Research philosophy: towards an understanding

In this paper, Frank Crossan argues that the distinction between quantitative and qualitative philosophies and research methods is sometimes overstated, and that triangulation of methods in contemporary research is common. It is, therefore, important to understand the strengths and weaknesses of each approach, and this paper aims to provide the novice researcher with a basis for developing that understanding. A descriptive analysis of the philosophies of positivism and post-positivist thinking in relation to research methodology is presented both as an introduction to the philosophical basis of research, and as a sound basis from which to discuss the 'quantitative-qualitative' debate.

research methods
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positivism
post-positivism
quantitative
qualitative

Introduction

Positivism adopts a clear quantitative approach to investigating phenomena, as opposed to post-positivist approaches, which aim to describe and explore in-depth phenomena from a qualitative perspective. This paper aims to introduce the philosophical basis of research by, firstly, providing a descriptive analysis of positivist and post-positivist philosophies, and secondly, by providing a sound basis from which to discuss the 'quantitative-qualitative' debate in relation to research methods. It begins by exploring the reasons for

studying philosophical issues in general and then more specifically in relation to research methodology. The philosophies of positivism and post-positivist thinking are explored using literature drawn from a variety of disciplines and sources to identify the key components and elements of both.

Understanding philosophy

There are numerous reasons why an understanding of philosophical issues is important. Hughes (1994) asks: '...what is it about philosophy that gives it this seemingly vital role in human intellectual affairs? Is this simply a contingent fact of our intellectual history, or is there something distinctive about philosophy itself which gives it this authoritative place?' In answer to this question it could be argued that it is the nature of philosophical questions that best demonstrates the value of understanding philosophy. It is the uncomplicated style and innocent way of questioning, which produces confusion and instability in our assumptions and ideas about the world, that makes the study of philosophy of special benefit (Smith 1998). The indirectness and circular nature of philosophical questioning in itself is helpful, as it often encourages in-depth thinking, and generates further questions in relation to the topic under consideration. Clarifying assumptions related to personal values is also seen as useful when planning a research study. According to Proctor (1998), individuals rarely take time to do this in everyday life, but exploring basic personal beliefs could assist in understanding wider philosophical issues, notably '...the interrelationship between ontological (what is the nature of reality?), epistemological (what can be known?), and methodological (how can a researcher discover what she or he believes can be known?) levels of enquiry' (Proctor 1998).

Easterby-Smith *et al* (1997) identify three reasons why the exploration of philosophy may be significant with particular reference to research methodology:

Firstly, it can help the researcher to refine and specify the research methods to be used in a study, that is, to clarify the overall research strategy to be used. This would include the type of evidence gathered and its origin, the way in which such evidence is interpreted, and how it helps to answer the research questions posed.

Secondly, knowledge of research philosophy will enable and assist the

researcher to evaluate different methodologies and methods and avoid inappropriate use and unnecessary work by identifying the limitations of particular approaches at an early stage.

Thirdly, it may help the researcher to be creative and innovative in either selection or adaptation of methods that were previously outside his or her experience.

The ongoing 'quantitative/qualitative' debate is fogged by lack of coherent definitions and by a focus on methods rather than an exploration of underlying philosophy. According to Clarke (1998), research methods can be described, considered and classified at different levels, the most basic of which is the philosophical level. The methodological distinctions most commonly used focus on the differences between quantitative research, which is generally associated with the philosophical traditions of positivism, and qualitative research, most commonly allied with post-positivist philosophy (Polit *et al* 2001). The philosophical level of a research method relates to its assumptions based on the most general features of the world, encompassing such aspects as the mind, matter, reality, reason, truth, nature of knowledge, and proofs for knowledge (Hughes 1994). If we, for example, examine how research based on a positivist philosophy differs from that based on a post-positivist philosophy, the appropriateness to the research needs is simplified and the nature of the most appropriate approach clarified. From this we can see that the choice of approach may be dependent on the context of the study and the nature of the questions being asked. The researcher's experience, understanding of philosophy, and personal beliefs may also have some bearing on the method adopted (Denzin and Lincoln 1994). Shih (1998) expands this idea and lists four areas for consideration when deciding on a research method: the philosophical paradigm and goal of the research, the nature of the phenomenon of interest, the level and nature of the research questions, and practical considerations related to the research environment and the efficient use of resources.

Proctor (1998) considers that consistency between the aim of a research study, the research questions, the chosen methods, and the personal philosophy of the researcher is the essential underpinning and rationale for any research project. She indicates that before any decision on research method can be made an understanding of the two extremes of research philosophy,

i.e. positivism and post-positivism, need to be explored and understood.

