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RESEARCH BASICS

Research is a very general term for an activity that involves finding out, in a more or less systematic way, things you did not know. A more academic interpretation is that research involves finding out about things that no-one else knew either. It is about advancing the frontiers of knowledge.

Research methods are the techniques you use to do research. They represent the tools of the trade, and provide you with ways to collect, sort and analyse information so that you can come to some conclusions. If you use the right sort of methods for your particular type of research, then you should be able to convince other people that your conclusions have some **validity**, and that the new knowledge you have created is soundly based.

It would be really boring to learn about all these tools without being able to try them out – like reading about how to use a plane, chisel, drill etc. and never using them to make something out of a piece of wood. Therefore courses in research methods are commonly linked to assignments that require these methods to be applied – an actual research project that is described in a dissertation or thesis, or a research report. In the workplace, it is often the other way round. When there is a perception that more information and understanding is needed to advance the work or process of work, then ways are sought how research can be carried out to meet this need.

Being a researcher is as much about doing a practical job as being academically competent. Identifying a subject to research, finding and collecting information and analysing it, presents you with a range of practical problems that need to be solved. Over hundreds of years, techniques, or methods, have been evolved to provide solutions to these problems. The practice of research is closely bound up with the theoretical developments that were promoted by philosophers and key thinkers and practitioners in the sciences, right back to the ancient Greeks. The debate about knowledge and how we acquire it is rooted in philosophical thought (discussed in Chapter 2).

WHAT YOU CAN DO WITH RESEARCH

So what can we use research to do in order to gain this new knowledge? Some of the ways it can be used one to:

- **Categorise.** This involves forming a **typology** of objects, events or concepts, i.e. a set of names or 'boxes' into which these can be sorted. This can be useful in explaining which 'things' belong together and how.
- **Describe.** Descriptive research relies on observation as a means of collecting data. It attempts to examine situations in order to establish what is the norm, i.e. what can be predicted to happen again under the same circumstances.
- **Explain.** This is a descriptive type of research specifically designed to deal with complex issues. It aims to move beyond 'just getting the facts' in order to make sense of the myriad other elements involved, such as human, political, social, cultural and contextual.
- **Evaluate.** This involves making judgements about the quality of objects or events. Quality can be measured either in an absolute sense or on a comparative basis. To be useful, the methods of evaluation must be relevant to the context and intentions of the research.
- **Compare.** Two or more contrasting cases can be examined to highlight differences and similarities between them, leading to a better understanding of phenomena.
- **Correlate.** The relationships between two phenomena are investigated to see whether and how they influence each other. The

relationship might be just a loose link at one extreme or a direct link when one phenomenon causes another. These are measured as levels of association.

- **Predict.** This can sometimes be done in research areas where correlations are already known. **Predictions** of possible future behaviour or events are made on the basis that if there has been a strong relationship between two or more characteristics or events in the past, then these should exist in similar circumstances in the future, leading to predictable outcomes.
- **Control.** Once you understand an event or situation, you may be able to find ways to **control** it. For this you need to know what the cause and effect relationships are and that you are capable of exerting control over the vital ingredients. All of technology relies on this ability to control.

You can combine two or more of these objectives in a research project, with sometimes one objective needing to be successfully achieved before starting the next, for example you usually need to be able to explain how something happens before you can work out how to control it.

RESEARCH DESIGNS

There are numerous types of research design that are appropriate for the different types of research projects. The choice of which design to apply depends on the nature of the problems posed by the research aims. Each type of research design has a range of research methods that are commonly used to collect and analyse the type of **data** that is generated by the investigations. Here is a list of some of the more common research designs, with a short explanation of the characteristics of each.

HISTORICAL

This aims at a systematic and objective evaluation and synthesis of evidence in order to establish facts and draw conclusions about past events. It uses primary historical data, such as archaeological remains as well as documentary sources of the past. It is usually necessary to carry out tests in order to check the **authenticity** of these sources.

Apart from informing us about what happened in previous times and re-evaluating beliefs about the past, historical research can be used to find contemporary solutions based on the past and to inform present and future trends. It stresses the importance of interactions and their effects.

DESCRIPTIVE

This design relies on observation as a means of collecting data. It attempts to examine situations in order to establish what is the norm, i.e. what can be predicted to happen again under the same circumstances. 'Observation' can take many forms. Depending on the type of information sought, people can be interviewed, questionnaires distributed, visual records made, even sounds and smells recorded. Important is that the observations are written down or recorded in some way, in order that they can be subsequently analysed. The scale of the research is influenced by two major factors: the level of complexity of the survey and the scope or extent of the survey.

