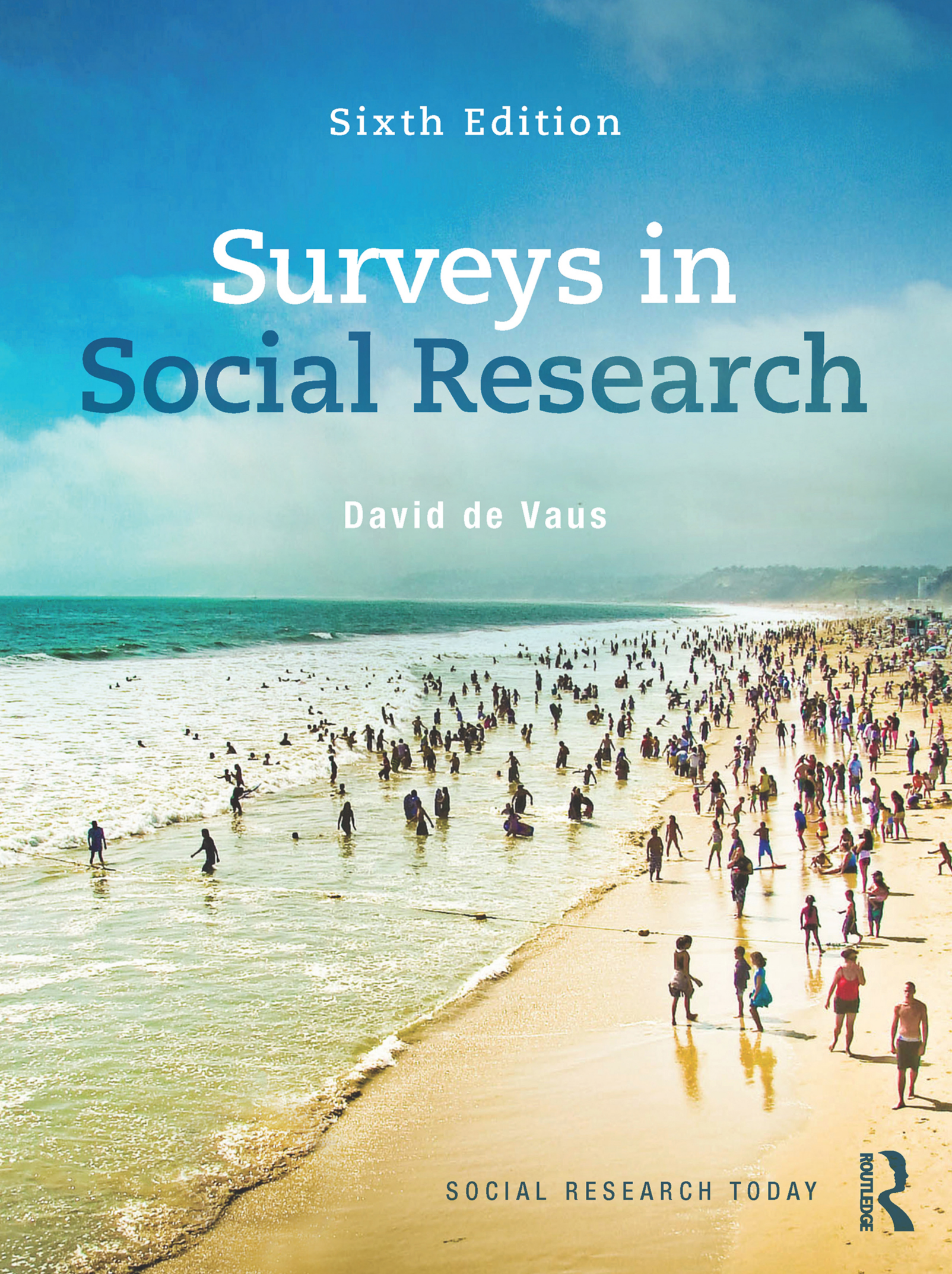
Sixth Edition

Surveys in Social Research

David de Vaus



SOCIAL RESEARCH TODAY

ROUTLEDGE

SURVEYS IN SOCIAL RESEARCH

David de Vaus' classic text *Surveys in Social Research* provides clear advice on how to plan, conduct and analyse social surveys. It emphasises the links between theory and research, the logic and interpretation of statistics and the practices of social research. This sixth edition has been completely revised and updated, and contains new examples, data and extensive lists of web resources.

As well as explaining how to conduct good surveys, de Vaus shows how to become a critical consumer of research. He argues that the logic of surveys and statistics is simply an extension of the logic we use in everyday life; analysis, however, requires creativity and imagination rather than the application of sterile mechanical procedures. The prime goal of research should be to gain accurate understanding and, as a researcher, use methods and techniques which enhance understanding. De Vaus advocates researchers use the method, rather than letting the method use you.

Surveys in Social Research is essential reading for students and researchers working with surveys. It assumes no background in statistical analysis, and gives you the tools you need to come to grips with this often challenging field of work.

David de Vaus is Emeritus Professor in Sociology, University of Queensland.

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Edited by Martin Bulmer

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Surveys in Social Research (sixth edition)
David de Vaus

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David de Vaus

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Brief contents

Detailed contents

Boxes, figures, web pointers and tables

BOXES

FIGURES

WEB POINTERS

TABLES

Preface

A great deal has happened in the field of survey research since the first edition of this book appeared in 1985. The fifth edition was a major update that reflected many of the software and technological changes that had occurred since the first edition. It is now more than 10 years since that update and the world of survey research has continued to evolve.

The greatest changes reflect developments on the internet. Internet-based surveys have become commonplace as simple web-based survey software has become widely available. More and more of the population is online, so internet surveys are an increasingly viable option for administering surveys. At the same time, changing living patterns, reduced response rates and changes in telephone technology are making it more and more challenging to conduct surveys using the old methods. These social and technological changes mean that we need to be able to use multiple modes of administering surveys and to rise to the challenge of multi-mode methods. The development of suitable sampling methods and the evaluation of mode effects are two of the challenges for survey research in the future. This edition has been revised to take these developments into account.

We have also learned more about the cognitive aspects of question and questionnaire design. We are learning more about the way in which context affects question meaning and the answers provided. Cognitive psychology is making important contributions to the design and administration of questionnaires and this edition directs attention to developments in this area.

The way in which we do so much of our work for surveys has been transformed by the online environment in which we work. We can access questionnaires, question banks and other resources from around the world to help us design questionnaires that enable us to make comparisons of trends and patterns across time and nations. Huge data sets from major surveys are available to download and are available for analysis using the many statistical software packages that can be purchased and downloaded in an instant. Extensive data archives and even online analysis of survey and census data mean that we can interrogate survey data from across the globe immediately. These are marvellous developments but the rate of change makes it difficult to keep abreast of the current state of knowledge. This edition points to some of these new resources, updates all the web links and expands the reference and reading lists to help readers keep up-to-date.

But the basics of survey research remain the same. A structured set of data obtained using reliable and valid instruments from quality samples is the foundation for survey research. Clear research questions and well thought through concepts remain as central as ever. Systematic and open-minded analysis of the data is fundamental to good surveys and a multivariate perspective based on an understanding of research design remains critical to being able to draw robust conclusions

from the data. I hope that this edition of *Surveys in Social Research* continues to highlight these survey basics while at the same time providing you with the state-of-the-art ways of achieving these features of survey research.

David de Vaus
University of Queensland
August 2013

Part I

THE SCOPE OF SURVEY RESEARCH

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1

The nature of surveys

The purpose of this chapter is to outline briefly what is meant by the term survey research. Any examination of texts on social research or the popular media shows that the term survey is used in many different ways. To avoid confusion we must be clear at the beginning about how the term will be used in this book. The way we define what a survey is affects the range of topics for which we can use a survey, the way in which we conduct a survey and our evaluation of the merits and shortcomings of the survey method.

