



University of HUDDERSFIELD

University of Huddersfield Repository

Pathirage, C. P., Amaratunga, Dilanthi and Haigh, Richard

The role of philosophical context in the development of theory: Towards methodological pluralism

Original Citation

Pathirage, C. P., Amaratunga, Dilanthi and Haigh, Richard (2008) The role of philosophical context in the development of theory: Towards methodological pluralism. *The Built and Human Environment Review*, 1 (1). ISSN 1759-0574

This version is available at <http://eprints.hud.ac.uk/id/eprint/22647/>

The University Repository is a digital collection of the research output of the University, available on Open Access. Copyright and Moral Rights for the items on this site are retained by the individual author and/or other copyright owners. Users may access full items free of charge; copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational or not-for-profit purposes without prior permission or charge, provided:

- The authors, title and full bibliographic details is credited in any copy;
- A hyperlink and/or URL is included for the original metadata page; and
- The content is not changed in any way.

For more information, including our policy and submission procedure, please contact the Repository Team at: E.mailbox@hud.ac.uk.

<http://eprints.hud.ac.uk/>

The Role of Philosophical Context in the Development of Theory: Towards Methodological Pluralism

Pathirage, C.P., Amaratunga, R.D.G and Haigh, R.P.

C.P.Pathirage@salford.ac.uk

The Research Institute for the Built and Human Environment, University of Salford, UK

Abstract

The research strategy dictates the major direction of the research and constitutes one of the important decisions made by the researcher. However, researchers' understanding on theory at the outset of the research guides the design of the research. The paper presents an overview of the involvement of theory within different research philosophies, approaches and methods. The relationship between data and theory is an issue that has been long debated. Moving from data to theory is commonly discussed in social constructionism with inductive approach and ideographic methods. However, within positivism philosophy with deductive approach and nomothetic methods, moving from theory to data is common. However, the growing concept of philosophical pluralism and methodological pluralism challenges the polarised views on philosophies and approaches, which suggests that methodologies are best used in complementary way.

Keywords – Research Philosophy, Research Methods, Induction, Deduction, Theory, Pluralism

Background

Research will involve the use of theory. However, the theory may or may not be made explicit in the design of the research, although it will usually be made explicit in findings (Saunders et al., 2007). The extent to which the researcher is clear about the theory at the beginning of the research guides the design of the research. Traditionally, authors have developed theory by combining observations from previous literature, common sense, and experience. However, the tie to actual data has often been tenuous (Perrow, 1986). As Glaser and Strauss (1967) argue, it is the intimate connection with empirical reality that permits the development of a testable, relevant, and valid theory. However, the relationship between data and theory is an issue that has been long debated by philosophers for many decades. The choice of whether 'the theory or the data comes first', relate fairly closely to the basic dichotomy between the use of positivistic and social constructionist paradigms, hence research design. It is possible to construct a continuum of research methods based on relative emphasis upon whether theory comes first (deduction) or data comes first (induction). As Gill and Johnson (2002) claim, a deductive research method entails the development of a conceptual and theoretical structure prior to its testing through empirical observation. The logical ordering of induction is the reverse of deduction as it involves moving from the empirical world to the construction of explanations and theories about what has been observed. Accordingly, at each extreme of the methodological continuum one can distinguish what are known as nomothetic and ideographic methods to research. However, this polarised view on philosophies and approaches is increasingly being challenged with the growing disclosure on philosophical and methodological pluralism.

In this context, this paper critically synthesises the role of philosophical context in the development of theory and methodology. The paper is broadly divided into five sections. Initially, it elaborates and defines theory, and its relationship to practice. Second, paper explores on deductive and inductive research approaches for theory testing and theory building. Different epistemological, ontological and axiological stances are discussed within section three; and section four introduces different research methods within ideographic and nomothetic ontologies. Finally in the discussion section, this paper argues that methodologies are best used in complementary way to develop theories, by reflecting on the issues between philosophical and methodological pluralism.