It is important to note that while quantitative research methods (or positivist philosophies) and qualitative methods (or post-positivist philosophies) are often seen as opposing and polarised views they are frequently used in conjunction. The distinction between the philosophies is overstated (Webb 1989) and triangulation of methods in current day research is common (Polit et al 2001). It is very important, therefore, that an in-depth understanding of the strengths and weaknesses of both approaches and their underlying philosophy is obtained. Clarke (1998) emphasises this point:

> 'Though some distinction between methods is well placed ... it is being acknowledged that philosophically the qualitative and quantitative paradigms are not as diverse or mutually incompatible as often conveyed. Staunch identification of methods with particular paradigms may not be as accurate, or even as useful, an endeavour as past trends would indicate'.

The nature of positivism

What could be described as the traditional scientific approach to research has its underpinnings in positivist philosophy. From the literature it is clear that positivism can be defined in various ways. Smith (1998) provides a useful insight into positivist thinking within social sciences with this description: 'Positivist approaches to the social sciences . . . assume things can be studied as hard facts and the relationship between these facts can be established as scientific laws. For positivists, such laws have the status of truth and social objects can be studied in much the same way as natural objects'.

The ideas associated with positivism have been developed and challenged, stated, re-examined and re-stated over time. Outhwaite (1987) suggests that there are three distinct generations of positivist philosophy. These generations follow on from the period generally know as the 'Enlightenment', which allowed the contemplation of social life to break away from religious interpretations and establish human beings as the main protagonists in the development and accumulation of scientific knowledge. The first generation produced philosophers such as Locke, Hume and Comte who were associated

with the early traditions of positivism established in the 18th and 19th centuries (Comte 1853, Hume 1784). The next generation was logical positivism, associated with philosophers of the early 20th century collectively known as the Vienna Circle (Ayer 1936, Carnap 1932). The next generation, commonly associated with Karl Hemple (1965), developed in the post-war period.

The basic reasoning of positivism assumes that an objective reality exists which is independent of human behaviour and is therefore not a creation of the human mind. Auguste Comte (1853) suggests that all real knowledge should be derived from human observation of objective reality. The senses are used to accumulate data that are objective, discernible and measurable; anything other should be rejected as transcendental. The positivists' antipathy to metaphysics within scientific enquiry is well illustrated by David Hume:

> 'If we take in our hand any volume; of divinity or school metaphysics, for instance; let us ask, does it contain any abstract reasoning concerning quality or number? No. Does it contain any experimental reasoning concerning matter of fact and existence? No. Commit it then to the flames: for it can contain nothing but sophistry and illusion' (Hume 1748/ 1984).

The importance of induction and verification, and the establishment of laws, are stressed by logical positivists and in this respect differ from the earlier tradition of positivism. The stated aim of the logical positivists is to cleanse scientific knowledge of speculative and subjective viewpoints. It endeavours to do this by the use of mathematics and formal logic (as a branch of mathematics) to provide analytical statements about the observed world using the process of induction as a means of establishing generalisations and laws. Post Second World War standard positivists such as Hemple (1965) focused on the need for reasoning that moves from theoretical ideas, or a set of given premises, to a logical conclusion through deductive thinking. That is, through the mental process of developing specific predictions from general principles, and through research establishing whether or not the predictions are valid.

The general elements of positivist philosophy have a number of implications for social research based on this approach. These implications, adapted

from Bond (1989), Easterby-Smith et al (1997), and Hughes (1994) are:
Methodological: all research should be quantitative, and that only research which is quantitative can be the basis for valid generalisations and laws
Value-freedom: the choice of what to study, and how to study it, should be determined by objective criteria rather than by human beliefs and interests
Causality: the aim should be to identify causal explanations and fundamental laws that explain human behaviour
Operationalisation: concepts need to be operationalised in a way that enables facts to be measured quantitatively
Independence: the role of the researcher is independent of the subject under examination
Reductionism: problems are better understood if they are reduced to the simplest possible elements.

A major criticism of the positivist approach is that it does not provide the means to examine human beings and their behaviours in an in-depth way. Ayer (1969) questions the use of positivist and empirical approaches to the study of human behaviour, and suggests that it may be something about the 'nature of men' that makes the establishment of laws and ability to generalise impossible. Parahoo (1997) provides the following example:

'In physics, it is possible ...to formulate laws relating to... the expansion of metal when heated. From such laws, the amount of expansion that will occur in particular circumstances can be predicted. However, when a man loses his job and becomes depressed, it does not mean that he will be depressed each time he loses his job, nor can we say that everyone who loses his job becomes depressed' (Parahoo 1997).

Humans are not 'objects', and are subject to many influences on behaviour, feelings, perceptions, and attitudes that positivists would reject as irrelevant and belonging to the realms of metaphysics. Critics of the positivist approach argue that it yields useful but limited data that only provide a superficial view of the phenomenon it investigates (Bond 1993, Moccia 1988, Payle 1995).

In summary, the positivist philosophy embraces a conception of truth in which verifiable statements concur with the ascertainable facts of reality.

