Chapter 1

Major research paradigms

Introduction

The primary purpose of this text is to provide an overview of the research process and a guide to the options available to any researcher wishing to engage in that process. It has been said that too much time spent engaging in the 'higher' philosophical debate surrounding research limits the amount of actual research that gets done. All researchers have their work to do and ultimately it is the 'doing' that counts, but the debate is a fascinating one and it would be very remiss not to provide you with some level of introduction to it. If you find yourself reading this chapter and thinking 'so what?', take some time to examine the implications of a paradigm on the research process. What follows is a very brief discussion of the major research paradigms in the fields of information, communication and related disciplines.

We are going to take a tour of three research paradigms: positivism, postpositivism and interpretivism. I had considered revising this for this edition but after extensive investigation into the developing discourse, I have decided that my basic belief has not been altered by these debates. There are those that lament the absence of a fourth paradigm which covers the mixed-methods approach from this text, namely *pragmatism,* but try as I might I can find no philosophical underpinning for pragmatism that is not already argued within a postpositive axiology. For some this will be too much, for others too little. Those of you who want more can follow the leads at the end of the chapter; those of you who want less, please bear with me for the brief tour of the major research traditions of our discipline. Having at least a basic understanding of different research paradigms is important at any level, if for no other reason than making you aware of the potential implications of the choices you make: 'Being aware of paradigmatic blinders is a first step towards greater situational responsiveness and creativity in making methods decisions' (Patton, 1988, 118).

Guba and Lincoln go further and claim that 'paradigm issues are crucial; no inquirer ought to go about the business of inquiry without being clear about just what paradigm informs and guides his or her approach' (1998, 218). Of course it has also been said that attempting to write on this subject 'requires the skills of an individual who is at once presumptuous and masochistic' (Caldwell, 1994, 1). I hope I am neither, and so I shall keep this discussion to a minimum and examine only that which

I feel is important as background to the practical side of research.

According to Lincoln and Guba (1985), there are three major questions that help us to define a research paradigm: the ontological question, the epistemological question and the methodological question. 'Ontology' is the nature of reality; 'epistemology' is the philosophy of how we can know that reality; and 'methodology' is the practice of how we come to know that reality. The three questions are:

1 What is the nature of reality? This is the ontological question concerning the nature and form of reality.
2 What is the nature of the relationship between the knower and the known? This is the epistemological question.
3 How we can come to know it? This is the methodological question.

It is in answering these three questions that paradigm boundaries are established. The three major research paradigms associated with our disciplines are positivism, postpositivism and interpretivism. By using the three basic questions above we can examine the beliefs of each of these paradigms and contrast the fundamental differences between them. A summary is provided in Table 1.1, which is adapted from Lincoln and Guba (1985, 109). You are strongly advised to read this essay for more detailed discussion.

Before we go on to discuss the three major paradigms let us remind ourselves of what we mean by a paradigm. In the Introduction I used Kuhn's definition of a paradigm as 'the entire constellation of beliefs, values, techniques, and so on shared by members of a given [scientific] community' (Kuhn, 1970, 146). That is to say it is 'a basic set of beliefs that guide action' (Guba, 1990, 17). Now we can go on and examine the positivist, postpositivist and interpretivist traditions in light of the three questions concerning the ontology, epistemology and methodology of each paradigm. I would also like to provide a very brief history of each paradigm for context. These are potted histories that do little more than provide you with an outline of the development. Table 1.1 provides an overview of the contrasting basic beliefs of each of the three paradigms.

Positivist research
Brief history
There are three generations of positivist thinkers who have influenced and shaped the paradigm as it is today: the original formulation of positivism attributed to Auguste Comte, the logical positivism associated with the Vienna Circle, and finally the standard positivism developed in the mid-20th century (Outhwaite, 1987).

In the early 19th century Auguste Comte devised social positivism as a means of examining social phenomena as an empirical science as opposed to the theological and metaphysical philosophies that dominated at the time. Positive knowledge was the discovery of causal laws of phenomena derived directly from observation. This was a rejection of the notion that society was beyond our physical perception and could not be examined in the same way as natural objects could be examined. Comte sought to take the rules and practice of the natural sciences of physics, astronomy and chemistry

Table 1.1	Characteristics of major research paradigms (adapted from Lincoln and Guba, 1985)		
	Positivism	Postpositivism	Interpretivism
Ontological stance	'Realism'	'Critical realism'	'Relativist'
	Belief in a tangible, social reality. This reality exists independently of those 'creating' the reality. A social reality can exist just as a natural reality exists (water remains water whether someone is swimming in it or not).	Belief in a social reality but acceptance that knowing this reality will always be inhibited by imperfections in detecting its nature. The imperfections are the result of human fallibility.	Belief in multiple, constructed realities that cannot exist outside the social contexts that create them. Realities vary in nature and are time and context bound.
Epistemological stance	Objectivist/dualist	Modified dualist/objectivist	Transactional/subjectivist
	Investigator and investigated are independent of each other.	Acceptance that independence is not possible but objectivity is seen as the goal and demonstrated by external verification.	The results of the investigation are a product of interaction between the subject and the investigator. What can be known is a result of the interaction.
Methodological stance	Experimental/ manipulative	Modified experimental/ manipulative	Empathetic interaction
	Hypothesis testing, variables identified before the investigation. Empirical testing is conducted in order to establish the 'truth' of the proposition.	Hypothesis testing but more emphasis placed on context.	Investigator interacts with the object of the investigation. Each construction of reality is investigated in its own right and is interpreted by the investigator.
	Predominantly quantitative.	Quantitative and qualitative.	Qualitative, including hermeneutics and dialectic interchanges.
	Analysis by variables.	Analysis by variables.	Analysis by case.
Purpose	Prediction/control/ explanation	Prediction/control/ explanation	Understanding/ reconstruction
	Framing of general laws.	Generalizations.	Transfer of findings.

and apply the same investigative techniques to social theory and human behaviour. It has to be remembered that at this time natural science was still dominated by Newtonian mechanics. But Comte believed it was possible to 'reconstruct human knowledge

in order to build a better society' (Smith, 1998, 78). Although Comte is seen as the 'father of positivism' much of his work was rhetorical; it was Emile Durkheim (1858–1917) who first pioneered empirical investigation of society, and he was labelled the first 'sociologist' (Corbetta, 2003). Durkheim began to examine social phenomena as a set of independent variables that could be empirically tested to determine any evidence of causal links.

