HDR Seminar Series

Faculty of Commerce

Spring Session 2005

Research Models and Methodologies

Agenda

- *Definition of Research*
- *Research Paradigms* (a.k.a research philosophy or research model) specifying *concepts*- phenomena of interest as defined in model, and *statements*- propositions involving concepts
- Theories, Methods and Application Domains
- Classes of *Research Methodologies* that have emerged as a consequence of conducting similar kinds of research
- *Research Design Formats* for Qualitative and Quantitative
- Multi-method research

What is Research?

What is Research?
Some Definitions

- going beyond personal experience, thoughts, feelings, and opinions that do not refer to other sources of information
- some subjects require us to go beyond our personal knowledge and experience
- research is undertaken to:
  - explore an idea,
  - probe an issue,
  - solve a problem,
  - make an argument that compels us to turn to outside help

What is Research?
Research Deliverables

- why produce outlines, reports, presentations, and/or dissertations- we need to have these deliverables for two reasons:
  - to ***assist us to think through this process*** because it is extremely difficult to do without scaffolding or structuring ones thoughts
  - because ***if your thoughts cannot be communicated then you do not truly understand them***

What is Research?
Primary Research and Sources

- ***Primary research*-study of a subject through first hand observation and investigation:**
  - **analysing a workplace, conducting a survey or an interview**
  - **carrying out a laboratory experiment, building apparatus**
  - **analysing a literary or historical text, a film or performance**
- ***Primary sources* of information include statistical data, historical data, works or art…**

What is Research?
Secondary Research and Sources

- ***Secondary Research***- involves the examination of studies of other researchers
- ***Secondary Sources*** include books, articles about political issues, medical issues, scientific debates or literary works

Most research and most research writing involves the use of both forms of research and both forms of research sources

Research Models

Research Models

- broadly speaking there are two major types of research models or ***research paradigms*** (after Creswell 2003):
  - ***quantitative***- also known as traditional, positivist, experimental, or empiricist as advanced by authorities such as Comte, Mill, Durkheim, Newton, Locke
  - ***qualitative***- constructivist, naturalistic, interpretive, postpositivist or postmodern perspective as advanced by Dithey, Kant, Wittgenstein (latter), Foucault, Miles and Huberman

Assumption	Question	Quantitative	Qualitative
Ontological	What is the nature of reality?	Reality is objective and singular, apart from the researcher	Reality is subjective and multiple as seen by participants in a study
Epistemological	What is the relationship of the researcher to that researched?	Researcher is independent from that being researched	Researcher interacts with that being researched
Axiological	What is the role of values?	Value-free and unbiased	Value-laden and biased
Rhetorical	What is the language of research?	Formal, based on set definitions, impersonal voice, use of accepted quantitative words	Informal, evolving decisions, personal voice, accepted qualitative words
Methodological	What is the process of research?	Deductive process; Cause and effect; Static research design- categories isolated before study; context free (independent); generalisations leading to predictions, explanation, and understanding; accurate and reliable through validity and reliability (testing)	Inductive process; Mutual simultaneous shaping of factors; Emerging design-categories identified during research process; Context-bound; Patterns and theories developed for understanding; accurate and reliable through verification

After: Creswell, J. W. (2003)

Research Models
Reasons for Choosing a Paradigm

- there are several reasons that you would use for choosing a paradigm (after Creswell 2003):
  - worldview or assumptions of each paradigm
  - training and experience
  - psychological attributes
  - nature of the problem
  - audience for the study

Criteria	Quantitative Paradigm	Qualitative Paradigm
Researcher's Worldview	A researcher's comfort with the ontological, epistemological, axiological, rhetorical, and methodological assumptions of the quantitative paradigm	A researcher's comfort with the ontological, epistemological, axiological, rhetorical, and methodological assumptions of the qualitative paradigm
Training and Experience of the Researcher	Technical writing skills; computer statistical skills; library skills	Literary writing skills; computer text- analysis skills; library skills
Researcher's Psychological Attributes	Comfort with rules and guidelines for conducting research; low tolerance for ambiguity; time for a study of short duration	Comfort with lack of specific rules and procedures for conducting research; high tolerance for ambiguity; time for lengthy study
Nature of the Problem	Previously studied by other researchers so that the body of literature exists, is known along with the variables, and existing theories	Exploratory research, variables unknown; context important; may lack theory base for study
Audience for the Study (eg. journal editors and readers, graduate committees)	Individuals accustomed to/supportive of quantitative studies	Individuals accustomed to/supportive of qualitative studies

After: Creswell, J. W. (2003)

Research Models

- used to *describe the overall framework used to look at reality*, based on a philosophical stance
  - eg. empiricism, positivism, postmodernism, post-structuralism
  - models identify basic concepts and describe what reality is like, and the conditions by which we can study it
  - ideas identified in models are called *concepts*

