5

THE TRADITIONAL REVIEW

Key points

- Traditional reviews allow you to be flexible and to explore ideas
- They can be insightful and original
- They can be undertaken by one person at undergraduate or postgraduate level
- Subjectivity is implicit; there is no protocol but it is good practice to tell the reader on what basis the material was selected
- It is only relatively recently that the literature review has been deemed a research methodology in its own right

Be aware

- The result depends on the skills of the writer
- Traditional reviews can be dismissed as an 'opinion piece'
- Traditional review is less helpful for policy development because it is not a systematic review (see Chapter 7)

Overview of the debate

So far in Part I of this book we have covered the early stages of doing a literature review. We have:

- identified a topic, funnelled down and decided on a specific research area and research question
- identified keywords and used the library resources to search for resources and information
- read the material, and
- made notes after reading.

Part II of the book concentrates on two different approaches to literature review. The language – or labels – used to describe literature reviews tends to be confused. So each time you read the words 'literature review' you should

check, read and categorise what type of review it is. In this book we set out to differentiate between a 'traditional literature review' and a 'systematic literature review', which has a very specific meaning. The first part of this chapter examines a selection of published reviews showing how each one has a different focus. The latter part of the chapter begins working through the review process. To make the most of this chapter you need to refer to the original article because sometimes we quote from the original work and other times we only provide a commentary.

A literature review is a desk-based research method by which the researcher critically describes and appraises what is already known about a topic using secondary sources. In some instances, a literature review is described as a traditional narrative review (Torgerson, 2003) because it consists of a narrative style of presentation.

- The traditional review, as undertaken by undergraduate and Masters-level students, aims to be comprehensive, which means it aims to present a summary review of the current state of knowledge about a particular subject.
- The traditional review also seeks to add new insights on the topic.

Critique of traditional review

Some writers who promote a systematic review methodology take a pejorative approach to the traditional review on the grounds that it does not produce reliable evidence (see Petticrew and Roberts, 2006, on health and social care). Which approach to review you take depends on the context of review, the academic discipline of study, and the purpose. It also depends on what level of study you are at. Traditional review is the norm at undergraduate level. At postgraduate level traditional review may be less helpful for guiding policy or, as Torgerson (2003) asserts, for contributing to an informed debate of the issues in education. Critics dismiss the traditional review as of little value because it is 'non-scientific', or it is merely a discussion paper, or an opinion piece. This is because in traditional reviews the author's subjectivity is implicit; there is no protocol and quite often no description of how the review was carried out. In some journal articles, for example, there might not be a methods section to help the reader understand the choices made on selection or on the review process. The critique claims that the absence of a systematic protocol means that an uninformed reader is unable to judge the completeness of the arguments put forward in such a review (the systematic protocol is described in Chapter 7).

But the argument presented in this book is that before being able to move on to doing a systematic review you have to be confident in your searching

skills and basic reviewing ability. To start with a traditional review helps you to develop those reviewing skills and gives you the insights to enable you to work your way up to doing the systematic review. It can be argued that this form of review is a 'scoping review', that is, a review which sets the scene for a future research agenda. It is unlikely that at undergraduate level you will have the time to do more than a traditional review, but that does not mean you do not need to know what a systematic review methodology involves. Postgraduates are most likely to attempt a systematic review.

Critics of traditional narrative review argue:

- that there is no formal methodology, so there is a lack of transparency and no academic rigour
- that the reasons for including some material and excluding others is not discussed
- on selection grounds, because the review is only a small, potentially biased selection of the whole range of literature on the subject
- since there is no methodological audit trail, the review cannot be replicated by others
- that there is no quality assessment of the material included; incorrect interpretations may therefore result
- that contrary or conflicting views may not be identified or included in the review.

When will you need to review the literature?

In Chapter 1 we suggested that there are six different scenarios when literature reviews are undertaken:

1 When writing a research proposal, usually for postgraduate dissertations of approximately 3,000 words in length. The review would take up approximately one-third of this word count. So this review would be a preliminary taster of the more in-depth review that you write in your dissertation. On the other hand, a proposal seeking funding for further research would be a review which summarises key findings before highlighting the knowledge gap, thereby justifying the rationale for further research.
2 For an undergraduate or postgraduate Masters research project, where the dissertation is between 10,000 and 20,000 words in length. The review might be one or two chapters covering policy or theory and empirical applied studies. This would be a more comprehensive review of the topic, still identifying the research gap and explaining or justifying the project.
3 For a doctoral dissertation.
4 For a journal article publishing research findings, which often begins with a summary or a section that 'strings together' the literature without providing an in-depth analysis.
5 When writing a literature review in its own right to provide a stand-alone review of a topic.
6 For evidence-based policy development.

Types of review: critical, conceptual, state of the art, expert and scoping

To recap, traditional reviews are exploring issues, developing ideas, identifying research gaps, whereas systematic reviews are compiling evidence to answer a specific research or policy problem or question, using a protocol. It can be argued that both approaches are used to answer a research question or problem. However, the main difference is in the design and the methodological approach. Within the traditional review model, there are different types or reasons for reviewing. The type or reason is often indicated in the article title. The types are listed next and then followed by an example of each type.

- A *traditional review* usually adopts a *critical approach* which might assess theories or hypotheses by critically examining the methods and results of single primary studies, with an emphasis on background and contextual material. The material is selected in order to present an argument. Example 5.1 is a paper on marketing recycling and is representative of a typical academic paper – setting up the story so far.
- A *conceptual review* aims to synthesise areas of conceptual knowledge that contribute to a better understanding of the issues. Example 5.2 is a discussion about the two concepts: public health and population health.
- A *state-of-the-art review* brings readers up to date on the most recent research on the subject. This might be a seminal work, so it could be a useful beginning to your research project. Example 5.3 is a state-of-the-art review of green supply-chain management.
- Similarly, an *expert review* is just that, written by an acknowledged expert. This may be heavily influenced by the writer's own ideology and paradigm. Example 5.4 is an expert review on organisational and managerial change.
- A *scoping review* sets the scene for a future research agenda. This is comparable to what you have to do for your student project. The review documents what is already known, and then, using a critical analysis of the gaps in knowledge, it helps to refine the questions, concepts and theories to point the way to future research. It is also used as the first step in refining the questions for a subsequent systematic review. The output is a document which maps out the general topic area and makes recommendations for future research. Example 5.5 explores the research agenda for research on firm acquisition.

To summarise, these types of traditional review are often based on a personal selection of materials because the author has some important contribution to make to the knowledge base and the point is to help develop an argument or tell a story. This approach offers greater scope to be reflective, but may provide a one-sided or even biased argument, as discussed in Chapter 4.

TASK

Take a look at the contents pages of recent editions of the journal *The International Journal of Management Reviews,* which publishes only review articles (note: some articles contain no methodology section at all). You will see that the article titles carry a pointer, indicating what types of a review they are. Sometimes they declare the method, as in: 'content analysis', 'towards a conceptual model', 'a review of theories', 'towards a research agenda', 'a narrative review'.

The key point about traditional reviews is that it is not necessary to conduct a comprehensive systematic search, but you will help the reader more if the method and selection rationale is described because they will be able to judge the completeness of your argument. So, we are talking here about a search description (building on Chapter 2), then a selection rationale, prior to analysis and synthesis. The reader can then understand better the relevance and importance of the review and its findings with respect to their own information needs.

Some examples of published traditional reviews

To benefit from the following examples you will need to read the original papers.

Critical reviews

Example 5.1 is taken from Smallbone (2005), an article entitled 'How can domestic households become part of the solution to England's recycling problems?' In this article, Smallbone is reading the recycling literature from a marketing perspective. So the critical reading skill here is to apply one academic perspective, 'marketing', on to another academic perspective, in this case 'environmental studies'. Example 5.1 shows you how this review is assembled. You can see how many articles were used in the review and that having an alternative focus helps you to identify a gap.

TASK

It would help if you can look at Smallbone's article for yourself to see how the review is constructed (you can find it online at WileyInterscience, *Business Strategy and the Environment,* 4(2): 110–122.

The first paragraph of the review (Example 5.1, column 1) is laid out to show how it has been constructed and the behind-the-scenes reading and analysis

that underpins the statements (column 2). This opening section presents the reader with a summary overview of the current state of knowledge on the topic.

Example 5.1

A critical review

Taken from a paper on recycling by Smallbone (2005), this is an example of a good critical literature review put together with survey results to make policy recommendations.

The original text	**Deconstructing notes on the text**
The academic literature on pro-environmental behaviour and why people do and do not participate in recycling is extensive, but it is scattered in journals that range from those concerned with psychology through business, marketing and environmental science and sociology. It goes back to the 1970s, and by the mid 1980s a meta-analysis aiming to formulate a model of environmental behaviour could include 128 studies (Hines et al., 1986).	First sentence – tells me there is a lot of published material, and that contributions have been made from a variety of academic disciplines and perspectives. Second sentence – tells me how old the topic is and that there is already a meta-analysis of 128 studies, published in 1986.
Despite this effort, the results are frequently contradictory and are bedevilled by differences in local rubbish collection systems, variations in cultural expectations, and reliance on self-reported behaviour and small or biased samples, leaving a recent study to conclude that current knowledge on recycling behaviour is 'fragmented and inconclusive' (Davies et al., 2002: 54).	This is the summary analysis (an overall statement of 'what does this material tell us') and notes differences – reaffirming this opinion by citing a recent paper (at the time of writing her work).
Nevertheless it is possible to tease out a number of strands of thinking which together help to shed light on the validity of the three marketing assumptions described above.	Then she brings the paragraph back to her own research question.