Logical positivism emerged from a group of philosophers working in Vienna during the 1920s; they rejected Comte's positivism (they actually refused the title 'logical positivists' in favour of 'logical empiricists' in order to distance themselves still further from the tradition associated with Comte) (Outhwaite, 1987). Moritz Schlick began the movement in 1922 at the University of Vienna. Other notable members of this group, known as the Vienna Circle, were Rudolf Carnap, Philip Frank and Bertrand Russell. Russell developed the analytical tools of mathematics, which made the greatest distinction between Comte's positivism and the new empirical positivism. This was the first time statistical analysis was used to examine social behaviour. These philosophers believed that although Comte had attempted to adapt social theory to the model of the natural sciences, he had not gone far enough. They rejected totally the concept of the metaphysical and claimed that elements of this still existed within Comte's work. They 'asserted that only meaningful statements were to be permitted scientific consideration and accorded the status of knowledge claims' (Caldwell, 1994, 13). By 'meaningful' they referred to only those statements that could be verified or falsified by evidence.

Physical evidence is paramount to logical positivists: if there is no physical evidence then how can phenomena be verified or falsified? They believe that concepts such as motivation and affective influences on behaviour can only become metaphysical speculation, as there is no visible means of verifying these 'unseen' behavioural influences. 'The stated aim of the logical positivist is to cleanse scientific knowledge of speculative thinking, for it is not tied in a direct and demonstrable way to experience' (Smith, 1998, 97). Examples of this way of approaching social investigation can be seen in the work of a group known as 'behaviourists', who based their work on the concept of classical and operant conditioning. This approach concentrates on the way individuals respond to various stimuli. From this behaviourist tradition emerged the 'classical conditioning' of Pavlov (1927), and Skinner's 'operant conditioning' (Skinner, 1987). This demonstrates that the basic premise of positivism, that of social engineering, still remained for the behaviourists although the approach had changed.

Ontology – realism

Positivism assumes the existence of an objective, independent and stable reality, which is available for discovery and analysis. Only observable phenomena are recognized; what is real is only that which can be observed. Metaphysics is strongly rejected, thereby denying the meaningfulness of human characteristics that cannot be demonstrated overtly. Social facts are seen to exist independently of human interaction just as natural laws exist. These social facts function according to their own laws, mecha-

nistic and immutable. Newtonian mechanics were seen as transferable from the natural world to the social world of its inhabitants.

Epistemology – objectivist/dualist

The positivist view of the relationship between the knower and the known is one of 'objective observer'. The researcher can stand apart from that which is being observed and report on the reality that is discovered through this observation. This stance was seen as an obvious development from the natural sciences: if we can watch a flower grow and report on that growth, then watching a human interact with their environment in any way could also be observed and reported.

Dualism exists when two distinct entities are present with the research process, the researcher and the subject, existing independently of each other. Research is designed in such a way that objectivity can be demonstrated through replication; this will be discussed in more detail later in this chapter. This stance relies on the presumption that it is possible to observe without influencing that which is being observed.

Methodology – experimental/manipulative

Positivists believe that reality can be dissected into variables that represent the theoretical constructs that underlie observable phenomena. These variables can then be manipulated through experimentation and 'laws' can be determined from the results of those manipulations. Positivist research usually begins with a hypothesis, which is then tested empirically for verification through structured experimentation. This testing involves a complex statistical mechanism for determining relationships between the variables, and results in broad generalizations concerning the phenomena being studied. Quantitative methodology is used in positivist research.

Purpose – predication/control/explanation/verification

Positivist approaches are focused on explaining how things happen in order to predict what comes next and being in a position to control what happens. Social reconstruction was the driving force behind Comte's original ideas and this purpose remained constant throughout the various positivist traditions. Generalizations are derived from examination of the specific and applied to all occurrences of the incident, striving to demonstrate universal validity.

Postpositivism and mixed methods research (MMR)
Brief history

It is important to realize that the whole premise of positivism was an emulation of the natural sciences, particularly physics. Postpositivism was as much a reaction to the failings of positivism as it was to a shift in the emerging changes in the basic axioms of natural science. During the early 20th century natural science underwent an enormous shift; physics was the driving force behind this shift. There was a move from the rigid mechanistic Newtonian physics to the concept of 'uncertainty' and 'relativity'. Einstein and Heisenberg took physics from the language of deterministic laws to probability and uncer-

tainty (Corbetta, 2003). The great shift here was not Einstein's theory of relativity, but rather his statement about the tentative nature of discovery, that determinism inhibits the true goal of research, which is discovery (Popper, 1963). If it was no longer possible to study the natural world from a mechanistic viewpoint then it was certainly no longer possible to study social facts in that way. This raised an enormous question for the study of human behaviour. There was a need for refinement and development in social research if it was to retain credibility as a true science. That development came in two major stages; standard positivism began in the 1930s and continued through to the 1960s, when it was replaced by the postpositivist paradigm as we know it today.

