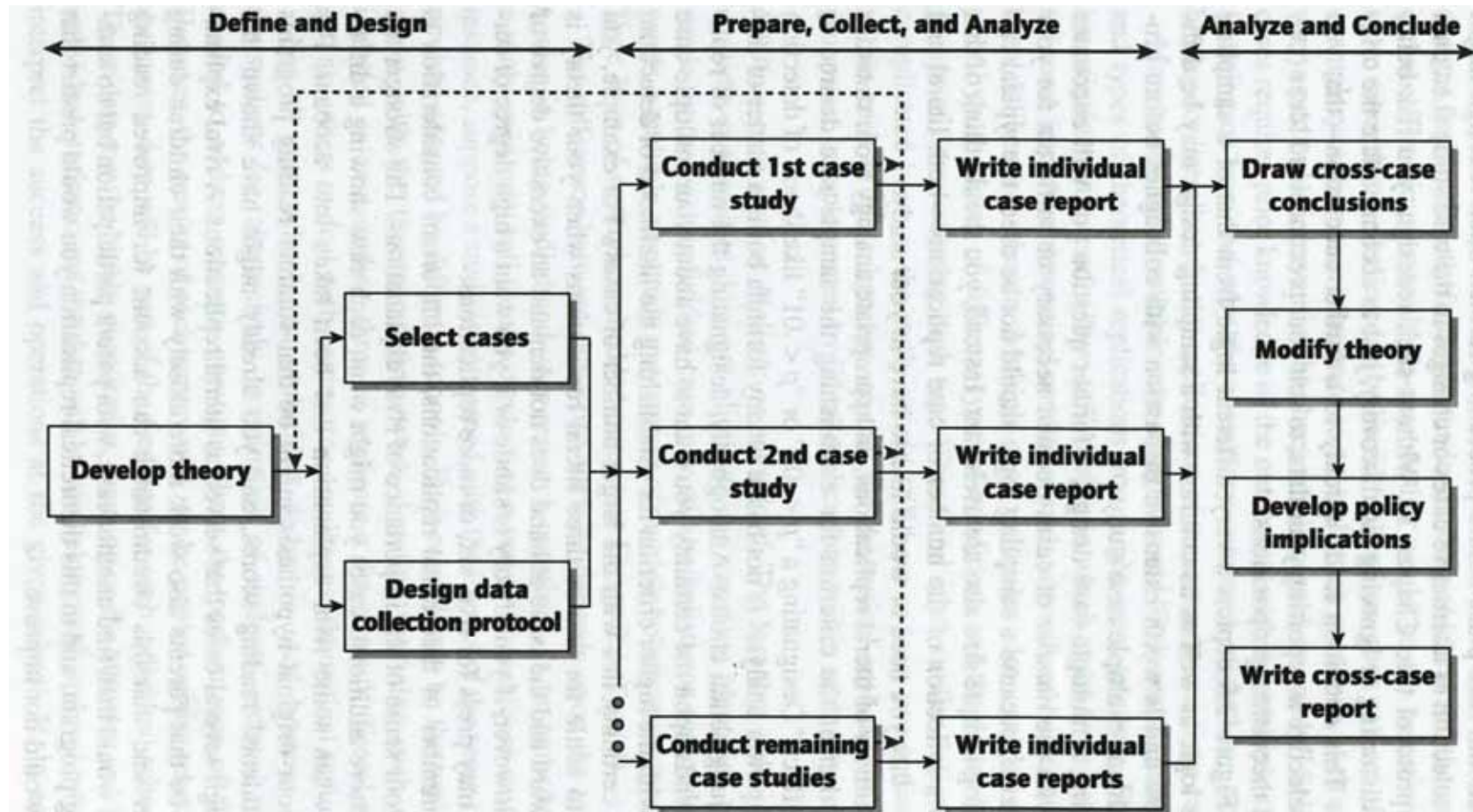


# Single case studies

1. **Critical case**
  - Testing a well formulated theory
2. **Extreme or unique case**
  - Phenomenon is extremely rare
3. **Representative or typical case**
  - Typical case can inform understanding average
4. **Revelatory case**
  - Opportunity to investigate a phenomenon that is very difficult to access
5. **Longitudinal case**
  - Studying the case at different points in time



# Case Study Method



**Figure 2.5** Case Study Method

SOURCE: COSMOS Corporation.

