

What Kind of Science is Social Science? Classical Responses

[There] is a controversy which for more than half a century has split not only logicians and methodologists but also social scientists into two schools of thought. One of these holds that the methods of the natural sciences which have brought about such magnificent results are the only ones and that they alone, therefore, have to be applied in their entirety to the study of human affairs . . . The other school of thought feels that there is a basic difference in the structure of the social world and the world of nature. This feeling has led to the other extreme, namely the conclusion that the methods of the social sciences are *toto coelo* different from those of the natural sciences . . . It has been maintained that the social sciences are ideographic, characterized by individualizing conceptualization and seeking singular assertory propositions, whereas the natural sciences are nomothetic, characterized by generalizing conceptualization and seeking general apodictic propositions. The latter have to deal with constant relations of magnitude which can be measured and can perform experiments, whereas neither measurement nor experiment is practicable in the social sciences. In general, it is held that the natural sciences have to deal with material objects and processes, the social sciences, however, with psychological and intellectual ones and that, therefore, the method of the former consist in explaining, and that of the latter in understanding.

A. Schütz, 'Concept and Theory Formation in the Social Sciences'

Introduction

The controversy which Schütz identified in this quotation has raged for at least a hundred years. While some progress has been made in achieving a better understanding of the nature of the different views, and some proposals for alternative positions to bridge the differences have been offered, the issue of the extent to which social life can be studied in the same way as nature continues to be the central one in the philosophy of social science (Keat and Urry 1975; Bhaskar 1979; Held and Thompson 1989).

In order to answer the question 'Can the methods of the natural sciences be applied to the social sciences?', another question must also be answered: 'What are the methods of the natural sciences?' For the past fifty years

there has been as much if not more controversy over this question than there has been over the first one. Many philosophies of science have been proposed and debated centring on issues such as the nature and importance of observation, when observation should occur in the process of developing scientific knowledge, the appropriate form of logic to be used in constructing theories, the role of theories themselves in this process, the structure of theories, and the extent to which scientists work with open minds or are constrained by the beliefs, values and orthodox practices of the community of scientists to which they belong. To answer the first question it will be necessary to deal with the second as well.

It is important to note that the reference to 'methods' in these questions does not refer to the actual *techniques* of observation, data gathering or data analysis, but rather to the logic or *strategy* of enquiry, to the processes by which knowledge is generated and justified. The techniques of data gathering and analysis used in the various disciplines are related to the particular nature of their subject matters. While some techniques may be used in more than one discipline, e.g. the use of particular statistical tests, the study of chemical structures is a very different activity from the study of social structures.

It is not possible to answer the first question with a simple 'Yes' or 'No'. First, more than one method has been claimed to be appropriate in the natural sciences and, secondly, both 'Yes' and 'No' answers have been qualified in various ways. Eleven different answers to the question will be explored, six classical positions in this chapter and five contemporary positions in the next chapter. The first of the classical positions, and the one against which all other positions are reactions, is known as *Positivism* – the only straight 'Yes' answer; it advocates that all sciences, whether natural or social, should use the same method. The second answer is that of *Negativism* – a straight-out 'No'; it claims that a science of the social is impossible. The third answer is 'Yes and No', referred to here as *Historicism*; it advocates a modified form of the method of the natural sciences proposed by Positivism as being appropriate for the social sciences, one in which prediction based on past trends is the primary concern. The fourth answer, another 'Yes and No', is known as *Critical Rationalism*; it also argues for the use of the same methods, but rejects the view of science associated with Positivism in favour of a different method for natural science. The fifth answer, from *Classical Hermeneutics*, is 'No'; it claims that the natural science aim of explanation is not relevant to the social sciences and it is concerned with interpretation, particularly of texts. The sixth, another 'No' answer, is *Interpretivism*; it rejects the methods of the natural sciences as appropriate for the social sciences arguing that, because of the qualitative differences in their subject matters, a different kind of scientific method is required.

