

Topic 3

SPECIFICATION AREA

The nature of science and the extent to which sociology can be regarded as scientific

Science as a product of modernity

As discussed in the previous topic, science as we know it today was part of modernism. In modernity, explanations for events as arising from the actions of spirits, gods or other supernatural beings are displaced by rational scientific explanations based on **empirical evidence** derived from observation and experimentation, logical thought and reasoning. Deciding whether a particular understanding of the world was true or not would no longer be based on appeals to religion, faith, intuition, tradition and superstition, but on evidence and rational argument based on the scientific method. Through the application of rational principles and the use of empirical evidence, it was thought that the scientific method could contribute to the understanding and control of the natural and social worlds, and thereby improve them. Because of the scientific method, science came to be seen as superior to other forms of knowledge.

Empirical evidence is observable evidence collected in the physical or social world.

The scientific method

Popper (2002 [1935]) suggests that science involves the hypothetico-deductive method. This involves drawing up a specific question, idea or possible explanation (a hypothesis), which is based on previous research, observation and hunches, to test through research. For example, a researcher looking at official crime statistics might deduce that young people have a greater involvement in crime, leading to the formation of a hypothesis for investigation and testing that this might be due to status frustration. Popper's features of the scientific method include:

- 1 *Hypothesis formation*: forming ideas or informed guesses about the possible causes of some phenomena.
- 2 *Falsification*: the aim of testing hypotheses against the evidence is to try to prove them wrong, as just one exception can prove a hypothesis false (this is discussed further shortly).
- 3 *The use of empirical evidence*: no hypothesis can be regarded as a scientific hypothesis unless it is capable of being falsified (proven wrong) by testing against empirical and measurable evidence derived from systematic observation and/or experimentation.
- 4 *Replication*: testing against empirical evidence is capable of being checked by other researchers who can repeat (or replicate) the research to verify the accuracy of the findings.
- 5 *The accumulation of evidence*: scientific knowledge is cumulative – that is, it builds up over time, through a constant cycle of hypothesis formation, falsification through testing against empirical data, and new hypothesis formation, until the hypothesis seems to be robust and accurate.
- 6 *Prediction*: through establishing cause-and-effect relationships rooted in evidence, precise predictions of what will happen in the same circumstances in future can be established.
- 7 *Theory formation*: if the hypothesis is capable of being tested against evidence and cannot be shown to be false, and predictions appear sound, then there can be some confidence that the hypothesis is probably true. This may then become part of a scientific theory.
- 8 *Scrutiny*: a scientific theory will be scrutinized by other scientists, and will stand only until some new evidence comes along to show the existing theory is false.

Popper argues that a proposition like 'all swans are white' is a scientific hypothesis because it can be tested by empirical research; but it can never be finally proven true as there is always the possibility of finding an exception. So scientists should hunt for the exception, or the non-white swan, to falsify their hypotheses, rather than for evidence to prove them true.



Popper's principle of falsification

Popper suggests no hypothesis can ever finally be proven true, as there is always the possibility of some future exception. However, a hypothesis can easily be proven false, as just one observation to the contrary can disprove it. Popper used the famous case of the 'white swan' to make his point. He argues that the hypothesis that 'all swans are white' can never be finally proven true as there is always the possibility of finding an exception, but it can easily be proven wrong or falsified by finding just one example of a non-white swan. So Popper argues that researchers should aim, not to prove their hypotheses true, for example by counting all the white swans, but to falsify them by looking for the non-white swan. The more a hypothesis stands up to such attempts, the more likely it is to be a 'scientific truth' – though it will remain only a probability and not a proven fact, as an exception may always come along. Popper suggests that much of sociological theory is not scientific as it can't actually be falsified by empirical research, and will only become scientific when it produces testable and falsifiable hypotheses.

Objectivity and value freedom

Objectivity is an important part of the scientific process, and the data collected are seen as objective facts, not distorted by the value judgements and personal beliefs of the scientist. Objectivity involves three main aspects:

- Open-mindedness on the part of the researcher, and a willingness to consider all possibilities and evidence, to demonstrate 'fair play' and act in good faith;
- **Value freedom** – keeping personal prejudices, opinions and values out of the research process (the difficulties with this are discussed in Topic 5);
- Findings should be open to inspection and criticism by other researchers: the 'community of scientists' should have the opportunity to scrutinize and check findings, and criticize them.