New theories of uncertainty and probability leading to the tentative nature of discovery were adopted in social research with the concept of 'falsification' introduced by Karl Popper between 1959 and 1963. It was no longer possible to 'prove' a hypothesis, as it could never be certain that an alternative explanation did not exist for the relationship between the variables. Popper introduced the concept of 'critical realism'; the positivist view of the existence of objective social facts remained but this was now tempered with the notion that those facts were subject to interpretation (Tucker, 1998). This was translated into the practical claim that it was possible to prove the hypothesis was 'wrong' to falsify the claim, but not to verify that claim beyond doubt; uncertainty and probability would always prohibit this. Current postpositivism is rooted in the premise that any perception of reality cannot be an objective picture but is drawn from empirical observation and existing theory. There has been a shift within this paradigm but the basic concepts of quantification and generalization taken from original positivism remain predominant.

It is at this point that we need to refer to mixed methods research (MMR) as a form of postpositive research. Although it is clearly a pragmatic approach to exploring research questions, there is still a tendency amongst MM researchers to claim that this approach is a 'catch-all' and by applying both qualitative and quantitative methodologies we are ensuring that the failings of one are compensated for by the other. This is an erroneous assumption (Giddings and Grant, 2007). Denzin (2010, 423) stresses that mixed methods 'requires multiple investigators with competencies in more than one method or paradigm', that would sit much more comfortably than a single individual attempting to be all things to everybody. Denzin has promoted the use of more than one method for many years (Denzin, 1978) but has always argued for rigour and trustworthiness to be ensured. I continue to stress that combining methods is not an issue, the rigour and trustworthiness of the research are.

Ontology – critical realism

Objective social facts do exist independently of and externally to human beings, but these facts are subject to uncertainty and probability. Cause and effect relationships do exist but it is not always possible to 'know' these relationships in their entirety. Human fallibility will always create imperfections but there remains the basic belief that a 'reality' is out there waiting to be discovered.

Epistemology – modified dualist/objectivist

The major difference between postpositivist epistemology and that of the original positivists was the ability of the 'knower' to be completely divorced from the known. Postpositivists accept that all discovery is subject to interpretation; it is the responsibility of the researcher to demonstrate objectivity during the discovery process. This objectivity is demonstrated by external validity, a notion that will be discussed later in this chapter.

Methodology – modified experimental/manipulative

The approach taken by postpositivists remains one of experimentation and hypothesis testing and although the procedure has been modified from that of the early positivists, they remain essentially the same. Variables are identified and manipulated, and the relationship between these variables is then measured using statistical techniques. The more 'qualitative' notion of 'interpretation' is often included in this approach allowing for the possibility of prior knowledge having an impact on the perceptions of results. Mixed methods research is constructed following the same process of an 'a priori' design but that design can take a number of different forms giving equal weighting to qualitative and quantitative aspects of the inquiry or allowing for dominance of one or the other. The various designs will be explored later when discussing methodologies.

Purpose – prediction/control/explanation/falsification

The purpose of research within the postpositivist tradition remains very similar to that of positivism. The most significant difference is the notion of falsification; disproving the existence of a phenomenon had become a valid outcome of an investigation. Generalizations about the phenomena under investigation remain an output of the postpositivist approach to empirical investigation. Methodological dualism in the use of qualitative and quantitative is accepted practice in postpositivist research.

Interpretivist research
Brief history

'Interpretivism' is used as a covering term for a number of approaches to research. Essentially the areas we are concerned with can be sorted into two distinct groups: 'empirical interpretivism' and 'critical theory'. The former deals with investigation in natural settings of social phenomena; the latter engages in ideologically orientated investigation, examining current thought and social structures. Anthropology also falls into the interpretivist paradigm but it is beyond the remit of this book to cover that area in any detail other than to look at the generic issues that influenced the development of all interpretivism. In 1883 Wilhelm Dilthey published the first critique of positivism with his now famous distinction between the 'science of nature' and the 'science of spirit' (Corbetta, 2003). This was essentially a philosophical debate that commented on the difference between understanding human thought and explaining nature. Dilthey's critique was a direct response to positivism, a refutation that human beings could be investigated in 'cold' cause and effect terms.

The first proponent of empirical interpretivism was Max Weber at the beginning of the 20th century. Early interpretivists focused on ethnographic studies of colonial culture and immigrant culture in Europe and America, focusing on the work of Bronislaw Malinowski (Swingewood, 2000) and the Chicago School of sociology (Denzin and Lincoln, 1994). A new movement that attempted to formalize the procedures of empirical interpretivist research followed this early phase. One of the best examples of this approach can be found in the work of Barney Glaser and Anselm Strauss. They attempted to provide interpretivist researchers with a framework for analysis that had, up until this point, been missing from the paradigm (Glaser and Strauss, 1967). Following this, from 1970 to the mid-1980s there was an expansion of the paradigm into a myriad of approaches to interpretivism; these are listed in Table 1.2.

I am not suggesting that all approaches to research shown in Table 1.2 were developed during this short period; these approaches emerged throughout the 20th century (see Swingewood, 2000, for in-depth discussion).

Table 1.2   Approaches to interpretivism

Human inquiry	Critical theory
Anthropology	Feminism
Constructivism	Marxism
Ethnomethodology	Post-modernity
Naturalist inquiry	Post-structuralism
Phenomenology	Structuralism
Semiotics	
Symbolic interactionism	

Ontology – relativism

Interpretivists believe that realities are multiple, constructed and holistic. There is no single, tangible reality, instead there are only the complex, multiple realities of the individual. Reality is seen as 'individual' and embedded in context, as opposed to 'universal' (Flick, 2002).