The primary aim of this book is to provide guidance on how to do good surveys. Some critics of the survey method have responded to problems evident in many surveys by urging that we move away from survey research altogether and employ entirely different research methodologies. However, the solution to criticisms of surveys need not be to abandon survey research but to solve the problems that the critics assume are inherent to the survey approach.

Many criticisms of surveys are based on misunderstandings of what surveys can be and are based on examples of poor surveys and the inappropriate use of survey research. This is not the place to review these criticisms or to argue how they are frequently misinformed. The best discussion of these criticisms is available in Catherine Marsh's book titled *The Survey Method: The Contribution of Surveys to Sociological Explanation* (1982). The focus of the present book is to show what can be achieved with a good survey and how to achieve this.

WHAT IS A SURVEY?

A survey is *not* just a particular technique for collecting information: questionnaires are widely used but other techniques, such as structured and in-depth interviews, observation, content analysis and so forth, can also be used in survey research. The distinguishing features of surveys are the form of the data and the method of analysis.

Form of data

Surveys are characterised by a structured or systematic set of data which I will call a variable by case data grid. All this means is that we collect information about the same variables or characteristics from at least two (normally far more) cases and end up with a data grid. In Table 1.1 each row represents a case (person) and each column represents a variable or information collected about each case. Since the same information is collected

Table 1.1 A variable by case data grid

		Variables			
		Sex	**Age**	**Political orientation**	**Social class**
Cases	Person 1	male	36 years	progressive	working
	Person 2	male	19 years	moderate	lower middle
	Person 3	female	30 years	progressive	upper working
	Person 4	male	55 years	traditionalist	upper middle
	Person 5	female	42 years	traditionalist	middle

for each case the cases are directly comparable and we end up with a structured or 'rectangular' set of data.

The technique by which we generate data about the cases can vary between surveys. We might collect information by giving a questionnaire to each person and then copying answers from each questionnaire into the data grid. Because questionnaires are highly structured they provide a straightforward way of obtaining information for the data grid. However, the data for the grid could be collected by other means such as interviewing or observing each case, by extracting information from records we have on each person or by many other means. There is no *necessary* connection between questionnaires and survey research (see Figure 1.1).

The absence of a necessary connection between the survey method and a particular data collection technique is reinforced by the fact that the cases in the variable by case data grid need not be people. Technically the case in the data grid is called a *unit of analysis*—it is the 'object' about which we are collecting information (see Web Pointer 1.1). While this frequently is a person it need not be. We could construct a data grid in which the unit of analysis was a country, a year or virtually anything so long as we collect attributes

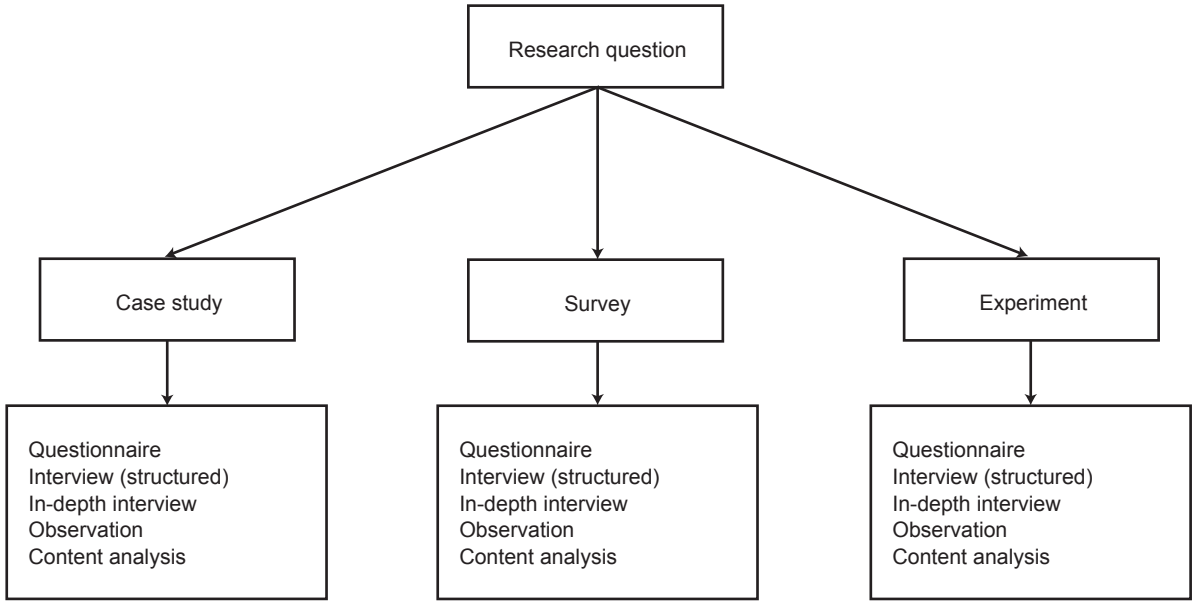


Figure 1.1 A range of methods of research and techniques of data collection

WEB POINTER 1.1 ***Units of analysis***

Clear and brief description of the idea of units of analysis. www.socialresearchmethods.net/kb/unitanal.php

of that case (see section on units of analysis in Chapter 3). If countries were the cases, a list of countries would be listed down the side of the table instead of people, and attributes of countries (e.g. population size, area, density, unemployment rate) would be listed across the top. If years were the cases, years (e.g. 1980, 1990, 2000, 2010) would be listed down the side with attributes relevant to years across the top (e.g. inflation rate in particular years, divorce rate).

The variable by case data grid is fundamental for survey *analysis* which is based on a comparison of cases. It is this method of analysing data which is the second distinguishing feature of surveys.

Methods of analysis

One function of survey analysis is to describe the characteristics of a set of cases. Thus if we want to describe how a group of people will vote, we need to know how each person in that group intends to vote. A variable by case data grid provides this information.

But survey researchers are also interested in causes of phenomena. The survey analyst tries to locate causes by comparing cases. By looking at how cases vary on some characteristics (e.g. some cases will be political progressives and others will be traditionalists), the survey analyst will see if the progressives are systematically different from the traditionalists in some additional way. For example, in Table 1.1 there is variation between cases in how they vote. This is systematically linked to variations in class: the progressives are working class and the traditionalists are middle class. Survey research seeks an understanding of what may cause some phenomenon (e.g. vote) by looking at variation in that variable across cases, and looking for other characteristics which are systematically linked with it. As such it aims to draw causal inferences (e.g. class affects vote) by a careful comparison of the various characteristics of cases. It does not end there. The next step is to ask why class affects vote. Survey researchers need to be very careful, however, to avoid mistaken attribution of causal links (simply to demonstrate that two things go together does not prove a causal link).

This style of research and analysis can be contrasted with other methods. For example, the case study method focuses on particular cases and tries to develop a full and rounded understanding of the cases. The case study method does not fundamentally rely on comparing cases but on fully understanding the 'wholeness' of a particular case and understanding particular attributes of a person (or an organisation or whatever the case is) within the context of the case's other characteristics and history. The experimental method is similar to the survey method in that data are collected in the form of variable by case data grid, but is fundamentally different in that the variation between the attributes of people is *created by intervention* from an experimenter wanting to see if the intervention creates a difference. For example, the experimenter who wants to know whether a drug cures a disease would take a group of sufferers and divide them into two similar groups. The drug would be administered to only one group and then the recovery rates of the drug and non-drug groups would be compared. Here the variation between the two groups (i.e. drug/non-drug) has been created by the experimenter. A survey approach would not create the variation but would find 'naturally occurring' variation; that is, find a group of sufferers who did not have the drug and compare them with a group of sufferers who did have the drug.

