Part 7

Concluding Suggestions about Data-collection Concepts
Facts

In the preceding chapters I have presented concepts arising in the qualitative, quantitative and mixed-methods data-collection processes. I have referred to ‘facts’ a few times as something that may result from the standard data-collection process. At this point, I want to pause and reflect for a moment on the factual status of the findings. It is helpful to know about facts in order to have confidence in building up scientific or ethical arguments. Having clarity about ‘facts’ has several advantages. For instance, if you have ‘facts’ then you may be a more convincing author for certain audiences such as journalists or government policy experts. Another advantage of having facts is feeling confident about your own argument, and letting the facts play a role in supporting more complex arguments you may not feel quite so sure about. In this chapter I explore the existence of facts, discuss the kinds of facts that we can be confident about, and conclude with the questioning attitude that makes me think most good science is ‘fallible’ even if it makes reference to facts.

The challenge today to those who claim to have ‘facts’ or factual science comes from those who worry about the licence to act that may be derived from this ‘factual’ basis. This calls for further explanations so that certain kinds of facts can be claimed to be true, whilst arguments – which are not facts – are more healthily set out. A claim is a sentence of longer argument that asserts something is the case; claims can be a mixture of claims about the world and claims that something is the case in general. The former are more testable, while the latter tend to include some normative or ethical assertions, and to be more general or even universal (Weston, 2002). Claims should be based on reasoning, and we reason through a variety of methods rather than just claiming something to be ‘factual’ when what we really mean is to make a complex argument. Two examples can be used to illustrate simple, factual statements that need to be expressed in a concrete and tightly worded way:

1. A foetus in weeks 1–6 of its development in a uterus has no human consciousness.
2. Statistical estimates show that the wage rise associated with education is not obtained to the same extent by women as by men.
For the sake of this exercise, let us suppose that we have an agreed dictionary of psychology with a widely accepted definition of human consciousness, and that some data do support a regression of the general kind referred to in statement 2. There are three main reasons why statements like 1 and 2 are often not considered to be factual.

The first reason is that they are too broad in their apparent coverage to work well as universally or very general factual claims. As a claim, statement 1 seems to apply to any place where we find humans, but a dictionary definition of human consciousness – or any normative definition of human consciousness – is likely to be swayed in one direction or another by local norms embedded partly in the language of that dictionary. Statement 1 might work as a factual statement if it were meant to refer only to a specific linguistic, cultural and regional population. It would need some revision though, perhaps as shown below.

1a. A foetus in weeks 1–6 of its development in a uterus was considered to have no human consciousness as recognised by atheists in the USA in the twentieth century.

Since non-atheists in the USA in the twentieth century would define ‘human consciousness’ in a different way than their atheist counterparts, the statement would not be true without the specific clause ‘by atheists’. I offer this revision only as a rough and temporary illustration of how one might make a statement more concrete, local and particular to enable us to move from a ‘false broad’ claim to a ‘true but narrow’ factual claim. Statement 1a is actually about the world. It can be tested. Statement 1, however, is rather abstract. We would move to a search for relevant evidence if we wanted to do further research. We might, for example, start to study evidence for a related claim:

1b. A foetus in weeks 1–6 of its development in a uterus shows no sign of human consciousness as defined by scientists in the USA in the twentieth century.

It should now be clear that the ‘factual’ nature of a concrete statement such as 1a or 1b could be considered both by atheists and non-atheists to be a matter that could be settled by reference to data. If a statement is not concrete and has a universal or timeless quality, it is more likely to be fundamentally contestable.

A second issue is that the data underlying the statement can be questioned in numerous ways. Statement 2 can be used to illustrate this problem. The data about wages can be questioned in terms of the recording of wages. One might examine whether men’s wages are recorded or set differently from women’s, perhaps to cover for unpaid overtime which women do not do. If there were more male than female unpaid overtime and wages were adjusted upward to
allow for that, then male wages would appear to be higher – but male wages per hour *actually worked* might not be higher. Another issue could be whether some other outside factor explains and causes the difference, and whether, after controlling for this factor (e.g. effort, talent, desire for promotion or ability to plan), the women’s wages would be seen as fair. The purview of the statement – which derives a conclusion about a wide population from a sample – could also be exaggerated. The factual reference point is more limited than the general statement seems to imply. Again, a revision of the statement might help a lot to make the statement more factual.

2a. The statistical estimates for the UK in 2004–7 clearly show that the rise in wages (per hour of paid work) associated with education is not obtained to the same extent by women as by men, *ceteris paribus*.