Epistemology – transactional/subjectivist

The known and the knower influence each other; all descriptions are time- and context-bound. It is impossible to separate cause from effect, as all entities are in a state of simultaneous shaping (Lincoln and Guba, 1985). All knowledge we acquire is a product of the interaction between the known and the knower; the researcher and the subject are both 'changed' by the experience, and knowledge is a result of this interaction and is time- and context-bound.

Methodology – empathetic interaction

Interpretivists take the stance that any research activity will leave the subject of that research in an altered state. Heisenberg claims that 'what we observe is not nature itself, but nature exposed to our method of questioning' (1958, 288). The data that is gath-

ered from that research might itself be, in part, a product of the research process. The time and context in which the data is gathered will also influence that data: 'Context is something you swim in like a fish. You are in it. It is you' (Dervin, 1997, 32). Interpretivism can offer understanding of the meanings behind the actions of individuals. 'From this perspective, meaning depends upon context, and the interpretation of action or opinion must take account of the setting in which it is produced' (Dey, 1993, 110). Interpretivism seeks to understand the entire context, at both the macro- and micro-environmental level. Qualitative methodology is applied, including dialect interchange with participants and hermeneutics, depending on both the tacit and the explicit knowledge of the researcher.

Purpose – transfer of findings based on contextual applicability

Transferability depends on 'similarities between sending and receiving contexts, the researcher collects sufficiently detailed descriptions of data in context and reports them with sufficient detail and precision to allow judgments about transferability' (Erlandson et al., 1993, 33). The 'sending' context is the research location, the 'receiving' context is the context to which the research findings are applied. Interpretivist tradition is concerned with individual contexts, therefore 'research can only be particularized and generalization, in the traditional scientific sense, is impossible' (Dervin, 1997, 14).

As I said in the opening section of this chapter, there are those who believe that discussions of paradigms have no place in the research process; you can make your own mind up about that. I believe that although the theoretical debate may not contribute greatly to 'getting the job done', it does provide an understanding of the intention behind the action. It would be very difficult to provide a simple definition of 'types' of researchers without over-simplifying the nature of these traditions. One useful if somewhat basic definition is supplied by Greene (1990), who suggests that positivists and postpositivists can be thought of as social engineers, interpretivists as storytellers and critical theorists as catalysts of social change.

Qualitative or quantitative methodology?

In the research hierarchy there is no doubt that a research paradigm implies a research methodology. Hopefully the explanation of the three paradigms given above should make this very clear. It is impossible to examine multiple, individual realities in any depth using a quantitative methodology, just as it is impossible to identify a single reality, measure it or quantify it in any other way than via a quantitative methodology.

Gorman and Clayton (2005) identify the fundamental argument between the two methodologies and present a summary of qualitative and quantitative approaches to an inquiry. Although they do not argue necessarily for paradigmatic purity, it appears implicit in the distinctions between the two. They begin by examining the basic assumptions of each mode of inquiry; quantitative methodology assumes the objective reality of social facts; qualitative methodology assumes social constructions of reality (Gorman and Clayton, 2005, 24–8). These assumptions are in fact two

of the basic axioms of two separate belief systems, two conflicting paradigms. There is no consensus of opinion concerning the need for paradigmatic purity in research. Many social researchers see methodological dualism as the only pragmatic option. Feyerand argues that this eclectic approach to inquiry is not only possible but necessary if science is to advance, claiming that both 'methodologies have their limitations and the only "rule" that survives is "anything goes"' (Feyerand, 1975, 296). This is in fact the methodology associated with the postpositivist paradigm. Although there is much discussion about mixed methods research as an emerging methodology, it is actually something which had been advocated by many social science researchers for over four decades. MMR is not a methodology, in my opinion, it is a method for combining the existing two methodologies in various ways to address various research questions. This could be one of those examples where discussion about methodologies and past 'paradigms wars' (Denzin, 2010) do us very little good in terms of getting the job done.

Qualitative research design

The emergent design of qualitative research does not allow for a detailed plan before the research begins: 'the research design must therefore be "played by ear"; it must unfold, cascade, roll, emerge' (Lincoln and Guba, 1985, 203). However, it is possible to develop a design that allows for the iterative nature of the study. A design adapted from Lincoln and Guba's generic research model (1985, 188), their development of that model (Guba and Lincoln, 1998, 104) and Kumar (1999) is presented in Figure 1.1. This design illustrates the entire research process conducted within the boundaries of trustworthiness: transferability, credibility, dependability and confirmability. The human instrument applies appropriate data collection techniques, complemented by tacit knowledge, to the investigation. Purposive sampling is employed in order to achieve a sample of maximum variation, extreme case or typical case (Patton, 1987), to ensure that each new research participant contributes characteristics differing from preceding participants. This allows for multiple perspectives on the phenomena under study. Inductive data analysis is a vital part of both the selection of subsequent participants and the constant building of grounded theory (Glaser and Strauss, 1967). The emergent design (Lincoln and Guba, 1985) of individual data collection techniques is based on analysis of preceding data and the identification of concepts and ideas that require further and deeper investigation. This process produces individual studies, which are then reported back to research participants and discussed with the researcher. By analysing these individual studies, themes are identified which provide grounded theory to be transferred from the local to the global level (Deem, 1998).