The problem for survey researchers is that they cannot be sure that the two groups are similar in other respects, whereas the experimenter begins with two similar groups and the only difference (in theory) is that only one group receives the treatment. Therefore any difference in recovery rates must be due to the drug. Apart from the potential ethical problems of experimental research (see Chapter 5), these different approaches to obtaining variation between groups lead to quite different methods of analysis.

In any particular study a range of research approaches can be used. A study of causes of

industrial disputes could involve a survey of attitudes of management and workers, a case study of a particular strike or a particular factory and an experiment where groups of workers work under different conditions to see if this affects the frequency of disputes.

The techniques by which data are collected using any of these methods can vary considerably. In a survey we could observe each case, interview them, give them a questionnaire and so on.

In summary, survey research is one method of collecting, organising and analysing data. The relevant data can be collected by a variety of techniques and in many studies it may be appropriate to use a range of research methods (see Figure 1.1).

QUANTITATIVE AND QUALITATIVE RESEARCH

Survey research is widely regarded as being inherently quantitative and positivistic and is contrasted to qualitative methods such as participant observation, unstructured interviewing, case studies and focus groups (see Web Pointer 1.2). Quantitative survey research is sometimes portrayed as being sterile and unimaginative but well suited to providing certain types of factual, descriptive information—the hard evidence. Qualitative methods are often regarded as providing rich data about real life people and situations, and being more able to make sense of behaviour and to understand behaviour within its wider context. However qualitative research is often criticised for lacking generalisability, being too reliant on the subjective interpretations of researchers and being incapable of replication by subsequent researchers.

This distinction between quantitative and qualitative research is frequently unhelpful and misleading. It is more helpful to distinguish between two stages of the research process: collecting data and analysing data.

At the data collection stage it is more useful to distinguish between research methods that yield structured and unstructured data sets than between methods that are quantitative or qualitative. I have already argued that the data grid required for survey research can be filled in using a variety of data collection methods. The nature of the data that are collected for the grid need not be quantitative. Each cell in the grid might be filled with numeric or quantitative data (e.g. age, income, years of education, score on an IQ test, number of times assaulted) or it may be filled with much more qualitative information. For example the variable (column) about which we are collecting information can be used to indicate the nature of a person's marriage. We could simply ask them to rate the marriage on a scale of 0 to 10 or we could enquire at some depth about the nature of the marriage. In the course of our enquiry we may collect information about equality, conflict, ways of handling conflict, feelings of intimacy and so forth. The clues about equality, conflict and intimacy may come from specific interview questions, may be based on observations or may be based on information gleaned from a number of different topics discussed in a relatively unstructured interview. Whether the data are quantitative or are collected with a questionnaire or some other method does not go hand in hand with a survey. The survey will simply collect *systematic* data that allows for systematic comparison between cases on the same characteristics. Similarly we might collect quantitative data but this does not mean we are conducting a survey. If this is collected from only one case (as in a case study) or is collected only spasmodically from some cases we do not

WEB POINTER 1.2 ***Positivism and survey research***

A brief but useful description of the term positivism.	www.socialresearchmethods.net/kb/positvsm.php
Howard Becker discusses some of the differences and similarities of quantitative and qualitative research.	http://stuff.natehaas.com/pub/TheoryThe%20Necessary%20Evil.htm and www.sfu.ca/~palys/Becker-EpistemologyOfQualitativeResearch.pdf

have the structured data set that permits survey analysis.

The quantitative/qualitative distinction is also not especially helpful at the data analysis stage. While statistical techniques are typically employed to analyse survey research it is the *logic* of analysis that distinguishes survey research. The logic of survey analysis is that variation in one variable is matched with variations in other variables. The notion of co-variation is not an inherently statistical concept—it is a logical concept that has been systematically formulated by Mill (1879). Statistical methods have been developed as indices of co-variation but this does not mean that the method of analysis is quantitative or statistical. Similarly, causal analysis is a common feature of survey research. That is, survey data are used to evaluate whether one variable affects another (e.g. does religion affect voting preference?). Again, statistical tools are frequently used and are helpful as part of the process of evaluating whether one variable affects another but causal analysis is fundamentally a logical rather than a statistical process.

It is most useful to think of survey research by emphasising that it is a structured approach to data collection and analysis and that it relies on a particular logic of analysis. Typifying survey research using the quantitative/qualitative distinction is misleading and emphasises the use of statistical analysis and quantitative measures at the expense of highlighting the fundamental characteristics of the survey method.

PRACTICE VS IDEAL TYPES

A basic difficulty when trying to describe how to do research is the gap between textbook accounts of how research *should* be done and how it actually *is* done. A number of valuable books have been published in which some researchers 'come clean' and provide accounts of how they did their research (e.g. Bell and Newby, 1977). Like my own experience, theirs does not conform to the textbook models.

What ought to be done in a book like this? To describe an 'ideal-typical' model of survey research, in which each step of research is outlined, is not to describe what researchers do. As such it can mislead. When you actually do some research you will find that you are not doing what you 'should'. So should the book describe the reality? Perhaps. But which one? The course that a piece of research actually takes will be peculiar to that piece of research: it is affected by the research topic, the technique of data collection, the experience and personality of the researcher, the 'politics' of the research, the types of people or situation being studied, funding and so on. I could describe my experiences but like an ideal-typical model they would not reflect other people's.

I have decided to do a bit of both. I will outline the key steps which a survey researcher must take at some stage and describe the reasoning behind the order in which it is normally suggested they be taken. But, I will also point out that in practice some steps are omitted, things are done out of order and we move backwards and forwards between steps. Guidelines that are provided are not meant to be prescriptive. The guidelines I describe are like signposts or a map to provide some direction and give us clues as to where to go when we get lost. As you become more familiar with the territory you can manage more easily without the map and learn short cuts. What I describe will not always reflect your research experience but will provide guidance. You should not try to follow each step slavishly. The prime goal of research should be to gain accurate understanding and, as a researcher, use methods and techniques which enhance understanding. Use the method: do not let it use you.

KEY CONCEPTS

Case
Data collection technique versus research method
Structured data set
Unit of analysis
Variable
Variable by case data grid
Variation

FURTHER READING

Catherine Marsh's book *The Survey Method* (1982) remains the best description of the survey method available. Her outline and evaluation of the most substantial criticisms of surveys is direct, clear and stimulating.

Carr-Hill's paper 'Radicalising Survey Methodology' (1984) approaches the criticisms of surveys somewhat differently but suggests ways of overcoming some of the problems from a radical perspective.

Donsbach's paper on 'Survey Research at the End of the Twentieth Century' (1997) provides a critical evaluation of surveys as they are often practised.

The exchange between Greeley (1996) 'In Defense of Surveys' and Lewontin (1996) 'In Defense of Science' in relation to a particular survey (national survey of American sexual behaviour) highlights some of the practical issues involved in evaluating survey research.

Denzin's *The Research Act* (2009) provides a critique of survey research from a symbolic interactionist perspective as do Blumer's papers 'What is Wrong with Sociological Theory?' (1954) and 'Sociological Analysis and the Variable' (1956).

Chapter 3 of *The Sociological Imagination* (1959) by C. W. Mills on abstracted empiricism is a well-known attack on certain forms of survey research. A very useful discussion of positivism is contained in Halfpenny's 1982 book *Positivism and Sociology: Explaining Social Life*, which clarifies much of the confusion in the way this concept is used in sociology.

Differences between the various types of research designs are discussed fully in de Vaus' book *Research Design in Social Research* (2001). Chapter 4 of Madge's classic text, *The Tools of Social Science* (1965) provides a concise summary of Mill's logic that is relevant to survey analysis. De Vaus (2001) elaborates on the logic of the methods of survey analysis and on concepts of causality.

EXERCISES

1 Draw a variable by case data grid for six people and five variables of your choice. Fill in characteristics for each case.

2 Draw three variable by case data grids each using a different unit of analysis from the following list: countries, years and people. In each grid use four cases and five variables appropriate to the selected unit of analysis.