Truth is therefore not dependent on belief alone but on belief that can be verified through examination and observation of external reality. Speculation and assumptions related to knowledge based on the metaphysical are discarded. The exploration and examination of human behaviours such as feelings are beyond the scope of positivism. The elements and focus of positivism have a profound effect on those involved in social research, and on the continuing quantitative-qualitative debate.

Post-positivism

Following the recognition by scholars such as Jacob Bronowski (1956) and Karl Popper (1959) that within the world of modern science the elementary justifications of positivism were no longer entirely defensible, a new philosophy emerged, that of post-positivism. Post-positivism provides an alternative to the traditions and foundations of positivism for conducting disciplined inquiry. For the post-positivist researcher reality is not a rigid thing, instead it is a creation of those individuals involved in the research. Reality does not exist within a vacuum, its composition is influenced by its context, and many constructions of reality are therefore possible (Hughes 1994). Proctor (1998) suggests that among the various factors that influence reality construction, culture, gender, and cultural beliefs are the most significant. They recognise the intricate relationship between individual behaviour, attitudes, external structures, and socio-cultural issues. It follows then that objective reality as proposed by positivist philosophy can be seen as only one aspect or dimension of reality. In describing the nature of post-positivist philosophy, Forbes et al (1999) suggest that post-positivism is concerned with establishing and searching for a 'warranted assertibility', that is, evidence that is valid and sound proof for the existence of phenomena (Philips 1990). This is in contrast to the positivist approach of making claims to absolute truth through the establishment of generalisation and laws. Popper (1959) questioned the positivist claims to truth and scientific knowledge through the process of induction. As Doyal (1993), a student and colleague of Popper, explains: 'Popper argued that certainty or even high probability in knowledge was an illusion because given the universal claims of scientific theories we can never prove them on the basis of our particular experiences. There may always be some

potential observation or experiment that might demonstrate that what we had previously thought to be true was, in fact false' (Doyal 1993).

For Popper, falsification, that is, disproving of theories and laws, was much more useful than verification, as it provided more purposeful research questions and practices (Easterby-Smith *et al* 1997). The ideas of 'truth' and 'evidence' are allied mainly to positivist philosophy. The debate, which centres on verification and falsification, fits well within the positivist view. However, there are lessons for the researcher adopting a post-positivist approach. Popper (1969) asks the researcher to be intentionally critical, to test ideas against the evidence to the limit and to avoid being dictatorial in research. Smith (1998) suggests that falsification is as much an attitude to research as a set of methodological procedures. While post-positivism continued to consider the metaphysical as being beyond the scope of science, it was increasingly accepted by post-positivists that although a real world driven by natural causes exists, it is impossible for humans to truly perceive it with their imperfect sensory and mental capacity. From a realist standpoint it is advocated that unobservable phenomena have existence and that they can be used to explain the functioning of observable phenomenon (Guba 1990, Schumacher and Gortner 1992). According to Letourneau and Allen (1999) post-positivist approaches 'give way' to both qualitative and quantitative methods. This is described as critical multiplism (Guba and Lincoln 1998). Critical implies that, as in positivism, the need for rigour, precision, logical reasoning and attention to evidence is required, but unlike positivism, this is not confined to what can be physically observed. Multiplism refers to the fact that research can generally be approached from several perspectives. Multiple perspectives can be used to define research goals, to choose research questions, methods, and analyses, and to interpret results (Cook 1985).

The limitations of post-positivist approaches generally relate to the interactive and participatory nature of qualitative methods. Parahoo (1997) suggests that this is the main weakness and is due to the proximity of the researcher to the investigation. Mays and Pope (1995) summarise the main criticisms as:

> 'Firstly, that qualitative research is merely an assembly of anecdote and personal impressions, strongly subject to researcher bias;

secondly, it is argued that qualitative research lacks reproducibility – the research is so personal to the researcher that there is no guarantee that a different researcher would not come to radically different conclusions; and, finally, qualitative research is criticised for lacking generalisability'.

In summary, post-positivist approaches assume that reality is multiple, subjective, and mentally constructed by individuals. The use of flexible and multiple methods is desirable as a way of studying a small sample in depth over time that can establish warranted assertibility as opposed to absolute truth. The researcher interacts with those being researched, and findings are the outcome of this interactive process with a focus on meaning and understanding the situation or phenomenon under examination.

Conclusion

This paper has provided a descriptive analysis of the philosophies of positivism and post-positivist thinking in relation to research methodology, and has identified the main elements of both approaches. Positivism adopts a clear quantitative approach to investigating phenomena as opposed to post-positivist approaches, which aim to describe and explore in depth phenomena from a qualitative perspective. As already stated, while quantitative and qualitative research methods are often seen as opposing and polarised views, they are frequently used in conjunction with one another. According to some scholars the distinction between the philosophies is overstated (Webb 1989) and triangulation of methods in current day research is common (Polit 2001). It is very important, therefore, that an in-depth understanding of the strengths and weaknesses of both approaches and their underlying philosophy is obtained.

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