CORRELATION

This design is used to examine a relationship between two concepts. There are two broad classifications of relational statements: an association between two concepts – where there is some kind of influence of one on the other; and a causal relationship – where one causes changes to occur in the other. **Causal statements** describe what is sometimes called a 'cause and effect' relationship. The cause is referred to as the '**independent variable**', the variable that is affected is referred to as the '**dependent variable**'.

The correlation between two concepts can either be none (no correlation); positive (where an increase in one results in the increase in the other, or decrease results in a decrease); or negative (where the increase in one results in the decrease in the other or vice versa). The degree of association is often measurable.

COMPARATIVE

This design is used to compare past and present or different parallel situations, particularly when the researcher has no control over events. It

can look at situations at different scales, macro (international, national) or micro (community, individual). **Analogy** is used to identify similarities in order to predict results – assuming that if two events are similar in certain characteristics, they could well be similar in others too. In this way comparative design is used to explore and test what conditions were necessary to cause certain events, so that it is possible, for example, to understand the likely effects of making certain decisions.

EXPERIMENTAL

Experimental research attempts to isolate and control every relevant condition which determines the events investigated and then observes the effects when the conditions are manipulated. At its simplest, changes are made to an independent variable and the effects are observed on a dependent variable – i.e. cause and effect. Although experiments can be done to explore a particular event, they usually require a hypothesis (prediction) to be formulated first in order to determine what variables are to be tested and how they can be controlled and measured. There are several **classes** of experiment – pre, true, quasi, etc. which are characterized by the amount of checking and control involved in the methods.

SIMULATION

Simulation involves devising a representation in a small and simplified form (**model**) of a system, which can be manipulated to gauge effects. It is similar to experimental design in the respect of this manipulation, but it provides a more artificial environment in that it does work with original materials at the same scale. Models can be mathematical (number crunching in a computer) or physical, working with two- or three-dimensional materials. The performance of the model must be checked and calibrated against the real system to check that the results are reliable. Simulation enables theoretical situations to be tested – what if?

EVALUATION

This descriptive type of research is specifically designed to deal with complex social issues. It aims to move beyond 'just getting the facts',

by trying to make sense of the myriad human, political, social, cultural and contextual elements involved. There are a range of different approaches of evaluation models, for example, systems analysis – which is a holistic type of research looking at the complex interplay of many variables; and responsive evaluation – which entails a series of investigative steps to evaluate how responsive a programme is to all those taking part in it. A common purpose of evaluation research is to examine the working of projects from the point of view of levels of awareness, costs and benefits, cost-effectiveness, attainment of objectives and quality assurance. The results are generally used to prescribe changes to improve and develop the situation.

ACTION

Essentially, this is an 'on the spot' procedure, principally designed to deal with a specific problem found in a particular situation. There is no attempt made to separate the problem from its context in order to study it in isolation. What are thought to be useful changes are made and then constant monitoring and evaluation are carried out to see the effects of the changes. The conclusions from the findings are applied immediately, and further monitored to gauge their effectiveness. Action research depends mainly on observation and behavioural data. Because it is so bound up in a particular situation, it is difficult to generalize the results, i.e. to be confident that the action will be successful in another context.

ETHNOLOGICAL

Ethnological research focuses on people. In this approach, the researcher is interested in how the subjects of the research interpret their own behaviour rather than imposing a theory from outside. It takes place in the undisturbed natural settings of the subjects' environment. It regards the context to be as equally important as the actions it studies, and attempts to represent the totality of the social, cultural and economic situation. This is not easy as much of culture is hidden and rarely made explicit and the cultural background and assumptions of the researcher may unduly influence the interpretations and descriptions. Moreover there can be confusions produced by the use of language and the different meanings which may be given to words by the respondents and researcher.

FEMINIST

This is more of a perspective than a research design that involves theory and analysis that highlight the differences between men's and women's lives. Researchers who ignore these differences can come to incorrect conclusions. However, everyone is male or female, so value neutrality is impossible as no researcher practises research outside his or her system of values. No specific methods are seen to be particularly feminist, but the methodology used is informed by theories of gender relations. Although feminist research is undertaken with a political commitment to identify and transform gender relations, it is not uniquely political, but exposes all methods of social research as being political.