Science and the study of society

Positivism

Positivism is the view that the logic, methods and procedures of the natural sciences, as used in subjects like physics, chemistry and biology, can be applied to the study of society with little modification, and that human behaviour is a response to external forces – such as the agencies of socialization – in much the same way as events in the natural world. Such claims were made by many of the founders of sociology. Comte, for example, argued that the application of natural science methodology to the study of society, based on empirical evidence and objectivity, would

Objectivity

means

approaching topics with an open mind, avoiding bias and being prepared to submit research evidence to scrutiny by other researchers.

Value freedom

is the idea that the beliefs and prejudices of a researcher should not influence the way research is carried out and evidence interpreted.

produce a 'positive science of society', showing that behaviour in the social world is governed by laws of cause and effect in the same way as the behaviour of objects in the natural world. Marx similarly claimed his theories of class struggle, revolution and the transition to communism were based on cause-and-effect theories established by the application of the scientific method to historical and contemporary empirical data. In keeping with the modernist tradition, and the aims of natural science, such a 'science of society' was seen as a means to solving social problems, improving the quality of human lives and making the world a better place to live in.

Durkheim, in *The Rules of Sociological Method* (1895), argued clearly for a positivist approach in sociology, with his fundamental rule: 'Consider social facts as things'. Sociology rarely produces results that are as precise and repeatable as those produced by natural scientists (although this is not seen as a major problem by positivists). This is partly because sociologists are unable to control all the variables in the situations they study, as natural scientists are able to do under laboratory conditions. Nonetheless, positivists argue that applying the procedures of the natural sciences to the study of society enables an objective and value-free science of society.

Social facts

Positivists believe that, just as there are causes of things in the natural world, so there are **social facts** that cause events in the social world. Durkheim said the aim of sociology should be the study of these social facts, which should be considered as things, like objects in the natural world, and could in most cases be observed and measured quantitatively – in number/statistical form. By social facts, Durkheim meant social phenomena which exist outside individuals but act upon them in ways that constrain their behaviour. These include customs, belief systems and social institutions, such as the family, law and the education system. For example, social classes are social facts, with clear measurable differences between them, such as in income, crime rates, housing, health and educational achievement; although social classes exist independently of individuals, they shape the way they act. For positivists, society has a reality external to individuals, and social facts – for example, customs and norms – although independent of the individual, exercise constraint on and limit the options of individuals. Simply put, individuals cannot do exactly as they wish without coming up against a whole range of social sanctions which curb the opportunities for anti-social behaviour.

The main features of positivism in sociology

Positivists argue that sociology should be a science, and that this is made possible by following the scientific approach using the hypothetico-deductive method. This positivist view consists of the following features.

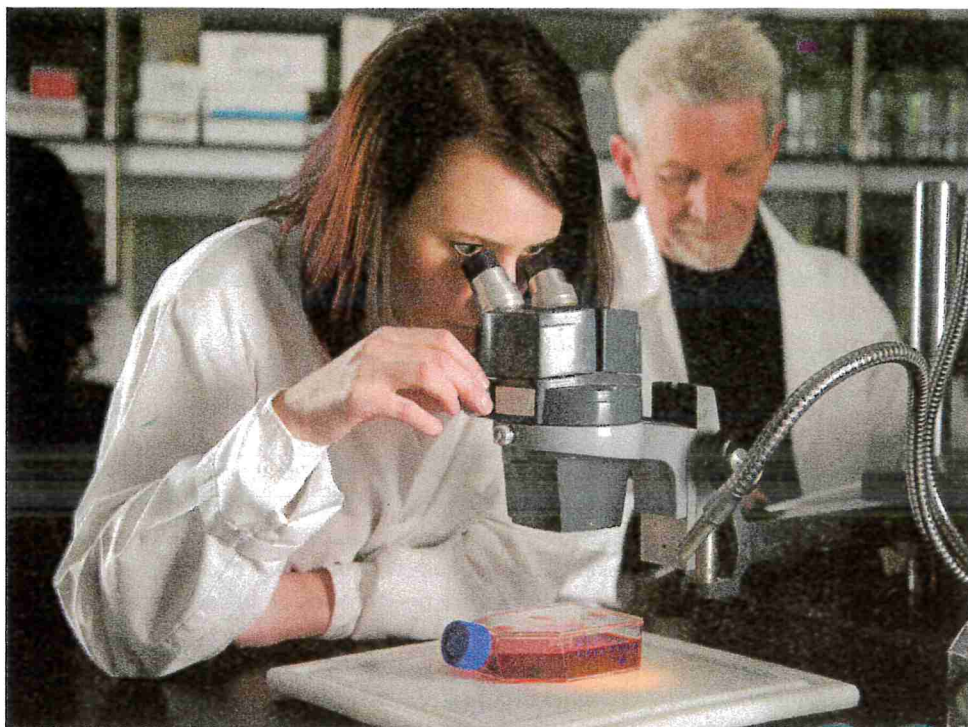
- 1 A view that human behaviour is a response to observable social facts, and can be explained in terms of cause-and-effect relationships.
- 2 Direct observation and the use of quantitative, statistical methods of data collection should be used to study society. Only those factors which are directly observable and can be statistically measured form acceptable data: the feelings, motives and mental states of individuals cannot be observed, and are therefore inadmissible evidence. Without quantification, sociology will remain at the level of insight, lacking evidence, and it will be impossible to replicate (or repeat) studies to check findings, establish the causes of social events, or make generalizations and predictions.
- 3 Research should focus on the search for the social causes of events in society. Examples might be to establish hypotheses about why people in some social classes suffer poorer health, or are more likely to commit suicide or get involved in crime than those in other classes, and look for causes by studying official statistics or carrying out surveys. This is what Durkheim tried to do in his 1897 study *Suicide*, in which he suggested the causes of suicide were imbalances in the degrees of **social integration** and **moral regulation** in society.
- 4 The focus of sociology is on the study of social institutions and the social structure as a whole, not on the individual, as it is these external structures which shape and mould individuals.