This brief overview of the classical positions makes it clear that it is not possible to give a simple answer to the question. A vast and complex array of philosophical positions and arguments will be encountered in the review

of these answers. The treatment of them will, of necessity, have to be brief and at times may appear to the professional philosopher to be somewhat superficial. The purpose is to lay the foundations for a consideration of the alternative research strategies that are available to social scientists.

Classical Responses

Positivism

The first answer is a straightforward 'Yes'. It is based on a position known as *Naturalism*, the belief that there can be a *natural scientific study of people and society*, the doctrine known as the '*unity of scientific method*'. It is argued that in spite of the differences in subject matter of the various scientific disciplines, both natural and social, the same method or logic of explanation can be used, although each science must elaborate these in a way appropriate to its objects of enquiry (Popper 1961; von Wright 1971; Kolakowski 1972). The philosopher John Stewart Mill (1879) adopted this position as a way of rescuing the social (or moral) sciences from what he regarded as an unsatisfactory state. He believed that all scientific explanations have fundamentally the same logical structure. A more recent philosopher, Karl Popper, adopted a similar position.

I do not intend to assert that there are no differences whatever between the methods of the theoretical sciences of nature and of society; such differences clearly exist, even between the various natural sciences themselves, as well as between the various social sciences . . . But I agree with Comte and Mill – and many others . . . – that the methods in the two fields are fundamentally the same. (Popper 1961: 130–1)

Popper, as shall be seen, had his particular view of *the scientific method* which differed from that advocated by Mill and the other early supporters of Naturalism. The fact that there are differences in subject matter is not seen to be a problem: 'According to this standpoint, the phenomena of human subjectivity, of volition and will, do not offer any particular barriers to the treatment of social conduct as an "object" on a par with objects in the natural world' (Giddens 1974: 3–4).

In his definition of 'science', Braithwaite has included

all the natural sciences, physical and biological, and also such parts of psychology and the social sciences (anthropology, sociology, economics) as are concerned with empirical subject-matter. . . This sense of the word 'science' corresponds pretty closely with the most frequent modern use of the word . . . ; it is synonymous with 'natural science' if man [sic] is included with nature. (Braithwaite 1953: 1)

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This thesis of Naturalism is a central claim of *Positivism*, a philosophy of the natural sciences which, in its various forms, has been both the dominant doctrine and the object of extensive criticism. In the nineteenth century, Positivism was not merely a philosophy of science; it expressed a more general worldview which lauded the achievements of science. While the term was invented by Comte (1830), one of the founding fathers of sociology, he did not formulate the doctrine.

Numerous attempts have since been made to identify the central tenets of Positivism (see, for example, Abbagano 1967; von Wright 1971; Kolakowski 1972; Giedymin 1975; Hacking 1983; Stockman 1983). In addition to the thesis of the 'unity of method', the following rules or beliefs are generally accepted as characterizing Positivism.

Phenomenalism This rule asserts the uniqueness of experience as the only reliable basis for scientific knowledge. 'We are entitled to record only that which is actually manifested in experience' (Kolakowski 1972: 11). That which is to count as knowledge must be based on experience, on what an observer can perceive by his or her senses. 'The positive tradition gets its character from an insistence on the epistemic primacy of direct observation. The senses give us our sole direct acquaintance with the world, our only source of unvarnished news' (Hollis 1977: 44). This perception must be achieved without the subjective activity of the cognitive process; it must be 'pure experience' with an empty consciousness. Hence, it is a passive model of knowledge. 'An episode of scientific discovery begins with the plain and unembroidered evidence of the senses - with innocent, unprejudiced observation' (Medewar 1969b: 147).