Research Models
Caveats

- ***sometimes the word 'model' is used incorrectly in IS*- it is used in a much more constrained sense to indicate a set of (hopefully) related concepts**
- ***similar use occurs with 'framework'*- have to distinguish between the disciplinary usage of the term and the term as it exists in the philosophy of science**
- **also known as *research philosophy*, *research paradigm*, …**

Research Models
Definition

- a concept is a *general expressions of particular phenomenon*
  - eg. information, cats, dogs, motivation, usability
  - a concept is the relationship between the word or symbol and an idea and its conception- *signs*
  - everybody, everywhere makes use of concepts
  - many concepts are shared especially if we are members of the same culture- eg. baby, hate, justice

Research Models
Meanings and Communication

- concepts are used to *impose some sort of coherent meaning on the world*
  - it is through them that we can make sense of reality, and perceive order and coherence
  - used to communicate our experience of the environment around us
  - our perception of our surroundings is therefore highly dependent on the scale of our knowledge and our familiarity with a wide range of concepts

Research Models
Physical Science versus Social Science

- according to the model being used *researchers in natural science will try to define meanings with great precision*- this may be possible to do in research
- *social scientists* however often recognise that the concepts within their models may be based on opinions, values, traditions, cultures and rules that cannot be precisely 'pinned down'
- Do you think that information systems is a science? If so why? If not why? How about Computing Science?

Research Models
Concepts and Statements *(1)*

- ***the use of concepts on their own is limited*** **in research**
- **we expect that research should provide:**
  - **a system of classification**
  - **offer explanations,**
  - **make predictions, and**
  - **acquire a sense of understanding**
- ***concepts are only useful in providing a system of classification (typology)*** **the remaining expectations are met by research statements**

Research Models
Concepts and Statements *(2)*

- the *remaining aims must be expressed in the form of statements that contain concepts*- therefore the meaning and value of concepts cannot be assessed apart from their use in statements
- interestingly:
  - while concepts can be generally measured for the degree of agreement about its use and its meaning amongst users of the concept, statements are generally more complicated
  - certain types of statements reoccur within a discipline – these may be associated with discourses

Research Models
Theories, Methods, Domains & Methodologies

- research models (paradigms) are applied to *understanding particular application domains* (also known as a problem domain) *by means of deploying methods which have behind them particular theories* (next section …)
- research models (paradigms) are *deployed using one of a number of recognised research methodologies*- the choice is largely a matter of discipline- what counts as a useful methodology within a particular area (following section …)

Theories, Methods, Domains

Theories, Methods, Domains *(1)*
Theory Defined

- a ***theory*** is a set of interrelated constructs (concepts), definitions and propositions (statements) that presents a systematic view of phenomena by specifying relations among variables
- arranged with the purpose of ***explaining and predicting phenomena***
- a theory is a convenience – necessity for organising facts and constructs into a meaningful and manageable form – but it ***can be tested for quality*****…**

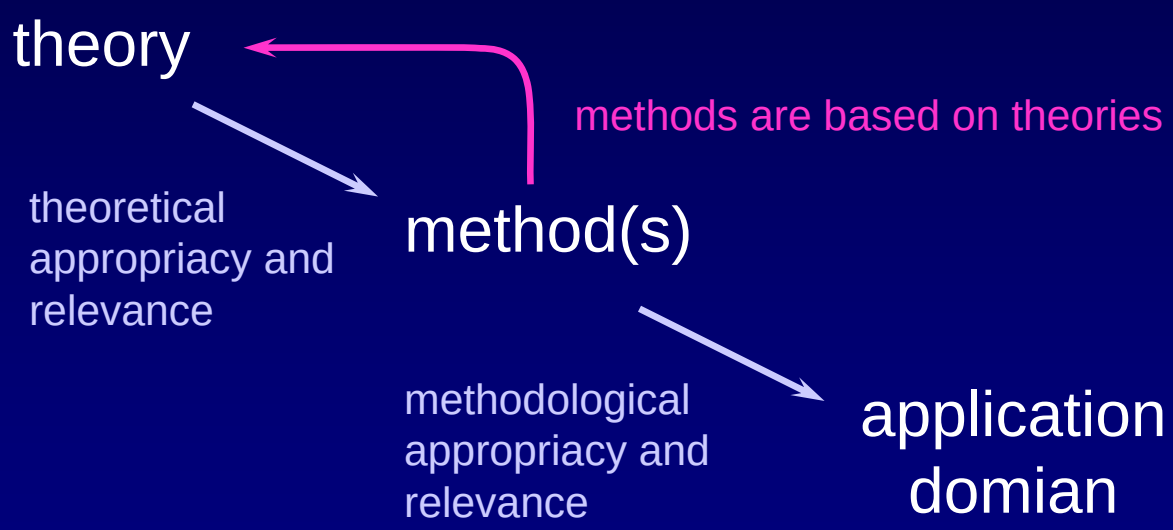
Theories, Methods, Domains *(2)*
Methods and Techniques