Examine the paper again. You will see that Smallbone organises the material under three main headings (the framework):

- Targeting the green consumer using marketing communications.
- Green intentions and recycling behaviour.
- Could recycling become a social norm?

If we examine this structure further, we can see that each of these headings contains a varying number of paragraphs and references. This gives you an indication of how much material there was to review in total, and then how many authors had covered each theme. This information helps you, as a critical reader, to make judgements about the quantity of work reviewed and the relative importance of each topic.

- Targeting the green consumer using marketing communications – five paragraphs, covers 18 articles.
- Green intentions and recycling behaviour – three paragraphs, covers three articles.
- Could recycling become a social norm – three paragraphs, covers three articles.

Altogether, Smallbone has reviewed and analysed 24 papers.

So the critical dimension is achieved by reading the available material from a different perspective, looking at the topic through an alternative lens – the eyes of a marketing discipline. This is providing an alternative focus and that is one way that knowledge is advanced. Smallbone wants to make a point about the gap she found in the recycling knowledge and is using the literature to show that gap. In a policy-related context she wants to show that current policy may be focused on the wrong trajectory. Of course, she also wants to set the scene for future marketing campaigns.

Tip

See if you can apply an alternative discipline lens to the topic you are reviewing.

Example 5.2

Conceptual reviews

An example of conceptual review in an emerging field is Kindig's article, 'Understanding population health terminology' (2007). We suggest that you look up this article to get the most out of the discussion that follows.

We have to be sure that we are in agreement that the words we use have a shared meaning and understanding. Conceptual reviews are able to compare and contrast the different ways in which authors have used a specific word or concept. The following paragraph is my observation, not a reproduction of the original text. At first glance you might not think it is a review at all, but on closer reading of the original paper you will notice that Kindig (2007) is reviewing the state of knowledge on two concepts, which are often used in a confused way in public health discourse: public health and population health. So what makes this a conceptual review?

Kindig (2007) does not contain a methods section; neither does it state that it is a literature review, although it is. The context for the paper is the realisation that the different disciplines now contributing to the discourse on public health have different understandings and use of the core concepts. Now it is not just medicine that has an input, but also epidemiology, economics, sociology and psychology. Kindig defines and discusses many of the terms and concepts characterising this emerging field. This paper is written by an expert in the field, drawing on a wealth of personal and professional experience. The concepts are *public health*, an old term whose definition was once clear but is now becoming problematic, and *population health*, a relatively new term. In the final paragraph, Kindig gives his rationale for the study. This is a policy agenda and an important research question is proposed: 'What is the optimal balance of investments in the multiple determinants of health over the life course that will maximise overall health outcomes and minimise health inequalities at the population level?' Without an agreed definition of the core concepts the subsequent research will be of little use.

Kindig faced a similar problem that students have to face. There is a research question, but before you can begin to specify the research question and design the research methodology you have to be clear how the core concepts are understood and used (operationalised). Using Kindig (2007) as an example, this paper shows the complexity that might arise when examining current literature from a different paradigm or academic discipline.

Tip

Note down from each article you read how the core concepts have been used or operationalised. Are there different definitions in other disciplines and how has the definition changed over time?

Example 5.3

State-of-the-art reviews

We have selected a paper by Srivastava (2007) as an example of a state-of-the-art review. The paper is a comprehensive review of supply chain literature on green supply. (Srivastava, 2007). This is an expert review because the authors have developed an original framework through which to analyse the known body of work, as shown in the following quotation.

The paragraph below is based solely on the journal article abstract, using the original text. Note that the published review is described as 'comprehensive and all inclusive'. It must therefore have taken a long time to do. This paper does have a detailed methodological description. So what makes this a state-of-the-art review?

> A perusal of the literature showed that a broad frame of reference for this subject is not adequately developed. A succinct classification is needed. The literature on green supply chain management is covered exhaustively from its conceptualisation, primarily taking a 'reverse logic angle'. This review classifies the problem context, on the methodological approach, maps mathematical tools and provides a timeline. (Srivastava, 2007: 53)

Example 5.4

Expert reviews

Ferlie is a well known expert on public policy. His review paper presents an overview of the organisational changes and management literature on recent large scale change within health care organisations. Ferlie notes that seven critics may argue that the approach adopted here is too subjective in orientation (Ferlie, 1997: 181). This example of a literature review is a self-declared subjective selection written by an expert on the topic of organisational and managerial change. It is therefore a traditional review, not a systematic review. Ferlie (1997), as an acknowledged expert, gives his opinion on the literature as it applies to health care. This following paragraph is my observation, not the original text. So what makes this an expert review?

> Ferlie (1997) explains his search and selection rationale. He observes that the subject matter is a diffuse field where the unit of analysis – organisational and managerial reform – is multifaceted. So, there is no conceptual consistency then. He observes that studies are based on diverse methodological and theoretical orientations, and randomised trials are rarely employed. Ferlie's search design consists of a two-stage model. The first stage involved a manual search of eight key journals known to the author. Ferlie traced earlier work by examining citations, and then selected those studies which *appeared to be of interest*. The second stage was the selection of a group of nine key texts which appeared to be of *particular interest*. The selected studies were chosen on the basis that:
>
> - they discuss organisational and managerial changes in health care at a macro rather than a micro level
> - they present primarily empirical data as well as interpretation
> - in the *judgement of the author,* they reflect the work of established scholars and research groups working in this field as indicated by professional reputation, citation and the winning of grants.

It is the description of the methodology that tells you that this is not a systematic review and that the author has used his expert knowledge to limit the search. An insight here is that by using citations and scanning key journals it is possible to identify a useful range of information. But it is the expertise that drives selection of material.

Tip

By scanning the citation list for each article you will quickly spot the key journals publishing material on your topic. It does not take long to identify them in the search stage as the same ones keep popping up. This will help to concentrate your search.

Example 5.5

Scoping reviews

Our example of a scoping review is a paper on the subject of firm acquisition by Barkema and Schijven (2008). As a reminder, a scoping review sets the scene for a future research agenda. This is my observation, not the original published text, on what makes this a scoping review.

> Barkema and Schijven (2008) provide an example of a critical literature review which summarises past research and presents a research agenda for the future. Barkema and Schijven set their review of firm acquisition in the contemporary management context at the time of writing. The consensus is that most acquisitions fail. Yet despite many academic insights into what needs to be done when acquiring a new company, the same mistakes appear to be repeated. Therefore, the authors note that *there is value in taking stock of past research and in outlining what remains to be explored and in drawing an agenda for future work* (2008: 595). There is a short methods section explaining what is covered in the review – studies published since 1980 in leading management journals plus some as yet unpublished work and work from other settings. The structure of the paper is balanced, consisting of 11 pages on the past review, six pages on the future agenda, together with summary tables of the selected papers. The summary tables are the evidence, presented to the reader.

The review documents what is already known. Then, using a critical analysis of the gaps in knowledge, it helps to refine the questions, concepts and theories and thus points the way to future research. It is also used as the first step in refining the questions for a subsequent systematic review. The pages of summary present the evidence to the reader, so that you can make your own assessment of the validity of the authors' claims.

So now you have looked at some published examples of different types of traditional critical reviews, this should help when you are reading for your own literature review and give you some ideas on how to get going.

Drawing up an analytical framework – how to sort the material

Although you might set out with a limited plan for the scope of your research, it can actually be a fluid and flexible process. The library search will show you

the size of the body of work that exists. If you can't find anything, you may need to revise your research question or try alternative keywords. The advantage of a traditional review, which is less formally prescribed than a systematic review, is that you can add new thoughts and new themes to your plan throughout the process.

Figure 5.1 is a stylised presentation showing an overview of the typical process as straightforward and linear. Step 1 begins when you have obtained some papers, some information on theories and on the empirical applications of the theory. Step 2 is to read and begin to think what approach your critique will take. Make an analytical assessment of what you have in front of you. Step 3 is the point at which you can spot a knowledge gap.

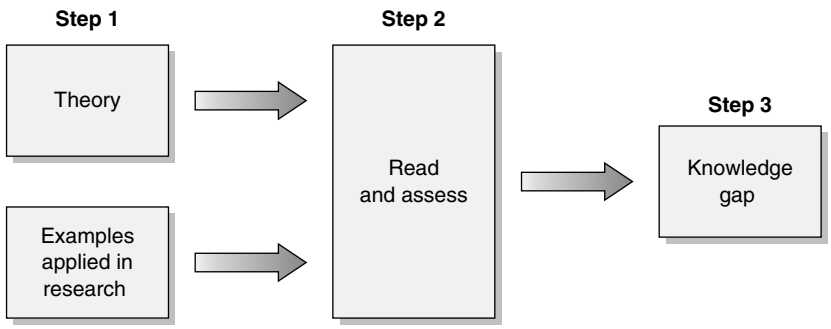

Figure 5.1 The analytical process

The review process

Figure 5.1 is an abstract representation. If we take a real-world example, you can see how this might begin to work out. Remember the Smallbone (2005) example covered 24 articles, so start this process as soon as you can. Begin to make notes, categorise your papers and start to write.