Nominalism The rule of nominalism asserts that any abstract concepts that are used in scientific explanations must also be derived from experience; metaphysical notions about which it is not possible to make any observations, have no legitimate existence except as names or words. As Hindess (1977: 16) has stated it, '[p]ositivism asserts the claims of experience as the ultimate foundation of human knowledge and denies the possibility of meaningful discourse concerning supersensible objects.' For example, the concept of 'God' cannot be regarded as scientific as it is not possible to observe God, and statements such as 'God exists' or 'God does not exist' are meaningless because no observational evidence can have any bearing on them. A development of this rule is the belief that the language used to describe observations must be uncontaminated by any theoretical notions and that the statements in this language can be readily established as true or false by reference to 'reality'. It is a theoretically neutral observation language in which the descriptive terms correspond to real objects. Hence, descriptive terms which do not belong to this privileged language, i.e. theoretical terms which are unobservable, must either be able to be translated into observables or they will be regarded as meaningless.

Atomism The objects of experience, of observation, are regarded as discrete, independent, atomic impressions of events which constitute the ultimate and fundamental elements of the world. In so far as these atomic impressions are formed into generalizations, they do not refer to abstract objects in the world, only regularities among atomic events (Harré 1970).

General Laws Scientific theories are regarded as a set of highly general, law-like statements, and establishing such general laws is the aim of science. These scientific laws summarize observations by specifying simple relations or constant conjunctions between phenomena. Explanations are achieved by subsuming individual cases under appropriate laws. These laws are general in scope in that they cover a broad range of observations and they are universal in form in that they apply, without exception, across time and space: 'Positivism pivots on the Humean theory of causal laws, viz. that laws are or depend upon constant conjunctions of atomistic events or states of affairs, interpreted as the objects of actual or possible experience. This theory itself follows ineluctably from the requirements that knowledge be certain and given-in-experience' (Bhaskar 1979: 158).

Value Judgements and Normative Statements This rule requires a separation of 'facts' and 'values' and denies values as having the status of knowledge: 'we are obliged to reject the assumption of values as characteristics of the world for they are not discoverable in the same way as the only kind of knowledge worthy of the name' (Kolakowski 1972: 17). Giddens has expressed this rule as 'the idea that judgments of value have no empirical content of a sort which renders them accessible to any tests of their "validity" in the light of experience' (1974: 3).

Hacking (1983: 41-57) has identified a similar set of six key ideas which are associated with a positivistic approach to the natural sciences.

1. There is an emphasis on *verification*: the truth or falsity of statements about the world can be settled in some way; they can predict observable states of affairs and are capable of conflicting with observable evidence.
2. *Pro-observation*: what we can see, feel, touch etc. provides the best foundation for non-mathematical knowledge.
3. *Anti-cause*: there is no causality in nature, only constant conjunctions between events, such that events of one kind are followed by events of another kind.
4. *Downplaying explanations*: if all we have are regularities between types of events, then explanation is nothing more than locating an event within a wider-ranging regularity; explanations do not provide deep answers to *why* questions.
5. *Anti-theoretical entities*: given the preceding ideas, unobservable entities may not be offered as causes because reality is what can be observed, and observed regularities are all that can be verified.

- 6 *Against metaphysics*: the positivist argues that untestable propositions, unobservable entities, causes and deep explanations are derived from metaphysical notions and must be avoided.

According to Halfpenny (1982), it is possible to identify twelve varieties of Positivism. However, for the present purposes, these can be reduced to three (following Outhwaite 1987a). The first brand of Positivism was formulated by Comte as an alternative to theological and metaphysical ways of understanding the world. All scientific knowledge is based on causal laws derived from observation, and all sciences are unified in a hierarchy of related levels, building on mathematics at the lowest level, followed by astronomy, physics, chemistry, biology and, finally, sociology. However, Comte believed in the existence of a social reality independent of the realities of the sciences at lower levels in the hierarchy, and governed by laws that cannot therefore be reduced to the laws of the other sciences; he rejected reductionism.

