CHAPTER 3: SYSTEMATIC REVIEWS FOR POLICY
David Gough and Janice Tripney

Research to inform policy

Social science is concerned with the study of society and the individuals within it. Policy is the articulation of aims and principles for action, and is used particularly for organisations with remits to undertake action, such as local and central governments. As policies are often concerned with societal and individual issues then social science may provide insights and research results to inform such policies. This chapter is concerned with systematic methods for bringing together in a rigorous and transparent way (systematic reviews) the findings of that research to inform policy and practice decision making.

Over the last twenty years there has been an increasing concern, both in the UK and internationally, to ensure that research evidence is used to improve the design and outcomes of public services. This has led to the rapid growth of systematic reviews in many areas of public policy. The systematic identification, mapping and synthesis of research not only tells us what we know from existing research but also focuses our minds on what we do not know and what more we might want to know from research. Systematic reviews of research are therefore a crucial component of the knowledge-to-action cycle (Best & Holmes 2010; Graham et al (2006).

The core of this chapter introduces the common principles and over-arching approach of systematic reviews, including what they involve in practice. The purpose is to briefly outline the methods rather than provided detailed explanations of procedures, which are elaborated elsewhere (e.g. Gough et al 2016). In the final section, consideration is given to the multiple overlapping and inter-related roles of social science in understanding and enabling the use of research evidence in decision-making, roles in which systematic reviews are central.

The need for systematic reviews

Research is an industry providing careers for many research staff. It is challenging for researchers to keep abreast of all the research in an area, and thus even more difficult for others who are less likely to have the skills, experience or background knowledge to access, appraise and contextualize research evidence. So, how do policy makers and other non-academic users of research access research knowledge? One approach is simply using research that the policy maker happens to know about. Academic researchers are increasingly expected to market and achieve impact from their research and so their findings may be reported in the media or be presented directly to policy makers or their staff. In addition, there may be many other incidental ways that people may become aware of particular research studies. The problem of course is that such routes of access to research may not result in the most relevant or most reliable studies being known. More fundamentally, any individual or group of studies may not represent all the relevant studies that could be considered. Publication and other forms of selection bias may occur from particular types of studies being more likely to be known and referred to than others and these may not necessarily be the best or most representative studies. There may be features of the studies that make them more or less likely to be known such as being associated with particular fashions or individuals or vested interests that misrepresent the totality of research that exists on any given topic.

One solution to this problem is the use of experts who know about a research field and can provide policy makers with access to that knowledge. There are many advantages of this model in using existing expertise to provide a timely efficient overview of all relevant studies. There are however dangers. First, one needs to be clear that the area of expertise is appropriate. This might seem a simple issue of ensuring that the topic specialism is correct, but there are, for example, cases of practice and research skills being confused; for instance where a professor of clinical practice is asked about research data as an expert witness in court. Second, even if the topic specialism is appropriate the breadth and depth of expertise may be unknown. The expert may know some things in more depth than others and this may bias their account of the literature. Third, and related to this, the expert may have good skills in conducting and appraising research but they may not be so skilled in bringing together and synthesizing that knowledge in the way requested by the potential user of that research. Fourth, the expert may have some hidden biases based on particular theories or their own research work and hypotheses that they are studying. In sum, the expert may be able to provide a very quick and efficient and very accurate portrayal of the research literature; the difficulty is in ascertaining whether this is the case.

Another solution to enabling policy-makers access to research evidence is the literature review providing a summary of the research studies undertaken to date. In many ways this is similar to expert accounts of the literature, except that it is written and therefore potentially a more public account of the literature. The potential weaknesses of a literature review are also similar to expert accounts in the potential for hidden biases. There is, however, a way to minimize this weakness by providing an account of how the review was undertaken. This is essentially what a systematic review is, a literature review with an explicit, accountable methodology (Gough et al 2016).