Mind map or table display of material

The assumption at this point is that you have printed off several articles and are ready to begin the next phase of analysis. One useful way to start is to lay out the material on your desk or on a big table, in bundles or piles. Figure 5.2 is based on an evaluation project where we needed to find out quickly how to evaluate a local Sure Start Partnership. Sure Start was a UK-government intervention in disadvantaged communities. The aim of the programme was to support parents of children under 5 years by bringing together all the statutory

public and voluntary services working for families – thus forming a partnership. Over six months we had gathered together huge piles of paper, on a research question 'What is to be learned from Sure Start programme evaluations?' Figure 5.2 represents the desk display of the different materials that were obtained. Displaying the materials in this way helped us to conceptualise the topic and create a mind map. The skills you need to perform this task are 'differentiating' and 'categorising' your data.

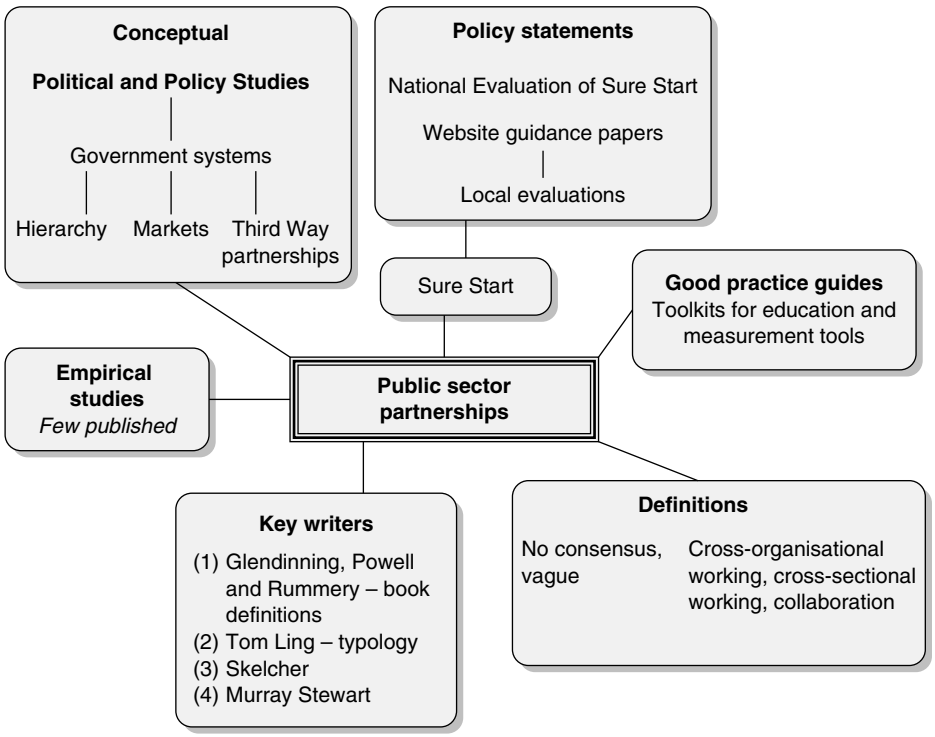

Figure 5.2 Example of a mind map/table sort of materials on Sure Start public partnership evaluation

This project was about public sector partnerships, so partnerships sit at the centre of the map. Both conceptual and empirical studies were retrieved – with some overlap; there were also government practice guidelines and public partnership evaluation toolkits. After skim reading all of this material we could confidently state that there was no clear definition of public partnership. There were several abstract models and public partnership evaluation toolkits, but few empirical examples of applying these models and none applying evaluation toolkits to local Sure Start interventions. This does not mean that there were none, just that we had not yet found them because they were not in the public domain.

Begin to categorise

So to recap. Step 1 begins when you have obtained some articles, possibly covering theories and some empirical applications of the theory. Step 2 is to read and begin to think what approach your critique will take, making an analytical assessment of what you have in front of you. Step 3 is to begin to categorise your material. The next section shows how you can take a single text and summarise the key points, authors, and concepts into a table.

Change management is a topical feature of modern management. The example on change management is summarised in Table 5.1. Shacklady-Smith (2006) advises her readers to be mindful of the historical, social, economic and political contexts when reviewing the change management literature. This is a useful example because it has several approaches, lots of empirical studies testing out the theory and a succinct critical summary and overview of the literature.

This is an example from a textbook, where the literature has already been summarised for you – remember, wherever possible you should attempt to consult the original publications to make up your own mind and develop your own critique. Nevertheless this type of review does serve as an introduction to help you get started and charts your 'enquiry chain' (O'Neill, 2005).

Table 5.1 Change management theory as a topic

Theoretical approaches	*Relevant authors*	*How this differs*
Mechanistic and planned	Lewin, 1958	Historical beginnings
Emergent process	Burnes, 1996	Challenges Lewin
Typologies of change:	Ackerman, 1997	Modern applications
Developmental		
Transitional		
Transformational		
How to change organisations	Empirical case studies	Applied to real situations

Source: Shacklady-Smith (2006:)

Moving to analysis and synthesis

So far this chapter has described different types of review and illustrated the types with published examples from a range of topics. This was followed by some advice on how to begin making sense of the literature you are reading.

In his classic text *Doing a Literature Review*, Hart (1998) has given us a checklist of the types of question you might use to interrogate an article and which will also provide a framework for your write-up:

- What are the key sources?
- What are the key theories, concepts and ideas?
- What are the key epistemological and ontological grounds for the discipline?
- What are the main questions and problems that have been addressed to date?
- How has knowledge in the topic been structured and organised?
- How have approaches to these questions increased our understanding and knowledge?
- What are the origins and definitions of the topic?
- What are the major issues and debates about the topic?

You will find your own preferred way of beginning to put information together. The process of searching, reading, then refining the scope and re-searching is a cyclical process. It is unlikely that you will do each of these activities once only. By now you will have explored several sources and articles, maybe even different sorts of literature, you will know the key issues and have found a focus for your review. Next, you have to concentrate on documenting the themes, similarities and differences in the literature you are reviewing. Synthesise on a thematic basis, so the evidence from single studies is pooled. This takes us to the next three steps towards analysis.

Stage 1

Write a summary of the important parts of each paper; take three papers to begin with. You will start, with three sets of information and two or three themes (which might include theory, results or data analysis). Look again at Example 5.1 where Smallbone (2005) stated the three key topic areas the literature review covered. Evaluate the evidence that is presented, question for yourself how valid and reliable the evidence is. This is easier to do if you already have knowledge of one subject area and can apply it to a different discipline or a different focus, as Smallbone did with marketing and recycling. At this stage you are writing descriptively – it is just a summary. Later you will expand on the number of papers you review and build up the evidence, and maybe revise your themes as you go along.

Stage 2

Now compare and contrast the three papers and themes: what is the same, what is similar, what is different? Write short summary paragraphs of the key points you want to make, drawing from each of the three individual extracts you produced in step 1. Now you should have one comparative set of information but it is no longer in a bibliographic format but combined. Be careful with time sequences – analyse the work in a chronological order. If it is a new subject area for you, question the plausibility. Does what you read make sense from

your own experience? You may be the person who makes a critical challenge to longstanding ideas or theory. At this stage you are writing critically.

Stage 3

This is a cyclical process. You will read more, make more notes, and discard some notes, read and review, write, read, review. Build up your case now. It is important to document the good and negative or weak features, the strengths and limitations of the method as well as the explanatory arguments. Keep returning to your original research question, aim and objectives to make sure what you are writing is still relevant. Some students get to this point and change direction because an in-depth understanding of the problem helps them to refocus on the research problem.

Tip

When writing, check the words at the beginning of each paragraph. If each paragraph begins with an author's name then maybe you still have a format that is based on description, where each source of information is presented independently one after the other. Now repeat this test with each sentence. Try not to begin every sentence or paragraph with the author's name.

The presentation of your review

The aim of a traditional narrative literature review is to provide a critical review, not a description, a catalogue or shopping list. It is a new picture or story you are presenting, with your judgements made from a sound basis of evidence, reflection and sometimes experience.

Make sure that you summarise current knowledge in a clear and consistent logical way. Think of your review as a story, with an introduction, middle and end. The format could be like this:

- Introduction – guide the reader through. Give an overview of what is known and how you will present your critique – the trailer. Make the purpose clear from the start, explain the structure.
- Method – this is optional but it does help the reader to see how and from where you have obtained your information. You can also state here possible themes/issues that you have decided not to include.
- Theme 1.
- Theme 2.

- Theme 3.
- Discussion and critical summary paragraphs.
- Conclusion – states what your contribution to the debate is. Show the gap. Do not introduce new material. If relevant, how does it link into your research project?

Summarising the gap – dare to have an opinion

You need to convince the reader that you are fully conversant with the current debate on your topic, that you know who the key writers are and the ideological agendas or perspectives from which they work. You want to be original and show how your analysis and synthesis brings insights or a new dimension to the topic. Finally, show that you have identified the knowledge gap, especially if the purpose of the review is scoping to set up a research project. Highlight any consensus, any exceptions to that consensus, and note the methodological or theoretical limitations in the work you have reviewed.