- ***methods*** **(a.k.a. techniques) are used to reveal the existence of, identify the 'value', significance or extent of, or represent semantic relationships between one or more concepts identified in a model from which statements can be made**
- **sometimes a distinction is made between methods and *technique*- one definition has technique as the way or manner in which a method is applied or deployed**

Theories, Methods, Domains *(3)*
Relationship between Methods and Theories

- in order to know the range of available methods that can be selected- *you must know about the theory being applied*
  - an important issue involves realising that *behind every method there is always a theory*
  - *theories also need to be checked* for appropriacy and relevance with respect to a given application domain

Theories, Methods, Domains *(4)*
Relationship to Application Domains



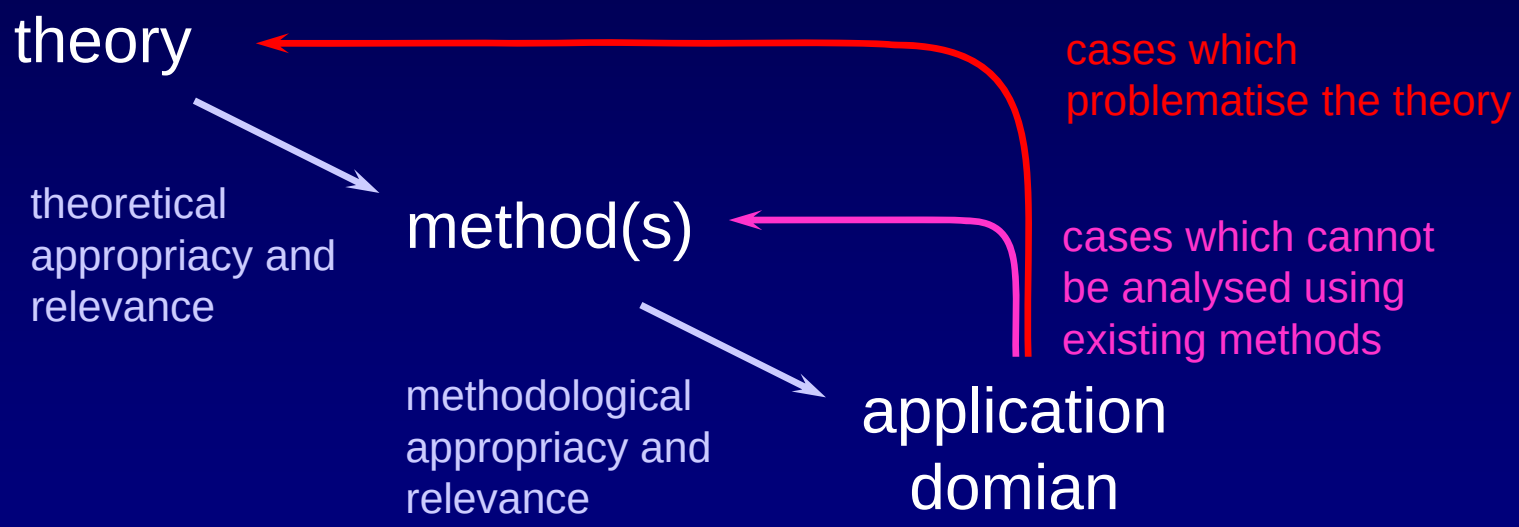
Theories, Methods, Domains *(5)*
Application Domains Defined

- ***application domains*** are defined as those substantive araeas, examples, cases that theory and methods are applied
- in turn, the application of methods to a particular domain can put these ***methods at risk***- they may not explain the domain being investigated
- in some cases small adjustments to methods are sufficient to yield useful and appropriate findings

Theories, Methods, Domains *(6)*
Putting Theories at Risk

- in severe cases the application of methods to a particular domain can put the ***theory at risk***
- can be manifest in several ways and may involve:
  - ***major projects to revamp theories*** to account for the special conditions, or
  - ***the use of additional theories*** to account for these special conditions
- real researchers look for these occasions- it often means you can get a substantial part of your original argument (and your PhD!)