Nature of systematic reviews
Research uses rigorous methods so that the results of such research are trustworthy. These methods also need to be explicit and transparent so that the methods are open to question and thus accountable. Systematic reviews are pieces of research. They are literature reviews with explicit and rigorous methods in order to examine what is known from already existing studies. Primary research is applying research methods directly to the society we live in. Systematic reviews are similar, but instead of applying these methods to study phenomena directly, they are applying them to the findings of primary research. Systematic reviews are thus more of a level of analysis, the analysis of secondary data, than a totally different methodology of research.

Research is question led; a question is being posed and the methods of research aim to explore and answer that question. Some literature reviews are very broad, and ask questions about what is known about a topic rather than addressing a specific research question. Systematic reviews, informed more by the thinking of primary research, tend to be question driven rather than only topic driven. In one topic area, therefore, you may find many different systematic reviews with different questions, different data being considered and therefore also different answers. Across all technical, medical and social sciences there are a vast array of disciplines, topics and questions. All of the research questions that can be addressed at the primary level can also be addressed at the review level.

Systematic reviews and primary research on the same question are likely to be very similar in two main ways. First, and rather obviously, reviews answering a particular question are likely

to include the studies that are addressing that question in primary research. Second, the methodology of that review is likely to share the research paradigm and approach of those primary studies. If, on the one hand, you are undertaking a primary qualitative study exploring and developing ways of understanding a particular phenomenon, then a review of such studies is likely also to be exploratory and conceptual. On the other hand, if you are undertaking an experimental controlled quantitative evaluation of a policy initiative, then a review of such studies is likely be informed by the thinking of such experimental controlled evaluations.

The distinction between what is often called qualitative and quantitative research is an important one in research as it effects so much of the thinking and practical approaches used by these two main research paradigms. The terms qualitative and quantitative are however rather vague beyond the fact as whether the studies do or do not use numbers. Many qualitative studies make quantitative statements and vice versa. We prefer to use the terms 'configuration' and 'aggregation' which refer to the extent that the analysis stage of a study is concerned with arranging (configuring) and rearranging data into patterns to develop conceptual understandings or that it is concerned with adding up (aggregating) data within such conceptual understandings (Sandelowski et al 2012).

A qualitative primary study and a review asking similar research questions (and thus including such studies) are likely to be predominantly configuring in approach. They are likely to take an iterative exploratory approach with the detailed methods developing as the study proceeds and more interest in exceptional cases than aiming to be representative of sample or a situation. There may however be some aspects of aggregation with, for example, statements of degrees or extent that things happen in different circumstance. One form of qualitative configuring research is ethnography. One form of systematic review of such studies is meta-ethnography. Ethnography studies small samples in detail and develops concepts to understand the processes being examined. Meta-ethnography is a form of review which examines and configures the concepts in those primary studies to develop overarching (meta) explanatory concepts that cover the insights of the individual primary studies (Noblitt & Hare 1988).

Quantitative primary studies and reviews asking similar research questions (and thus including such studies) are, in contrast, likely to be predominantly aggregative in approach. They are likely to take an a priori approach to specifying their method and be anxious of iteration or any aspect of the research method that might lead to any bias. Instead of developing theory, the approach is collecting data within a particular theory to describe the world or to test or make predictions about empirical outcome. Experimental controlled trials are one form of aggregative quantitative study testing the hypothesis that a certain intervention has a particular outcome, often that the intervention has the desired outcome and 'works'. Statistical analysis is used to test the extent of any experimental effect of the intervention. A review asking the same question brings together the statistics of the individual studies into a statistical meta-analysis. All of the studies together have a greater sample size and thus much more power than an individual study. Although the approach is predominantly a priori and aggregative, there may be configuring iterative aspects. One example is a post hoc regression analysis of how some of the independent and dependent variables relate together. This is an iterative exploratory hypothesis generating process rather than the main aggregative a priori hypothesis testing.

Practice of systematic reviews
The logic of systematic reviews is quite straightforward. They involve the use of explicit, rigorous research methods to bring together what is already known to answer different research

questions. They are a level of analysis (secondary rather than primary research) and they answer the research questions by interrogating existing research studies. This all sounds rather abstract without some discussion of what such reviews involve in practice.