CULTURAL

Many of the prevailing theoretical debates (e.g. postmodernism, poststructuralism etc.) are concerned with the subjects of language and cultural interpretation. Cultural research provides methodologies that allow a consistent analysis of cultural texts so that they can be compared, replicated, disproved and generalized. Examples of approaches to the interpretation of cultural texts are: content analysis, semiotics and discourse analysis. The meaning of the term 'cultural texts' has been broadened from that of purely literary works to that of the many different forms of communication, both formal such as opera, TV news programmes, cocktail parties etc., and informal such as how people dress or converse.

DECIDING ON YOUR TYPE OF RESEARCH

It is your research interest that decides the nature of your research problem, and this will indicate the appropriate type of research to follow. Once the objectives of a research project have been established, the issue of how these objectives can be met leads to a consideration of which research design should be chosen. The research design provides a framework for the collection and analysis of data and subsequently indicates which research methods are appropriate. You can combine two or more types of research design, particularly when your subject combines the study of human behaviour with that of, for example, economics, technology, legislation or organizations.

The different types of research design may involve the use of their own specific types of research methods, developed specifically to solve the problems inherent in that design. However, some methods are widely used across many research types.

WHERE TO FIND OUT MORE

Apart from continuing to read this book, there are other introductions to research that you may wish to check out. Most books on this subject cover the whole sequence of doing research. The following books are aimed at undergraduate and postgraduate research and selective reading of the preliminary chapters will provide further guidance on research basics. Each gives a slightly different view of the issues, so refer to as many as possible. You can probably do this in the library without even taking the books out on loan.

Blaxter, L., Hughes, C. and Tight, M. (2006) *How to Research* (third edition). Buckingham: Open University Press.
The first chapter gives an entertaining review of what research is about.

Rudestam, K. E. and Newton, R. (2007) *Surviving Your Dissertation: A Comprehensive Guide to Content and Process* (third edition). Thousand Oaks, CA: Sage.
Again, the first couple of chapters provide an introduction to research.

David, M. and Sutton, C. (2004) *Social Research: The Basics*. London: Sage.
A good chapter on getting started.

Swetnam, D. (2000) *Writing Your Dissertation: How to Plan, Prepare and Present Successful Work* (third edition). Oxford: How To Books.
Chapter 1 gives some simple advice on how to get started.

Biggam, J. (2008) *Succeeding with Your Master's Dissertation: A Step-by-Step Handbook*. Basingstoke: Palgrave.
A useful, simple and easy to read book for a person that has not done a dissertation before.

2

RESEARCH THEORY

Research is about acquiring knowledge and developing understanding, collecting facts and interpreting them to build up a picture of the world around us, and even within us. It is fairly obvious then, that we should hold a view on what knowledge is and how we can make sense of our surroundings. These views will be based on the philosophical stance that we take.

Despite this, some people maintain that a study of the philosophy of the natural or human sciences is irrelevant to researchers. They remark that the study of philosophy consists of learning about how theory after theory has been erected, only to be torn down by the subsequent one, and that it has little bearing on the day-to-day practice of research and only causes confusion. So why should you find it necessary to know something about philosophy as a background to your research? Because everyone is a philosopher – everyone has a concept of the world. In fact, the alternative to having a philosophy is not having no philosophy but having a bad philosophy. The 'unphilosophical' person has an unconscious philosophy, which they apply in their practice – whether of science or politics or daily life (Collier, 1994: 16).

All philosophical positions and their attendant methodologies, explicitly or implicitly, hold a view about reality. This view, in turn, will determine what can be regarded as legitimate knowledge. Philosophy works by making arguments explicit. You need to develop

sensitivity towards philosophical issues so that you can evaluate research critically. It will help you to discern the underlying, and perhaps contentious, assumptions upon which research reports are based even when these are not explicit, and thus enable you to judge the appropriateness of the methods that have been employed and the validity of the conclusions reached. Obviously, you will also have to consider these aspects in regard to your own research work. Your research, and how you carry it out, is deeply influenced by the theory or philosophy that underpins it.

There are different ways of going about doing research depending on your assumptions about what actually exists in reality and what we can know (metaphysics) and how we can acquire knowledge (epistemology).