Summary

This chapter has tried to tease out the different types of traditional literature review that you may encounter in your reading. Tell the reader what the purpose of your review is and what type of review it is. The traditional review is flexible. It allows us to use different types of evidence, draw on quantitative and qualitative work, on research and non-research materials. A final point is to remind you to be self-aware, reflective and critical. It remains the key research method that all students have to undertake at some point in their academic career. It does not have to be labour intensive, and can be done within the budget and time constraints of a student project. It is the first step you need to undertake before you can begin a systematic review.

In Chapter 7 we cover systematic review. To aspire to the systematic review as the gold standard is good, but first you have to know how to do an effective traditional review. Systematic reviews, if done properly, are time-consuming, expensive and are usually undertaken by a team of research assistants and researchers. Researchers who produce systematic reviews have to have an overview of the current literature. In effect, they have insights from a scoping review to formulate or modify the research question, before they can apply the specific research question and designate the inclusion and exclusion criteria.

7

THE SYSTEMATIC REVIEW

Key points

- To undertake a systematic review you need some working knowledge and understanding of the field
- Systematic review uses a standardised, structured, protocol-driven methodology
- The methodology is focused, explicit and must be transparent
- Systematic review requires a rigorous, systematic, comprehensive and exhaustive search for *all* the relevant literature
- Systematic review claims to be objective, balanced and unbiased

Be aware

- Systematic review methodology may not be appropriate for undergraduate-level reviews
- Systematic review is time-consuming and can be expensive
- Systematic reviews are usually undertaken by more than one person; they are usually a team effort, to do the scanning, screening and quality assessment to reduce bias
- Systematic review is dependent on access to electronic databases and a range of available databases and can therefore be limited by the effectiveness of the databases
- Systematic review is typically restricted to published, peer-reviewed, academic work

Overview

Literature reviews can be envisaged as a continuum, ranging from traditional review to systematic review.

Traditional review	———————	Systematic review
No defined method	———————	Rigorous method
Exploratory/creative	———————	Transparent/replicable

This chapter begins by describing the context in which systematic review has developed as a methodology in evidence-based practice. It then takes you step

by step through the explicit stages of the methodology, as shown in Figure 7.1. You will learn how to develop your review protocol and the importance of documenting every stage of the process. The chapter ends with some examples of more sophisticated and complex reviews.

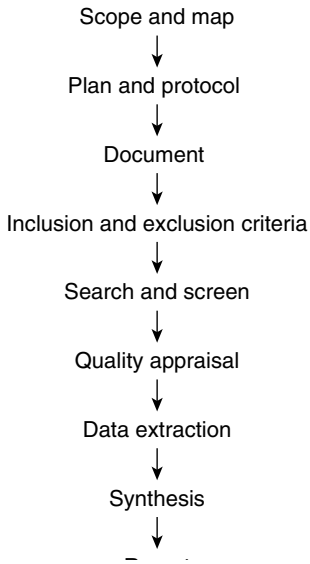

Figure 7.1 Key stages in a systematic review

Definitions

Systematic review

The term, or concept, systematic review is used in two ways: it can refer to the prescribed methodology (a means – method) or to the output report itself (a report). This first definition, by Sweet and Moynihan (2007: 1), written with a healthcare context in mind, encapsulates all the key buzzwords which define a systematic review:

> Systematic reviews provide a systematic, transparent *means* for gathering, synthesising and appraising the findings of studies on a particular topic or question. The aim is to minimise the bias associated with single studies and non systematic reviews. (our italics)

Or it describes the output:

> A systematic review is a *research article* that identifies relevant studies, appraises their quality and summarises their results using scientific methodology. (Kahn et al., 2003: 1, our italics)

Identifying and sifting through all the relevant studies and evaluating each according to predefined criteria is what distinguishes a systematic review from a traditional review. Table 7.1 sets out the key differences.

Table 7.1 Comparative table of scoping review and systematic review

	Traditional (scoping) review	*Systematic review*
Aim	To gain a broad understanding, and description of the field	Tightly specified aim and objectives with a specific review question
Scope	Big picture	Narrow focus
Planning the review	No defined path, allows for creativity and exploration	Transparent process and documented audit trail
Identifying studies	Searching is probing, moving from one study to another, following up leads	Rigorous and comprehensive search for ALL studies
Selection of studies	Purposive selection made by the reviewer	Predetermined criteria for including and excluding studies
Quality assessment	Based on the reviewer's opinion	Checklists to assess the methodological quality of studies
Analysis and synthesis	Discursive	In tabular format and short summary answers
Methodological report	Not necessarily given	Must be presented for transparency

Source: Adapted from Pilbean and Denyer (2008)

Task

Go to the internet and enter the keywords: 'traditional literature review' and then 'systematic literature review' in the search box. Note the difference in the number of hits your search engine throws up.

The sheer volume of new research studies published these days makes it hard for researchers, practitioners and policy makers to know what is currently useful. This is a knowledge management problem and the aim of systematic reviews is to help bring this problem under control. For practitioners, the limitations of acting on single case study articles is that they may misrepresent the balance of available research evidence. In addition, studies can be of variable quality in terms of their design, execution, analysis and reporting. Moreover, research reports can be biased.

Systematic review for clinical biomedical research was formalised over 20 years ago in the UK through the Cochrane Collaborative, but since then it has been adopted worldwide and to some extent by most other fields of research. The purpose is to combine information from various sources to provide more

data to answer a specified research question *without the need to set up a new study*. The Cochrane papers provide a valuable resource and guidance to practitioners and students undertaking a systematic review. These reviews adopt a strict scientific methodology, as shown in Table 7.2, which may not be appropriate for your student subject or topic. It is best to check with your supervisor which type of review you should undertake.

Evidence-based practice

Evidence-based policy or practice (EBP) began in healthcare research, in medicine and nursing, but it is now to be found in other areas, such as education, the probation service, regeneration policy and practice, housing, social care and criminal justice. You will notice from this list that in the UK these are all public services, where a large body of research is commissioned regularly, so there is ample material to review.

Several research centres, based in academic institutions, have been set up to collate the evidence and to help researchers adapt the Cochrane guidelines by producing specialised guidelines and toolkits. Some of these are listed in Appendix 3. For example, in social care, the Social Care Institute for Excellence (SCIE) sets its own framework for systematic reviews which covers five domains: policy knowledge, organisational knowledge, practitioner knowledge, user knowledge and research knowledge. The SCIE quality agenda covers empirical evidence of policy and practice, including the use of testimony from users and carers, a field which would not be highly rated in other subject contexts.

As we noted earlier, some authors argue that systematic review is a 'better' research method than traditional review because it is a more rigorous and therefore 'scientific' approach to the practice of literature reviewing (see Torgerson (2003) on education research and Petticrew and Roberts (2006) on the social sciences). Rigorous and scientific, in this context, refers to the systematic protocol methodology, compared to the looser and more flexible approach implicit in the traditional review. However, there is rather less consensus in the social science disciplines as to what constitutes evidence and appropriate methodological paradigms, each academic field having its own preferences.

Business and management research

The development of evidence-based management and the practice of undertaking systematic reviews in the business and management field has been slow. The problems for business and management subjects has been well articulated by Tranfield et al. (2003: 208). However, it should be acknowledged that the business and management field covers a diverse range of subjects, including marketing, finance and accounting, work organisation and psychology, economics and

international business, each of which has its own research paradigm and acceptable approaches to research. Thus it can be difficult to impose the systematic review methodology on to their work. To meet this challenge the Advanced Institute of Management Research (AIM) researchers at Cranfield University have developed a training package to encourage the use of systematic review in business schools (Pilbean and Denyer, 2007/8). Tranfield et al. (2003) argue convincingly that, compared with the medical and biological sciences, there are significant ontological, epistemological and methodological differences in the many disciplines which go under the 'management' umbrella, and this makes it even more problematic to adopt wholesale the prescribed approach to systematic review.

Social science and cross-disciplinary systematic reviews

Other authors have noted that the systematic review methodology has not always been successful in social science and multidisciplinary research. A really interesting discussion on the limitations of a protocol-driven methodology is to be found in a systematic review which set out to answer this question: *What empirical evidence is available on the relationships between mental health problems and social exclusion*? (Curran et al., 2007). This study had to combine the literature covering two topics: health (mental health problems) and social policy (social exclusion). Both of these concepts are subject to varying usage over time and place. The authors of this review noted other challenges arose because much of the work was located in grey literature, such as in policy documents and government reports, or research from major charities or think tanks. The conclusion, in the context of trying to apply the systematic protocol to social science and cross-disciplinary research, was:

> There are a number of challenges to be overcome: poorly defined topics; inconsistent use of key words and controlled vocabulary; abstracts that do not effectively communicate the content of the paper or are not accessible in bibliographic databases and resource and technology problems. (Curran et al., 2007: 305)

The observations made about business and management research and social science and cross-disciplinary systematic reviews are here to illustrate some of the hazards implicit in taking a methodology from its original discipline – medicine and healthcare – and adapting it to other disciplines.