Although there are many types of research question on different topics and involving many different research paradigms and research methods, there are some basic stages of the review process common to many reviews. These are outlined next and then briefly discussed in turn.

(i)   Developing the initial question
(ii)   Clarifying which studies are relevant
(iii)   Identifying studies
(iv)   Checking that studies found meet the selection criteria
(v)   Mapping
(vi)   Further coding of studies for synthesis
(vii)   Quality and relevance appraisal
(viii) Synthesis
(ix)   Communication
(x)   Recommendations and guidance

Developing the initial question
All research is driven by a question that people want answered. Even within the same topic area, different people will be interested in different issues and will have different perspectives about the priority issues and the ideological and theoretical assumptions that frame the question. This is not an issue of questions being correct or wrong or good or bad. It is an issue of purpose and methods to achieve those purposes. It should not be surprising that an academic coming from a particular research tradition would have different priorities and ways of understanding an issue to a policy maker or a professional practitioner or a user of service. The development of concern for public engagement in research (Oliver et al 2015) or more public processes for identifying research priorities in health research (see, for example, the work of the James Lind Alliance at http://www.jla.nihr.ac.uk/) arises from both a realisation of these differences in perspectives and the waste that can occur without prioritisation of research (Chalmers et al 2014).

There are three important implications of this for systematic reviews (and also for primary research too). First, the perspectives and the assumptions underlying a research question determine the way that the research is conceptualized and undertaken and the resultant findings and conclusions. Second, in order to operationalize the research question in a way that enables the research to be coherent, consistent and transparent we need to be very careful about making these assumptions explicit. The execution of all stages of the research and the findings achieved will depend upon how the initial research question is framed. Third, we should expect research questions that seem similar but differing in perspective to result in different research findings and conclusions. Fourth, debates about research findings are often a complex integration of perspectives and research results created and framed by those perspectives. These debates may be about disagreements about the perspectives and or about the coherence of the process by which results were produced and interpreted within these perspectives.

All of this means that the development of the research question in a systematic review is crucial. It will determine all stages of the review. Several weeks may therefore need to be taken to unpack the purposes of the review and the assumptions underlying the review question. Practical processes to enable this can include developing the review question with various

stakeholders such as those that the review hopes to serve: in other words, the users of the review. It might also involve checking the question with those coming from different academic or broader societal perspectives. A review may not be useful for everyone, but engaging with the views of others may help surface hidden ideological and theoretical assumptions underlying a research question.

Other more detailed practical approaches involve defining every concept in a research question. A question on, for example, the effects of homework on children would need to be clear what was meant by homework and children. For some research questions there are standardized lists of questions to ask of research questions. If, for example, the research is on the effects of an intervention on people then the research question may need to specify the population (P), experimental intervention (I), control group intervention (C), and outcomes measured (O) that is summarized as PICO. There are a range of such acronyms to assist research question development.

Clarifying which studies are relevant

The review question leads to a consideration of the types of primary research studies that would help answer that question. Clear specification of the criteria for which studies to include in the review assists the practice of finding such studies, the reporting of the review, and avoids misunderstanding about what the review was really about. In aggregative reviews taking an a priori stance, specification and consistence application of the inclusion and exclusion criteria help reduce bias in what studies are included in the review. These criteria are similar to the specification of a sample in a primary study. In primary research, the sample may be made of human participants. In a review, the sample may be made up of such primary studies.

Common inclusion criteria in a review relate to the topic being considered and the methods used to study the phenomena in the primary research. If the review question is about prevalence then primary prevalence studies are likely to be specified. If the review question is on the impact of an intervention, then experimental intervention studies are likely to be specified. Another common inclusion criterion is year of publication with restrictions on how far back in time the review will go. Sometimes such date limits can be justified due to changes in historical contexts, but they are often also used as a pragmatic way to limit studies being considered by a review (which is not a good basis for such a decision).