The second brand of Positivism, known as Logical Positivism, was founded in Vienna in the 1920s. The catch cry of these philosophers was that any concept or proposition that does not correspond to some state-of-affairs, i.e. which cannot be verified by experience, is regarded as meaningless (the 'phenomenalism' rule). At the same time, it is argued that the concepts and propositions of the higher level sciences can be reduced to those of the lower ones. In other words, they adopted the reductionist position that the propositions of the social sciences could ultimately be analysed down to those of physics.

The third variety, which was derived from the second and is sometimes referred to as the 'standard view' in the philosophy of science, dominated the English-speaking world after the Second World War. Its fundamental tenet is that all sciences, including the social sciences, are concerned with developing explanations in the form of universal laws or generalizations. Any phenomenon is explained by demonstrating that it is a specific case of some such law. These laws are of the form of 'constant conjunctions' between events, or in the case of the social sciences, statistical correlations or regularities (the 'general law' rule).

At its most general, positivism is a theory of the nature, omni-competence and unity of science. In its most radical shape it stipulates that the only valid kind of (non-analytic)¹ knowledge is scientific, that such knowledge consists in the description of the invariant patterns, the co-existence in space and succession over time, of observable phenomena... Its naturalistic insistence on the unity of science and scientific disavowal of any knowledge apart from science induce its aversion to metaphysics, insistence upon a strict value/

¹ Analytic statements are true by definition (e.g. 'Black cats are black'), or can be tautological (e.g. 'Either black cats are black or they are not black'). It is self-contradictory to deny either of these kinds of statements. Synthetic knowledge, on the other hand, makes a claim about the world (e.g. 'Black cats are fierce'), and can be denied without self-contradiction.

fact dichotomy and tendency to historicist confidence in the inevitability of scientifically mediated progress. (Bhaskar 1986: 226)

The various brands of Positivism, while differing in some detail, have a particular view of the methods of the natural sciences. Other responses to the question of whether the methods of the natural sciences can be used in the social sciences have not accepted this view. It is therefore useful to distinguish between *Naturalism*, as a positive response to the question, and the specific features that have come to be identified with *Positivism* as a philosophy of science, thus making it possible to adopt a naturalism based on a non-positivist view of science (Keat and Urry 1975: 2).

It was through the work of Comte (1970) and Durkheim (1964) that Positivism was introduced into sociology. Forms of Positivism have dominated sociology, particularly in the decades immediately following the Second World War, and continue to do so today in disciplines such as psychology and economics. In the past fifteen years, Positivism has been the subject of much discussion within sociology (see, for example, Giddens 1974; Fay 1975; Keat and Urry 1975; Adorno et al. 1976; Benton 1977; Hindess 1977; Halfpenny 1982; Bryant 1985). Some examples of how Durkheim advocated the application of the methods of the natural sciences in sociology will be discussed in chapter 5.

Negativism

The proponents of this answer may accept a Positivist view of the natural sciences but argue that the methods of the natural sciences cannot be applied to the social sciences. The arguments for this assertion come in various forms and have been usefully summarized by Popper (1961: 5–34).²

1 While the so-called 'laws of nature'³ are assumed to apply throughout space and time, the regularities in social life are time and space specific. Social uniformities cannot be generalized because they change from one historical period to another and across cultures. The reason for this, it is claimed, is that social uniformities are the result of human activity – they are socially constructed – and can therefore be changed by human activity. 'For social uniformities are not laws of nature, but man-made [sic]; and although they may be said to depend on human nature, they do so because human nature has the power to alter and, perhaps, to control them' (Popper 1961: 7–8).

2 The use of the experimental method is based on the assumption that similar things will happen in similar circumstances. By artificially isolating

² For similar reviews see Nagel (1961) and Runciman (1969).

³ These arguments, like much of the popular discussion of the nature of science, assume that the 'laws of nature' are real, that they have an existence independent of the scientist. Popper, however, regarded such laws as the scientist's inventions which are designed to provide an understanding of the natural world.