METAPHYSICS AND EPISTEMOLOGY

Metaphysics is concerned with questions such as what it is to be, who we are, what is knowledge, what are things, what is time and space. At one extreme there is:

- **Idealism**, that advocates that reality is all in the mind, that everything that exists is in some way dependent on the activity of the mind. Hence, as phenomena are reliant on mental and social factors they are therefore in a state of constant change e.g. music is not just sound, it is an emotional experience.

and at the other extreme is:

- **Materialism (or reductionism)**, that insists that only physical things and their interactions exist and that our minds and consciousness are wholly due to the active operation of materials. Hence, phenomena are independent of social factors and are therefore stable e.g. music is just vibrations in the air.

As you can imagine, these are opposite ends of a spectrum, with many intermediate positions being held that balance the importance of the mind and material things in different degrees.

Epistemology is the theory of knowledge, especially about its validation and the methods used. It deals with how we know things

and what we can regard as acceptable knowledge in a discipline. It is concerned with the reliability of our senses and the power of the mind. As for the methods of acquiring knowledge, there are two basic approaches:

1 **empiricism** – knowledge gained by sensory experience (using inductive reasoning);
2 **rationalism** – knowledge gained by reasoning (using deductive reasoning).

The relative merits of these approaches have been argued ever since the Ancient Greeks – Aristotle advocating the first and Plato the second.

INDUCTIVE AND DEDUCTIVE REASONING

The reasoning behind the empirical and rationalist approaches to gaining knowledge also start from opposite ends of a spectrum. Although it is not possible to apply either extreme in a practical way, it is useful to characterize the distinct differences in the two opposing approaches. A more practical approach that goes a long way to overcome the shortcomings of each is the **hypothetico-deductive method**, which uses the features of each in a pragmatic way, in fact, the method used in much scientific enquiry and hence also called '**scientific method**'.

INDUCTIVE REASONING – THE EMPIRICIST'S APPROACH

Inductive **reasoning** starts from specific observations or sensory experiences and then develops a general conclusion from them. This simple example gives and indication of the line of reasoning:

All the giraffes that I have seen have very long necks.	(Repeated observations)
Therefore I conclude that all giraffes have long necks.	(Conclusion)

Induction was the earliest and, even now, the commonest popular form of scientific activity. We use it every day in our normal lives as we learn from our surroundings and experiences. We come to conclusions from what we have experienced and then generalize from them, that is, set them up as a rule or belief. The Elizabethan philosopher

Francis Bacon stated that one should consult nature, and not rely on the writings of ancient philosophers such as Aristotle or on the Bible. The scientific revolution in the seventeenth century was based on this approach, led by such scientists as Galileo and Newton (remember the apple that fell on his head from the tree that lead to his theory of gravity? Nice story anyway!). Mendel's discovery of genetics and Darwin's theory of evolution are perhaps the most famous generalizations in the form of theories that are, even by them, claimed to be developed through inductive reasoning.

However there are problems with induction. The first is the question of how many observations must be made before we can reasonably draw a conclusion that is reliable enough to generalize from; and the second is how many situations and under which conditions should the observations be made so that true conclusions can be reached? These problems do not stop us from using inductive reasoning every day quite successfully without even thinking about it. But we should be aware that what might at first seem obvious may not be so reliable with making further investigations.

Therefore, in order to be able to rely on the conclusions we come to by using inductive reasoning, we should ensure that we make a large number of observations, we repeat them under a large range of circumstances and conditions and that no observations contradict the generalization we have made from the repeated observations.

DEDUCTIVE REASONING – THE RATIONALIST'S APPROACH

Deductive reasoning begins with general statements (premises) and, through logical argument, comes to a specific conclusion. Again, a simple example will provide a guide to how this works:

All living things will eventually die.	(General statement – first premise)
This animal is a living thing.	(Inference – second premise)
Therefore, this animal will eventually die.	(Conclusion)

This is the simplest form of deductive argument, and is call a syllogism. As you can see it consists of a general statement (called the first premise),

followed a more specific statement inferred from this (the second premise), and then a conclusion which follows on logically from the two statements

Deduction, as with many philosophical ideas, was first discussed as a way of reasoning by the Ancient Greeks, in particular, Plato. Enquiry is guided by the theory which precedes it. Theories are speculative answers to perceived problems, and are tested by observation and experiment. Whilst it is possible to confirm the possible truth of a theory through observations which support it, theory can be falsified and totally rejected by making observations which are inconsistent with its statement. In this way, science is seen to proceed by trial and error: when one theory is rejected, another is proposed and tested, and thus the fittest theory survives.