The essential components of a qualitative research design are literature review, theoretical framework (to act as cognitive signposts, not to restrict emerging concepts), fieldwork in a natural setting, using a human instrument, purposive sampling, appropriate data collection techniques, inductive analysis, emergent design, iteration of activities, grounded theory, negotiated outcomes, and forming a tentative working hypothesis, leading to transference of findings based on contextual applicability.
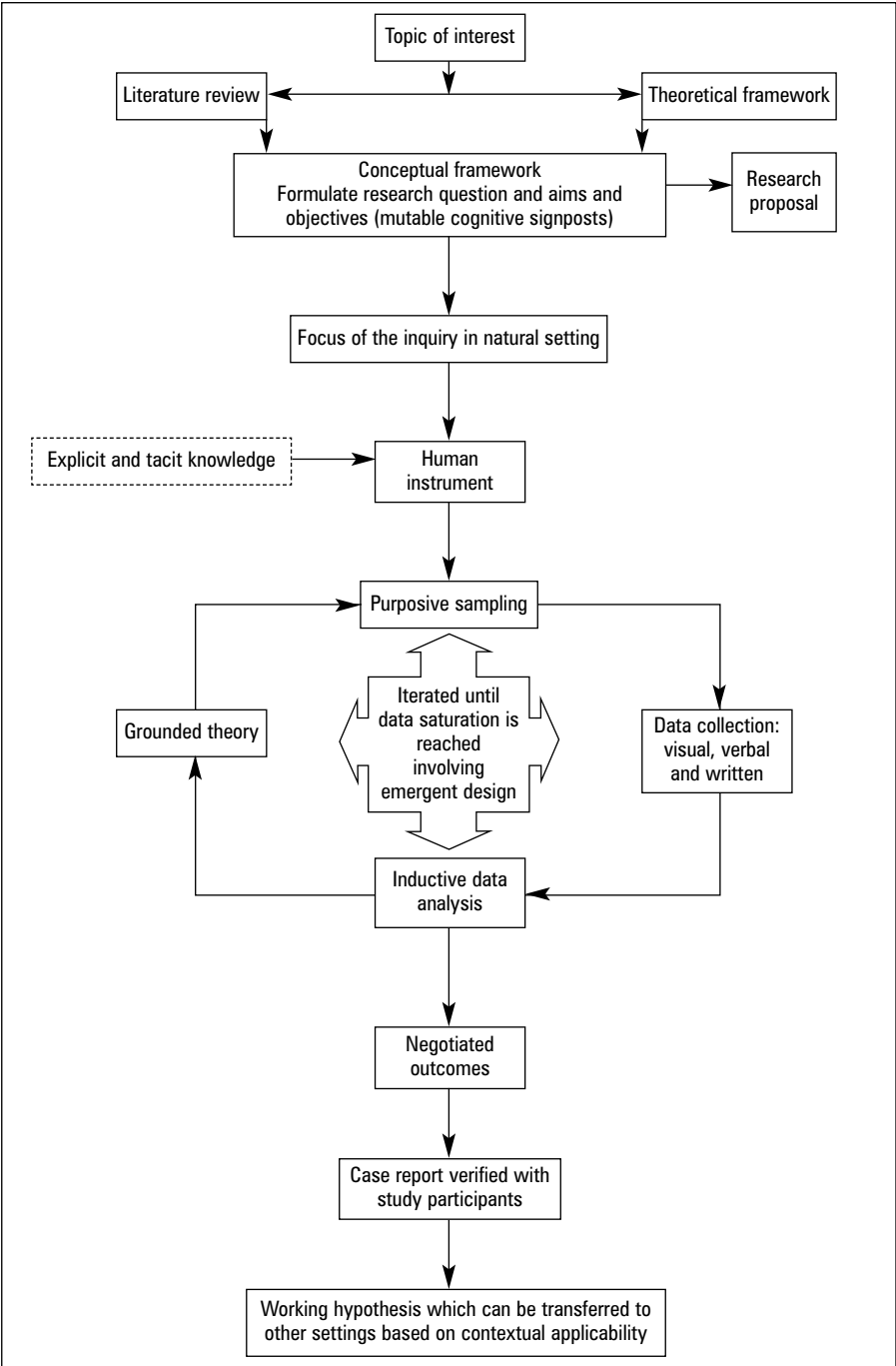
Figure 1.1 Qualitative research design (adapted from Kumar, 1999, and
           Lincoln and Guba, 1985)

Many of these stages are discussed in detail in subsequent chapters but there are a number of things we need to examine further before we go on.

Human research instrument

In order to study behaviour in context it is most appropriate to choose the human as instrument. Human lives and their interpersonal relationships create complexities that need to be understood and the researcher acting as the research instrument allows for understanding and depicting these complexities: 'These complexities . . . cannot be figured out, cannot be understood by one-dimensional, reductionist approaches; they demand the human-as-instrument' (Maykut and Morehouse, 1994, 27).

Qualitative research combines the individual research participant, the researcher as research instrument and appropriate data collection techniques in a collaborative process of producing meaning from data and using that meaning to develop theory: 'If a person is to be understood as a person and not as a thing, then the relationship between the researcher and the other person must be a dynamic and mutual relationship' (Maykut and Morehouse, 1994, 37). When human experience and situations are the subject of the research, then the human as instrument is 'the only instrument which is flexible enough to capture the complexity, subtlety, and constantly changing situation which is the human experience' (Maykut and Morehouse, 1994, 26). The researcher as instrument is also in a position to apply appropriate tacit knowledge to each situation and event as it occurs. Tacit knowledge can contribute to interpretation of the observed evidence, although confirmation and justification of how this knowledge is applied must be possible. Tacit knowledge provides a springboard to generate theory but must be applied tentatively and these theories are only retained and developed when there is evidence to support them.

Emergent design

Emergent design is an integral part of all qualitative research yet it is rarely explicitly admitted outside the social sciences. The concept of an emergent design is based on the belief that the researcher 'does not know what he or she doesn't know' (Lincoln and Guba, 1985, 209) at the beginning of a study. Therefore it would be impossible to establish the means by which the unknown could manifest itself to the researcher during the course of the study. Because of this, qualitative research allows the design to emerge as the study progresses. A research model can and should be developed that allows for the iterative nature of the study. It takes the form of a plan that maintains the focus of the study without restricting or limiting the use of individual techniques as they become apparent. This is one area in the investigation where the participants can be given a degree of control over the process, leading to a sense of ownership of the study: 'The [interpretivist] paradigm affirms the mutual influence that researcher and respondents have on each other . . . never can formal methods be allowed to separate the researcher from the human interaction that is the heart of the research' (Erlandson et al., 1993, 15).