Again this statement has a clear reference to the real world. It is concrete and can be tested. The phrase *ceteris paribus* can be read two ways. It should be translated from Latin to mean ‘all else being equal’. That means men’s wages exceed women’s after controlling for the factors that have been put into the statistical estimate. But *ceteris paribus* can also be read to mean ‘all other factors being allowed to vary as they do in the real population’, which are not in fact equal at all. Thus many women are unpaid domestic workers and so are left out of the population of waged workers; many men have had several promotions which women have not had, and so on.

The intended reference to the world should really be limited to the exact situation that was the remit of the data collection. With its concrete reference point, giving the country and the dates, the revised statement 2a is much clearer and could be defended more easily as factual – and, indeed, some data do support it.

The third problem with calling something ‘factual’ is that you might offend someone with the nuances of the statement (Olsen, 2007b). In both statements 1 and 2 there are hints about what is fair and just – statement 1 seems perhaps to relate to operations on pregnant women, and statement 2 seems to relate to an unfairness about the wage inequality. Critics of ‘factual discourses’ would worry that the use of facts in arguments moves the arguer forward into a territory that they have shaped and mapped out with the statements’ discursive tricks. From such a point of view nearly all statements are potentially controversial. Possible responses would be to offer a competing statement, reject the ethics while accepting the ‘fact’ if it is true, or perhaps create a different venue for a different type of argument. Foucault (1980) and Harding (1999) provide excellent accounts as to why the debates about the framing of facts matter so much. Another useful source is Fairclough (2001) which explains how to do discourse analysis. It
is not very useful simply to claim that ‘there are no factual statements’ without developing any alternative way to gain knowledge and express that knowledge in words. Otherwise nothing could be true and we would never know whether any claim was true or false!

So far I have presented three arguments against the existence of facts. The third is the most compelling. The first two helped give advice about data collection. If you want to gather or develop some facts, then be prepared to quote these facts in a concrete way as narrowly true in a given time and place, supported by evidence, and carefully phrased so as to limit the ambiguity about whom they refer to. It is fine to work through a set of facts, foreseeing criticisms, checking the evidence and working on how they fit together – hopefully without inconsistencies – as a way to make progress on a research project.

But facts are not enough for good scientific arguments. Perhaps surprisingly, facts are not all that arguments consist of. A good argument has a shape or structure and there are many kinds of them (Fisher, 1988, 2001). There are persuasive arguments which urge the reader to take a particular position. These usually move from premises to facts and evidence, concluding with a value judgement and an exhortation. In a persuasive argument, some premises usually invoke a normative position. Another type of argument is the discussion of competing theoretical explanations which concludes that one is better than another. There are several variations on this argument theme: that the best theory is one which encompasses all the others; that the worst theory has false facts underlying it in crucial ways; that the coverage of a poor-quality theory is too limited and that the theory needs to be revised to cover a wider range of cases; and so on.

A third broad type of argument is a scientific test. The structure of this argument might run like this:

We have gathered data consistent with theory A and its sub-element, B.  
We organise the data to test B.  
The test fails and B is falsified.  
Since A implies B, and B is false, A might be false.  
Therefore a new theory will be needed once the alternative to B is examined carefully.

The problem with this argument is rather obvious. Look closely at it and see if you can find its weak point. Read Fisher (1988) or Weston (2002) for more help constructing sound scientific arguments. They advise that you specify the
premises very carefully, and perhaps go back and test or re-examine any weak premises. As a result, you develop a chain of explicit reasoning.

The problem with the scientific argument offered is that the whole theory A was not tested. A still stands untested while its spin-off statement B has been falsified. One example would be if a test of statement 1a were conducted by checking whether foetuses in weeks 1–6 of development were able to respond to outside sound stimuli. (That is a better test for statement 1b than for 1a.) Theory A would be the definitional theory of human consciousness that was agreed upon from a dictionary at the start. B could be an implicit statement: babies, like all humans, should respond to external sound stimuli even in weeks 1–6 of their growth in the uterus. If they do not respond, B is refuted. But A is not yet refuted. We can modify A because it does not depend heavily on B and still have the claim that A is true but B is refuted. Quine and Duhem (Quine, 1953) both argued that since scientific falsification arguments typically have a structure like the one given above, they are weak. Whilst keeping scientists busy with experiments, falsification does not solve the greater problem of achieving truth in science. A summary is given by Smith (1998: ch. 3), and there is further discussion by Sayer (1992: chs 1, 2 and especially 8).