In order for a theory to be tested, it must be expressed as a statement called a **hypothesis**. The essential nature of a hypothesis is that it must be falsifiable. This means that it must be logically possible to make true observational statements which conflict with the hypothesis, and thus can falsify it. However, the process of **falsification** leads to a devastating result of total rejection of a theory, requiring a completely new start.

Another problem with deductive reasoning is that the truth of the conclusions depends very much on the truth of the premise on which it is based. For example, in the past many conclusions about the movement of the planets were incorrect due to the premise that the earth was the centre of the universe.

HYPOTHETICO-DEDUCTIVE REASONING OR SCIENTIFIC METHOD

The hypothetico-deductive method combines inductive and deductive reasoning, resulting in the to-and-fro process of:

- identification or clarification of a problem;
- developing a hypothesis (testable theory) inductively from observations;
- charting their implications by deduction;
- practical or theoretical testing of the hypothesis;
- rejecting or refining it in the light of the results.

It is this combination of experience with deductive and inductive reasoning which is the foundation of modern scientific research, and is commonly referred to as scientific method. It was only by the beginning of the 1960s that Popper (1902–92) formulated the idea of the hypothetico-deductive method, even though it must have been used in practice for decades before.

Of course there are many problems posed by the complexity of testing theories in real life. Realistic scientific theories consist of a combination of statements, each of which relies on assumptions based on previous theories. The methods of testing are likewise based on assumptions and influenced by surrounding conditions. If the predictions of the theory are not borne out in the results of the tests, it could be the underlying premises which are at fault rather than the theory itself.

There are certain assumptions that underlie scientific method that relate to a materialist view of metaphysics and a positivist view of epistemology. These assumptions are:

- **Order** – the universe is an ordered system that can be investigated and the underlying 'rules' can be exposed.
- **External reality** – we all share the same reality that does not depend on our existence. We can therefore all equally contribute to and share knowledge that reflects this reality.
- **Reliability** – we can rely on our senses and reasoning to produce facts that reliably interpret reality.
- **Parsimony** – the simpler the explanation the better. Theories should be refined to the most compact formulation .
- **Generality** – the 'rules' of reality discovered through research can be applied in all relevant situations regardless of time and place.

However, these assumptions are not accepted by the opposite camp in metaphysics and epistemology. Those with an idealist and relativist point of view insist on the importance of human subjectivity and the social dimension to facts and their meanings. This clash of viewpoints is unlikely ever to be resolved.

A brief review of history will show that this quest for what is reality and what are facts is a constant preoccupation in the enquiry into our relation to existence.

POSITIVISM, RELATIVISM, POSTMODERNISM AND CRITICAL REALISM

There is an important issue that confronts the study of the social sciences that is not so pertinent in the natural sciences. This is the question of the position of the human subject and researcher, and the status of social phenomena. Is human society subjected to **laws** that exist independent of the human actors that make up society, or do individuals and groups create their own versions of social forces? As briefly mentioned above, the two extremes of approach are termed **positivism** and **interpretivism**. Again, as in the case of ways of reasoning, a middle way has also been formulated that draws on the useful characteristics of both approaches.

POSITIVISM

The positivist approach to scientific investigation is based on acceptance as fact that the world around us is real, and that we can find out about these realities. There is an order made up of atomistic, discrete and observable events. Knowledge is derived using scientific method and based on sensory experience gained through experiments or comparative analysis. It aims at developing a unique and elegant description of any chosen aspect of the world that is true regardless of what people think. By developing these scientific facts, knowledge is built up in a cumulative fashion, despite some false starts. Science builds on what is already known, for example, even Einstein's radical theories are a development from Newton's.

The approach to knowledge is reductionist in character, by maintaining that less measurable sciences are reducible to more measurable ones. Sociology is reducible to psychology, psychology to biology, biology to chemistry, and chemistry to physics. Social sciences can therefore be value free and objective.

RELATIVISM (ALSO CALLED INTERPRETIVISM, IDEALISM, CONSTRUCTIVISM OR EVEN CONSTRUCTIONISM)

The alternative approach to research – **relativism** – is based on the philosophical doctrines of idealism and humanism. It maintains that the view of the world that we see around us is the creation of the

mind. This does not mean that the world is not real, but rather that we can only experience it personally through our perceptions which are influenced by our preconceptions, beliefs and values; we are not neutral, disembodied observers but part of society. Unlike the natural sciences, the researcher is not observing phenomena from outside the system, but is inextricably bound into the human situation which he/she is studying. As well as concentrating on the search for constants in human behaviour which highlights the repetitive, predictable and invariant aspect of society the researcher does not ignore what is subjective, individual and creative – facts and values cannot be separated. The researcher encounters a world already interpreted and his/her job is to reveal this according to the meanings created by humans rather than to discover universal laws. Therefore there can be more than one perspective and interpretation of a phenomenon.