Yin

# Data Collection Techniques and Sources

- **Interviews - individual or groups**
  - Structured, Semi-structured, Open ended
  - Focus groups
  - Surveys
- **Documents**
- **Observation**
  - Direct
  - Participatory (intervention has to be considered)
- **Field notes**
- **Secondary sources can be used from case study databases and books** (eg Microsoft, IBM, Apple, etc case studies)





# Techniques for analysing qualitative data

- 1 Coding of field notes drawn from data collection
- 2 Noting reflections or other remarks in margin
- 3 Sorting or shifting through the materials to identify similar phrases, relationships between themes, distinct differences between subgroups and common sequences
- 4 Isolating patterns and processes, commonalties and differences, and taking them out to the field in the next wave of data collection
- 5 Gradually elaborating a small set of generalisations that cover the consistencies discerned in the data base
- 6 Confronting those generalisations with a formalised body of knowledge in the form of constructs or theories

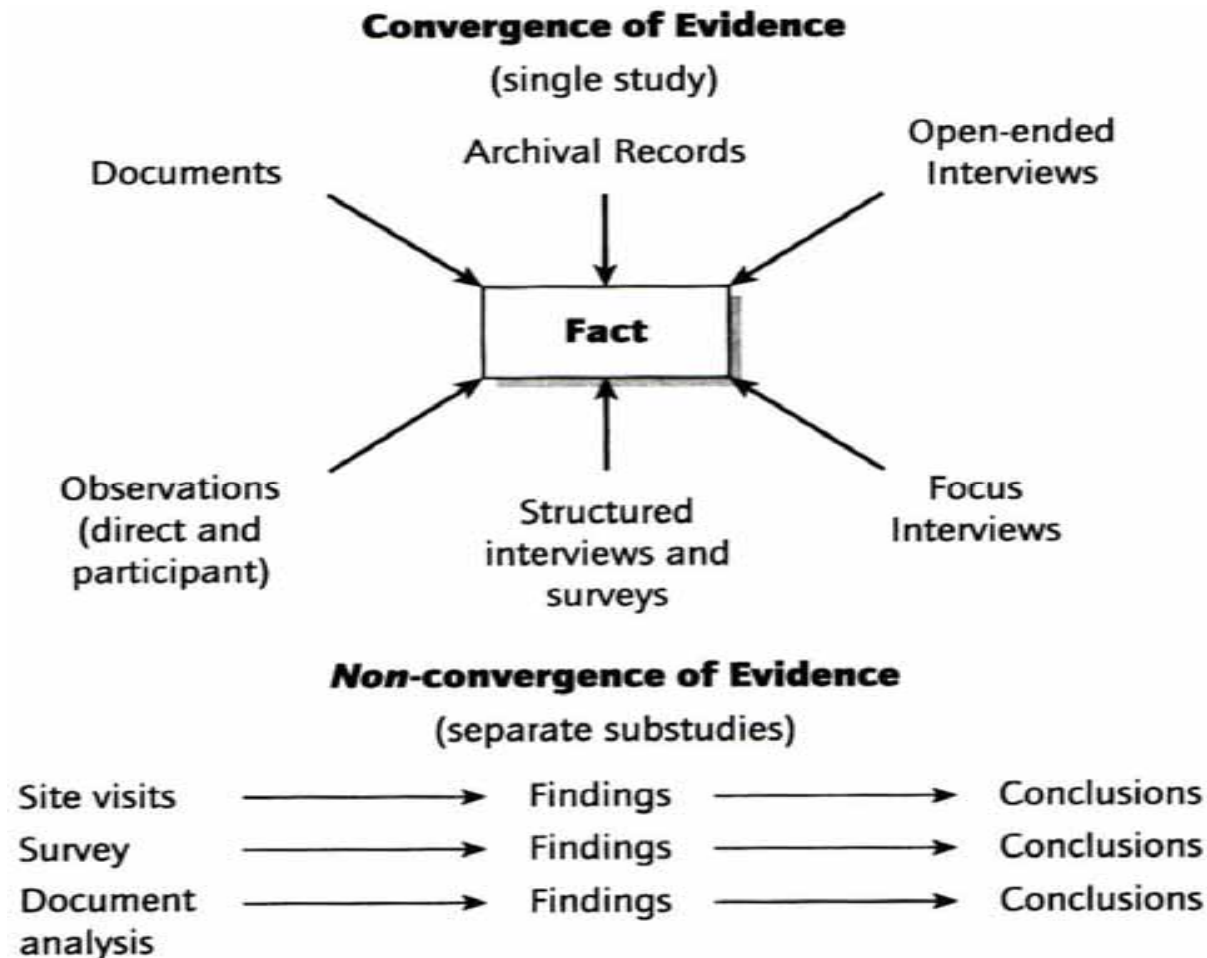
# Case study design assessment tests

TESTS	Case Study Tactic	Phase of research in which tactic occurs
<b>Construct validity</b>	<ul style="list-style-type: none"> <li>◆ use multiple sources of evidence</li> <li>◆ establish chain of evidence</li> <li>◆ have key informants review draft case study report</li> </ul>	data collection data collection composition
<b>Internal validity</b>	<ul style="list-style-type: none"> <li>◆ do pattern matching</li> <li>◆ do explanation building</li> <li>◆ address rival explanations</li> <li>◆ use logic models</li> </ul>	data analysis data analysis data analysis data analysis
<b>External validity</b>	<ul style="list-style-type: none"> <li>◆ use theory in single-case studies</li> <li>◆ use replication logic in multiple-case studies</li> </ul>	research design research design
<b>Reliability</b>	<ul style="list-style-type: none"> <li>◆ use case study protocol</li> <li>◆ develop case study database</li> </ul>	data collection data collection

# Triangulation

- A technique used to increase reliability