In general, good ‘arguments’ contain a consistent series of statements of which some are premises and some are conclusions. An argument, says Fisher, has both intermediate and final conclusions. The advice Fisher gives arises from a variety of sources, including symbolic logic and some of the philosophical writings of Aristotle, notably *Rhetoric*, written around 300 years before the birth of Christ (Aristotle, 2007). Fisher parses out some longer texts into the skeletal bare bones of their argument. Among his sample arguments, Fisher offers some sweeping statements that usually fall in the list of premises. The reader of a ‘fact’ within an argument, or a factual argument, will need to be ready to agree to all the premises or else they will need the author of the argument to move backward and prove their premises.

In many scientific arguments certain premises are difficult if not impossible to prove. Examples of sweeping statements include ‘the rational choice model of human decisions is correct’ as a starting point in economics, and ‘the id and ego work together in implicit ways to generate psychological health’ in Freudian psychology. In politics a common one is ‘country governments act only and always to protect their basic interests’. These basic premises will only be acceptable to a part of the world audience. Many writers compile facts for a limited audience, for example for those in their discipline or sub-discipline or in a particular workplace. An annual report is a set of facts about a firm written by the accountants of that firm. They are factual in that context, but are seen as a social construct by those who do critical accounting and the sociology of finance! The factual nature of a statement or an argument is
in large part relative to the standpoint of the group receiving or interpreting the whole argument.

By taking great care in their construction, one can make good arguments that are very hard to challenge. Good scientific arguments have a critical dependence on strongly supportive evidence. Factual evidence plays a role in bolstering arguments but is not enough to make an argument strong. A warranted argument is one which has strong premises, makes reference to the real world and has some evidence in it which has been gathered and can be set out for scrutiny in ways that are consistent with the argument (Olsen and Morgan, 2005).
Reality

It is important to remember that by doing data collection we are trying to represent reality, not just our own prior concepts and assumptions. It is no good simply having a strong assumption about something, operationalising it, and then proving that the world works just like you thought it did.

Nevertheless, to make sense of the data-collection stage, one has to refine the research question at an earlier stage so that any conceptual framework that is being presumed true is not being tested. Such a broad set of assumptions should be reasonable. For most qualitative researchers, that implies trying to start out with almost a blank slate and being prepared to accept almost any new finding. The reason is that each social situation is unique and will show up differences compared with past generalisations. Each qualitative project is unique in its findings.

On the other hand, when we come to more systematically-based projects there is usually a set of claims that need to be accepted from the outset, such as ‘suicide arises from a mixture of social, institutional and psychological factors’.

For a qualitative researcher ‘suicide’ itself is unpicked and explored immediately, and the validity of the initial generalisation cannot be taken for granted. But for the quantitative or statistical stage of a project it may be useful to take this statement for granted and then set up an interesting hypothesis within that frame of reference. One has to stipulate reasonable definitions for basic concepts such as suicide. Making these explicit will tend to improve the research.

An interesting hypothesis would not arise merely ‘deductively’ as a lawlike prediction from the starting statement. Instead the hypothesis might arise during the literature review from some oddity, exception, difference of experience or ethically worrying oversimplification usually accepted in the literature. For example, if we pursue the project seeking explanations for suicide, we might have this as the controversial hypothesis: ‘women’s suicides are often misunderstood as psychological, and instead need to be seen pluralistically as affected by institutional and structural factors and not simply as personal tragedies’.

To continue with this, a detailed hypothesis about men might be appropriate, or perhaps we would focus on young women, or some other subgroup. Consider this extension of the hypothesis: ‘men’s suicides are divided into two groups: young men who are affected by status and dignity issues in a consumerist social milieu, and older men who are distressed by intra-household conflict’. If data
were available to explore these hypotheses, then the general research question could be rewritten to encapsulate the whole project.

You can turn this exercise into a research question: ‘How do gender and age-group factors influence the causality of suicide, given that suicide’s causes are in general multi-level and complex and include both holistic social, local institutional, and personal psychological factors?’ Now an interesting project will result. I think of this stage as setting up the project to reflect reality. There are three data-collection techniques which can help both quantitatively-led and qualitatively-led researchers develop their knowledge of the concrete reality during their research project. The techniques are: keeping a field diary, developing expert informants and studying historical and organisational trends.

Keeping a field diary is normal in anthropology, but good operating habits are rarely taught to students in degrees where secondary data analysis is usual.