Social facts are phenomena that exist outside individuals and independently of their minds, but which act upon them in ways which constrain or mould their behaviour.

Social integration refers to the integration of individuals into social groups, binding them into society and building social cohesion.

Moral regulation refers to the regulation or control by social values of the actions and desires of individuals.

How does studying society differ from the procedures used in the natural sciences?



Can sociology be scientific?

There are disagreements within sociology as to how far the logic, methods and procedures of the natural sciences can be applied, as positivists suggest, to the study of society. Many sociologists argue that such methods – for example, the laboratory experiment and the use of observable, quantitative data – are inappropriate or insufficient for the study of society. This is because there are fundamental differences between the social world and the natural or physical world, and sociology therefore cannot simply copy the approach and methodology of natural science, as the following points suggest:

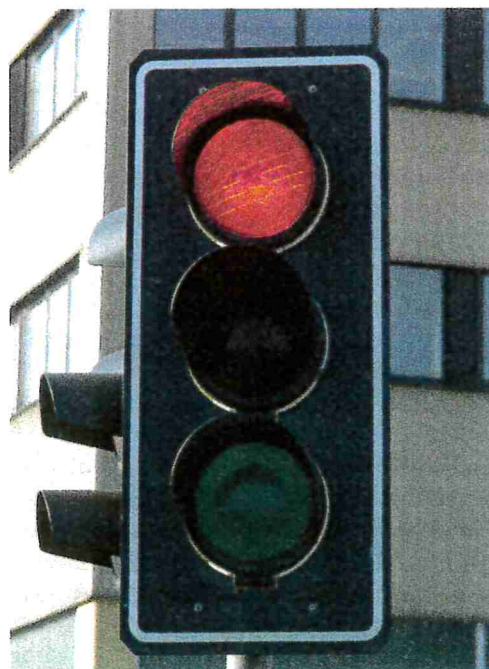
- 1 *The problem of prediction.* In natural science, experiments can be carried out to test ideas and it is possible to isolate causes in laboratory conditions; therefore, natural scientists can accurately predict what will happen in the same circumstances in the future. Human beings, however, might behave differently in an experiment, knowing they are being observed. Human behaviour cannot be predicted with certainty: people have free will and choice, and might react differently to the same circumstances on different occasions – for example, not everyone facing the same set of circumstances will commit suicide.
- 2 *Artificiality.* Sociology wants to study society in its *normal* state, not in the artificial conditions of a laboratory experiment.
- 3 *Ethical issues.* Human beings might well object to being boiled, weighed, wired, prodded with sticks, interrogated or observed in laboratories.
- 4 *The Hawthorne effect.* In the natural sciences the presence of the scientist does not usually affect the behaviour of chemicals or objects. However, sociologists studying people may themselves change the behaviour of those being studied. When people are being interviewed or observed, they may become embarrassed, be more defensive and careful about what they say, or act differently because they have been selected for study (this is known as the ‘Hawthorne effect’). If this happens, then the results obtained will not give a true picture of how people behave in society.