A half-way review – rapid appraisal

So what are we saying here? We argue in this book that a systematic review actually builds on a traditional, critical or scoping review, as described in Chapters 5 and 6, but there are two main differences: the *reason* for undertaking a review and the *manner* of performing a review.

- A systematic review is a comprehensive review of *all* published articles selected to address a specific question using a systematic method of identifying relevant studies in order to minimise biases and error.
- The details of the approach used in a systematic review must be documented in the methods section of the review report.
- Systematic reviews have a structured methodology which must be transparent to its readers.
- The starting point is having a key specific question to answer.
- The whole process is summarised in Table 7.2.

Table 7.2 The key phases of a systematic review

Phase 1: Mapping the field through a scoping review. What do we know and what are the knowledge gaps (as described in Chapter 5). How much relevant material is available?
Prepare the review plan. This includes the method and the protocol for the systematic review. Define the question or questions, compile key words. Set up the inclusion and exclusion criteria. Design the data extraction pro-forma or data sheet.
Phase 2: Comprehensive search. Access the electronic databases and search using your key words. Search and document the search results.
Check whether the hits are relevant or are you coming up with too many hits. If so, do you need to refine the search and revise the key words? Do you need to revise the inclusion and exclusion criteria? Do you need to change the research question being addressed? Document the results/ numbers in a table. Screen the title, the abstract and, if relevant, print or obtain the paper.
Phase 3: Quality assessment. Read the full paper and apply the quality assessment, using the 'hierarchy of research'. Decide whether papers are IN or OUT of your review. Document the reasons for excluding papers and compile a numerical table of the process.
Phase 4: Data extraction. Write down the relevant data on to your pre-designed extraction sheet. This can be handwritten or in an electronic format.
Phase 5: Synthesis. Synthesise the data from each individual article into one. Shows what we know now and what we still need to know. Is a meta-analysis or a mathematical synthesis feasible?
Phase 6: Write up. Write up a balanced, impartial and comprehensive report, using a systematic review format, presenting the process reports which will enable another researcher to replicate your review. Disseminate to inform practice.

One of the limitations of the systematic methodology is that to do a good systematic review takes time, resources and ideally more than one researcher. You will note that most published systematic reviews are multi-authored. That should not automatically deter you from doing your review using the systematic methodology, but you do need to recognise and note the limitations. This methodology is more appropriate for Masters-level and doctoral work. Such a review might be called a rapid review. In the professional sphere, 'rapid appraisals' are reviews of existing evidence which are not fully developed systematic reviews. They are descriptive and can be completed in 8–12 weeks, as advised by the Government Social Research Unit (GSRU):

> Rapid evidence appraisals collate descriptive outlines of the available evidence on a topic, critically appraise them (including an economic appraisal), sift out studies of poor quality and provide an overview of what that evidence is telling us and what is missing from it. (GSR, 2008: 12)

The GSR process is based on a fairly comprehensive electronic search, which can include some print materials, but it does not involve an exhaustive search.

Development of the review protocol

In Chapter 5 we described the key features of traditional review and in Chapter 6 we gave more guidance on writing up your review. So at this stage we assume that you have undertaken a traditional review. Use the checklist by Hart (1998) and map your findings:

- What are the key sources?
- What are the key theories, concepts and ideas?
- What are the key epistemological and ontological grounds for the discipline?
- What are the main questions and problems that have been addressed to date?
- How has knowledge in the topic been structured and organised?
- How have approaches to these questions increased our understanding and knowledge?
- What are the origins and definitions of the topic?
- What are the major issues and debates about the topic?

Figure 7.2 shows the simple mapping (visual) of a scoping literature review for an intervention through a community pharmacy to improve services to men, with the workplace playing a strategic role. The interconnecting circles show where the knowledge is; the detached circles show where there are no cross-overs or linkages – this is where the gaps are. This is an example of a scoping

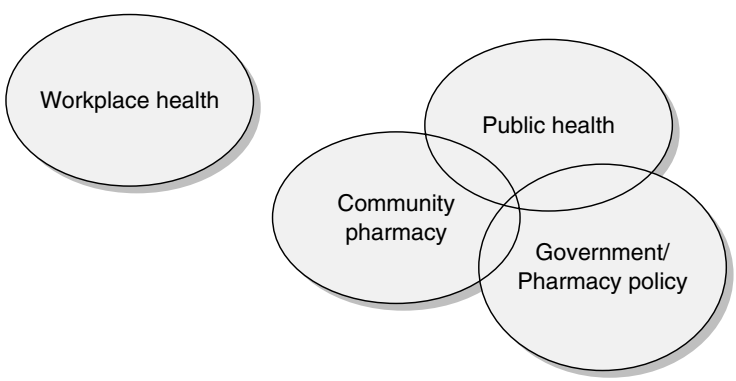

Figure 7.2 Literature scoping map for a project on men's health in community pharmacy

study. Alternatively, it could be labelled as a mapping study. A mapping study helps you assess the size of the work, the terminology used, and the methodological, epistemological and ontological basis of the field. In this example, there was no literature linking workplace health and community pharmacy. By doing this, you will also assimilate knowledge of the range of theoretical approaches.

The plan or protocol

Next, you have to draw up a plan or protocol of the proposed research to establish the theoretical, empirical and conceptual background to your review. You specify the research with a clear aim and objectives, state the research question or questions, and clarify the purpose of the review. The plan helps to establish a degree of objectivity because it is an explicit statement and description of the steps that are to be taken. To complement it, there will be a documented audit of your progress.

To recap, then. Before you can make an explicit plan you have to be aware of the type of information available, the quantity and the quality. This should have been identified during your scoping/mapping review and culminate in the development of your systematic review question. In a limited period of time you will be unlikely to address a complex question that requires the detailed evaluation of thousands of published articles. Conversely, where the topic is relatively new there will be minimal published information available and your review will be easier to complete and relatively short.

Formulating the review question

The review question is critical to the systematic review. The question addressed by the systematic review needs to be defined very precisely because you will have to make a dichotomous (yes or no) decision as to whether each potentially relevant paper will be included or rejected from your review.

Example 7.1 is a policy review problem concerning mental health and social exclusion by Curran et al. (2007). It shows how a mapping/scoping review question was set out.

Example 7.1

A mapping/scoping review question

What empirical evidence is available on the relationship between mental health problems and social exclusion?

Sub-questions

What is the nature of this evidence? Is it qualitative or quantitative?
Which mental health and social exclusion topics are well researched and which are not?
Which countries are the studies set in?
What research designs are used to generate the evidence? (Curran et al., 2007: 293)

More concise guidance on how to frame the question is taken from the Magenta Book (2005). There are four components to designing a systematic policy review question, and these are outlined in Example 7.2.

Example 7.2

Components of a policy review question

1 Give a clear specification of the intervention, factors or processes in question.
2 Give a clear specification of the population or subgroups in question.
3 Give a clear specification of the outcomes that are of interest to the user.
4 Give a clear specification of the contexts in which the questions are set.

By applying these four criteria, we can draw up a systematic review research question about a policy intervention:

What is the effect of a personal adviser service (1. intervention) in terms of retaining (3. outcome [a]) and advancing (3. outcome [b]) lone parents (2. population) in the UK workforce (4. context)?

And an example about implementation:

What are the barriers (1. factors/processes [a]) and facilitating factors (1.factors/processes [b]) to getting lone parents (2. population) to participate (3. outcome [a]) and advance (3. outcome [b]) in the UK workforce (4. context). (Magenta Book, 2005)

Documenting your progress

Throughout the process you have to document your decisions so that the process is transparent to the reader and can therefore be replicated by other researchers. The information you need is usually:

- the title of the database
- date searches conducted
- years covered
- search terms (keywords)
- language restrictions
- number of hits.

Documenting as you go along is crucial because you will obtain a different set of results with every electronic search. You may want to refresh your ideas with a review of the contents of Chapter 2 on library search. The first table you compile will describe the search process. A summary narrative illustration is shown in Example 7.3, which is a systematic review of barriers to recycling in the UK. The documentation can be provided for the reader either in summative narrative form in the report (as in Example 7.3), or in a technical table (Table 7.3).

Example 7.3

The search report from a systematic review 'What are the barriers to recycling' (Jesson and Stone, 2008)

The search began in October 2007 and continued until the final GoogleScholar search in May 2008. A cut-off date of 2001 was deliberately chosen to reflect changes in knowledge about recycling. A systematic search was undertaken of the computerised databases Metalib®, ABI/INFORMS EBSCO, and SWETSWISE. The individual journal databases searched were: Sage, Wiley Interscience online, Oxford, Taylor and Francis Informaworld. Links within these databases to similar journal pages were followed up, as were references at the end of each relevant paper. Once it was noted that one journal was registering frequently, every issue of *Resources, Conservation and Recycling* was scanned for the years 2001–2008 (vols 32–52), which covered our stated timeframe.

The initial electronic search identified 522 papers which contained the words 'barriers to recycling UK'. Each title and abstract was screened using the inclusion/exclusion criteria. Then paper copies were obtained and read more closely for information about barriers to recycling. The final number of papers which met the inclusion criteria was 14. They all had something interesting to say about current barriers to recycling.