Theory, Practice and Data

One of the characteristics of a mature discipline is the presence of a sound theoretical base (Betts and Lansley, 1993). Theory can be defined in many ways depending on different philosophical stances. In general, Sutherland (1975: p.9) describes theory as ‘an ordered set of assertions about a generic behaviour or structure assumed to hold throughout a significantly broad range of specific instances.’ Further, as Gill and Johnson (2002) define, theory is a network of hypotheses advanced so as to conceptualise and explain a particular social or natural phenomenon. In this, each hypothesis presents an assertion about the relationship between two or more concepts in an explanatory fashion. Krausz and Miller (1974: p.4) claim that concepts are the building blocks of theories and hypotheses in that they are ‘abstract ideas which are used to classify together things one or more common properties’. Thereby, often theory is described as a model, framework, and collection of propositions or hypotheses for explanation and understanding of a phenomenon. However, Dubin (1969) differentiates between frameworks and theories, whilst identifying five requirements for a theory:

- Allows prediction or increased understanding
- Includes attributes or variables and their interactions
- Does not include composite variables
- Includes boundary criteria
- Is interesting

A framework is essentially considered as a pre-theory which could substitute in many ways as a theory. Further, McNeil (1993) proposes eleven characteristics of any general theory. However, theory is also often linked to practice. According to Gill and Johnson (2002), theories are a means by which people generate expectations about the world; often they are derived from what people have perceived to have happened before and thus influence (tacit or otherwise) how people set about future interactions with the world. However, Polanyi (1974) distinguishes between tacit knowledge and theory construction. Where tacit knowledge is embodied and experiential knowledge, theory requires more. As Polanyi (1974: p.4) states, ‘it seems that we have sound reason for... considering theoretical knowledge more objective than immediate experience... A theory is something other than myself. It may be set out on paper as a system, of rules, and it is the more truly a theory the more completely it can be put down in such terms’. Gill and Johnson (2002) use Kolb’s experiential learning cycle (Kolb et al., 1979) to explain the process of constructing and evaluating explanatory statements, hence, theories (refer to Figure 1). According to Kolb, the experience of an event or stimulus will trigger the learning, which the individual then reflect upon in trying to make sense of it. This will result in generation of explanations of how something occurred, which then can be used to form an abstract rule that can be generalised to new events and stimuli of similar type. However, the learning can also start at this point when such a rule is merely received

from others by the learner. In either case, whether the rule is received or generated out of the prior experiences and reflection, its testing in new situations creates new experiences which enable consequent reflection, observation and ultimately new rules (Gill and Johnson, 2002). Kolb's learning cycle, within research context, highlights two different approaches to research: theory developing and theory testing.