3 Different methods of research (survey, experiment and case study) have different characteristics. Next to each characteristic below indicate the method having the particular characteristic.
   a Can use questionnaires.
   b Can use unstructured interviews.
   c Can use observation.
   d Can use content analysis.
   e Uses a variable by case data grid.
   f Is based on 'natural' variation between cases.
   g Researcher creates variation between cases.
   h Compares the 'treatment' with the 'no treatment' group for analysis.

4 Imagine that you believe being unemployed leads to a loss of self-esteem. Briefly contrast how the case study, the experiment and the survey would differ in their basic procedure for testing this proposition.

2

Theory and social research

This chapter explores the relationship between theorising about society and researching society. I argue the following.

- The role of the social scientist is to theorise—not to do social arithmetic.
- Theories must be tested rigorously in the real world they purport to describe.
- Data collection and analysis must be fashioned by theoretical ideas. Social research should not be the endless and unguided collection of bits and pieces of information.
- Theorising and collecting research data should be interdependent components of 'doing social science'.

This chapter provides some guidance on how to begin to combine theoretical questions with empirical research.

THE INTERACTION OF THEORY AND RESEARCH

Observations require explanation but equally explanations need to be tested against the facts. It is not enough simply to collect facts. Nor is it sufficient simply to develop explanations without testing them against facts. Fundamentally sociological research involves a constant interplay between observation and explanation, collection of further facts to test the explanation, a refinement of the explanation and so on.

The development of good explanations involves two related processes: theory construction and theory testing. These two processes are not alternative ways of arriving at good theories but represent two stages with different starting points (see Figure 2.1).

Theory construction is a process which begins with a set of observations (i.e. description) and moves on to develop theories of these observations. It is also called grounded theory (Glaser and Strauss, 1967 and Strauss and Corbin, 1994) because it is based on observation—not simply armchair speculation. Others call it *post factum* theory (Merton, 1968) or *ex post facto* theory since the theory comes after the observation rather than before. The reasoning process that is used in theory building research is called *inductive* reasoning and involves starting with particular observations and drawing out a theory from the observations.

Theory testing differs in that it starts with a theory. Using the theory we predict how things will be in the 'real' world. If our predictions are correct this lends support to our theory. If they are wrong there are three possible explanations:

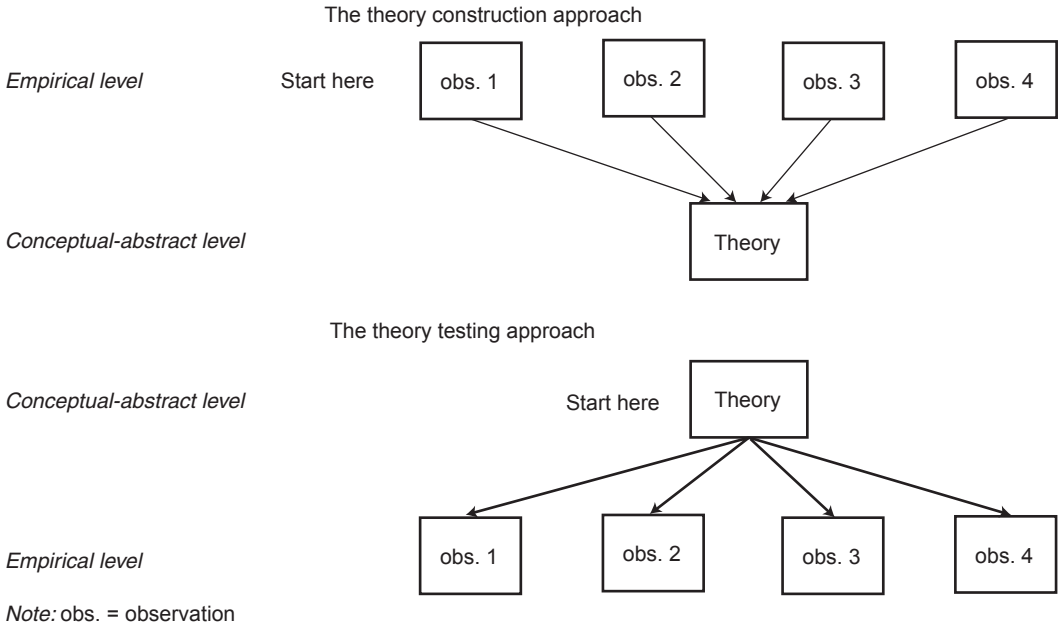


Figure 2.1 Theory construction and testing

1 The theory is wrong.
2 The prediction has been illogically derived from the theory.
3 The way we have gone about gathering information from the real world was flawed.

The reasoning process employed in theory testing research is called *deductive* reasoning—it involves deducing or predicting that certain things will follow (will be empirically observable) if the theory is true.

Theory building is, in my view, the first stage of developing good explanations, and theory testing follows as an attempt to test rigorously the tentative theory we have arrived at in the theory construction phase. In practice there is a constant interplay between constructing theories and testing them. Rarely are we purely constructing a theory or purely testing a theory.

THE PROCESS OF THEORY CONSTRUCTION

Having made particular observations, the basic question is: *is this observation a particular case of some more general factor?* If it is then we can gain a better understanding of the significance and meaning of the particular observation. For example, Durkheim (1970) observed that the suicide rate was higher among Protestants than among Catholics. But is religious affiliation a particular case of something more general? Of what more general phenomenon might it be an indicator? Similarly, women seem to be more religious than men. Is gender simply a particular case, or an indicator, of some more general concept? Gender might reflect position in the social structure: that women are socially less valued than men and are in this sense deprived. Thus the observation that women are more religious than men might simply indicate a

WEB POINTER 2.1 ***Inductive and deductive reasoning***

Useful description of the difference between inductive and deductive reasoning.	www.socialresearchmethods.net/kb/dedind.php

more general pattern that social deprivation leads to increased religiousness.

Establishing the meaning of observations

There is a fundamental difficulty. How do we know of what more general phenomenon a particular observation might be an indicator? How do we even get ideas of what it might be indicating? It is no simple task to know what particular observations might be indicating at a more general level. There is a real role for creative imagination, a craft which some people seem to be able to master more easily than others. Although there is no ideal way of identifying what the general phenomenon might be there are a number of approaches that can help.

Locating the common factor

If several different factors have a similar outcome we can ask: *do each of these factors have something in common?* This principle is used in IQ tests where a number of items are listed and you have to pick the odd one out. For example, given the list of pelican, eagle, duck and seagull we work out the odd item by seeing which three items share something in common which the fourth does not. The technique of locating the commonality between particular factors with the same outcome helps us work out the more general concept that the individual observations might represent. An example of this process is provided in Box 2.1.

Existing theories and concepts as a source of ideas

Making a set of observations will not always or even normally lead to the development of new concepts or a new theory. Any attempt to make sense of a set of observations will often use existing concepts and theories. If concepts and theories developed by others seem like reasonable summaries or accounts of what we have observed then we will make use of them. Where our observations are new or different or are not adequately summarised by existing concepts and theories we may need to adapt or modify the existing ideas.

A major problem in using existing theories and concepts is that we may not be open to equally plausible interpretations of the observations. This is especially a problem if we are committed to a perspective. The problem is not so much in using existing concepts but in the level of commitment to them and in failing to examine whether they are the most appropriate ones. When we are committed to a model, whether it be Freudian, Marxist, Weberian, Feminist, Skinnerian or something else, we might ignore equally plausible alternative explanations and simply take every observation as further confirmation of what we already believe. This is very much against the spirit of the theory construction approach where the aim is to let the concepts and ideas emerge from observations. Of course it is never this simple. As we seek to make sense of observations, we bring our commitments,

BOX 2.1
Durkheim's suicide as an example of inductive reasoning

In his study of suicide Durkheim (1970) developed a social explanation for why people suicide based on inducing a common factor that underlay a set of different facts. He discovered that the suicide statistics indicated that the following groups were the most suicidal:

- *Protestants* compared with Catholics
- *older people* compared with younger people
- *urban dwellers* than rural dwellers
- *unmarried* than married
- *childless* than parents
- *men* than women
- *wealthy* than poor.