Identifying studies

Once there is clarify about the studies to be included in a review, then such studies need to be found. In an a priori type review then the aim will be to identify all relevant studies. If only a sub set of studies meeting the inclusion criteria are found then these may be a particular type of study with particular type of findings and so may misrepresent the total population of such studies. In more iterative reviews, for example, to synthesise the different ways a social issue has been conceptualized, then the search for studies may be more exploratory and the aim may be to identify at least one example of each type of study (saturation) rather than to find multiple examples of very similar studies.

The nature of the strategy for identifying studies will depend upon the review question and where relevant studies are most likely to be found. In some areas of research, government or other websites may be most fruitful. In other areas of research, the studies may be found mostly in books. In many reviews, there is great reliance on bibliographic databases of published journal papers. This may be very appropriate for some systematic reviews but there still needs to be thought given as to which databases and how to operationalize the search in practice

(Schucan Bird & Tripney 2011). In all cases, the need is for a search strategy which can be reported and justified in terms of the needs of the specific review question. It is not a simple technical process of a quick search of a few databases; it is a thought through strategy.

Many reviews rely on bibliographic databases for identifying studies. This can be very efficient in that the technology helps to find studies meeting the inclusion criteria. It can also be inefficient in that it is often very imprecise and many non-relevant studies are identified in the search. The studies may have been coded by the bibliographic databases but this will be in broad categories. The databases can also be searched using free text searching for words specified by the searcher) but the papers may not be very clear in their use of language and in specifying their topic and methods (particularly in their titles and abstracts). In addition, to avoid bias from missing studies, the search is over inclusive. The result is that many thousands of mostly not relevant studies may be identified in the search.

Checking that studies found meet the selection criteria
Once potential studies have been identified, they need to be checked (screened) to ensure that they really do meet the inclusion criteria. This can be a very time consuming exercise if a large number of studies have been identified through the search strategy. As many of the identified studies may be totally irrelevant, it is common for there to be a two-stage screening process with the first stage just examining the titles and abstracts of identified studies and excluding those that are clearly not relevant. In the second stage, the full text of the studies is sought in order to have a more detailed examination of these remaining 'potential include' studies.

As the study identification and screening process can be so inefficient, attempts are being made to use text mining to automate aspects of this process. If humans screen some of the studies, software can learn from these judgements and apply them to the rest of the list of identified studies. There are of course anxieties of the accuracy of the text mining in making these judgements but studies of this process is finding that the machines can be more accurate than humans, particularly when topic specification is built into the process (O'Mara-Eves et al 2015). The use of technology in these processes is also part of broader developments that integrate bibliographic information about research with the research production and use processes.

Mapping
The studies identified as relevant in the screening process are the studies included in the review. Some information will be required on these studies such as authors and titles simply to manage them through the review process. However it is also possible to record much more descriptive information and to use this to create a 'map' of the literature specified by the research question. The variables on which this research literature is described will depend upon the interests of the reviewers, funders and other stakeholders. It might include country of study, sub-topic, conceptualization of issues, and research methods of the primary studies. Research maps do not typically include research results as these will not have been checked for quality and relevance (see later).

The map can be useful in many ways. First it describes the research field. It is important to note that the nature of this 'field' will be determined by the review question and the resultant inclusion criteria. It may therefore cut across and not fit with traditional academic boundaries of research fields, particularly if non-academic views were involved in the question formulation. Maps may be useful is in clarifying what has been studied and how it has been studied.

Second, maps have the potential to identify gaps in what has been studied. It may, for example, be that there are many new developments in policy and practice and (due to the vagaries of the research production process) only specific subsets of this real world activity has been studied and so the research may provide an incomplete account of important issues. As maps can be so useful, they are sometimes undertaken as reviews on their own and do not proceed to synthesis.