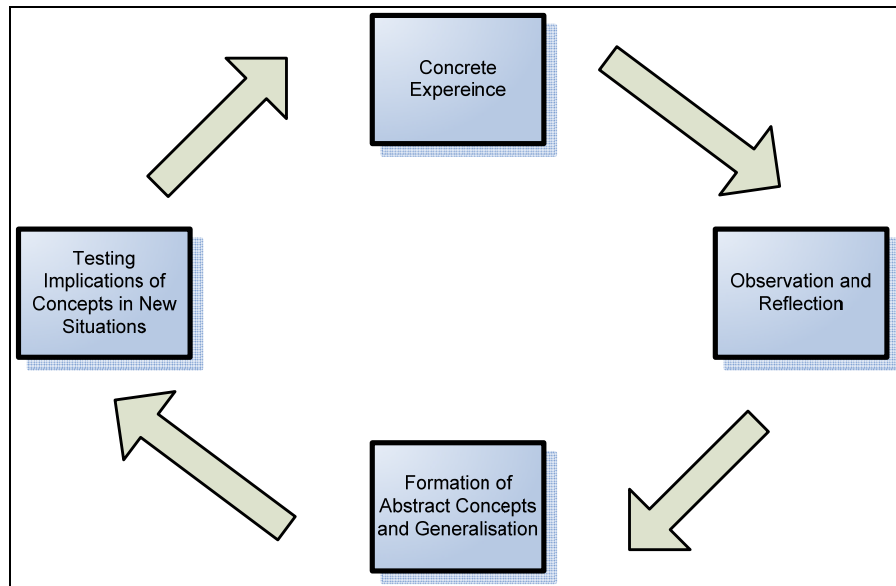


Figure 1: Kolb's experiential learning cycle

Remenyi et al. (1998) introduce on empirical and theoretical research, while classifying various approaches to research under different taxonomies. The rationale behind empiricism is a philosophical assumption that evidence, as opposed to thought or discourse, is required to be able to make a satisfactory claim to have added to the body of knowledge. Hence, the empiricist goes out into the world and observes through experiment or even by relatively passive observation of what is happening. Through study of real life situations and collection of related evidence, the empiricist will draw conclusions and make the claim that something of value has been added to the body of knowledge. The theorist, in contrast, reflect on writings of others through discourse using intellectual capabilities, constructs a new or different view of the situation, which sometimes may be regarded as a new theory. At the end of the theorist's work conclusions are drawn and claim is made that the research has added to the body of knowledge (Remenyi et al., 1998).

However, both these approaches are interlinked, although sometimes regarded as distinct and separate. As Remenyi et al. (1998) claim, it is not possible to be an empiricist without having a thorough understanding of the theoretical issues surrounding the subject that will be studied and which evidence will be collected. Thus, empirical research should be fundamentally rooted in theory and it is impossible to conduct such research in a meaningful way without taking a specific theoretical standpoint. Further, theoretical research, although not directly based on evidence collected from observation, also relies on ideas which have at some previous time been based on original evidence collected by means of empirical work. According to Remenyi et al. (1998), concerns about how theory and data relate to one another poses a dilemma by asking which comes first, data or

theory. As they argue, this persistent dilemma, the paradox of data and theory, is not simply resolvable. There are always theoretical assumptions associated with the collection of evidence and there is always evidence that underpins theory. Hence, this provides very useful insights on the processes by which natural and social science theories are constructed, evaluated and justified. This facilitates to distinguish between different research approaches: that is, research methods that are deductive and those that are inductive.

Deduction and Induction

As Daft (1985: p.202) explains, there are two very different approaches for deductive and inductive research. In general, deductive research tends to proceed from theory to data (theory, method, data, findings), while inductive research tends to proceed from data to theory (method, data, findings, theory). As Gill and Johnson (2002) assert, a deductive research method entails the development of a conceptual and theoretical structure prior to its testing through empirical observation. While providing insights on deductive research, Remenyi et al. (1998) state that, in this approach the researcher may have deduced a new theory by analysing and then synthesising ideas and concepts already present in the literature. The emphasis in this type of research will be on the deduction of ideas or facts from the new theory in the hope that it provides a better or more coherent framework than the theories that preceded it. However by taking a slightly different perspective, Gill and Johnson (2002) argue that, what is important is the logic of deduction and the operationalisation process, and how this involves the consequent testing of the theory by its confrontation with the empirical world. According to Collis and Hussey (2003), deduction is the dominant research approach in the natural sciences, where laws present the basis of explanation, allow the anticipation of phenomena, predict their occurrence and therefore permit them to be controlled. Accordingly, Robson (2002) introduces five sequential stages through which deductive research will be progressed:

- Deducing a hypothesis from the theory
- Expressing the hypothesis in operational terms
- Testing the operational hypothesis
- Examining the specific outcome of the inquiry
- If necessary, modifying the theory

This highlights a detail description of the deductive process. Gill and Johnson (2002) represents this process of theory testing to the left-hand side of Kolb's learning cycle (given in Figure 1), since it begins with abstract conceptualisation and then moves on to testing through the application of theory.