Before you read any further, see if you can think what the set of suicidal groups (italicised) might have in common. Of what more general factor might they simply be an indicator?

Durkheim believed that he had developed an explanation of suicide by locating such a common factor. He argued that all these types of people were likely to be relatively poorly integrated into society and that it was for this reason that each of these particular types had higher suicide rates. All his particular observations were simply particular cases of the general principle that *the less well integrated people are, the more likely they are to commit suicide*. The likelihood that this induction is correct is increased because he had looked at a number of factors which have the same outcome (higher suicide rate) and he could at least plausibly argue that all the factors shared something in common.

biases and values with us and our attempts to let the concepts emerge are restricted by the limited store of concepts with which we are familiar. The important thing is to realise this and to accept that our interpretations are likely to be clouded by our commitments. We must accept that our interpretations, although plausible or even convincing to ourselves, need to be tested rigorously.

Context

An important way of working out the meaning of an observation is to look at it in context. This is particularly so for the characteristics, behaviour and attitudes of people. For example, take a person who earns $100,000 a year. Do we take this as indicating that they have a reasonable income? Do we classify two people earning $100,000 as being equally well off? The meaning of a $100,000 income depends on many other factors, such as whether it is the only income in the family, the number of dependants, the age of the income earner, other expenses and so on. We have to see this apparently simple observation in the context of other factors to interpret what it indicates.

Ask respondents

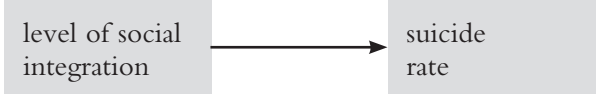
In many cases it is wise to ask people why they act or think as they do. This can provide clues about motivations behind actions and assist in interpreting what a particular action or attitude indicates for that person. This is not to say that we accept the stated reasons uncritically, but it can help provide insight into the meaning of behaviour.

Introspection

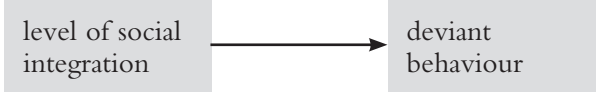
When we are familiar with a particular type of situation it is worth trying to put ourselves in the role of other people and try to understand their behaviour from their point of view. For example, we might observe that in families where the father or husband loses his job there is more violence than in families where the male is employed. To understand what that violence indicates and why it occurs it is helpful to try to imagine ourselves in the same situation. Our ability to do so varies according to our familiarity with a situation and also with the ability of particular researchers to put themselves in the position of someone else.

Levels of generality

Regardless of the means by which we move from the particular observations to working out what it might indicate at the more general level we can then go further to even more general levels. Using Durkheim's suicide example we developed the generalisation that:



Using the same approach as outlined we can ask: *is this simply a particular example of an even more general pattern?* It could be that it is a particular case of the more general pattern that:



Plausibility and the need for theory testing

The general approach I have been describing is called the inductive approach. It is the process by which we develop explanations by moving from the particular to the general: from observations to theory. The basic principle is to try to see to what more inclusive set of phenomena our observation might belong.

Theories or explanations arrived at in this way are not the end of the explanation process. These explanations need to be tested rigorously. This is because such *ex post facto* explanations, although consistent with the observed facts, are not necessarily compelling and because a number of quite different explanations might be equally consistent with the facts—we need to have some way of working out which one is best (Merton, 1968: 93). The explanation may be plausible but not convincing.

In Box 2.2 I have provided an example that illustrates the notion of plausibility and the need for rigorous testing of *ex post facto* theories.

On the basis of the simple fact (women tend to be more religious than men) all five explanations in Box 2.2 are plausible. The available facts do not allow us to choose between these explanations.

BOX 2.2
Gender differences and religion: plausible explanations

Studies in many countries have consistently found that on all sorts of measures women are more religious than men. A number of 'explanations' have been developed, all of which are consistent with the facts.

1 *Guilt theory:* Women are more religious because religion relieves guilt feelings. Since women have more guilt feelings they are therefore more religious.
2 *Freudian theory:* God is portrayed as a male—a father figure. According to Freud people identify with the opposite sex parent. Therefore women are attracted to a religion with a male god. This also fits with the additional observation that among Catholics men and women are about equally religious. That is because men identify with the Virgin Mary!
3 *Deprivation theory:* In our society women are more deprived than men and since religion fulfils a comforting role it will be the deprived who are most attracted to religion.
4 *Social learning theory:* The socialisation of girls teaches them to be nurturant, obedient, emotional, passive and submissive. Since religion encourages these attributes women find religion more attractive than do men.
5 *Role theory:* Women tend to have primary responsibility for childrearing. Because of the church's emphasis on the family, children's activities associated with the church and the church's role in moral training, mothers get drawn into the church via their children.

(Argyle and Beit-Hallahmi (1975) review the evidence and a range of theories including some of those listed above.)

We need to obtain further crucial facts to test any explanation. To test the role theory explanation we might collect evidence to see if it is among men and women with young children that the male–female difference in religiousness is greatest. If this is so it would lend additional support for this particular theory above the others. But we would want to test each of the models in additional ways to help see which one had the most convincing empirical backing.

THE PROCESS OF THEORY TESTING

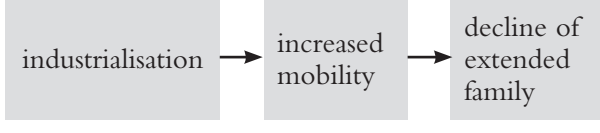
To test a theory we use the theory to guide our observations: we move from the general to the particular. The observations should provide a crucial test of the theory. Thus if we were testing the guilt explanation for the greater religiousness of women, we would at least expect that the greater a woman's feelings of guilt the more religious she would be. We might expect that the preponderance of women over men would be more marked in religions emphasising forgiveness than in religions where forgiveness was not an important theme.

The basic idea then is to derive from the general theory more limited statements which follow logically from the theory. The key is to derive these statements in such a way that if the theory is true so will be the derived statement. Having derived these more limited statements we collect data relevant to them and then look at the implications of these data for the initial theory. This process of theory testing is probably best explained with an example. I will outline six ideal-typical stages in this process (see Box 2.3).

Six stages in theory testing

Stage 1: Specify the theory to be tested

As an example we will use the theory that industrialisation, because of the need for a mobile and skilled workforce, is a principal cause of the decline of the extended family and the rise of the nuclear family. The need to move because of jobs and training breaks down family ties (Parsons, 1949). That is:



Stage 2: Derive a set of conceptual propositions

A proposition is a statement which specifies the nature of a relationship between two factors. The previous statements—the greater the guilt the more religious, or the more a church emphasises forgiveness the greater the proportion of women—are both examples of propositions. They

BOX 2.3
Stages in testing a theory

Stage 1: Specify the theory to be tested
Stage 2: Derive a set of conceptual propositions
Stage 3: Restate conceptual propositions as testable propositions
Stage 4: Collect relevant data
Stage 5: Analyse data
Stage 6: Assessing the theory

are conceptual propositions in that the key terms (guilt, religious, forgiveness) are abstract items that are not directly observable.

Stinchcombe (1968: 18–20) argues that the more propositions tested the stronger the test of a theory. Given the theory above, the propositions in Box 2.4 seem to follow logically.

You will notice that the propositions in Box 2.4 are still fairly abstract: the key terms which are italicised are still abstract concepts. Although these conceptual propositions provide us with a better idea of what observations to make, they still do not provide enough clues. What is an industrialised country? What is an extended family or a nuclear family? The next stage in the process then is to develop testable propositions.