An interesting example of this occurred during one of my own qualitative investi-

gations involving teenagers. I had designed what I thought to be a very good search log (a diary of their information seeking behaviour) for each participant in my study and asked them to use it. After 20 weeks of the field work, only two of the 16 teenagers had begun to use their logs to keep a record of their searches. They were happy with the organization and format of the log and thought that the information provided in it was clear and gave them a valuable framework for recording their work. The 14 teenagers who had made no entries gave a variety of reasons for not complying with my request: 'I haven't done any research projects', 'I forgot what to do', 'It interferes with my work', 'It takes up too much time', 'I can't be bothered' and 'I don't want to walk around with a great big yellow book, I feel stupid'.

A focus group meeting was held at each site to decide what could be done about this problem. I explained that I needed a detailed account of the searches the teenagers carried out when the researcher could not be present. It was to be a surrogate for the observations the teenagers were now accustomed to. Very productive discussions followed and the teenagers themselves identified ways in which they thought the search log could be a more effective tool. They suggested keeping a handwritten diary in their own words, storing data on a Microsoft Access database, and keeping a diary in a Microsoft Word file. One participant requested an audio tape so he could describe his actions verbally. Unfortunately the economic restrictions of the research would not permit this last suggestion although it would have been a very interesting data collection method. I agreed to logs being kept in one of four ways: on databases, on notebooks, as word-processed documents, and using the original log design. The search logs provided a rich source of data and were well maintained throughout the research. The level of involvement in the design of the log by the teenagers played an important role in the quality and quantity of information provided from this source. They had become stakeholders in the research and this appeared to encourage vigilance in maintaining the logs. After all, if their design was so much better than mine it had to work to prove them right! It certainly increased their diligence.

Negotiated outcomes

The dialectic nature of qualitative research is accommodated by interaction with participants where they are encouraged to compare and contrast the researcher's constructions of reality by debate: 'Because the realities that will be included are those that have individually and collectively been constructed by persons within the context of the study, it is imperative that both data and interpretations obtained be verified by those persons' (Erlandson et al., 1993, 31).

Stake claims that negotiated outcomes or 'member checking' is a vital component of a study, not just in terms of adding to the credibility of the study, but also in improving the quality of the final case report. He stresses that 'all [his] reports have been improved by member checking' (Stake, 1995, 116). There is some debate on how far participants should be allowed to go in terms of altering what has been said or done but it is the responsibility of the researcher to control this procedure to allow for maximum information yield. Ultimately this is up to the researcher or the research team.

I have always found it incredibly helpful to involve research participants in this process; there is rarely any real conflict concerning interpretations but there can be significant insight gained by this dialectic interchange.

The other aspects of qualitative research will be covered later in this book. The role of this introduction is to provide you with a broad picture of what qualitative methodology actually means and give you an outline of the research process.

Quantitative research design

The design of quantitative research is far more linear than that of the qualitative approach and I would suggest that this is probably the most attractive feature of this approach for new researchers. I have always found that students doing research for the first time prefer the appearance of this design as it provides a more concrete framework, but that does not mean to say I am recommending it over qualitative research, far from it. I am saying that we need to look beyond first impressions and make choices based on much more.

Quantitative research begins with a theoretical framework established from the literature review; from this framework a hypothesis will emerge and the variables within that hypothesis can be identified. The notion of a hypothesis can also be translated into research aims and objectives; it is only compulsory to have a hypothesis when true experimental research is chosen as the method. This will be discussed in detail in Chapter 3. From this it is possible to select the most appropriate research method, then calculate the sample and design the data collection instruments within that method. Once data collection is complete it is time to process and analyse the data. Once data analysis is complete the researcher has the 'evidence' either to falsify or to support the hypothesis. Please note the use of the word 'support', I am often frustrated by the use of the word 'prove'; it is rarely possible to prove anything that is related to human behaviour. There is also no need to make such an irrational claim, as support is a great achievement in any research. It is then time to make generalizations based on the findings or, in the case of experimental research, to formulate general laws (highly unlikely within our discipline). All of these elements of the research process are discussed in much more detail throughout this book. See Figure 1.2 for a summary of the quantitative research design process.