A field diary is a handwritten collection of thoughts about the scene of the data collection. For a field researcher these will include notes from conversations, addresses of respondents and commentaries on how old theories are being proved wrong by events about which further details will be gleaned. The field diary usually includes brainstorming and ideas for later tasks. It is a hardbound or spiral-bound book, not a handheld computer. It includes notes about mistakes, problems, translations, misunderstandings, lay talk and slang versus academic concepts, and policy or practitioner responses to the research. The field diary can contain at the front a one-page summary of the project, and at the back a copy of the standard informed-consent form. When meeting new people the field researcher simply shows these documents to defuse any doubts about what they are doing. They can get verbal consent from interviewees prior to starting the interviewing process in earnest. They may give a printed copy of the informed-consent letter to the respondent, or get them to sign a copy. Well-informed verbal consent signifies ethical clearance, and once that has been given the research can in most instances go ahead.

For a secondary researcher, one might say, there is no ‘field’ of study. There is ‘no fieldwork’. Some might say that in that case there is no need for ethical clearance either. These erroneous judgements tend to give us an image that places the researcher on another planet studying the oddity known as Earth. Instead, it is better to consider that we can read the newspapers, magazines, government publications and other sources about the localities that are covered by the data. A field diary then records notes gleaned from these various ‘voices’ or sources. How their perspective differs from that taken in the research raises serious questions about the usefulness, comprehensibility and validity of the research – or it may suggest that lay writers are actually wrong. The secondary data analyst can also carry out mixed-methods research. They might visit specific field sites under examination, with ethical clearance, of course, so they can discuss the research with people who are typical of those in the secondary data. While in the field
they might run focus groups and other supplementary research. For a mixed-methods researcher led by secondary data, a field diary is required. It helps also in recording common misperceptions which may later need to be written about.

The use of expert informants is also typical of field anthropologists and development studies (Thomas et al., 1998).

Anyone can be an expert informant, but there cannot be too many. It is important that these people can and will find the time to sit with the researchers during multiple visits so that various points of interpretation can be cleared up. All researchers need expert informants, and qualitative and mixed-methods researchers need them most.

When using expert informants, note-taking and agreement on the findings are important. No one should collect data covertly, because this would not be ethical. The ethical clearance for a project must include the way that researchers approach other experts. Expert informants often do not want to be quoted. They may have their own reasons for this. They are prepared instead to offer their insights without being formally connected with the project. They may mentor you or offer collaboration.

But be careful about who your expert informants are. Local people are unlikely to have a research background, and people from organisations may have pressing agendas. These require careful and ethically scrupulous treatment. On the other hand, another useful group is academic experts – there might possibly be some in your study area. Academics are widely thought to be public intellectuals who are prepared to have their thoughts put on record (Fuller, 2005). It is polite to check any quotes with them, but they are not like other respondents who may have little public power or voice of their own. In conclusion, getting in-depth knowledge by discussing your research or your findings with local and other experts is an excellent way to broaden the basis of validity of the findings. It may also help you with nuances and subtleties that you might not have thought important beforehand.

Numerous sociologists promote the idea of the researcher as a public intellectual who can then write letters to newspapers, give public talks, engage in participatory or democratic dialogue, give evidence to official committees and sit on public bodies as an expert. The field diary is a way to develop your expertise as a public intellectual – rehearsing arguments with opponents or others; explaining ideas in ways lay people might grasp; reinterpreting what newspapers say in clearer and more concise language to check if they are correct.

Among academics, there may not be a need for the usual written informed consent. If you interview an expert on the record, it may be more like journalism than research. In any case you can get informed consent at the beginning of a meeting by saying politely: ‘I am doing a project on ——. Would you mind if I quoted you as making some points in this interview? If so, I assure you I’ll send you a copy of the text before it leaves my desk, whether it’s a paraphrase
or a direct quote. Or would you prefer me to quote your published work?’ This polite request offers them a way to give you information secretly if they wish.

It is also important to study history and the organisational culture that surrounds your field site. Statistical studies, in particular, sometimes lack a historical background. Most of the ‘reasons for things happening’ have their origins in the historical events that lie behind today’s structures and institutions. Reading up on the political and economic history of a country or region is absolutely crucial for every good research study. Further reading on social, cultural and ethnic factors is very useful too. When doing this background reading, do not just look merely for facts. Notice the viewpoints, standpoints and conceptual frames taken by the various authors. Read widely. Engage with journalists or historians when you can. Discuss the recent past with policy-makers – it may be a really useful chat!