- 5 *Validity.* The natural scientist does not have to persuade objects, chemicals or (usually) animals to take part in research, but people may distort and conceal the truth, refuse to answer questions or otherwise cooperate, making sociological research difficult or impossible. Those who have attempted, but failed, to commit suicide may, for example, later invent reasons for their suicidal behaviour which might be quite different from their real motives at the time. This raises the possibility of obtaining invalid or untruthful evidence.
- 6 *Empirical observation.* Popper suggests scientific hypotheses must be capable of being tested against evidence derived from systematic observation and/or experimentation. However, not all social phenomena are observable or quantifiable, such as the meanings and motives people have for their behaviour. The realist view of science, on the other hand, suggests this is also true in the natural sciences (see pages 409–10).

Interpretivism

Interpretivists argue that sociology cannot be a science either in the same way as natural science or in the way positivists suggest. Interpretivism emphasizes the difference between studying society and studying the natural and physical world. Interpretivists argue people do not simply respond to external forces, as positivists claim: they interpret and give meaning to a situation before responding to it. It is therefore impossible to predict human behaviour or to establish simple cause-and-effect relationships through simple observation, experimentation and the collection of empirical, quantitative data obtained through surveys or official statistics. In order to understand and explain human society it is necessary to discover and interpret the meanings people give to situations. This is achieved by letting people 'speak for themselves'. Weber argued that this is a process of 'understanding', which he termed (in German) *Verstehen* (pronounced *fair-shtay-en*). This involves a recognition that people give meaning to their actions, and researchers can only understand these meanings if they try to put themselves in the position of the people whose actions they are trying to understand.

Interpretivists emphasize that meanings do not exist independently of people. For example, social phenomena such as suicide, crime and social class are not social facts, but social constructions that have no reality outside the meaning given to them by people. A tree or mountain exists whether people are there or not. A sudden unnatural death only becomes a 'murder', a 'manslaughter', an 'accident' or a 'suicide' because people define it as such, and these definitions can



How might positivists and interpretivists differently explain the fact that (most) people conform to the norm of stopping at a red traffic light?

change from place to place and from person to person. There can be no laws of human society, and no possibility of prediction as human behaviour is variable and changeable. Sociologists cannot hope to explain anything without moving from quantitative, empirical data towards a more qualitative understanding of peoples' own subjective views of the world. In order to understand society, the principles of objectivity and detachment associated with the natural sciences and positivism are completely inadequate, as involvement, closeness and empathetic understanding (*Verstehen*) are necessary to understand the meanings which drive people's behaviour in society.

Is science really as scientific as it claims to be?

The discussion of positivism and interpretivism above highlighted different approaches to the study of society, with the positivists taking the view that 'good sociology' can and should model itself on the procedures of the natural sciences, while the interpretivists suggest sociology cannot follow such procedures because of the fundamental differences between the natural and social worlds.

Sociology as a whole (including positivist research) is often seen as inferior to the natural sciences, and made out to be sloppy and less scientific than natural science research. This is because sociology rarely produces results or is able to make predictions that have the same kind of precision as those of natural scientists, and sociological research, particularly interpretivist research, is often difficult to replicate to check findings. However, this comparison rests on assumptions that natural scientists are wholly objective and value-free, remorselessly engaged in the pursuit of scientific truth as they attempt to falsify their hypotheses through the scrupulous and detached collection of observable empirical data, and are able to make accurate predictions based on scientific laws. However, there are two general reasons to doubt this view of natural science.

- 1 It is based on mistaken assumptions about what natural science and scientific method are really like, as the realists suggest.
- 2 It ignores the way scientific knowledge is socially constructed.

These suggest that, when considering whether or not sociology is or can be a science, a starting point could well be to ask whether the natural sciences fulfil their own criteria of being as neutral, objective, detached and based on empirical evidence as natural scientists might claim them to be. These issues are discussed in the next sections.

The realist view of science

Bhaskar (1998) adopts a realist view of science. **Realism** suggests that not all phenomena are material objects or (for positivists) social facts capable of observation and measurement, but there can be underlying, unobservable structures that cause events. Part of 'doing science' is the discovery and explanation of what these structures are. Bhaskar argues that these underlying structures are a feature of both the natural and social worlds, and the positivist view is based on an incorrect assumption that natural scientific method, as Popper suggests, is based only on that which can be observed. For example, many of the greatest scientific discoveries have not been directly observed, but inferred or worked out from their effects. These include things like sub-atomic particles, viruses, germs, energy and solar fusion. The view that the Earth is round has been an accepted view of science for hundreds of years, yet it was only physically observed in the 1960s, with the start of space exploration. Sociology operates in much the same way. We can't see or observe structures like social classes or belief systems, but we can discover them by their effects, such as by large numbers of people sharing similar incomes, education and housing, or by full or empty churches, mosques and temples.