Within inductive approach, the theory would follow the data rather than vice versa as with deduction. As Gill and Johnson (2002) describe, learning is done by reflecting upon particular past experiences and through formulation of abstract concepts and theories, hence, induction corresponds to the right-hand side of Kolb's learning cycle. In sharp contrast to the deductive tradition theory is the outcome of induction. Table 1 compares the deductive and inductive research approaches. Kuhn (1962) implies that deductive researchers are enslaved normal scientists, while inductive researchers are paradigm-breaking revolutionaries (Glaser and Strauss, 1967: p.28). Although the debate between supporters of induction and supporters of deduction have a long history, as Gill and Johnson (2002) claim the modern justification for taking an inductive approach in the social sciences tends to revolve around two related arguments:

- The explanation of social phenomena grounded in observation and experience

- Critique of some of the philosophical assumption embraced by positivism

Table 1: Major differences between deductive and inductive approaches to research
(Adopted and modified from Saunders et al., 2007)

Deduction	Induction
Moving from theory to data	Moving from data to theory
Common with natural sciences	Common with social sciences
A highly structured approach	Flexible structure to permit changes
Explain causal relationships between variables	Understanding of meanings humans attach to events
Select samples of sufficient size to generalise conclusions	Less concern with the need to generalise

For many researchers working within the inductive tradition, explanations of social phenomena are relatively worthless unless they are grounded in observation and experience. Grounded theory is a concept developed by Glaser and Strauss (1967), which they define as ‘an inductive, theory discovery methodology that allows the researcher to develop a theoretical account of the general features of a topic while simultaneously grounding the account in empirical observations or evidence’. Hence, in attempting to develop a grounded theory the researcher will approach the enquiry with a reasonably open mind as to the kind of theory that will form the research (Remenyi et al., 1998). In contrast to the speculative and a priori nature of deductive theory, theory that inductively develops out of systematic empirical research is more likely to fit the data and thus is more likely to be useful, plausible and accessible (Partington, 2000). One of the main themes of positivism and much of the deduction tradition in the social sciences is a conception of scientific method constructed from what is assumed to be the approach in natural science, which entails the construction of covering-laws, through causal analysis and hypothesis testing. Many supporters of induction in the social sciences reject the causal model, because there are fundamental differences between the subject matter of the social sciences and the subject matter of the natural sciences. As argued by Laing (1967: p.53) ‘the error fundamentally is the failure to realise that there is an ontological discontinuity between human beings and it-beings. Persons are distinguished from things in that persons experience the world, where as things behave in the world’. This underlines the philosophical stances of a research.

Philosophical Basis

The research philosophy refers to epistemological, ontological and axiological assumptions and undertakings that guide an inquiry in a research study, implicitly or explicitly. In general, epistemology describes ‘how’ researcher knows about the reality and assumptions about how knowledge should be acquired and accepted. The ontology explains ‘what’ knowledge is and assumptions about reality. Axiology reveals the assumptions about the value system. These epistemological undertakings, ontological assumptions and axiological purposes about the nature of the world complement the formulation of research philosophy, thereby influencing the selection of appropriate research approach and methods. As Easterby-Smith et al. (2002) argue, failure to think through

philosophical issues, while not necessarily fatal, can seriously affect the quality of a research, which is central to the notion of research design. In terms of epistemological undertakings, two fundamentally different and competing schools of thought are positivism and social constructionism which can be placed in two extreme ends of a continuum. Easterby-Smith et al. (2002: p.28) asserts, in their review of research philosophies, “in the red corner is constructionism; in the blue corner is positivism”, which stresses the two extreme ends of the epistemological undertakings. The contrasting key features of these two epistemological research paradigms are detailed in Table 2.

In summary, positivism believes that the social world exists externally and that its properties should be measured through objective measures, where observer must be independent from what is being observed, which originates from the thinking of Comte (1853). Positivism was, for centuries, the single and then dominant method of scientific inquiry, derived from the study of natural sciences. In contrast, social constructionism stem from the view that reality is not objective and exterior, but is socially constructed and given meaning by people (Easterby-Smith et al., 2002), who are conscious, purposive actors with ideas about their world and attach meaning to what is going on around them (Robson, 2002). Gill and Johnson (2002) argue that the deductive approach to research has become synonymous with positivism, whilst inductive approach with social constructionism. Supporting them, Saunders et al. (2007) assert that it is useful to attach research approaches to the different philosophies, although such labelling has no real practical value. However, such representation will provide understanding on how theory is related to each research philosophy. While discussing the choices for research design, Easterby-Smith et al. (2002: p.46) state, ‘...which come first: the theory or the data?...represents the split between the positivist and constructionist paradigms in relation to how researcher should go about his or her work.’