Mixed methods research

Although none of the reviews of the first edition of this text mentioned the omission of mixed methods I feel it is probably useful now to include some discussion here to ensure new researchers are exposed to all possible approaches to research investigation. As I have already said, I feel mixed methods fall within the postpositivist paradigm. It is a combination of methodologies to address the same overarching research question but can take many forms. In LIS research one of the most common approaches to this is a large-scale survey followed up by a more detailed case study, but this is rarely labelled as mixed methods. Tashakkori and Cresswell (2007, 4) defined mixed methods as 'research in which the investigator collects and analyzes data, integrates the findings and
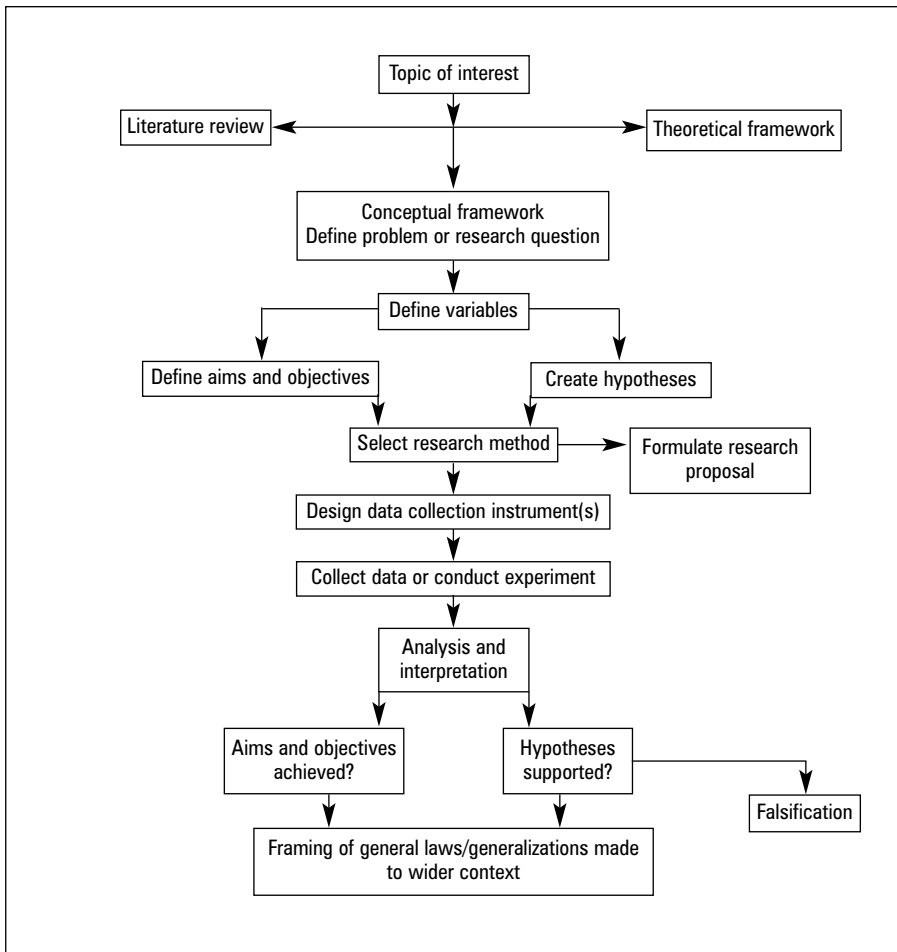
Figure 1.2   Quantitative research design

draws inference using both qualitative and quantitative approaches or methods in a sin-
gle study or program of inquiry'. There is no single design for a mixed methods
investigation; there are many and varied combinations – Tashakkori and Teddlie (2003)
present 35 possible designs for a mixed methods study. Leech and Onwuegbuzie
(2007) attempted to present a typology of mixed methods by designing a three-dimen-
sional framework for a mixed methods study but this still provides a bewildering array
of options. In 2007 a new journal was released by Sage, the *Journal of Mixed Methods
Research*, now providing a valuable source of instruction, debate and inspiration for any-
one wishing to explore a mixed methods approach to inquiry. I have neither the space
nor the inclination to present every potential design for a mixed methods study – that
has been done far better elsewhere – so I would simply direct you to those sources should

you wish to take this approach. I would issue a word of caution: the following section deals with criteria for judging the value of research, and where mixed methods are used, both methods have to satisfy the requirements of these criteria.

Criteria for judging research

Establishing the value of research findings has been and still is a hotbed of critical debate and conflict among researchers (Smith, 1990). Whichever paradigm you associate your research with, whichever methodological approach you take, demonstrating the value of your investigation is essential. This applies to practitioner research and student research: we all want our findings to be believed and are responsible for ensuring that they can be believed.

How do we do this? This question is particularly difficult to address when you consider the clear differences between the two methodologies we have looked at. It is clear that each takes a very different view of the nature of reality, and so it would follow that demonstrating the truth cannot follow the same pattern in both methodologies. I am constantly perplexed by attempts made to judge research conducted within one methodology by criteria established to judge the other. Wolcott's comments on the application of validity criteria devised for judging quantitative research being applied to qualitative research demonstrate the inappropriateness of applying criteria established for one research paradigm to another, conflicting paradigm. He claims that 'a discussion of validity signals a retreat to that pre-existing vocabulary originally designed to lend precision to one arena of dialogue and too casually assumed to be adequate for another' (Wolcott, 1990, 168). Understanding the methods of establishing the 'truth' of research is essential for researchers and they must understand that it is inappropriate to judge methodologies using criteria that are not only misleading, but fundamentally wrong. Table 1.3 shows the criteria applied to establishing the value of research findings from the qualitative, the quantitative and mixed methodological perspectives. The four concepts used by researchers to gauge the value of research have been 'truth value', 'applicability', 'consistency' and 'neutrality' (Lincoln and Guba, 1985).

Table 1.3 Methods of judging value in research (adapted from Lincoln and Guba, 1985)

	Quantitative methodology (rigour)	Qualitative methodology (trustworthiness)	Mixed methodological approach
Truth value	Internal validity	Credibility	Validity/credibility
Applicability	External validity	Transferability	Generalizability
Consistency	Reliability	Dependability	Synchronic reliability
Neutrality	Objectivity	Confirmability	Objectivity

Establishing trustworthiness in qualitative research
Credibility
Credibility in qualitative research is demonstrated by prolonged engagement with the research participants, persistent observation of those participants, triangulation of the techniques used to study those participants and their contexts, peer debriefing and member checks. Qualitative methodology often applies triangulation as a means of establishing credibility, including for example triangulation of investigators, theory, technique or sources (Denzin, 1978). As each source and type of data have both limitations and strengths (Patton, 2002), the use of multiple data collection techniques compensates for any limitations of individual techniques (Marshall and Rossman, 1995). There is also a need for what Mellon refers to as 'objective subjectivity' (Mellon, 1990, 42). Identifying that it is impossible to remove all subjectivity from a qualitative study allows the researcher to be constantly alert to this subjectivity and compensate whenever necessary.