Organisational culture is a subtle but important factor that influences long-term outcomes. The differences of experience – for example, by differing ethnic groups – are often vast but masked by ‘official’ discourses of equality. Read about the differences between different social groups. Which ones are visibly differentiated? Which are the minorities? Which are dominant? Which, if any, are isolated – perhaps deliberately so? Why and how is this happening?

These background notes may be useful when you are interpreting your own findings.

So, to summarise: no matter how well planned the research project is, it can usually benefit from some extra investigative techniques. These plug you into an ongoing social reality rather than leaving you in your ivory tower. There is even a danger that too much ivory tower research might leave you stale. That is why in this chapter I have stressed a polarity between the pure ideas explored by an isolated academic in an ivory tower against the grounded, field-tested ideas that are consistent with social reality in a more particular concrete sense.

Keep in mind the three reality-testing techniques presented above:

• Keep a field diary to track your mistakes and surprises.
• Use expert informants as mentors who tell you things you did not know before.
• Read up on the history of your subject to get a sense of how things have developed up to the time of your research.

These pointers are just good sense really, but they also arise from the ‘realist’ viewpoint. Realists argue that reality – with all its confusing lay discourses – should be valued in itself and that academic ideas should be capable of being tested, because they should reflect and represent that reality.
Retroduction

The data-collection stage of a research project needs to allow for retroduction to occur. Retroduction means in brief ‘asking why’, and has already been mentioned several times in this book (see interpretation, case-study research and data). Retroduction perhaps needs to be set in context, and compared with induction and deduction, so that the data-collection strategy suggested here can be seen as coherently able to mix all three of these approaches to research. In this chapter I explain a coherent approach to induction and deduction that will make the context very clear.

First, no research project can or should be purely inductive. I have argued this point in some depth elsewhere (Olsen and Morgan, 2005; Morgan and Olsen, 2008), as have others before. In theory, a purely inductive project would gather many small details together and then develop a general theory or a series of small generalisations that are grounded on the details. Both grounded theory and content analysis are often portrayed as if they were purely inductive. According to my way of thinking, it is an excellent addition to these methodologies to augment induction by adding retroduction. Thus we would pause half way through a project, review what has been learned so far, and then revisit the data-gathering stage. One wants to keep gathering data to answer questions of the following kinds:

1. What caused the original data to show the patterns it showed? This question includes: why did I start off with the topic that I had set up in the beginning? Were there theoretical reasons? If so, were they good ones, or does that theory have some problems? Or were there ethical reasons, and if so what else do I need to know about in order to develop a strong ethical argument about the topic?

2. What causes unique, unusual, deviant or inexplicable cases to turn out as they do? Here, it may initially seem that speculation is needed. But scientific speculation is also a more formal type of logic which is much more like discernment. We have to ask (a) is it possible that the usual theories can explain the unusual, and if so why was it hidden from us at first? and (b) if the usual
theories do not explain the unusual, then what could? What kind of new theory do I need? What new addition to the lexicon would help me in discerning either meanings, explanations or an overall interpretation that helps make sense of these unusual cases?

3. What are the complex standpoints and viewpoints that are behind the contradictory results in this research? Or in other words, what are the sources of tension, and what have we learned that was not already known about these tensions? How do other people interpret the same data (or events)? Why are their interpretations different from the researchers’ findings so far?

The first of these questions is probing the data. The second is avoiding overgeneralization but searching for reasons and causes. The third of the questions is allowing for contradictory voices. All these three questions are specific forms of retroduction.

Retroduction was traditionally discussed mainly with regard to explanatory modelling (Sayer, 1992, 2000; Bhaskar, 1975). Retroduction implies a number of forms of inquiry that do not fit in easily with a simple inductive method. To see the archetypical inductive method, refer to Blaikie’s (2000) treatment of induction which he labels as one of four ‘strategies’ of research. In his parable of the researchers from outer space, he assumes that the inductive group do not use retroductive methods, the retroductive group do not use deductive methods, and so on. However, if we simply redefine ‘retroduction’ and ‘induction’ as modes of analysis in the short term, rather than as whole research ‘strategies’ or methodologies, we avoid a lot of problems in research. In summary, questions 1–3 are simply short-term modes of analysis, and can lead us toward other modes such as deduction, hypothesis testing, more data gathering, and even back to induction. It seems wiser to mix inductive and retroductive moments rather than to see them as mutually exclusive.

A quick summary of the three questions is a useful way to review retroduction. The researcher asks: why these data, why these things happened this way, and how people interpret things themselves – which implies also asking why people see things as they do. When operating this way, the user of retroduction is not just a scientist, they are also human. They care about what people think but they are not blinded by what people say. They care about the data but are not limited to a single data type or a single dataset. They are inquirers.