Third, for reviews that do proceed to synthesis, the next stage is clarification of that synthesis. This may have all been specified at the start of the review, but the mapping stage allows this to be reconsidered. It may, for example, be decided to only undertake a synthesis on part not all of the map. In effect this is a narrowing of the review at the synthesis stage; a broad map with a narrower synthesis. Such narrowing can be useful when, for example, the map results suggest that a synthesis on the whole question is not useful or problematic in some way. Maybe, for example, the studies are too heterogeneous for the synthesis to be meaningful or achievable. Also, if the plan is to undertake a series of synthesis reviews on a particular topic then it may be more efficient and helpful to undertake one broad map and then undertake the series of syntheses as sub-questions from that map.

A fourth benefit of a map is that when the synthesis question is narrowed, the broader description of the field provided by the map provides the context for understanding and interpreting that synthesis. This broader perspective provided by the map may be concerned with the topic of study, but it may also be to do with the methods used in the primary research. In evaluations of the effectiveness of interventions there may be a very broad range of studies that might be relevant broad map in which to understand the research field, yet a much narrower group of studies with the power to make clear conclusions about effectiveness. However, only studying the narrow technically powerful studies may misrepresent the research field and its potential to provide other sorts of insights and information about the interventions under study. Another way of looking at this is that being aware that review questions can be narrowed down when moving from the map to synthesis means that you can start with a broader (and thus potentially more relevant) review question, knowing that the map stage allows a narrowing down to a more manageable synthesis question.

Further coding of studies for synthesis
There are three main reasons to code information about studies in a systematic review. First, there is the mapping process already described. Second, information is obtained about the quality and relevance of the studies for inclusion in the synthesis. Third, information is also collected about the results of the studies as this is required for the synthesis. A strategy is needed as to what information is needed (needs to be coded) for all of these three different purposes.

In terms of the practicalities of undertaking a review, it may be more efficient in some cases to code information for all three coding purposes at one point in time. This is less likely to be efficient if only a small proportion of studies in the map proceed to the synthesis stage and if the review is very iterative when the nature of information required later in the review may not be known until that stage is reached.

Quality and relevance appraisal
In order for the results of research studies to be included in the synthesis, there needs to be consideration of the quality and relevance of these studies. There are many different scales and systems for making such critical appraisals and these consider all or some of three conceptual

components (Gough 2007). The first is that the studies were well executed within the expectations of the research methods employed. The second is the extent that that research methods is relevant to the review question being asked. In some cases, the research approach in the primary study may not be ideal, but if the study was well executed then there may be more reliance on its findings than a more appropriate method poorly executed. The third dimension, is the relevance of the study to the review question. The inclusion criteria have the role of only allowing into the review relevant studies, but even studies meeting the criteria may be judged at this later stage as being less relevant than other included studies. Reasons might be such things as the context in which the study was undertaken, the way in which any interventions or outcomes were operationalized, or issues such as the ethics of the studies.

The first component about execution of method is a generic appraisal issue; it would apply whatever review was being undertaken. The other two components are 'review specific' as they depend on the review question being asked. A poor score on these two components is thus not necessarily a criticism of the study being considered. Taking the three components together provides an overall view of the quality and relevance of the study to the review question and the weight that should be given to an individual study's results in the synthesis. In practice, this is often a decision to include or exclude the study, though in iterative reviews using qualitative data, the critical appraisal may just be used as a way to describe the studies and to inform the reader as to the nature of each study.

The many scales for critical appraisal do not often explicitly distinguish the three components described here. This is often because they scales are developed for specific research questions and methods and so focus on the first component of quality of execution of that method. In the quality appraisal in 'what works' reviews, the main research method is randomized controlled trials and so the quality appraisal checklists assess the extent that such a method has been applied and the measures taken to avoid any selection bias influencing the study results.