Transferability
In terms of transferability Lincoln and Guba note that 'the trouble with generalisations is that they don't apply to particulars' (1985, 110). In qualitative research, the goal is to allow for transferability of the findings rather than wholesale generalization of those findings. Here the researcher provides 'rich pictures' on an individual level; the user of the research then gathers, or already has, empirical evidence concerning the cases to which they wish to apply the findings. If sufficient similarities between the two contexts are identified then it is reasonable to apply the research findings to the new context: 'Every context is by definition different, an intersection of a host of nameless factors. Because of this, research can only be particularized and generalization, in the traditional scientific sense, is impossible' (Dervin, 1997, 14). Erlandson et al. (1993, 33) reinforce this: 'Because transferability in [an interpretivist] study depends on similarities between sending and receiving contexts, the researcher collects sufficiently detailed descriptions of data in context and reports them with sufficient detail and precision to allow judgements about transferability'.

Dependability
Dependability is established by an 'inquiry audit', where an external 'auditor' examines the research process. In order to allow for this an audit trail must be maintained by the researcher along with the research journal. The data produced can then be examined in terms of accuracy relating to transcripts and levels of saturation in document collection. Dependability is concerned with the manner in which the study is conducted; evidence needs to be provided that demonstrates that the methods and techniques used were applied appropriately and with relevance to the study. Lincoln and Guba (1985) recommend the use of the 'Halpern Audit Trail' as a means of ensuring that constructions can be seen to have emerged directly from the data, thereby confirming the research findings and grounding them in the evidence. Edward Halpern produced the audit trail as part of his doctoral dissertation in 1983.

Confirmability

Confirmability is vital to limit investigator bias. The notion of objectivity is still often used in postpositivist, qualitative research but it is becoming increasingly more difficult to defend even in the modified form in which it is now applied. 'How, when each researcher is embedded in prejudices, values and specific cognitive frameworks, can we move, however tentatively, towards something which might be called objectivity?' (Lazar, 1998, 17). The goal is to ensure that the results, accepted as the subjective knowledge of the researcher, can be traced back to the raw data of the research, that they are not merely a product of the 'observer's worldview, disciplinary assumptions, theoretical proclivities and research interests' (Charmaz, 1995, 32).

Establishing rigour in quantitative research

Quantitative research relies on what has been referred to as the 'trinity of validity, reliability and generalisability' (Janesick, 1994, 215). This is actually more true of the mixed methodological approach than it is of quantitative research, although the terms have been somewhat randomly applied. The way to establish the value of quantitative research is by testing it against the criteria of rigour noted in Table 1.3.

Internal validity

Internal validity relates to the way in which a causal relationship is demonstrated. Is it clear that the effect is indeed attributable to the cause? When examining causal relationships there are two sets of variables: dependent variables, the outcome, and independent variables, the variables that are manipulated in order to demonstrate a relationship. For example, if we are investigating the effect that playing music in a department store can have on shoppers' spending then music becomes the independent variable and spending the dependent variable. The presence and character of the music will be manipulated (no music, soft music, loud music and so on), and the resulting change, if any, in spending will be measured. Internal validity is concerned with the extent to which we can demonstrate any change in the dependent variable as a direct result of changes made to the independent variable, all other things being equal.

External validity

External validity is concerned with the extent to which findings from the investigation can be generalized to the wider context. This depends on the sample used in the investigation and to what extent it is 'representative' of the wider population. This is demonstrated by a statistical examination of probability; the significance of the sample is paramount and needs to be given considerable thought before the research is carried out.

Reliability

Reliability is concerned with stability of the research findings over time and across locations. Typically the test, retest method is used to demonstrate reliability. The research

is conducted more than once and by other researchers. If the results are found to be significantly similar, then reliability is accepted. More recently statistical analysis software has provided a second solution to this, which allows for cross-sectional analysis of the data. This will be discussed in the final section of this book.

Objectivity

Objectivity is a very tricky topic to discuss; it is highly emotive and therefore you are likely to find much discussion and many opinions on the matter. I do not put forward an opinion here, simply an explanation of how it is used in quantitative research. Objectivity is measured by the extent to which the findings from an investigation would remain constant regardless of the character of the researcher. Findings are a result of the research investigation, not a result of the researcher's interpretation of those findings. The goal is to demonstrate that the investigation is value-free, free from any personal constructs of the researcher.

Summary

Some claim that striving and debating over paradigm and methodological issues does not help in achieving the aims and goals of the research. For example Miles and Huberman contend that 'researchers should pursue their work, be open to an ecumenical blend of epistemologies and procedures, and leave the grand debate to those who care about it' (1988, 223). Well, I care about it and would encourage those of you who have been stirred by this debate to go on and investigate it further.

✎ PRACTICAL EXERCISE

This is slightly different from the exercises you can expect in the rest of the chapters in this book. It focuses more on your own beliefs than strict procedures and hopefully it will help you to understand the relevance of paradigms and methodology in deciding on your own approach to an investigation. I am going to give you a research question; I want you to decide on the approach you would take in order to provide what you think would be a valid response to the question. At this stage I would not expect you to go into any real detail concerning the design of your investigation but I do expect you to say how you would approach the question. This is as much about understanding your own view of the world as it is about demonstrating that you understand the major traditions discussed so far.

Research question: 'What is the impact of online access to extensive resources on an individual's ability to locate, retrieve and use those resources?'

• What do you think you can reveal by investigating this question?
• What would be your personal preference in approach to this question?
• Can you say why?

Keep a note of your responses, it may be very interesting to look back at them after you have explored this topic in more depth.

Suggested further reading

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