The final second GoogleScholar search in May listed 7,090 items using the word string 'barriers to recycling household waste in the UK'. From the first 120 scanned, five new sources, including two conference papers, were identified.

Table 7.3 Search report table (Jesson and Stone, 2008)

GoogleScholar	7,090
e-library electronic databases	522
Potential in scope and interesting	27
In scope after reading	14
Data on current barriers	8

Tip

Documenting your literature search as you go along is good practice and essential in systematic review.

Locating studies and sources of information

Keeping to your plan and research question you can now undertake a comprehensive search for *all* potentially relevant articles or studies through electronic databases. Technical guidance and instructions on searching electronic databases is to be found in Chapter 2. If you are getting too many hits, refine the keywords, synonyms or related terms and do the search again. This stage may be an iterative procedure until you have covered all keyword options.

You will have decided at the planning stage whether the study is to be based solely on electronic sources, as some would advise, or whether you will have to include other material. The range and types of material potentially available were discussed in Chapter 2, but are shown in Figure 7.3.

Academic peer-reviewed articles are said to be the best source of data for systematic review, but an electronic database search can only pick up on the

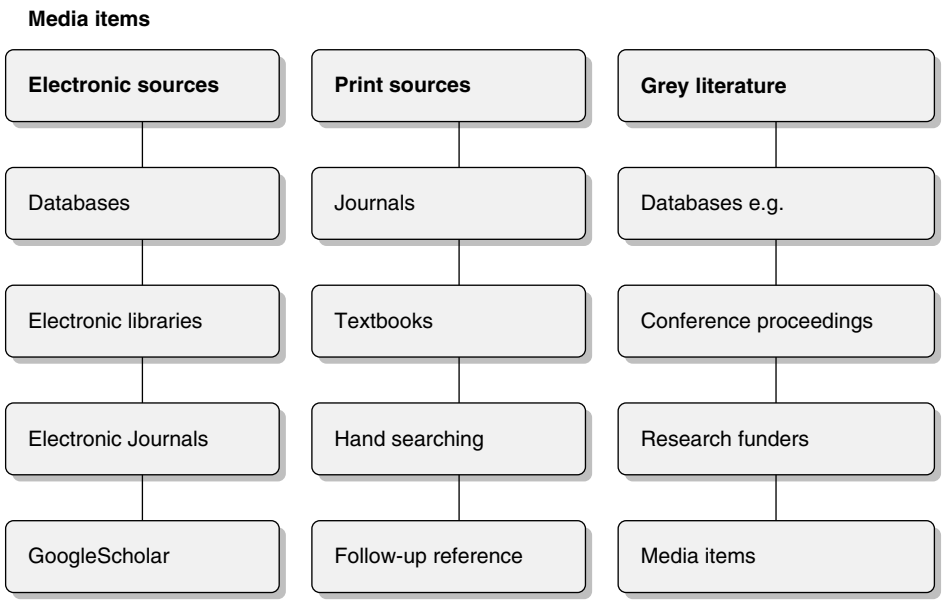

Figure 7.3 Systematic searching: potential resources table

title, subject heading and abstract of the article, as the authors have written it. The authors may not have given sufficient information for the abstract to be picked up and some abstracts give a misleading picture of the contents of the article. Depending on your review question, you may want to widen your search outside the narrow confines of the electronic search to include other methods of searching, such as manual examination of printed journals, and look at other forms of information, such as conference proceedings or commissioned research reports. Check with your supervisor whether this option will be acceptable. There are specific databases in many fields where non-peer-reviewed material is collated, such as www.wastenet.defra.gov.uk, which, in response to the needs of the research community, is beginning to centralise relevant and up-to-date information about waste and resources research.

The search will only be as good as the indexing of the databases you use. But what appears in indexed databases can be just the tip of an iceberg. A Cochrane review of 22 specialist, indexed, UK healthcare journals found that 35% of trials identified by a hand search were not indexed by Medline.

Tip

Following up references and hand searching individual journal contents pages can link you up with supplements, news items, and sometimes letters to the editor, which may have additional information about other research.

The additional steps suggested in the above tip can help you to avoid selection bias or publication bias. Sometimes it is easy to take only the more readily accessible material, which is in the major indexed databases, but this could defeat the aim of scientific rigour that is associated with systematic review methodology. Remember, publication bias occurs where journals have a tendency to promote a given approach and reject papers which have a negative stance or produce inconclusive findings. Therefore, it can be the case that one view predominates in the literature. A public discussion of publication bias arose when leaked emails from climate change researchers at the University of East Anglia was placed on the internet (Pearce, 2010).

So, to summarise the search process so far, remember that the search is one of the standard features which distinguishes a systematic review from a traditional literature review. The search process is more rule-driven and rigorous than in a traditional basic literature review. There has to be an explicit statement of the criteria that are being applied, an attempt, if possible, to cover *all*

published material and to state whether any evidence in non-academic forms (such as those in columns 2 and 3 of Figure 7.3) will be used.

Selecting studies: inclusion and exclusion criteria

You only want the articles that help you to answer your research question so the inclusion and exclusion criteria you will apply must be explicit. And you have to set these criteria at the outset, which is why you need a working knowledge of the topic. This is illustrated in Example 7.4. The first stage of your decision-making process is to read the title, the abstract and maybe the introduction and conclusion of the article. You will occasionally find that articles which appear relevant (because of words picked up by the search engine in the title or abstract) are in fact misleading. The second stage is to screen the papers in their entirety, scanning for the key information that you will need for your data extraction (Phase 4 in Table 7.2). This is where the quality criteria are applied and you sort out which papers to include and which to exclude. Assessment involves a degree of subjectivity in the judgements made (Phase 3 in Table 7.2). That is why many systematic review guidelines stress the importance of more than two people independently evaluating each study.

Example: 7.4

The inclusion and exclusion criteria from a systematic review 'What are the barriers to recycling' (Jesson and Stone, 2008)

Keywords
The strings and combinations of keywords included:
'household waste recycling'
'barriers/constraints and recycling'
'marketing and recycling'
'recycling and attitudes/motivation/behaviour and kerbside'

Inclusion and exclusion criteria

Inclusion: English language, UK, domestic waste, household and on street/kerbside studies, empirical evidence of barriers. The time scale was 2001–2008. Grey literature, such as reports and non-academic research, which were identified from reference lists, and GoogleScholar, were considered where available.

Exclusion: outside UK, Civic Amenity (CA) and bring sites only, other aspects of the waste hierarchy – re-use and reduce, measuring participation and set-out rates, volumes of waste, and papers published pre-2001.

You have to document the decisions you make, noting any articles that have been rejected or that failed to meet your criteria and stating why. You may find you will revisit these observations later. Some writers provide a flow chart showing the numbers involved in this process. There is an example in Chapter 8, Example 8.1. The documentation tables are to show the transparency of every decision so that readers can see what you have done.

Appraisal – assessing the quality of research

The next stage in systematic review is the appraisal of the material that you have selected. But how can you do that if you are a novice researcher? If your experience is predominantly in medical, quantitative studies, how can you assess social science or management research based on qualitative studies, or policy-based research? In this section we discuss some of the ready-made tools freely available from internet websites that have been designed by the systematic review centres mentioned earlier.

A key dimension of the appraisal is to examine the methodology of primary studies. There is often a 'quality' threshold applied before a study is included in the review. A 'hierarchy of research study designs' is the model which is used in biomedical research, but it also sets the standards in other fields of applied research.

This hierarchy is contestable in management and social science fields. The quality of what is accepted as evidence varies by discipline. Medical science has adopted the normal scientific approach, where double-blinded controlled trails are widely accepted as the most rigorous method for testing interventions. Thus random controlled methodology and double-blind, cross-over randomised control trials (RCTs) are known as the gold standard, while qualitative interviews and narrative studies have least credibility and are ranked as anecdotal. The direction of the arrow in Figure 7.4 shows that the higher in the table the method, the better the design quality.

But when we try to apply this judgement across other academic and policy fields of research, such as organisational and business studies, or multidisciplinary social science studies, the limitations of the standard hierarchy of evidence model becomes obvious.

Task

Where in the hierarchy measure do the publications in your area of interest lie? What does it tell you about the nature of research methodology typical in the field?

The gold standard blind randomised controlled trial is rarely used outside clinical research. Trying to impose the randomised controlled method across

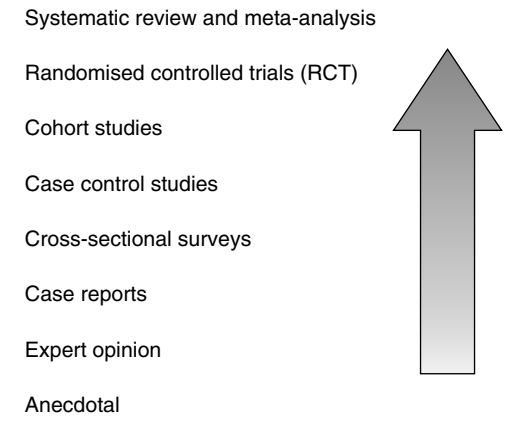

Figure 7.4 The hierarchy of research study design

organisational or business research is of dubious practical merit and ethical acceptability, and is rarely attempted.