BOX 2.4
Urbanism and extended families: propositions to test a theory

a *Industrialised countries* will be characterised by *nuclear families* more than will *relatively non-industrialised countries*.
b Within any country, *rural areas* will be characterised by *extended family structures* more than will *industrialised urban areas*.
c People who *move for work or education reasons* will have *weaker ties with their extended family* than will people who *do not move*.
d In industrialised countries there will be little evidence of *nuclear families before industrialisation*.

Stage 3: Restatement of conceptual propositions as testable propositions

This stage of theory testing involves a whole set of tasks called *operationalisation*, the process of deciding how to translate abstract concepts (e.g. industrialisation) into something more concrete and directly observable (see Chapter 4). Having made these decisions we can simply restate each conceptual proposition in testable terms.

The testable proposition has the same *form* as the conceptual proposition. It is, however, more specific—the concepts in the conceptual proposition are replaced with *indicators* of the concepts.

Box 2.5 provides an illustration of a conceptual proposition that has been translated into a testable proposition.

By replacing the concepts with clear and measurable indicators we gain a very clear idea of precisely what data to collect.

BOX 2.5
Urbanism and extended family ties: developing a testable proposition

Conceptual proposition
Rural areas will be characterised by *extended family structures* more than *industrialised urban areas* will.

Operationalising the key concepts
To test this we need an *operational definition* of the key concepts: rural, urban, extended family. Suppose we define urban areas as areas with a population density of over 60 people per square kilometre and choose a particular city as an example. Rural areas might be defined as areas with a population density of less than eighteen per square kilometre and we may choose a particular area as an example. Our indicator of the extent to which people live in an extended family might be the proportion of a specified set of extended kin (e.g. siblings, parents, cousins, aunts, grandparents) with whom they have face-to-face contact at least weekly. These indicators of the concepts are operational definitions.

Testable proposition
The conceptual proposition can be restated in its testable form:

People in [*selected rural area*] will have weekly face-to-face contact with a greater proportion of their extended kin (i.e. *grandparents, parents, aunts, uncles, cousins, siblings*) than will people living in [*selected city*].

Stage 4: Collect relevant data
Having decided what data are relevant to test our theory, we would then collect it (see Chapters 6–8).

Stage 5: Analyse data
Data are then analysed to see:
a how much support there is for the testable propositions
b in turn how much support there is for the conceptual propositions
c in turn how much support there is for the initial theory.

Stage 6: Assessing the theory
Rarely is the initial theory completely supported by the research: results are typically ambiguous and conflicting. The theory is supported in some respects but not in others: some results will be unanticipated and confusing. This is good since it makes us think and modify or develop the initial theory and thus leads to progress. When we try to make sense of our unanticipated and confusing results we are really starting on the theory construction phase yet again. That is, we will modify the initial theory to take account of the observations we have made. As such the modified theory will need to be tested rigorously.

Theory construction and testing: an ongoing process

Wallace (1971) has described the process of theory development as an ongoing interaction between theory and observation and between theory construction and testing. This logic of the research process involving the shuttling back and forth between theory and observation is summarised in Figure 2.2.

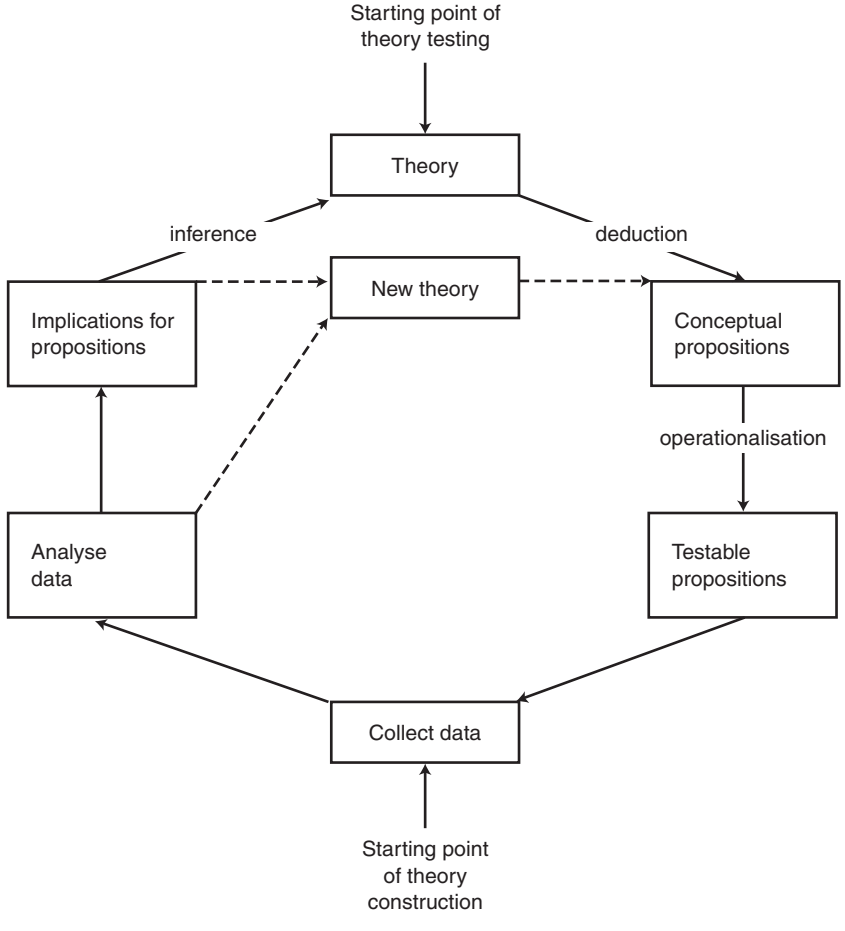


Figure 2.2 The logic of the research process

WEB POINTER 2.2 ***Links between theory and research***

Discussion of the link between theory and research as an ongoing process.	www.socialresearchmethods.net/kb/strucres.php

Even though the terms I have used are not always applied and the steps not formalised (often not even recognised), the logic of what I have described is common in research. People do not always say 'I'm theory testing now' or 'I'll do a bit of inductive theorising now' or 'my conceptual proposition is …', but if you boil it down this is effectively what a lot of researchers do. Furthermore, the practice of research does not by any means always fit neatly into these systematic approaches. I have outlined them because they provide a helpful structure to help organise research and give it some direction. In practice we will often have to improvise, and compromise. The models help us organise.

THE NEED FOR THEORY AND OBSERVATION

The emphasis on basing theories on observations and evaluating them against further observations may seem to be common sense. However, it is not universally practised among social scientists. The practice of some social scientists involves the formulation of 'explanations' which are never systematically tested empirically. At best, examples are used as proof. Examples, are a weak form of evidence, for regardless of the explanation we can find some examples to illustrate the argument. The key to empirical testing is to look for evidence which will *disprove* the theory, not simply to find supporting illustrations.

Other people, not necessarily social scientists, have accepted theories on other non-empirical criteria. The authority criterion is common: people will accept a theory because of *who* proposed it, not because of the evidence for it. Kuhn (1964) has argued how important this is in many academic disciplines.

Intuition or 'gut feelings' are another common but non-empirical way of assessing the validity of explanations. Values and basic assumptions are also crucial in affecting how convincing and appealing (and thus how popular) a theory is.

Another non-empirical way of assessing or developing a theory is to use the rules of logic rather than of evidence as the main criterion. This approach, which is called a rationalist approach, is illustrated by the classic example of a group of philosophers who, wishing to know how many teeth there were in a horse's mouth, consulted Aristotle (for rules of logic) rather than looking in the horse's mouth.