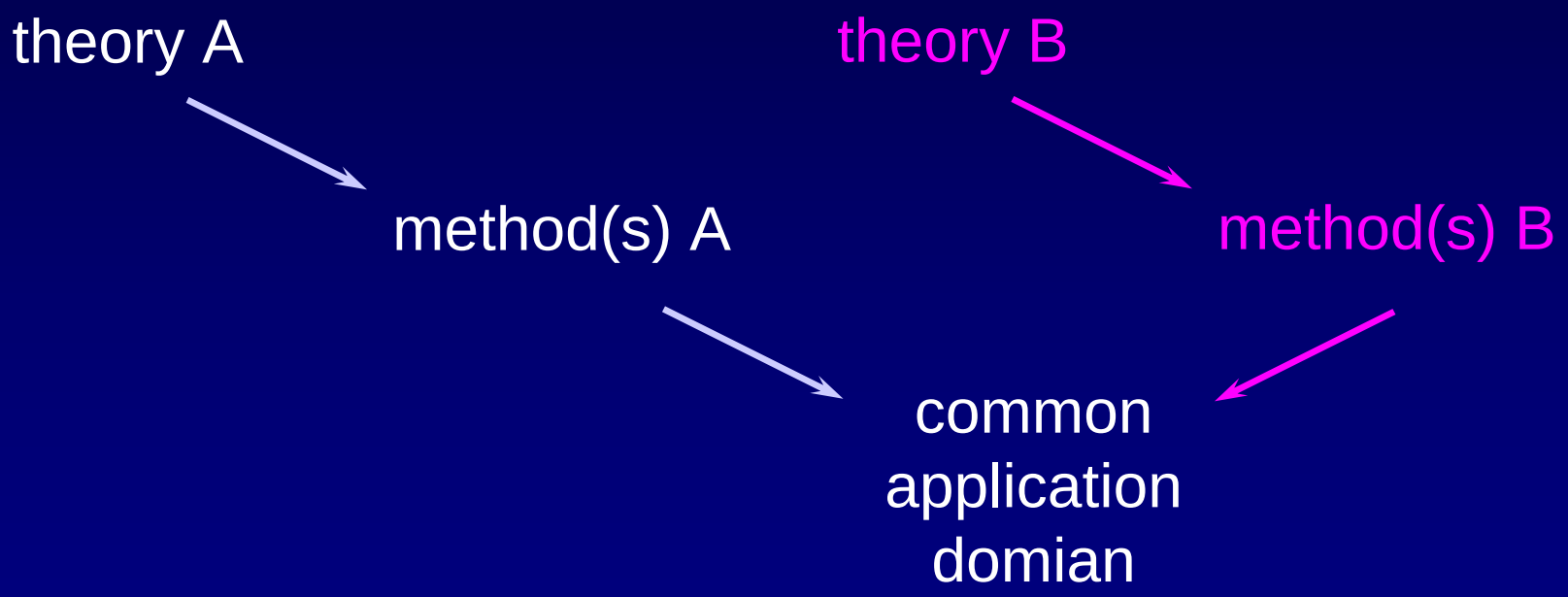
Theories, Methods, Domains *(7)*



Theories, Methods, Domains *(6)*
Single versus Multi-method Research

- in general the best advice would be to select a ***single paradigm (qualitative or quantitative)*** for your research work (after Creswell 2003)
- based on ***pragmatic choices***: time, skills, and overall size of the project
- the reason for this is that qualitative and quantitative research are based on differences in:
  - nature of reality- ***ontology***
  - relationship to that being researched- ***epistemology***
  - role of values- ***axiology***
  - use of language/words- ***rhetorical***
  - overall processof research- ***methodological***