*Table 2: Contrasting implications of positivism and social constructionism
(Adopted from Easterby-Smith et al., 2002)*

	Positivism	Social Constructionism
The observer	Must be independent	Is part of what is being observed
Human Interest	Should be irrelevant	Are the main drivers of the science
Explanations	Must demonstrate causality	Aim to increase general understanding of the situation
Research progress through	Hypotheses and deduction	Gathering rich data from which ideas are induced
Concepts	Need to be operationalised so that they can be measured	Should incorporate stake holder perspectives
Units of analysis	Should be reduced to the simplest terms	May include the complexity of ‘whole’ situation
Generalisation through	Statistical probability	Theoretical abstraction
Sampling requires	Large numbers selected randomly	Small numbers of cases chosen for specific reasons

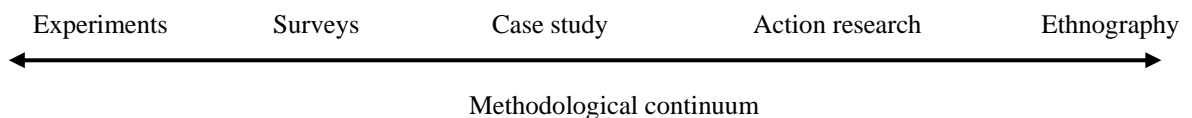
In addition to the epistemological positioning, the ontological assumptions about the nature of the reality or world, constitutes the other important aspect of the research philosophy. Based on whether the external world is having a pre-determined nature and structure or not, two ontological assumptions known as realist (Johnson and Duberly, 2000) and idealist (Gummesson, 1991) are defined. Realists start with a stance of a commonly experienced external reality with predetermined nature and structure (Sexton, 2004) whereas, idealists assumes that different observers may have different viewpoints and that, “what counts for the truth can vary from place to place and from time to time” (Collins, 1983). Axiology, the third component of the research philosophy, is classified based on whether the reality is value free or value driven. In value neutral research, the choice of what to study and how to study, can be determined by objective criteria, whilst in value laden research choice is determined by human beliefs and experience (Easterby-Smith et al., 2002), which marks the two extreme ends of a continuum. Gill and Johnson (2002) describe on the term ‘theory-laden’ to indicate the axiological stances of research. They refer the term theory laden to the way in which the prior theories and values of the observer influence what the individual ‘sees’. As Hanson (1958: p.7) claims, ‘there is more to seeing than meets the eyeball’. Thus the issue of how observation is ‘theory-laden’ raises the problem that there is no independent or neutral point from which an observer might occupy and objectively observe the world and thus all knowledge is knowledge from particular points of view or paradigms (Burrell and Morgan, 1979). Gill and Johnson (1991) elaborate on research methods based on ontological stances, as discussed next.

The Role of Research Methods

As Gill and Johnson (1991) proposed, research methods can be positioned by taking nomothetic (realist) and ideographic (idealist) ontologies into account. Gill and Johnson (1991) define nomothetic as the research approach which utilises quantified methods for data analysis, whereas ideographic approaches deal with analysis of subjective accounts generated through inside situations and involving one self in the everyday flow of life. However, according to Burrell and Morgan (1979), nomothetic methodologies have an emphasis on the importance of basing research upon systematic techniques, methods employed in the natural sciences, which focus upon the process of testing hypotheses.

*Table 3: A comparison of nomothetic and ideographic methods
(Adopted from Gill and Johnson, 2002)*

Nomothetic methods emphasise	Ideographic methods emphasise
Deduction	Induction
Explanation via analysis of causal relationship	Explanation of subjective meaning systems
Generation and use of quantitative data	Generation and use of qualitative data
Testing of hypothesis	Commitment to research in everyday settings
Highly structured	Minimum structure



Emphasis is therefore placed upon covering-law explanations and deduction, using quantified operationalisation of concepts. As explained by Burrell and Morgan (1979), ideographic methodologies, on the other hand, emphasise the analysis of subjective accounts that one generates by getting inside situations. The emphasis is upon theory rounded in such empirical observations to gain explanation by understanding. According to Gill and Johnson (1991), experiments and survey methods are associated with nomothetic type, whilst ethnography, action research and case study methods under ideographic type. Table 3 illustrates the features of nomothetic and ideographic methods. Although experiments and surveys are predominantly used for theory testing, and action research and ethnography for theory building, case studies are common for both deductive and inductive approaches. As Eisenhardt (1989) states, case studies can be used to accomplish both theory testing and theory generating. According to her, case study research starts with a deductive reasoning approach with a problem definition and leads to an inductive reasoning process of theory building. Thereby, this highlights the use of similar research methods within both deductive and inductive approaches.