One response to these non-empirical ways of deriving and evaluating explanations has been the empiricist position which is equally at odds with the approach I have outlined. Advocates of the empiricist approach encourage us simply to collect all the facts and let the facts speak for themselves rather than contaminating the 'true facts' with theory. This approach is untenable: it is not possible to collect all the facts. In 2008 the world experienced the Global Financial Crisis (GFC). Why? What caused the GFC? To answer this question by collecting all the facts we would have to do precisely that—collect *all* the facts. This would not only be extremely inefficient, but would be impossible. So we might decide to collect only the *relevant* facts. But how do we know which facts are relevant and which are irrelevant? The only way is if we have ideas about why the GFC occurred. These theories or hunches which we hold either implicitly or explicitly dictate which observations we make. Theories then are crucial in guiding the observations we make: they provide the foundation for focused observation.

The empiricist position also is unrealistic because the facts do not speak for themselves. Observations take on significance and meaning within a context. Durkheim's (1970) observation that suicide rates were higher among Protestants than Catholics took on much more significance and meaning within the context of his theory about social integration and suicide. Theories help provide a meaning and significance to

observations and patterns that might otherwise seem unremarkable. Theories help us 'realise what one finds'.

> Febvre: 'When one does not know what one is looking for, one does not realise what one finds'. (in Burke, 1973)
>
> Pasteur: 'Where observation is concerned chance favours only the prepared mind'. (*Oxford Dictionary of Quotations*, 1979: 369)

Simply to collect a number of facts gives no idea about how they relate to one another. Theories provide a way of ordering observations and producing plausible accounts of how such observations might interrelate.

SOURCES OF THEORIES

The ideas we use when developing theories and making sense of our data come from a variety of sources.

Sociological perspectives

Within sociology there are a number of distinct perspectives through which the world is interpreted and researched. These include:

- symbolic interactionist theory
- social learning theory
- structural functionalism
- feminist theory
- Marxism
- Weberian theory
- conflict theory
- exchange theory.

Different perspectives draw attention to different factors when trying to arrive at explanations. These different perspectives affect which facts we see as relevant and important and how we interpret them. Depending on our perspective(s) we ask different questions and are sensitised to different observations. Box 2.6 illustrates how different perspectives might affect the way we go about researching and explaining the way people vote.

For our current purposes it does not matter which of the perspectives in Box 2.6 best explains voting behaviour. The important thing is to be aware how these perspectives fundamentally affect the types of observations we make.

These perspectives provide clues about what to look for: they are a source of theories about particular aspects of society. All are relevant to a wide range of social phenomena and while no perspective is explicitly about voting, they have implications for voting. They are models of society or of personality rather than theories of a particular phenomenon. They provide ideas about possible explanations and give clues about how to

BOX 2.6
Perspectives for explaining voting preference

Why do some people vote for progressive political parties while others prefer more traditional parties? There are a number of sociological and psychological orientations that we might draw on to answer this question including these ones.

- A *social learning* perspective will emphasise the way in which a person's socialisation and role modelling behaviour affect voting preferences.
- Some *psychological* perspectives focus on personality characteristics such as authoritarianism and paranoia.
- A *Freudian* approach might draw attention to unresolved childhood conflicts leading to identification with certain sorts of leaders.
- A *Marxist* perspective might focus on a person's position in the class structure or use the notion of false consciousness or class consciousness.
- A *feminist* might interpret voting behaviour in terms of the roles and responsibilities of women (e.g. child care, poorer workforce position) or in terms of distinctive caring values that women are said to hold.
- A *structural functionalist* who sees society as a system of interdependent parts would explain voting as a result of what is happening in other parts of society. Thus conservative voting patterns may be seen as a response to rapid social change and an attempt to restore some sort of equilibrium.
- An *exchange* perspective emphasises that behaviour is basically motivated by the desire to maximise rewards and minimise costs. Thus it would focus on how people see a particular party as benefiting themselves.

make sense of what we see. As such they provide a set of glasses through which to view the world.

I do not intend to explore the sources of the various perspectives: that is a task for the history of ideas. However, a good many are illustrated in the classic works of sociology. Thus the works of Marx, Durkheim, Weber, Freud, Skinner, Mead and Parsons are important sources of these perspectives and provide a rich source of ideas when trying to develop theories.

Other sources

Previous research on the topic which you are exploring can provide invaluable leads, articulate theories to test and alert you to possible interpretations of what you observe. Our own imagination and experience can be a useful source of theories. Reflecting on why we behave as we do can provide ideas. Wide reading in sociology, related disciplines, novels, plays and so on can stimulate the imagination. Earlier, the contribution of inductive reasoning and a number of ways of working out what a particular observation might mean were discussed. These same processes can be valuable sources of theories.

THE ROLE OF DESCRIPTIVE RESEARCH

The emphasis on explanation so far does not mean that descriptive research is unimportant. Descriptive research deals with questions of *what* things are like, not *why* they are that way. It includes a wide range of areas such as market research, public opinion polling, media research (ratings surveys), voter intention studies and the like. Governments sponsor a lot of descriptive research: the census and unemployment rate surveys are examples. Sociological studies which describe the social structure of a community, social changes over the past 50 years, or the workings of an organisation are further examples of descriptive research. Descriptive research can be very concrete or more abstract: it depends on what we wish to describe. At the fairly concrete level we might describe the income levels of different types of people or their ethnic background, or we can address more abstract questions such as 'is the modern family isolated?', 'are working-class people characterised by class consciousness?' and 'is society becoming secularised?'

Good description is important. It is the basis for sound theory. Unless we have described something accurately and thoroughly, attempts to explain it will be misplaced. As a descriptive statement we might say that families have been getting smaller since the industrial revolution and then try to explain this. But if they have not been getting smaller our explanations will be both wrong and pointless. Furthermore good description can provide a stimulus for explanation and research. Descriptions can highlight puzzles which need to be resolved and as such provide the stimulus for theory construction.

Descriptive research plays a key role in highlighting the existence and extent of social

WEB POINTER 2.3 ***Sources for social theories and perspectives***

The following websites all provide different ways of learning about social theories and perspectives. Some sites provide original work of a wide range of social theorists, others provide useful overviews of their ideas while others provide summaries of the core ideas of various perspectives (e.g. Marxist, conflict, structural functionalist etc.).

List of theories and theorists.	www.mcmaster.ca/socscidocs/w3virtsoclib/theories.htm www.sociosite.net/topics/sociologists.php
Useful summaries of classic articles by important theorists. The summaries include commentaries and place the ideas in a wider context.	www.spc.uchicago.edu/ssr1/PRELIMS/theory.html
Links to numerous other social theory sites.	www.trinity.edu/~mkearl/theory.html

problems, can stimulate social action and provide the basis of well-targeted social policy interventions. Survey research has demonstrated the extent of poverty in many countries (this was the focus of early survey research—see Marsh, 1982: 9–36) and the unemployment surveys can affect public attitudes and government policies. Health surveys are important in the allocation of health resources and the development of effective health promotion programs. Competent description makes it more difficult to deny the existence of problems. Of course there is poor descriptive research just as there is poor explanatory research but this is not inherent in description itself. Some descriptive research seems to be based on empiricist assumptions and ends up as an exercise in mindless fact gathering. But this lack of direction and focus need not characterise good description. Some descriptions seem trivial—no doubt many are—but equally many are important or potentially so.

THE CENTRALITY OF THEORY

The theme of this chapter has been that as soon as we try to answer 'why' questions about society we necessarily start to theorise. I have argued that theories should be empirically based (theory construction) and evaluated against empirical reality (theory testing). I have emphasised the following.

1 Theory development is an important goal of social research.
2 Theories which we are testing either implicitly or explicitly guide us to which observations might be relevant to a problem. Theory testing therefore is central to efficient data collection.
3 Theories can help us make sense of a set of observations by helping us see what broader concepts our observations might reflect and by providing a plausible account of how various observations relate to one another.
4 Theories provide guides for analysis: propositions emerge from theories and propositions form a key focus around which data are analysed.
5 Theories provide a context in which to place particular observations which helps us to see the possible significance and meaning of observations. As such they sensitise us to observations we might otherwise ignore.
6 Theories can help us pose challenging questions and to be aware of certain problems. Hopefully they help avoid asking trivial questions and reducing research to social arithmetic.