Even Durkheim, who as a positivist claimed to use natural science methodology, used the twin social forces of social integration and moral regulation to explain suicide, though neither were observable or quantifiable. So natural science is not simply limited to the observable, as Popper suggests.

Realism is the view that events in both the social and natural worlds are produced (caused) by underlying structures and processes, which may be unobservable.



That the Earth is round has been an accepted scientific fact for hundreds of years, yet it was only physically observed last century with the start of space exploration. Studying the social world also includes many things that aren't observable, but does this make it any more 'unscientific' than natural science?

Open and closed systems

Realists such as Sayer (1992, 2000) and Keat and Urry (2010 [1975]) point out that prediction is often not as precise a process in natural science as Popper claims. Natural science has an advantage over social science in predictive powers when it can study events in what Sayer calls *closed systems*, when all the potential causal factors are under the control of the researcher and precise measurements are possible, as in the closed environment of the laboratory experiment. However, much natural scientific research, like most sociological research, takes place in much more *open systems* where these factors can't be controlled, and prediction is much more difficult and imprecise. Examples might be weather forecasting and seismology (the study of earthquakes). Although natural science might be able to predict general weather trends or identify areas at risk of earthquakes, it still often fails, despite a huge range of sophisticated technology and scientific knowledge, to give accurate predictions of whether or not it will rain tomorrow, or if and when our house may collapse around us through an earthquake.

In short, the claim that sociology is unscientific because it is unable to predict human behaviour, and shouldn't aim to copy natural scientific methods as all the factors necessary to explain human behaviour are not observable, as the interpretivists suggest, is based on a mistaken view of what real natural scientific research is like. Researching the social world and the natural world therefore may have more in common than might first appear, as they both study unobservable phenomena, and they both operate in open systems where they are unable to control all potential causes.

From a realist perspective, positivists and interpretivists both misunderstand what natural science is really like, and both positivists and interpretivists are using scientific approaches. Positivists are focusing on the observable, and interpretivists on the unobservable, but both are engaged in 'doing science' as much as any natural scientist. From a realist view, sociology is, then, a science.

The social constructionist approach: the social construction of scientific knowledge

The social constructionist view suggests that science, scientific method and scientific knowledge are not neutral, objective things, but that they are produced within a specific social context. They are created by the actions and interpretations of scientists themselves and influenced by a wide range of social factors. In other words, science is socially constructed.

Kuhn, the influence of paradigms and 'scientific revolutions'

Kuhn (2012 [1962]) questions whether scientists really do in practice set out to collect evidence with the specific aim of trying to falsify their hypotheses, as Popper suggests they should. Kuhn argues that, on the contrary, scientists work within **paradigms** – frameworks of scientific laws, concepts, theories, methods and assumptions – with which they approach the various puzzles they seek to understand and investigate, which are not called into question until the evidence against them is overwhelming.

A paradigm acts like a pair of coloured lenses through which scientists look at the 'puzzles' they are investigating, and these influence what they think they should look for, what sort of questions they ask, the approved methods which they follow to investigate these puzzles, and what they count as proper and relevant scientific evidence. The paradigm also provides what is likely to be seen as a correct or approved answer to the original puzzle being investigated. Paradigms are learnt by scientists in their training, during which they are socialized into the accepted view of 'normal science', based on the values of the scientific community at the time. This is just like sociologists learning different methodological approaches such as positivism or interpretivism, and what counts as 'good sociology'.

Kuhn argues that most scientists in their experimental work rarely question the paradigm, and the paradigm acts like blinkers which encourage scientists to try to fit observations into the paradigm, rather than actually attempting to falsify their hypotheses as Popper suggests. The more an idea challenges the dominant paradigm, the more experimental work is scrutinized for error; and the more findings do not fit into the existing paradigm, the more likely they are to be dismissed and the blame laid on experimental errors or freak conditions: the adequacy of the paradigm itself is largely unquestioned. Only when there are many anomalies, or things that the existing paradigm can't explain, will the established paradigm change, as scientists begin to question their basic assumptions and produce a new paradigm – a revised set of theories – that explains research findings that cannot be fitted into the old paradigm.

In other words, scientific paradigms change radically only when a series of discoveries cannot be explained by the dominant paradigm, and there is in effect a scientific crisis. Kuhn therefore argues science changes, not through the gradual accumulation of research as hypotheses are tested and falsified as Popper suggests, but in dramatic leaps – what he calls 'scientific revolutions' – when one scientific paradigm breaks down and another comes along to take its place.