Discussion

Understanding the relationship between research philosophy and methods is important. Easterby-Smith et al. (2002) state three reasons why an understanding of philosophical issues and approaches to research is very useful. First, it enables the researcher to take a more informed decision about the research design. Second, it can help the researcher to understand which design will work and crucially, those that will not. Third, the knowledge on different research traditions enables the researcher to adapt research designs according to the constraints of different knowledge structures. In addition, this will provide useful insights on the development of a theory, which is often made implicit. When synthesised, the above discussions on philosophical stances, approaches and methods, theory testing is common in positivism with deductive approach and nomothetic research methods. Theory building is common in social constructionism with inductive approach and ideographic research methods. However, this polarised view on research philosophies, approaches and methods is increasingly being challenged with the growing disclosure on philosophical and methodological pluralism. As Knox (2004) argues, this non rational alignment between positivism, quantitative methods and deduction and the opposing alignment of social constructionism, qualitative methods and induction limits and confuses the research process. Knox (2004) further challenges the use of Kolb's learning cycle by Gill and Johnson (2002), as it infers the researcher that the research approach of induction or deduction are in fact mutually exclusive; in the same way that positivism and social constructionism are placed at polar opposites.

As Easterby-Smith et al. (2002: p.57) cite, 'although there is a clear dichotomy between the positivist and social constructionist world views, and sharp differences of opinion exist between researchers about the desirability of methods, the practice of research involves a lot of compromises between these pure positions.' Further, Remenyi et al. (1998) argue that, seeing positivism and social constructionism as related concepts is useful and the understanding that empirical, and theoretical research as being in a dialectical relationship, helps in seeing research methods as providing a set of tools or directions which the researcher may draw on as and when appropriate. As claimed by Orton (1997), informally most researchers readily admit that research is a function of both inductive and deductive analyses, but they know they must present their research in either an inductive or a deductive rhetoric. As such Saunders et al. (2007: p.119) argue, 'not only is it perfectly possible to combine deduction and induction within the same piece of research, but also it is often advantageous to do so.' This use of

both inductive and deductive approaches is important as the research uses 'Grounded Theory' (Knox, 2004). Further, the use of induction and deduction is supported by Bryman and Bell (2003, p.12) who argue that grounded theory is an iterative process which includes elements of both induction and deduction.

As contended by Knox (2004), at best the concept of philosophical pluralism and methodological pluralism is trying to identify that a method does not select a theory but that there is an 'elective affinity' (p.124) between a theory and a method. Hence, the idea of an elective affinity allows one to identify that one's ontological views do in fact select, or lend themselves to certain approaches but being aware of these allows one to select what is best, from the myriad of tools available, for a particular piece of research (Knox, 2004). Thereby, understanding the issues of empiricism, theoretical research, positivism, social constructionism, deduction, and induction will encourage the researcher to select whichever is appropriate or even to triangulate the approaches and methods for development of theories, supporting the view that 'methodologies are best used in a complementary way'.

Conclusion

Substantial developments in research methodology have taken place over the last decade, especially relating to the philosophical stances of research. However, the role of theory in the design of research remains implicit and rarely made explicit. Thereby, this paper presented an overview of the involvement of theory within different research philosophies, approaches and methods. Moving from data to theory is commonly discussed in social constructionism with inductive approach and ideographic methods. However, within positivism philosophy with deductive approach and nomothetic methods, moving from theory to data is common. Understanding the role of theory from different philosophical stances is useful, although in practice rigid division is rare. Thereby, the growing concept of philosophical pluralism and methodological pluralism challenges the polarised views on philosophies and approaches.