While theory is central to the research enterprise there is nothing sacred about any particular theory. Theories are always tentative attempts to find a plausible explanation for a set of observations. They ought to be tested rigorously and be subject to modification and revision. In fact the principle of trying to disprove a theory should guide the design of research. Our aim should not simply be to design research to enable us to obtain results favourable to our theory.

KEY CONCEPTS

Concept	*Ex post facto* theories	Operational definition	Theory construction
Conceptual proposition	Grounded theory	Operationalisation	Theory testing
Deductive reasoning	Indicator	Rationalism	
Empiricism	Inductive reasoning	Testable proposition	

FURTHER READING

Merton's *Social Theory and Social Structure* (1968) provides good and well-known introductory discussions of the relation between theory and empirical research in Chapters 2, 3 and 4. Mills provides stinging criticisms of non-empirical theory and non-theoretical enquiry in Chapters 2 and 3 of *The Sociological Imagination* (1959). The whole book is worth reading because of its insistence that sociology is a craft.

Chafetz in *A Primer on the Construction and Testing of Theories in Sociology* (1978) provides a useful and readable book on the nature of theory

construction and testing as does Dubin in *Theory Building* (1978).

Two readable papers on theory testing in relation to nursing research are provided by McQuiston and Campbell in 'Theoretical Substruction: A Guide for Theory Testing Research' (1997) and by Acton et al. in 'Theory-Testing Research: Building the Science' (1991). A study by Gibson et al. on 'Why Do People Accept Policies They Oppose?' (2005) provides a neat example of moving from a theoretical idea to an operationalised study that tests a particular theory. Wallace expands on the circular model of research discussed in this chapter in *The Logic of Science in Sociology* (1971) but the best analysis of the logic of social research is Rose's *Deciphering Sociological Research* (1982). Glaser and Strauss provide a classic discussion of the nature of theory and the process of theory construction in *The Discovery of Grounded Theory* (1967).

Blumer has provided an excellent demonstration of the importance of theoretical concepts in any research undertaking but especially with inductively based research in his paper entitled 'Science without Concepts' (1934). Denzin also provides an excellent account of one type of theory construction approach in *The Research Act* (2009) and de Vaus (2001) illustrates the process of inductive theorising in case study research.

Strauss provides an example of higher level inductive theorising in his book on *Negotiations* (1978) and Glaser provides more insight into the way higher level inductive theorising is best achieved in his book *Theoretical Sensibility* (1978). Homans provides a brief and readable discussion of the importance of deduced propositions for the development of sociological explanations in his famous, if controversial, book *The Nature of Social Science* (1967).

EXERCISES

1 For each of the following studies say whether it is a descriptive or explanatory study.
   a A study to assess the level of health in society.
   b A study to assess voting intentions.
   c A study to assess whether divorce is linked to the affluence of a family.
   d A study to see whether the age at which people are getting married is increasing.
   e A study to discover people's attitude to the internet.
   f A study to test whether anti-smoking campaigns reduce smoking levels among young people or whether they increase smoking by making smoking appear more attractive by presenting it as a marginalised and forbidden behaviour.
2 In your own words explain the following terms: theory, inductive, deductive, *ex post facto*, operationalisation, empiricist, rationalist.
3 Below are two theories you might hear in everyday conversation. For each of these theories:
   a Translate the theory into a 'box and arrow diagram' as on p. 13.
   b Develop at least four conceptual propositions for the theory.

   Theory 1
   Our affluent society leads to the decline of the self-help ethic which in turn leads young people to expect things to be done for them which creates laziness and this leads to youth unemployment.

   Theory 2
   Anti-smoking campaigns and rules make smoking appear risky, deviant and marginal. Because young people need to develop a sense of identity that distinguishes them from their parents (and it is their parents' generation that make these rules and run the campaigns), these portrayals of smoking make smoking appear attractive to young people. Therefore anti-smoking campaigns and restrictions will lead to an increase rather than a decrease in smoking among young people.
4 What is the difference between a sociological perspective and a theory?
5 It was argued that the role of theory is central to research. Explain what theory achieves in social research.

3

Formulating and clarifying research questions

Research questions need to be focused. It is not enough to say, 'I'm interested in getting some answers about inequality'. What answers to what questions? Do you want to know the extent of inequality, its distribution, its causes, its effects or what? What sort of inequality are you interested in? Over what period? Where?

The purpose of this chapter is to provide guidelines on how to clarify research questions. It will do this by:

- outlining the difference between explanatory and descriptive research
- providing guidelines on how to focus descriptive research questions
- distinguishing between types of explanatory research questions
- identifying resources that help in reviewing existing research and thus help focus what research needs to be conducted
- showing how research design is a key element in shaping the way research questions are asked.

The chapter stresses the need to formulate a research question at the beginning of the research—certainly before data are collected. But this emphasis does not mean that the initial research question is the final one. While it is important to know what we are looking for, it is a mistake to let this initial focus blind us from other unanticipated questions which are perhaps more interesting, important or manageable than the initial one. Questions can be refined and new issues emerge while reviewing literature or collecting and analysing data.

TYPES OF RESEARCH QUESTIONS

There is no simple way to refine research questions but I will outline a number of different types of questions and provide some guidelines to help focus research. First, however, it is helpful to define a few terms (see also Web Pointer 3.1).

A *variable* is a characteristic that has more than one category (or value). Thus sex is a variable with the categories male and female. Age is a variable with many different categories (one year old, two years old etc.). Any case (e.g. person in a survey) will belong to only one category. A variable then is a characteristic on which cases can differ from one another. In cause-and-effect terms we can distinguish between three types of variables: *dependent*, *independent* and *intervening* variables (see Box 3.1).

The following diagram illustrates the three types of variables. Education is the independent

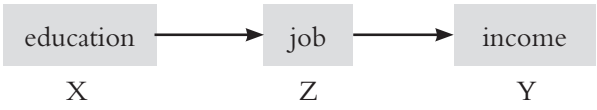
BOX 3.1
Dependent, independent and intervening variables

Type of variable	Description	Symbol	Causal diagram	Synonyms
Dependent	Effect	Y	X → Z → **Y**	Outcome
Independent	Cause	X	**X** → Z → Y	Predictor
Intervening	Mechanism	Z	X → **Z** → Y	

WEB POINTER 3.1 ***Web reading on types of research and research questions***

Useful explanation of descriptive and explanatory research.	www.socialresearchmethods.net/kb/resques.php
Types of research questions.	www.socialresearchmethods.net/kb/resques.php
Brief discussion of variables.	www.socialresearchmethods.net/kb/variable.php
Brief outline of some ways of defining a research question.	www.socialresearchmethods.net/kb/probform.php

variable that affects income level (the dependent variable) via its effect on job (intervening variable).



Once we have selected a broad topic ask 'what do I want to know about this topic?' Broadly, interests will be descriptive, explanatory or both.

Descriptive research

It is difficult to provide precise rules about how to focus a descriptive research question but five questions can help.

1 What is the *time frame* of our interest?
2 What is the *geographical location* of our interest?
3 Is our interest in broad description or in *comparing* and *specifying* patterns for subgroups?
4 What *aspect* of the topic are we interested in?
5 How *abstract* is our interest?

The way in which these questions help focus a broad research question is illustrated in Box 3.2.

Explanation: searching for causes or consequences

The next three types of research question all involve explanatory research. They only vary their focus and complexity.

Over the last 60 years the divorce rate in most western countries has increased markedly. We may want to know why but have no idea. Diagrammatically then the problem is:

Alternatively our interest might be to discover the consequences of the increased divorce rate. Diagrammatically this is:

The first step in focusing an explanatory research question is to decide whether we are