You will spot what constitutes evidence in your field of inquiry as you scan the articles in the search stage. In the waste context, the Department for Environment, Food and Rural Affairs (DEFRA) recognised the limitations of too narrow an evidence base and widened the scope for their *Waste and Resources Evidence Strategy* to include 'more than hard data, facts, trends, survey information but also … judgements and opinions, informal and tacit knowledge and analytical reasoning that sets the data research in context' (DEFRA, 2007).

You have to be pragmatic about using the quality standards. In the 'barriers to recycling' study used as an example in this chapter, it soon became clear that nearly all the studies retrieved were based on a survey method. Thus the quality assessment had to be made on the basis of the details given by the authors of each article about the survey design.

Task

Look at Example 7.6, Tables 7.1 and 2. This is the standard way of presenting summary results of a systematic review. Columns 4 and 5 give methodology details. Now, follow up the original papers yourselves and you will find there is insufficient methodological detail to assess differences in quality for your review.

Note that if the quality criteria are applied too stringently, then you may not have much to review. Ogilvie et al. (2005) reported in their systematic review of public health and health promotion interventions that filtering out studies for exclusion without examining them in any detail would have deprived the reviewers of useful insights and evidence.

Example 7.6

Summary tables (Tables 1 and 2) showing key evidence from a systematic review 'What are the barriers to recycling?' (Jesson and Stone, 2008)

Table 1 Articles included in the systematic review on current barriers to recycling domestic waste

Reference	*Aim of research*	*Focus and location*	*Method*	*Non-recyclers Numbers, reasons given*
Perrin, D. & Barton, J. (2001) *Resources, Conservation and Recycling,* 33: 61–74	To assess issues associated with transforming household attitudes and opinions into material recovery.	Comparison of two different kerbside schemes. Leeds Bradford	Comparative case study. Door-to-door delivery pre-intervention and follow-up postal self-completion survey. Total sample n = 763	Leeds n = 79 Bradford n = 14 **Barriers listed**
Tucker, P. & Spiers, D. (2003) *Journal of Environmental Planning and Management,* 46(2): 289–307	Attitudes and behaviour change in household waste management.	Home composting. Scotland	Longitudinal case study. Postal survey and deliver/collect. Two samples: those taking up a bin, those not taking a bin. Total sample n = 412/755 No response rate given	Non-composters not counted. Barriers based on the literature and this study. **Barriers listed**
McDonald, S. & Oates, C. (2003) *Resources, Conservation and Recycling,* 39: 369–385	To understand the non-recycler better.	Reasons for not opting-in to take a kerbside container. Sheffield	Case study. Postal survey non-participants only. Total sample n = 714/1690 Response rate 43%	Content analysis. Coded barriers into 12 categories. **Barriers listed**
Thomas, C., Yoxon, M., Slater, R. & Leaman, J. ISWA World Congress (2003)	To explore reasons why people recycle linked to a public communications and education campaign.	Kerbside provision. London Boroughs Western Riverside	Longitudinal case study. Part one. MORI face-to-face interview survey of n = 2023 and 13 focus groups.	Segments: medium, high, low and non-recyclers. **Barriers listed**
Williams, I.D. & Kelly, J. (2003) *Resources, Conservation and Recycling,* 38: 139–159	To identify reasons for non-participation in green waste collection.	Green waste opt-in or opt-out of a taking a container. Wyre, Lancashire	Case study. Two stages and two samples. Opt-in participants response rate 72.5% Opt-out response rate 49%	Non-participators n = 611 **Barriers listed**

Table 1 (Continued)

Reference	*Aim of research*	*Focus and location*	*Method*	*Non-recyclers Numbers, reasons given*
Robinson, G.M. & Read, A.D. (2005) *Resources, Conservation and Recycling*, 45: 70–83	To assess kerbside and bring site behaviour and promotional activity.	Measuring changes over time, 2000–2004 Royal Borough of Kensington and Chelsea	Longitudinal case study. One in four household sample, face-to-face interviews Samples: 2000: n = 8,066 2004: n = 3,367	Percentage non-recyclers drops from 51% to 27% **Barriers listed**
Smallbone, T. (2005) *Business Strategy and the Environment*, 14: 110–122	To measure consumer views on household waste and test assumptions underlying policy approach.	Recycling behaviour England, Scotland, Wales	Includes a NOP national telephone survey Sample n = 1000	Non-recyclers 21% **Barriers listed**

Table 2 Articles excluded from the systematic review and reasons

Reference	*Aim of research*	*Focus and location*	*Method*	*Reason for exclusion*
Davis, G. Phillips, P.S., Read, A.D. & Lida, Y. (2006) *Resources, Conservation and Recycling*, 46: 115–127	Understanding recycling participation using the Theory of Planned Behaviour.	Testing theory to create effective targeting material. West Oxfordshire	Survey hand delivered to 334 houses. Sampling: ACORN A, DEF, part of B. Response rate 22%	Excluded non-recyclers from analysis (n = 2). **Not about barriers**
Shaw, P.J., Lyas, J.K., Maynard, S.J. & van Vugt, M. (2007) *Journal of Environmental Management*, 83: 34–43	To assess kerbside schemes using a mathematical model based on SOR and PR.	To prioritise campaigning. London Borough of Havering	Street observation and Survey sample n = 4,085.	Literature review only
Oates, C.J. & McDonald, S. (2006) *Sociology*, 40(3): 417–433	To investigate recycling as domestic labour.	Gendered division of labour. Sheffield	Postal self-completion survey. Sample n = 469/1,532 Response rate 31%	**Not about barriers**

(Continued)

Table 2 (Continued)

Reference	*Aim of research*	*Focus and location*	*Method*	*Reason for exclusion*
Karousakis, K. & Birol, E. (2008) *Journal of Environmental Management* (internet version)	To examine the determinants of household recycling behaviour, measure willingness to pay.	London Boroughs of Kensington and Chelsea, Richmond upon Thames and Westminster	On street interviews Sample n = 188.	**Not about barriers**
Barr, S. (2007) *Environment and Behaviour*, 39(4): 435–473	To develop and test a conceptual framework.	Exeter	Self-completion survey. Contact and collect method. Sample n = 673/981 Response rate 69% Literature review and theory.	**Not about barriers**

There are a range of checklists that you can draw on to appraise the quality of non-clinical research. For example, we have provided the COREQ 32 checklist (Tong et al., 2007) in Appendix 2 (and see below). This checklist was written as formal reporting guidelines to help authors and journal reviewers improve the quality of work that is submitted to and published in medical journals, but the ideas are transferable to other disciplines.

Some researchers have found that the hierarchy of evidence model limits their choice and have devised a personalised quality hierarchy relevant to the topic or field. For example, in a meta-analysis of a study on stigma and mental health, quality was assessed along four dimensions: theory, publication bias, research design and sources of heterogeneity (Mak et al., 2007). Unlike the hierarchy of evidence which measures research design quality, Table 7.4 shows how to measure the quality of publication. Publication bias assesses external validity, or the extent to which the results can be generalised to the population.

Assessing quantitative studies

The previous section described the appraisal of study design using the hierarchy of evidence model and a customised four-dimensional quality appraisal model. The usual way to assess the quality of an individual study is to examine key features of the article or report. The following list is just some of the key dimensions that you could use as a starting point:

Table 7.4 Variables in assessing study quality, examining external validity

Dimension of quality assessment	*Components and operational definitions*	*Measure*
Type of review process	Has the paper undergone peer review?	• Peer reviewed • Not peer reviewed (grey)
Publication type	Where is the article published? This list may vary according to the protocol	• Academic journal • Professional journal • Book or book chapter • Doctoral dissertation
Publication date	When was the article published?	• Before 2000 • 2000 and later
Journal impact factor, for prestige, where 5 is highest	What is the current impact factor of the journal in which the paper is published?	• 0–1.0 • 1.1–2.0 • 2.1–3.0 • 3.1–4.0 • 4.1–5.0

Source: Adapted from Mak et al. (2007)

The introduction
Are the aim and objectives of the study clear?
Why was the study undertaken? (Known as the rationale)
Why now, in this context?
Is there a link to theory?

Method
What is the research design?
Is there detail about the sampling frame, how and why the sample was selected?

Data
What types of data are there?
How and where, and by whom was the data produced?
How trustworthy, reliable and valid is the data?

Analysis
How was the data analysed?
How rigorous and trustworthy is the analysis?

Results
Are the results a true representation of the data?
Do the results relate back to the research question?
Do the authors discuss the methodological limitations of their study?

Assessing qualitative studies

When it comes to assessing or appraising qualitative research there are several published guidelines to help you. Tong et al. (2007) undertook a systematic review of the many guidelines that have evolved to assess the quality of qualitative studies, covering in-depth interviews and focus group techniques, to produce The Consolidated Criteria for Reporting Qualitative Studies (COREQ). This is a 32-item checklist based on 76 items from 22 checklists which you might find useful (see Appendix 2). The comprehensive 32-item list can be adapted to suit your research field.