Because hypotheses and experiments to test them are fitted into the existing paradigm, it can be argued that scientific method and scientific knowledge are therefore socially constructed products, produced by the community of scientists in terms of agreed, taken-for-granted assumptions and methods.

Activity

Try to think of times in your own science lessons at school when you got the 'wrong' result. Did you immediately question the validity of the theory or just assume that you had, for example, a dirty test-tube or did something wrong? Did you investigate the new finding – or stick with the paradigm, and keep trying until you got the 'right' result?

Do scientists cheat? Reconstructed logic and logic-in-use

Much of the 'science debate' concerns the methods and procedures scientists should use and, indeed, claim to use. However, there may be a large gap between the methods scientists claim they use, and those they really do use. Kaplan (1973) suggested that scientists write up research using what he called *reconstructed logic* – the formal scientific method they are meant to use as scientists, and which is essential for the scientific community to accept their results as good science. However, in practice, scientists depart from these procedures, and the research process is much more haphazard, unsystematic and ad hoc (made up as they go along) than the ideal suggests. Kaplan calls this *logic-in-use*. There is, then, no guarantee that scientists will actually follow the rules of good scientific practice they might publicly claim to support. This is, in effect, a form of scientific

A **paradigm** is a framework of scientific laws, concepts, theories, methods and assumptions within which scientists operate, and which provides guidelines for the conduct of research and what counts as proper evidence.

cheating. Surveys show that only about one in four scientists is prepared to provide original data for checking by others, and this suggests there may be something to hide and that cheating is common in natural science.

One form of cheating is to keep re-running an experiment until the desired result is obtained, and then publish it, ignoring the failed experiments. Evidence suggests that only experiments that confirm hypotheses get written up, while the negative results are ignored. In 1998, the editor of the *British Medical Journal* said that only 5 per cent of published articles reached minimum standards of scientific soundness. Many clinical trials were too small to be relevant, and most of the published studies were the positive ones and a lot of negative evidence was being concealed.

There is little prestige or career progress to be gained by replicating (repeating) other scientists' work to check their findings, so scientific research is not really scrutinized as carefully as it should be. Acceptance of findings by the scientific community may therefore all too often be more an act of faith in scientific values than of scientific rigour.

Scientists may get things wrong, simply because the power of the paradigm may mean scientists focus on what they are looking for, and overlook or fail to see evidence which doesn't fit the paradigm. Sociologists may well face similar problems when they are trying to decide on the significance of observations and their interpretations of them.

Activity

Go to www.theguardian.com/science/series/badscience.

Examine one of the stories of dodgy so-called 'scientific' research there, and suggest three ways that scientists in effect cheat, and do not live up to their claimed scientific principles.

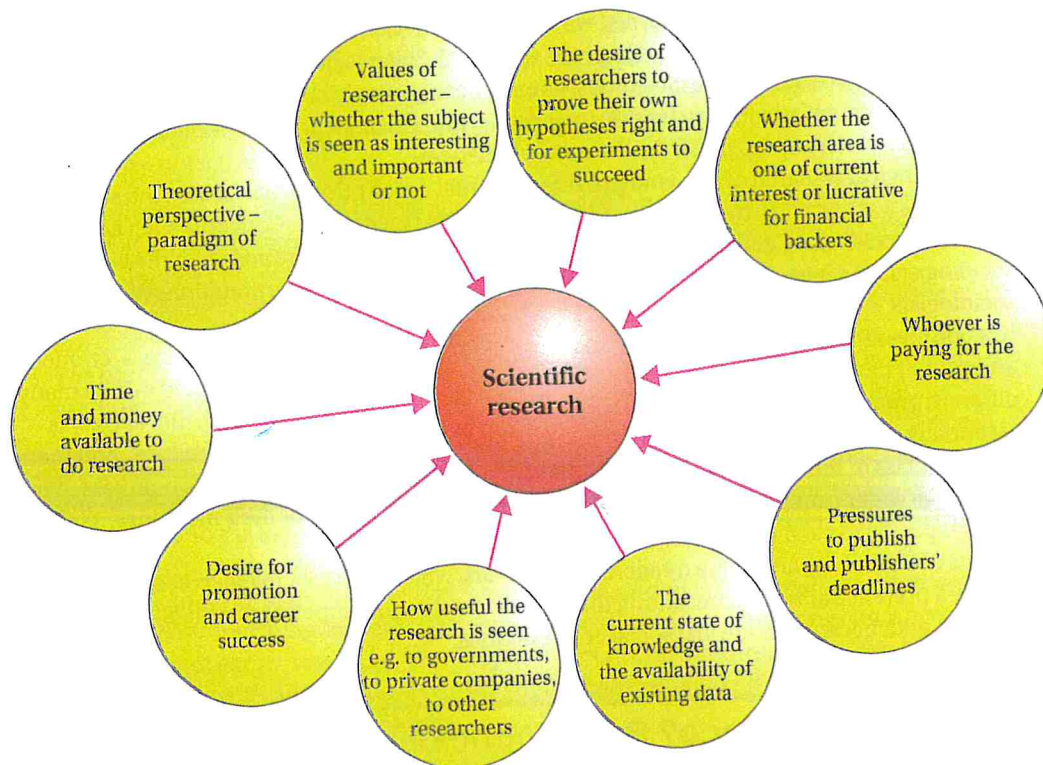
Social influences on the nature and direction of scientific research