Table 2.1 Comparison between positivist and relativist approaches

Issue	*Positivist*	*Relativist*
Philosophical basis	Realism: the world exists and is knowable as it really is.	Idealism: the world exists but different people construe it in very different ways.
The role of research	To discover universal laws and generalizations.	To reveal different interpretations of the world as made by people.
Role of researcher	Neutral observer.	Part of the research process.
Theoretical approach	Rational, using inductive and scientific methods and value free data.	Subjective, using inductive methods and value laden data.
Methods	Experiments or mathematical models and quantitative analysis to validate, reject or refine hypotheses.	Surveys and observations with qualitative analysis to seek meaningful relationships and the consequences of their interactions. Analysis of language and meaning.

(Continued)

Table 2.1 (Continued)

Issue	*Positivist*	*Relativist*
Analysis of society	Search for order. Society is governed by a uniform set of values and made possible only by acceptance of these values.	Search for dynamics. Multitude of values leading to complex interactions. Society made possible by negotiation.

Table 2.1 compares the alternative bases for interpreting the world. Table Just because the differences of perspective between positivist and relativist approaches are so radical, don't think that you need to espouse purely one or the other approach. Different aspects of life lend themselves to different methods of interpretation.

POSTMODERNISM

Postmodernism challenges key issues such as meaning, knowledge and truth which have opened up new perspectives and ideas about the essence of research. It denounces the meta-narratives (all embracing theories) of the modern movement as a product of the Enlightenment, and insists on the inseparable links between knowledge and power. In fact, there is no universal knowledge or truth. Science is just a construct and only one of many types of knowledge that are all subjects of continual reinvention and change.

It is a complex combination of ideas that emerged in a fragmented fashion at the end of the nineteenth century but became highly developed by French social theorists such as Saussure, Barthes, Derrida, Foucault, Baudrillard and Leotard in the latter part of the twentieth century.

One of the strands of postmodernism examines the structure of language and how it is used. It challenges the assumption that language can be precisely used to represent reality. Meanings of words are ambiguous, as words are only signs or labels given to concepts (what is signified) and therefore there is no necessary correspondence between the word and the meaning, the signifier and the signified. The use of signs (words) and their meanings can vary depending on

the flow of the text in which they are used, leading to the possibility of 'deconstructing' text to reveal its underlying inconsistencies. This approach can be applied to all forms representation – pictures, films etc. that gain added or alternative meanings by the overlaying of references to previous uses. This can be seen particularly in the media where it is difficult to distinguish the real from the unreal – everything is representation, there is no reality.

In another strand of postmodernism, Foucault maintained that representations of knowledge are developed through types of discourse – discussions that are framed by the current accepted norms of institutions that are in positions of power within the intellectual establishment; such as universities, government bodies and funding institutions. In this way, scientific enquiry and the application of the knowledge gained by it, rather than being freely conducted, are channelled towards supporting the interests of these institutions. Science is now a sort of game bound up with money, power and technology instead of being a simple search for truths.

These attitudes imply that the grand, monolithic structure of science and knowledge built up over the centuries, the striving after facts and laws that represent universal truths, and the steady progress towards greater understanding of the world and control of it through technology, is an impossible mission. Enquiry must be broken down into much smaller, localized and limited explanations, stressing different influences, ideologies and identities and the overwhelming complexity of our existence. There can be no over-arching theories and no universal truths – all is relative(see Table 2.2).

CRITICAL REALISM

Inevitably, there has been a reaction to this postmodernist challenge to traditional science which threatens a descent into chaos and powerlessness to act because of lack of possibility of agreement on truths and reality. This has been labelled **critical reality** based on critical reasoning.