In all three ways, retroduction is just one more technique in an arsenal. It is a technique that makes the researchers curious; it does not offer a simplifying protocol but a guide to complexity. Retroduction is also very different from deduction.

According to the usual presentation of deduction as a research ‘strategy’, one begins with theory and works out some predictions. Then data are collected (consistent with the theory) and the predictions are compared with the data. If they do not match, the deduction is falsified. Even more than with induction, this is
evidently a poor research method. It is too limited because it gives no advice on how to generate theory. Most authors advise that induction is a theory-generating method and deduction a theory-testing method. In this book I have presented the case for induction and deduction working alongside retroduction in an overall inquiry approach. The three modes of analysis can be used in any order, repeatedly, with returns to the data (or to new data) at any stage. Like Danermark et al. (2002), I suggest that the steps of research do not need to be a timeline but instead are a guide to activities. Therefore data gathering can happen right up to the last moments of writing up research. In a primary-data study the last few weeks might be spent brushing up on relevant laws, while in a secondary-data study one might decide to visit a field site before finalising the write-up of findings. Deduction in itself can play a part in writing up research because it is useful to know which hypotheses or claims are supported, and which are falsified, by a given set of research findings. It is a helpful mode for presenting results. But it is not sufficient for a whole research methodology.

Blaikie (1993, 2000) adds a serious discussion of ‘abduction’ (‘capturing the phenomenon’ from inside, which is like ethnographic approaches) which I will not reproduce here. It is also interesting to note that Potter (1999) sees the four modes as rather mutually exclusive. The reason is that there are whole disciplines and sub-disciplines which are based upon just one of the four modes of analysis. Anthropology usually rests mainly upon abduction, and animal psychology or economics might be seen as resting upon deduction. The reasons why this is an unwise way to set up ‘social science disciplines’ have been mentioned several times in this book, and can be rather briefly summarized here.

Firstly, the disciplines should be coherent with each other and not contradictory. Secondly, the disciplines should have blendable research themes at all overlapping edges, so training of researchers should not be restricted to just one or two modes of analysis. Thirdly, retroduction is such a good overall technique which aids in planning the research, executing the project, and writing up, that it must not be neglected by any researcher. Fourthly, a whole discipline based on ‘induction’ would be contradictory since it would obviously be training its students in theories which were passed on by methods other than induction. Fifthly, a whole discipline based purely on deduction would have no way to generate theory, nor could it deal with real anomalies. Finally, a whole discipline based purely upon abduction, if by that we meant immersion in social situations, would lack the expertise that comes from knowing a variety of viewpoints while also being able to explain that which people inside a situation cannot see very clearly because they are somewhat blinded by their own viewpoint.

Data gathering is an important part of social research because we have the opportunity to gather empirical evidence to bring to bear on social problems. Thinking about the data and returning to the evidence sources are important stages of research, so data gathering may go on rather longer than you had first
realized. It can go on in tandem with thinking, analysing, interpreting, understanding, learning, acting, voicing, and sharing. Data gathering underpins many research projects.

**Further Reading for Part 7**

In this part of the book I have summarised arguments about science and the development of an explanatory argument. My approach is very ambitious and I hope mainly to make a consistent argument here, not to innovate in this important area of science. Much effort has been spent already in clarifying these issues. Smith (1998) gives a history of the main schools of thought in science. Smith explains the sustained attack on positivism and gives a convincing explanation of why post-structuralism and realism are now so popular in social science. In practice they have replaced positivism. Smith (1998) is the best overview of how some post-modern social science has begun to develop a reputation for being confused or riddled with inconsistencies.

To overcome accusations of a schism, something has to be done about the apparent paradox that induction and deduction (as methodologies) are incompatible. Worse yet, I have argued, each is incomplete without much more effort being put into a research design and the combining of modes of analysis. Blaikie (2000) offers an excellent parable of Martian researchers who parachute in to Earth to do a research project, then break into four teams. This story is a useful reminder that induction is not enough on its own for research.

For reading the background about choices of research design, it is worth spending time on one of the high-quality methodology books. An easy one to read is Bryman (1988). Like many of the other books mentioned here, this has been reprinted since its original publication because it has been so popular. This book provides a sound underpinning for mixed methods. A broad overview for evaluation researchers, also well suited to market research, is offered by Pawson and Tilley (1997). For case-study research Ragin (1994) is indispensable.