There is a range of other factors that contribute to the social construction of scientific knowledge and undermine objectivity and introduce values into scientific research, which are summarized in figure 5.5, with some discussed in this section.

The values and beliefs of researchers will inevitably influence whether they think issues are important or unimportant and therefore worthy of studying or not. Scientists are professionals with careers and promotion prospects ahead of them, and they face a constant struggle to get money to fund their research. They therefore have an understandable desire to prove their own hypotheses right, and for their experiments to succeed. The desire for promotion may influence which topics are seen as useful to research, as will the current state of knowledge and what constitutes a cool or lucrative research area. The search for funding may determine which research is carried out and how it is approached. For example, as Marxists point out, research for military or defence purposes, or that helps private businesses to sell products and make profits, might attract funding more readily than research into help for disabled people. Government-backed research is likely to open more doors to researchers and produce more sponsorship than private individuals or small research departments are able to achieve by themselves. Objectivity may be limited by the institutional or funding constraints within which the scientist is working; for example, medical research on the effects of smoking funded by the tobacco industry, or research on genetically modified crops funded by the biotechnology industry. Publication of scientific papers is an important aspect of a scientific career, particularly in academic circles. Publishers' deadlines or the pressure to publish findings may mean that data are misrepresented, or that exhaustive experiments to attempt to falsify a hypothesis are not carried out. The availability of existing data on a topic, the practicality of and resources available for collecting data, and whether the subject matter is open to the use of certain methods or not will all influence what is researched.

All such influences on scientific research, summarized in figure 5.5, raise important questions about whether natural science, or indeed any research, lives up to its own supposedly objective scientific procedures. Science is itself a social product, produced within a set of agreed, taken-for-granted assumptions and methods (a paradigm). Evidence that doesn't fit the dominant paradigm may be dismissed or downgraded. This suggests that natural science, far from being the detached,

Figure 5.5 Social influences on scientific research



objective and rigorous process we are led to believe, is very much a social product created by the interpretations and values of the scientists themselves.

The discussion above suggests the positivists are perhaps exaggerating how objective and value-free the natural science model really is. The answer to those critics who accuse sociologists of sloppiness and question whether sociology is scientific, might well be 'Does natural science live up to its own criteria of objectivity and lack of bias?' In short, people in glasshouses shouldn't throw stones, as natural science and social research are equally vulnerable to the influences and biases summarized in figure 5.5.

Activity

Drawing on the material in the previous sections and figure 5.5:

- 1 Go through each of the points in figure 5.5 and explain briefly in each case how the factors identified might distort the objectivity and value freedom that is meant to be a feature of science, drawing on examples from both sociology and the natural sciences.
- 2 Identify and explain three reasons why scientific knowledge might be regarded as socially constructed.

Postmodernism, sociology and science

The debate in sociology between positivism and interpretivism over whether sociology can or should adopt the scientific method is largely dismissed by postmodernists as a pointless waste of time. Postmodernists take the view that:

- 1 Science is simply a metanarrative, another big theory claiming a monopoly of the truth, alongside similar social theories like Marxism and functionalism that seek to explain everything, with other ways of seeing the world regarded as inadequate and inferior.

- 2 There is a loss of faith in the modernist view that rational thinking and the application of scientific methods can control and improve the world. Science has failed, and has created problems like genetically modified foods, climate change, environmental pollution and antibiotic-resistant superbugs, leaving uncertainty and risk instead of solutions. Sociology has nothing to learn from copying from the natural sciences.
- 3 No sociological research of any kind provides a factual description of social life, and such research is a social construction created by sociological researchers. Concepts such as social structure, social class, gender and ethnicity are simply frameworks imposed on the world by sociologists, and have no meaning or existence separate from the interpretations of those sociologists.
- 4 It is pointless trying to find the social causes of behaviour. Social structures like class, ethnicity and gender have diminished in importance, and society has become fragmented into so many different groups, interests and lifestyles, all of which are constantly changing, that society is essentially chaotic. There is no longer anything called 'society' or 'a social structure', and there is only a mass of individuals making separate choices about their lifestyles. It is pointless to try to find the wider causes of their behaviour or even the construction of their meanings, as these will be specific to each individual.
- 5 Claims of objectivity and value freedom by scientists, which some sociologists seek to copy, are simply a pretence aimed at presenting their views as somehow superior to others, when all are equally valid, because all are just social constructions.