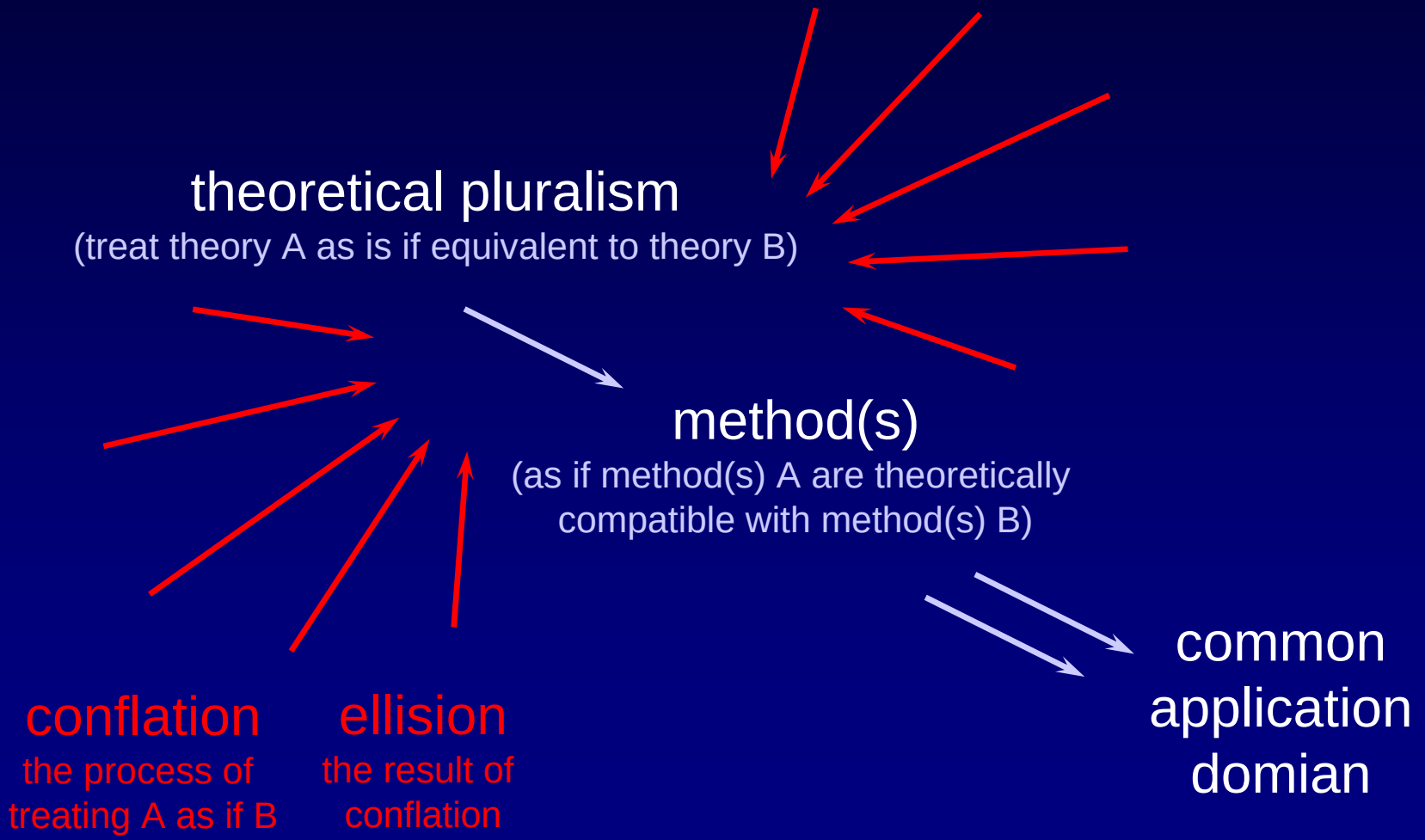
Theories, Methods, Domains *(8)*



Theories, Methods, Domains *(9)*
Theoretical Pluralism

- as a strategy, using multiple theories may appear to be simpler than improving the basis of a theory and it can be useful:
  - therefore this strategy is more commonly used, but it is *fraught with danger*
  - *theoretical pluralism*- we can easily mislead ourselves into thinking that several theoreis are compatible because we can apply them
- an acceptable *alternative to using multiple theories is to use multiple methods* (see later section)

Theories, Methods, Domains *(10)*
Risks in using Multiple Theories



Research Methodologies
Walliman (2001)

Research Methodology
From the General to the Specific

- defines:
  - what constitutes a research activity,
  - utilises or is applicable to a ***model***, and therefore specifies ***concepts*** and related ***statements***
  - what methods to apply, how to measure progress, and what constitutes success
  - also specifies how to communicate about an area of research activity (structure, deliverables)

Research Methodologies
Types of Research

- different kinds of research questions require different kinds of approaches – various methodologies have emerged to deal with them
- we will consider only those that have immediate relevance to CS/IS interestingly you could apply any of these approaches to IS:
  - mostly because of the fact that IS is an ***applied discipline*** and therefore lends itself to a range of different interpretations
  - also because IS is ***multidisciplinary*** and so its theoretical and methodological basis is in many different disciplines and therefore makes many kinds of research project possible

Research Methodologies
Types of Research (Walliman 2001)

1.	Historical	Qualitative
2.	Comparative	Qualitative
3.	Descriptive	Qualitative
4.	Correlation	Quantitative
5.	Experimental	Quantitative
6.	Evaluation	Qualitative
7.	Action	Qualitative
8.	Ethnogenic	various- not quantitative
9.	Feminist/Identity Politics	various- not quantitative
10.	Cultural	various- not quantitative

Broadly interpretivist methodologies which include Postmodernism, Post structuralism, Critical Theory Discourse Analysis, Critical Linguistics, Semiotics

Research Methodologies
Historical Research

1. Historical
2. Comparative
3. Descriptive
4. Correlation
5. Experimental
6. Evaluation
7. Action
8. Ethnogenic
9. Feminist
10. Cultural

- the systematic and objective location, evaluation and synthesis of evidence in order to establish facts and draw conclusions about past events
- involves:
  - Where the events take place?
  - Which people are involves?
  - When the events occurred?
  - What kind of human activity was involved?