References

- Betts, M. and Lansley, P., (1993), *Construction Management and Economics: review of the first ten years*, Construction Management and Economics, Vol 11, pp.221- 45
- Bryman, A and Bell, E., (2003), *Business Research Methods*, Oxford University Press, Oxford.
- Burrell, G and Morgan, G., (1979), *Sociological paradigms and organisational analysis*, Heinemann, London
- Collins, H.M., (1983), *An empirical relativist programme in the sociology of power and symbolism*, Routledge and Kegan Paul, London
- Collis, J and Hussey, R., (2003), *Business research: A practical guide for undergraduate and postgraduate students*, 2nd, McMillan, Basingstoke
- Comte, A., (1853), *The positive philosophy of Auguste Comte*, Trubner & Co, London
- Daft, R. L., (1985), Why I recommended that your manuscript be rejected and what you can do about it, (in eds) L. L. Cummings and Peter J. Frost, *Publishing in the Organizational Sciences*, Richard D. Irwin, Homewood IL, pp. 193-209.
- Dubin, R., (1969), *Theory building*, The free press, New York
- Easterby-Smith, M., Thorpe, R. and Lowe, A., (2002), *Management Research: An Introduction*, 2nd, SAGE publications, London

- Eisenhardt, K.M. (1989), Building theories from case study research, *Academy of Management Review*, Vol. 14 (4), pp. 532-55
- Gill, J. and Johnson, P., (1991), *Research Methods for Managers*, Paul Chapman Publishing, London
- Gill, J. and Johnson, P., (2002), *Research Methods for Managers*, 3rd, Sage Publishing, London
- Glaser, B. G. and Strauss, A. L., (1967), *The Discovery of Grounded Theory: Strategies for Qualitative Research*, Aldine, New York.
- Gummesson, E., (1991), *Qualitative Methods in Management Research*, revised edition Sage publications, London
- Hanson, N.R., (1958), *Patterns of discovery*, Cambridge university press, Cambridge
- Harre, R., (1972), *The philosophies of science: An introductory survey*, Oxford university press, Oxford
- Johnson, P. and Duberly, J. (2000), *Understanding Management Research*, Sage publications, London
- Kolb, D.A, Rubin, I. M and McIntyre, J.M., (1979), *Organisational psychology: an experiential approach*, Prentice-Hall, London
- Knox, K., (2004), A researchers' dilemma: Philosophical and methodological pluralism, *Electronic journal of business research methods*, Vol2 (2), pp. 119- 128.
- Krausz, E and Miller, S.H., (1974), *Social research design*, Longman, London
- Kuhn, T. S., (1962), *The Structure of Scientific Revolutions*, University of Chicago, Chicago
- Laing, R.D., (1967), *The politics of experience and the birds of paradise*, Penguin, Harmondsworth
- McNeil, D. H., (1993), *Reframing systemic paradigms for the art of learning*, Conference of the American Society for Cybernetics
- Orton, J.D., (1997), From inductive to iterative grounded theory: Zipping the gap between process theory and process data, *Scand J Management*, Vol. 13 (4), pp. 419-438
- Partington, D., (2000), Building grounded theories of management action, *British Journal of Management*, Vol. 11, pp.91- 102
- Perrow, C., (1986), *Complex organisations*, 3rd, Random House, New York
- Polanyi, M., (1974), *Personal Knowledge*, University of Chicago Press, Chicago, IL
- Remenyi, D. Williams, B. Money, A and Swartz, E., (1998), *Doing research in business and management: an introduction to process and methods*, Sage publications, London
- Robson, C., (2002), *Real world research*, 2nd, Blackwell, Oxford
- Saunders, M. Lewis, P and Thornhill, A., (2007), *Research methods for business students*, 4th, Prentice Hall, London
- Sexton, M., (2004), *PhD Workshop: Axiological purposes, ontological cages and epistemological keys*, Postgraduate research workshop, November 2004, University of Salford, UK
- Sutherland, J. W., (1975), *Systems: Analysis, Administration and Architecture*, Van Nostrand, New York