Is sociology a science? Some conclusions

The debate over whether sociology is or isn't, or can be or should be, a science raises a range of issues, which have been seen as important in sociology, even if postmodernists are rather dismissive of them. The question is whether sociology can be regarded as a science, to the extent that its findings should be taken at least as seriously as those in the natural sciences. There are at least four positions in this debate which have been discussed in this topic:

- 1 *Positivists* argue sociology should be a science, and can be if it searches for explanations by the study of social facts following as closely as possible the detached, objective, empirical and quantitative methods making up the scientific method found in the natural sciences;
- 2 *Interpretivists* argue sociology cannot be a science, because of the different nature of the social world, the unpredictability of human behaviour, and the need to explore people's subjective states of mind and the meanings they give to their actions;
- 3 *Realists* argue that both positivists and interpretivists have an incorrect understanding of what science is, and that science deals with both observable empirical data and hidden underlying structures. This suggests both positivism and interpretivism can be regarded as using scientific methods.
- 4 *Social constructionists, and postmodernists*, suggest that what counts as science is a product of a wide range of social influences, that scientists frequently don't live up to their own criteria of good science, and that there is no objective science or scientific method 'out there' which is somehow independent of the beliefs and activities of scientists themselves or the society of which they are a part.

It is most unlikely that sociological theory will ever be as accurate as a theory in physics, and those formed in the closed systems of laboratory experiments. We are not dealing with emotionless electrons but with people with consciousness, emotions, free will and values. Ultimately, whether sociology is or can be a science depends on what people define as a science in the first place. There are no clear-cut answers. In both the natural and social worlds, reputable researchers want to make sure they are testing hypotheses and producing statements or theories which are based on the best possible evidence available, whatever form that may take, and that the evidence they collect is valid, and not so manipulated, distorted or simply made up by researchers as to be completely worthless.

As long as sociologists *strive* to achieve objectivity and keep their personal values out of the research process, then sociologists of any perspective can justly claim that their work is no less objective or scientific than research which is carried out in the natural sciences. Sociology may then be regarded as scientific, regardless of the perspective used, as long as it strives to achieve the following five objectives.

- 1 *Value freedom*: the personal beliefs and prejudices of the researcher, while obviously affecting the topic chosen for study, are kept out of the research process itself, and not allowed to distort or manipulate data collection.
- 2 *Objectivity*: the sociologist approaches topics with an open mind, considering all the evidence in a detached and fair-minded way.
- 3 *The use of systematic research methods to collect evidence*, whatever perspective is used. For example, the use of careful sampling techniques and skilfully designed questionnaires in positivist survey research, or the careful recording of observations and interpretations in unstructured interviews or participant observation in interpretivist research.
- 4 *The careful analysis and evaluation of data and hypotheses in the light of evidence and logical argument*, and the use of evidence to support research and the conclusions drawn from it, rather than personal opinion or hearsay.
- 5 *Findings should be open to inspection, criticism, debate and testing by other researchers*, if necessary by replicating the research (carrying out the same or similar research again to check the findings of earlier research). This may be difficult with interpretivist research, such as participant observation, but even here the published findings and research notes should be open for other researchers to assess.

You should be aware that the 'rules' for rigorous scientific sociology discussed above, and particularly the issue of values, are themselves the subject of debate in sociology, and are considered in Topic 5.

Practice questions

- 1 Outline and explain **two** reasons why positivist sociologists suggest the methods and procedures of the natural sciences should be applied to the study of society. **(10 marks)**
- 2 Outline and explain **two** arguments for the view that sociology is a science. **(10 marks)**
- 3 Read **Item A** below and answer the question that follows.

Item A

Sociologists disagree about whether or not sociology can study society using similar scientific methods to those used by natural scientists, because of significant differences between the social and natural worlds. Some argue that whether or not sociology is a science depends on how science is defined, and point to the way the natural sciences are subject to similar social influences to those affecting sociology.

Applying material from **Item A** and your knowledge, evaluate the view that sociology is not, and cannot be, a science. **(20 marks)**