Critical reasoning can be seen as a reconciliatory approach, which recognizes, like the positivists, the existence of a natural order in social events and discourse, but claims that this order cannot be detected by merely observing a pattern of events. The underlying order must be discovered through the process of **interpretation** while doing theoretical and practical work particularly in the social sciences. Unlike the positivists, critical realists do not claim that there

Table 2.2 Methods of enquiry – a comparison

Basic beliefs	*Positivism/ Postpositivism*	*Relativism/ Interpretivism*	*Postmodernism/ Emancipatory*
Metaphysics (nature of reality)	One reality; knowable within probability	Multiple, socially constructed realities	Multiple realities shaped by social, political, cultural, economic, ethnic, gender and disability values
Epistemology (nature of knowledge; relation between knower and would-be-known)	Objectivity is important; researcher manipulates and observes in dispassionate, objective manner	Interactive link between researcher and participants; values are made explicit; creating findings	Interactive link between researcher and participants; knowledge is socially and historically situated

Source: Adapted from Mertens (1998: 9).

is a direct link between the concepts they develop and the observable phenomena. Concepts and theories about social events are developed on the basis of their observable effects, and interpreted in such a way that they can be understood and acted upon, even if the interpretation is open to revision as understanding grows. This also distinguishes critical realists from relativists, who deny the existence of such general structures divorced from the specific event or situation and the context of the research and researcher.

KEY FIGURES

To summarize the above, here is a short guide to some key figures that have influenced thinking about research.

Plato (427–347 BC) and Aristotle (348–322 BC) – these represent the two contrasting approaches to acquiring knowledge and understanding the world (epistemology). Plato argued for deductive thinking (starting with theory to make sense of what we observe) and Aristotle for the opposite, inductive thinking (starting with observations in order to build theories).

René Descartes (1596–1650) – provided the starting point for modern philosophy by using a method of systematic doubt; that we cannot rely on our senses or logic, and therefore he challenged all who sought for the basis of certainty and knowledge. His famous maxim is 'I think, therefore I am', that is – I can only be sure of my own existence, the rest must be doubted.

John Locke (1632–1704) – made the distinction between bodies or objects that can be directly measured, and therefore have a physical existence, and those abstract qualities that are generated by our perceptions and feelings.

George Berkeley (1685–1753) – argued that all things that exist are only mental phenomena. They exist by being perceived. This is 'our' world.

David Hume (1711–1776) – made a distinction between systems of ideas that can provide certainty – e.g. maths – and those that rely on our perceptions (empirical evidence) which are not certain. He recognized the importance of inductive thinking in the advancement of scientific knowledge, but highlighted its restrictions in finding the truth.

Immanuel Kant (1724–1804) – held that our minds organize our experiences to make sense of the world. Therefore 'facts' are not independent of the way we see things and interpret them.

Karl Popper (1902–1994) – formulated a combination of deductive and inductive thinking in the hypothetico-deductive method, commonly known as scientific method. This method aims to refine theories to get closer to the truth.

Auguste Compte (1789–1857) – maintained that society can be analysed empirically just like any other subjects of scientific enquiry. Social laws and theories are based on psychology and biology.

Karl Marx (1818–1883) – defined moral and social aspects of humanity in terms of material forces.

Emil Durkheim (1858–1917) – argued that society develops its own system of collectively shared norms and beliefs – these were 'social facts'.

Max Weber (1864–1920) – insisted that we need to understand the values and meanings of subjects without making judgements – 'verstehen' was the term he coined for this which is German for 'understanding'.

Thomas Kuhn (1922–1995) – revealed that scientific research cannot be separated from human influences and is subject to social norms.

Michel Foucault (1926–1984) – argued that there was no progress in science, only changing perspectives, as the practice of science is shown to control what is permitted to count as knowledge. He demonstrated how discourse is used to make social regulation and control appear natural.

Jacques Derrida (1930–2004) – stated that there is no external or fixed meaning to text, nor is there a subject who exists prior to language and to particular experiences. You cannot get outside or beyond the structure. This approach led to the movement called Deconstruction.

WHERE TO FIND OUT MORE

There is much written about the philosophy of knowledge and research and it is advisable to have a good general knowledge of the debate about the philosophy of scientific knowledge and its detractors, in order to place your research within the philosophical context. When compiling this chapter, I found the following books useful and well worth a browse. The titles give an indication of the subject tackled. I have put the more approachable ones first.

Two good introductory books to start with:

Thompson, M. (2006) *Philosophy*. London: Hodder (Teach Yourself).
This is a simple introduction to philosophy which explains the main terminology and outlines the principle streams of thought.

Warburton, N. (2004) *Philosophy: The Basics.* (fourth edition). London: Routledge.
A book in the same series as this one.