Research Methodologies
Comparative Research

1. Historical
2. Comparative
3. Descriptive
4. Correlation
5. Experimental
6. Evaluation
7. Action
8. Ethnogenic
9. Feminist
10. Cultural

- Often used together with historical research to compare people's experience of different societies, either between times in the past or in parallel situations in the present
- conducted at a macro level (revolutions) or at a micro level (individual experiences)
- Experimental research- where the researcher controls causal factors- is not really possible in social research, but history and comparisons can supply researchers with a natural experiment in which non-essential characteristics of a phenomena can be eliminated by looking at multiple instance of it

Research Methodologies
Descriptive Research

1. Historical
2. Comparative
3. Descriptive
4. Correlation
5. Experimental
6. Evaluation
7. Action
8. Ethnogenic
9. Feminist
10. Cultural

- Instead of examining records or artifacts, descriptive research relies on observation as a means of collecting data
- attempts to examine situations in order to establish what is the normal- what can be predicted to happen again under the same circumstances
- Observations are written down or recorded in some way in order to be subsequently analysed
- Depends on human observations and responses- distortions in data can occur in biased questions in interviews, questionnaires, selective observation of events

Research Methodologies
Correlation Research

1. Historical
2. Comparative
3. Descriptive
4. Correlation
5. Experimental
6. Evaluation
7. Action
8. Ethnogenic
9. Feminist
10. Cultural

- 'analytical survey' or correlation research is quantitative
- Correlation is a word which describes the statistical measure of association or the relationships between two phenomena
- Two types of studies
  - Relational studies: an exploratory form of study which investigates the possible relationships between phenomena to establish if a correlation exists and if so to what extent
  - Prediction studies: carried out in research areas where correlations are already known- attempts to predict possible behaviour or events

Research Methodologies
Experimental Research

1. Historical
2. Comparative
3. Descriptive
4. Correlation
5. Experimental
6. Evaluation
7. Action
8. Ethnogenic
9. Feminist
10. Cultural

- researchers try to isolate and control every relevant condition which determines the events investigated, so as to observe the effects when the conditions are manipulated
- Different types of experimental design:
  - ***Pre-experimental***: unreliable assumptions are made despite the lack of control over variables
  - ***True experimental***: rigorous check of the identical nature of groups before testing the influence of a variable on a sample of them under controlled circumstances
  - ***Quasi-experimental***: not all conditions of true experimental design can be fulfilled but the shortcomings are identified
  - ***Correlation and ex post facto***: ***correlation*** looks for cause and effect relationships between two sets of data; ***ex post facto*** reverse experimentation - interprets the cause of phenomenon by observing its effects

Research Methodologies

Evaluation Research…

1. Historical
2. Comparative
3. Descriptive
4. Correlation
5. Experimental
6. Evaluation
7. Action
8. Ethnogenic
9. Feminist
10. Cultural

- Descriptive type of research designed to deal with complex social issues (the latest so called fourth generation evaluation research has the following properties):
  - outcomes do not represent 'how things are' or 'how they work', rather they represent ***meaningful constructions*** which groups create to make sense of situations they find themselves in
  - It is recognised that these constructions are ***shaped by the values*** of the constructors
  - ***inextricably linked to*** *particular physical, psychological, social and cultural* ***contexts within which they are formed*** and in which they are used
  - ***evaluation*** of these constructions is ***highly dependent on the involvement and viewpoint of the evaluators***
  - ***evaluation should be action oriented***, define a course which can be practically followed- usually requires negotiation
  - ***participants are equal partners*** in every aspect of the design, implementation, interpretation and resulting action

Research Methodologies
…Evaluation Research (Systems Analysis)…

1. Historical
2. Comparative
3. Descriptive
4. Correlation
5. Experimental
6. Evaluation
7. Action
8. Ethnogenic
9. Feminist
10. Cultural

- One type of evaluation research is (would you believe):
  - *Systems analysis*: holistic type of research which reverses the three stage order of thinking which is typical of scientific enquiry (that is, breaking the problem into researchable parts, then separately evaluating the parts and then aggregating the evaluations into an explanation of the whole). In contrast, systems analysis is involved with:
    - Identifying the encompassing whole (the system) of which the phenomenon or problem is a part
    - Evaluating the behaviour or properties of the encompassing whole
    - Explaining the behaviour or properties of the phenomena or problem in terms of its roles or functions within the encompassing whole

Research Methodologies
…Evaluation Research (Responsive)

1. Historical
2. Comparative
3. Descriptive
4. Correlation
5. Experimental
6. Evaluation
7. Action
8. Ethnogenic
9. Feminist
10. Cultural

- Another kind of evaluation research is called:
  - ***Responsive Evaluation***: in which a series of investigative steps is undertaken in order to evaluate how responsive a program is (an advertising campaign, new degree course etc) to all those taking part in it:
    - ***Data collection***: identifying issues from the people directly involves in the programme; identifying further issues from the program documents; observing how the programme is actually working
    - ***Evaluation***: the design of an evaluation based on the data collected and reporting findings
    - ***Suggested changes***: informing the participants of the findings in ways specifically designed for each type of audience

Research Methodologies
Action Research

1. Historical
2. Comparative
3. Descriptive
4. Correlation
5. Experimental
6. Evaluation
7. Action
8. Ethnogenic
9. Feminist
10. Cultural