Assessing management or organisational studies

Systematic reviews have traditionally been applied in fields of research where positivist and quantitative approaches are dominant. Consequently, far less has been written about how to do a systematic review in some other fields of research, such as management. As mentioned earlier, Tranfield et al. (2003) explain that management research is a comparatively young field of inquiry, which is far less well developed than medical science. Nevertheless, there are a number of original reviews being undertaken by groups of researchers in several fields of inquiry that are being published in the *International Journal of Management Reviews*. There is not, as yet, a specific or appropriate published checklist to assess management research, so for your own review read the existing criteria list and then draw up your own criteria for assessing your specific field of study.

Data extraction

Now you have retrieved your articles, there will be two piles of papers in front of you (if you have printed them off), or two bibliography lists if you prefer that approach. One pile IN and one pile OUT. You have documented the process so far, and accounted and explained why the articles are in each pile. The next stage is to extract the relevant data from the articles in the IN pile.

Every researcher has his or her own favourite way of highlighting key aspects from articles; some insights were given in Chapters 5 and 6. One way to start, probably the old-fashioned way, is to highlight sections of the paper

with highlighter pens, and then enter the relevant information on to your data extraction form. This might be another dynamic phase where you revise the format of what you want to record. You may want to revisit the scoping and mapping phase, or revise your inclusion and exclusion criteria.

Example 7.5

The data extraction form from a systematic review 'What are the barriers to recycling' (Jesson and Stone, 2008)

The data extraction form has to reflect the question and planned assessment. It is another visual record of the decisions you have made. It will include the following details:

(a) Author and publication details (bibliographic details)
(b) Paradigm (academic discipline)
(c) Aim and focus of the paper
(d) Method details (sample selection, size, method design, response rate, location of the study)
(e) Theory or models
(f) Data about barriers to recycling (either as a literature review/summary or numbers of non-recyclers or a list of new reasons or barriers)
(g) Segmentation
(h) Other relevant or useful information

You will soon have several completed data extraction forms. You can then move on to the next phase and undertake your analysis and synthesis.

Synthesis, drawing conclusions, what the review shows

The analysis and synthesis is probably the most intellectually taxing phase of the systematic review process. Hart (1998: 110) defined synthesis as 'the act of making connections between the parts. It is not simply a matter of re-assembling them back into the original order but of finding a new order.' In the data extraction stage you unpacked each article. In the synthesis stage you have to put them all together again, but this time telling a new story or making new connections. That is your contribution to knowledge, or filling the knowledge gap.

There is no single agreed way of synthesising the evidence; it will depend on the type of review and subject matter. The aim is to collate and present the extracted data from primary studies so that the characteristics and results of the study are summarised in a meaningful way.

There are two components to synthesis: (1) the story, and (2) the table (the evidence). Descriptive or non-quantified studies involve narrative text and *tabulation* to present the study characteristics and results – in essence a short summary of findings. You will not need to tabulate all the data. Select the important points which help to answer your question, and structure them to highlight the similarities and differences between the included studies.

Tabulation allows the reader to scan down the columns and see where the similarities and differences are. The second component, where it may be possible in some studies to quantify synthesis by using statistics, is described in Chapter 8.

Evolving formats of systematic review

So far this chapter has described the process used to produce a systematic review. This process is 'protocol'-driven and follows a systematic methodology. We have also observed that this methodology was introduced to deal with biomedical and healthcare research studies. Business, organisational and social science researchers have been slower to adapt it for their requirements. Some researchers argue that systematic review is not appropriate for policy and management decisions, and you may have come to that conclusion for yourself by this point. For those who are still curious, carry on reading.

The controversial big question for reviewers has been 'Is it feasible to combine the findings of research studies that use different methods? The following section briefly introduces some of the more recent innovations and adaptations to the systematic methodology. These are more advanced, complex and specialised review methodologies, which may be useful for doctoral students.

Systematic reviews of qualitative and quantitative research

To date, there is no single agreed framework for synthesising both qualitative and quantitative data. A challenging contribution by Mays et al. (2005) explores this issue in one of several articles in the special edition on synthesising evidence in the *Journal of Health Services Research and Policy*, supplement to issue 3 (2005). Mays et al. (2005) proposed four basic approaches to synthesising both qualitative and quantitative types of data to inform policy making in the field of health. The four approaches are:

- Narrative, which includes traditional literature reviews, thematic analysis, narrative synthesis, realist synthesis and meta-narrative mapping.
- Qualitative, which converts all available evidence into a qualitative form using techniques such as meta-ethnography and qualitative cross-case analysis.

- Quantitative, which converts all evidence into a quantitative form using techniques such as quantitative case survey or content analysis.
- Bayesian meta-analysis and decision analysis.

In 2005, when the journal supplement was published, non-biomedical systematic reviews were in their early stages of development. Two examples of more recently published articles are presented in Example 7.7 to illustrate the methodological approaches.

Example 7.7

A meta-narrative mapping analysis (Collins and Hayes, 2010)

Met-analysis mapping is defined as the process of plotting how a particular research tradition has unfolded over time. It is an approach which combines the analytical dimensions of traditional narrative research with the comprehensiveness and rigour pursued in systematic literature reviews (Collins and Hages, 2010: 10). This is said to be a useful technique in the synthesis of vast and complex evidence bases to inform policy processes.

The aim of this review was to monitor thematic trends in the health inequalities knowledge base over time and to map local government intervention on local health inequalities. The reviewers searched for four bodies of knowledge: health promotion, Healthy Cities, population health and urban health, covering a 20 year timeframe 1986–2006, using only abstracts (therefore text as written, qualitative data). The timeframe represents the evolution of health determinants research. 1004 abstracts were reviewed. The lens applied was Canadian. Three electronic databases were searched. The result is a bibliographic report, which describes the detail of each article, showing the quantitative changes over the timeframe and the qualitative change in emphasis of topics and prescriptions for government intervention.

There are some points to note about this review and to show how you can use articles to generate research questions. First, it is based entirely on abstracts. Hopefully you will now be aware of some of the limitations associated with abstracts, so apply your critical lens to the paper. Second, note that the search ended in 2006 and the article was published in 2010, reflecting the time to carry out the search, review and synthesis, and then add on more time to write up the article and finally get it published. So, third, it would be perfectly possible to take this review as a starting point for a new review and see what has been published on the topic since that 2006 cut-off date. Or it could be possible to widen the databases search, maybe applying a European lens or possibly including grey literature.

Further specialist advice on thematic analysis is freely available online at the ESRC National Centre for Research Methods.

Grey literature in systematic reviews

One of the obstacles that policy researchers have identified with the systematic review methodology is that adopting a method used successfully in the clinical biomedical sciences is not automatically applicable in other fields of knowledge. A key issue is that in social sciences and policy research much of the useful knowledge is contained in non-academic, non-peer-reviewed journals, in so-called grey literature (Curran et al., 2007; Collins and Hayes, 2010).

The reason this is a problem is that grey literature is at the bottom of the academically acceptable resources table (Table 7.3) and does not register at all in the hierarchy of research study design (Table 7.4). Another limitation is in actually identifying this type of resource because academic electronic databases do not pick them up. This is where a working knowledge of the topic is essential, or maybe your information specialist in the library can help. If you do not access grey literature you are excluding that valuable information from service users, charitable organisations, think tanks, and so on. This is essentially an argument about what counts as knowledge in your field. The final obstacle is how to analyse, synthesise and incorporate the material you are allowed to use.

Umbrella reviews

Systematic reviews have been completed on many subjects and we are approaching the stage when it is possible to analyse the systematic reviews themselves as a body of knowledge. These are known as umbrella reviews. An umbrella review is a way of identifying and appraising and synthesising existing systematic review evidence. As such they are able to present the overarching findings of existing systematic reviews (see Example 7.8).

Example 7.8

Tackling the wider social determinants of health and health inequalities: evidence from systematic reviews (Bambra et al., 2009)

A systematic review methodology was used to locate and evaluate published and unpublished [therefore grey literature] systematic reviews of interventions around the 'wider social determinants of health' (Bambra et al., 2009). The authors set the context of an increasing policy emphasis on tackling the 'wider social determinants of health' through the implementation of appropriate interventions. So the aim of the review (or to put it another way, the research question) was to identify what is already known and to highlight areas for further development. The review identified 30 relevant systematic reviews and concluded that the effects of interventions on health inequalities were unclear.

So, what might the limitations be of a review of reviews? Without reading each review, and then reading each article or report within each review, the reader is relying on the skills, knowledge and expertise of Bambra and colleagues to be reliable interpreters of qualitative, quantitative and grey literature. So is the review still as reliable as a protocol-driven methodology would suggest it should be?

Summary

This chapter has given guidance on how to undertake a systematic literature review using a defined protocol, where the data is fairly homogeneous. We concluded by considering whether it is feasible to undertake a systematic review with data that are not homogeneous or with grey material that may not be acceptable to your academic institution. The answer is left open because this is an ongoing debate. Finally, some observations about objectivity and bias are necessary. It would be irresponsible to pretend that this methodology is entirely free from bias. As researchers, we make judgements at every stage of the review process. Occasionally, some bias may be unconsciously made as a result of the ideological lens through which we read each article. Then we need to make a decision on its quality and relevance.

Remember, systematic review is a question-driven methodology. If you do not have a specific question, you should probably be doing a traditional review. If you are reviewing research with quantitative data, then meta-analysis could be the way to synthesise the data, and that is the subject of Chapter 8.