- **Data**
  - Multiple data sources
- **Investigator**
  - Multiple investigators or evaluators
- **Theoretical**
  - Multiple lenses on same data sets
- **Methodological**
  - Multiple data collection or analysis methods

# Convergence and non-convergence of multiple sources of information



# Why and when to use case studies

- Advantages of case studies
  - Deep understanding of phenomena
  - Test theories in real, messy environment
  - Important for applied disciplines
    - Researchers get close to the action
- Disadvantages of case studies
  - Access to good cases difficult
  - Lack of control by researcher
    - Cases often collapse
  - Not appropriate for inexperienced or young researchers
  - Take a long time

# Case Studies challenges

- Good case study design is vital
- Yin suggests five components of good case study design:
  1. A study's questions
  2. its propositions, if any
  3. its unit(s ) of analysis s
  4. the logic linking the data to the propositions
  5. the criteria for interpreting the findings )

» Myers, 2002

# What makes an exemplary case study

- The case study must be interesting
- The case study should be “complete” (eg. all relevant evidence has been collected)
- The case study must consider alternative perspectives (eg. different theories, alternative cultural views, disagreements amongst the subjects)
- The case study must display sufficient evidence (not just that evidence which supports your own theory)
- The case study should be written in an engaging manner (are you enthusiastic about it?)
- ☐ One case study is fine! A common error: sampling logic ☐

» Myers, 2002

# Summary

- **Case studies are an important research method**
- **Used when phenomena under study can't be separated from context**
- **Data collection in field, mainly interviews and documents**
- **Not an easy option**
  - Good cases are hard to find
  - Design is complex
  - Data hard to collect and analyse
  - Can take a long time for a completed project
  - Ethical considerations are necessary to resolve



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