- similar to experimental research although ***carried out in the real world*** rather than in the context of a closed experimental system – it involves small scale interventions in the functioning of the real world and a close examination of the effects of such an intervention
- Essentially an 'on the spot' procedure- ***designed to deal with a specific problem evident in a particular situation*** where no attempt is made to separate a particular feature of the problem from its context in order to study it in isolation
- constant monitoring and evaluation are carried out and conclusions from the ***findings are applied immediately*** and further monitored
- as a practical form of research, aimed at a specific problem and situation and with little or no control over independent variables, ***it cannot fulfil the scientific requirement for generalisability***
- therefore despite its exploratory nature- and therefore relatable to experimental research- ***it is actually the antithesis experimental research***

Research Methodologies
Ethnogenic Research

1. Historical
2. Comparative
3. Descriptive
4. Correlation
5. Experimental
6. Evaluation
7. Action
8. Ethnogenic
9. Feminist
10. Cultural

- Researchers are interested in how subjects of the research theorise about their own behaviour rather than imposing a theory from outside
- Aims are:
  - to *represent a view of the world as it is structured by the participants under observation by eliciting phenomenological data* (that is it concentrates on the detailed description of conscious experience- the science of phenomena as opposed to the science of being)
  - it takes place in *undisturbed natural settings* of the subjects
  - it attempts to *represent the totality of the social, cultural and economic situation, regarding the context to be equally important as the action*
  - *Difficult form of research*- culture is often hidden and rarely explicit, need to consider the language and behaviour of subjects and surrounding conditions in which they work
  - *Risks*: cultural background of the research can affect the outcome; naturalistic settings mean that it is impossible to repeat the situation to verify the research

Research Methodologies
Feminist/Identity Politics Research

1. Historical
2. Comparative
3. Descriptive
4. Correlation
5. Experimental
6. Evaluation
7. Action
8. Ethnogenic
9. Feminist
10. Cultural

- No single sets of methodologies- rather a related set of practices which start from a position on research which says that gender and issues of identity politics must be considered as an enormously influencial category in social theory
- that those researchers who ignore its influence have invalid knowledge as *non-feminist paradigms usually ignore the partiality of the researcher's ideas about the social world*
- Undertaken with a political commitment to the identification and transformation of gender relations and identity
- *Very important form of research* because while this form of research is not uniquely political *it exposes the fact that all methods of social research are political* to the extent that *they are gendered and rely on specific kinds of representation of identity*

Research Methodologies
Cultural Research…

1. Historical
2. Comparative
3. Descriptive
4. Correlation
5. Experimental
6. Evaluation
7. Action
8. Ethnogenic
9. Feminist
10. Cultural

- Many of the prevailing theoretical debates (eg. Postmodernism, post-structuralism) are concerned with language and cultural interpretation- these issues are central to sociological studies
- 'Cultural texts' expanded to include many manifestations of cultural exchange:
  - Opera, TV, cocktail parties, fashion
  - The main criteria for cultural texts is that one should be able to 'read' some meanings into the phenomena
- Need has therefore arisen for methodologies that allow analysis of cultural texts to be compared, replicated, disproved and generalised:
  - Structural properties of language (Chomsky Sacks Schelgoff)
  - Language as action in its contextual environment (Wittgenstein Austin and Searle)
  - Sociolinguistics and the 'ethnography of speaking' (Hymes, Bernstein, Labov etc)
  - Semiotic theories of Language (Halliday, Hjelmslev)

Research Methodologies
…Cultural Research

1. Historical
2. Comparative
3. Descriptive
4. Correlation
5. Experimental
6. Evaluation
7. Action
8. Ethnogenic
9. Feminist
10. Cultural

- Three approaches to the consistent interpretation of cultural texts are:
- ***Content Analysis***: rather positivistic attempt to identify subjective meaning in the cultural domain. Example is counting the number of times a particular word occurs in a text as an indication of its importance.
- ***Semiotics***: takes an opposite approach by attempting to gain a deep understanding of meanings by the interpretation of single elements of texts and "… tracing the meanings of things back through the systems and codes through which they have meaning and make meaning" (Slater 1995, 240)
- ***Discourse Analysis***: studies the ways that people communicate with each other through language within a social setting- several schools

Research Methodologies
Some Very Sensible Questions …

- How do I know *which research methodology to choose*?
  - Ask your supervisors or others who have worked directly in the application domain that you are interested in studying, and/or
  - Look at significant papers in your field and attempt to determine what methodology they are using

Research Methodologies
… Some Very Sensible Questions …

- ***Can I mix research methodologies*?**
  - **In principle your should not need to. Within each methodology there are many schools it is more likely that you may only need to get more familiar with the range of methods techniques and concepts within your existing methodology. There are considerable risks (recall the theoretical pluralism section)**
  - **However, having said that if you can demonstrate that you need to do multi-methodology research and establish the condition for doing it then that will likely form a substantial part of the originality for your dissertation (I did this in my own PhD)**

Research Methodologies
… Some Very Sensible Questions

- ***How do I know whether my question is worth researching*?**
  - **You won't necessarily- but others are likely to.**
  - **Be aware that your problem will change and evolve- in my opinion let it! The problem will change (get more complex as your reading and research increases). Early on if it doesn't get more complex then it may be that the problem is not really appropriate.**
  - **If your problem appear to be getting more complex then that's often a good sign- your work is substantial.**

Research Design Formats
Creswell (1994)

Research Design Formats

- in general there are *predictable sets of questions, issues and information* that you need to address in order to successfully undertake a research question
- these *predictable elements differ depending on whether a qualitative or quantitative study is being undertaken*
- these so called *research design formats bridge the gap between your proposal and your evolving dissertation*
- *note*: you will probably need to do both types of design format if you are doing multi-paradigm research- just one more reason why multi-method studies take more time!

Research Design Formats
Quantitative Format (relatively Standardised)

- Introduction
  - Context (Statement of the Problem)
  - Purposes of the Study
  - Research Questions or Objectives or Hypotheses
  - Theoretical Perspective
  - Definition of Terms
  - Delimitations and Limitations of the Study
- Review of the Literature
- Methods
  - Research Design
  - Sample, Population, or Subjects
  - Instrumentation and Materials
  - Variables in the Study
  - Data Analysis
- Appendices: Instruments

Research Design Formats
Qualitative Format *1* (after Creswell 2003)

- Introduction
  - Statement of the Problem
  - Purposes of the Study
  - The Grand Tour Question and Subquestions
  - Definition of Terms
  - Delimitations and Limitations of the Study
  - Significance of the Study
- Procedure
  - Assumptions and Rationale for a Qualitative Design
  - The Type of Design Used
  - The Role of the Researcher
  - Data Collection Procedures
  - Data Reduction/Analysis Procedures
  - Methods for Verification
  - Outcome of the Study and its Relation to Theory and Literature
- Appendices

Research Design Formats
Qualitative Format *2*
(Marshall & Rossman 1989 in Cresswell 2003)

- Introduction and General Questions or Topic
- Statement of the Problem
- Significance of the Research
- Site and Sample Selections
- Researcher's Role in Management, including Entry, Reciprocity and Ethics
- Research Strategies
- Data Collection Techniques
- Managing and Recording Data
- Data Analysis Strategies
- Management Plan, Timeline, Feasibility
- Appendices

Multi-method Research

Creswell (1994)

Multi-method research
Definition of Triangulation

- there are certainly occasions where combining methods and methodologies can be useful- generally referred to as *triangulation*
  - combination of methodologies deployed to study the same phenomena
  - based on the assumption that any bias inherent in particular data sources, investigators and method would be neutralised when used in conjunction with other data sources, investigators and methods (this is quite an assumption!)

Multi-method research
Combined Method Study

- one in which the researcher uses multiple methods of data collection and analysis
  - *within methods approaches-* different types of quantitative data collection strategies, eg. 'survey' + 'experiment'
  - *between methods approaches*- drawing on qualitative and quantitative data collection procedures, eg. 'survey' + 'in-depth interview'
  - other possibilities:
    - observations + structured quantitative observations
    - ethnography + experimental research
    - survey research + qualitative procedures

Multi-method research
Reasons for Combining Methods

- if you are going to use multiple methods research then you must declare why you are going to these efforts:
  - *triangulate*- seek convergence of results
  - *complementary*- overlapping/different facets of a phenomena may emerge (eg. Peeling an onion)
  - *developmentally*- first method is used sequentially to help inform the second method
  - *initiation*- contradictions and fresh perspectives may emerge
  - *expansion*- where mixed methods add scope and breadth to a study

Multi-method research
Models for Combining Multi-methods

- ***simultaneous triangulation***
  - researcher answers qualitative and quantitative questions at the same time
  - results of the qualitative questions are reported separately and would not necessarily relate to or confirm the results of the quantitative study
- ***sequential triangulation***
  - researcher conducts two phases of the project with the results of the first phase essential for planning the next phase
  - the questions in Phase 1 are completed before the questions of Phase 2 are raised

Multi-method research
Models for Combining Multi-methods

- Simultaneous Triangulation
  - QUAL ; quan
  - QUAN ; qual
- Sequential Triangulation
  - QUAL -> quan
  - QUAN -> qual

Possible Future Seminars

- Possible Future Seminars for Faculty of Commerce Higher Degree Students can include:
  - Research Outline: Structure and Function
  - Writing a Dissertation
  - Identifying and Selecting Research Ideas
  - Developing Research Posters
- any others you have in mind contact please do not hesitate to contact David Aylward (Commerce Faculty Research Manager) or Rodney Clarke (Postgraduate Research Coordinator, Information Systems)

References; Further Readings

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