Although the quality and relevance appraisal of studies included in a review is an issue prior to synthesis, it is something that occurs throughout a review, from specifying inclusion criteria through to the process of synthesis. In addition, the overarching quality and relevance question is at the review level in terms of whether the review itself is of the appropriate quality and relevance (in terms of how it was undertaken, the quality and relevance of included studies, the nature and extent of the evidence identified and the resultant 'work done' by a review in addressing a research question). The appraisal of individual studies within the review is just part of this wider process (see Liabo et al 2016 for a more detailed discussion).

Synthesis
Synthesis is the process of bringing together the results of the included primary studies to answer the review question. The approach to synthesis will depend upon the nature of the question and is likely to mirror the approach taken to answer the review question at the primary level of research. The two extreme examples of synthesis have already been referred to. At one end of the continuum are hypothesis testing questions such as 'what works' that are commonly addressed using a priori bias avoiding research strategies. The primary studies in such reviews provide quantitative measures of the 'effect size' of the impact of an intervention. The reviews bring together these combine these individual effect sizes (adjusting for study sample size) to provide an overall effect size. At the other end of the spectrum are more exploratory concept developing questions that are commonly addressed by reviews that produce a synthesis of existing conceptual studies. A well-known example is meta-ethnography which interprets the

concepts in individual ethnographies (or similar qualitative studies) to produce new over-arching meta-conceptual distinctions.

Communication

As with all research, reporting is an important stage of the research. As previously mentioned, this involves explicit accountable reporting of the methods used as a requirement of research accountability. Other aspects of communication, though, depend on the audience for the work. The requirements for academic publication are different from communication to policy makers and practitioner to inform policy and practice decisions. These users of research are likely to require much shorter less technical accounts of the research without academic jargon and forms of communication though full details of the review may be important in some cases to enable interpretation and implementation of findings. Non-academic users will also need the potential of access to full technical reports for reasons of accountability though some of this is probably achieved indirectly through the branding as a systematic review and the credibility of the author or other indications of the source of the review. Some reviewers grouped together by common methods (as in realist synthesis) or topic interest as in the Cochrane and Campbell Collaborations have developed branding and standards for different types of reviews. Although this concern for quality is an important step, it is also to keep aware of the dimensions of differences of reviews which are more fundamental than current groupings of review types.

Another way of making review level evidence available is to provide web based toolkits that provides user friendly ratings of research evidence on different issues with the ability to link through to the detailed reviews underpinning these overviews. One example is the Education Endowment Foundation's Teaching and Learning Toolkit (https://educationendowmentfoundation.org.uk/evidence/teaching-learning-toolkit/) which provides summary evidence from systematic reviews of the effectiveness (and strength of such evidence) of different educational interventions, Another example is the Crime Reduction Toolkit provided by the What Works Centre for Crime Reduction (http://whatworks.college.police.uk/toolkit/Pages/Toolkit.aspx). This also provides information on the mechanisms underlying different interventions which is very helpful for policy users in considering how the results of generalized research findings may be applied to their own contexts.

Recommendations and guidance

Research results may suggest courses of action but do not in themselves specify action (Davies et al 2008). In addition to communication and other forms of engagement with research, the research needs to be interpreted before it can be applied. Just as there are formal processes for conducting research (including systematic reviews), there are also now formal processes for moving from research to recommendations from that research. One such approach in health - GRADE (http://gradeworkinggroup.org/index.htm) - combines an evaluation of the strength and trustworthiness of research on the efficacy of health interventions with the acceptability of the interventions to users of health services. A particular health treatment may, for example, be very effective yet cause great discomfort or other unhappiness for the patient, potentially limiting the interventions use.

Another formal system is used for health resource allocation and health and social care service guidance by the National Institute for Health and Care Excellence. This includes the involvement of interested stakeholders, such as service providers and users of such services, in defining practice issues that can be informed by systematic reviews of research evidence that

are then interpreted by such stakeholders to determine guidance and standards for English health and care services.

Dimensions of difference and developments in systematic reviews
The discussion so far has emphasized that review questions and reviews vary but the focus has been on the variations in the research paradigm (of a priori deductive aggregative and iterative inductive configuring approaches). Reviews, like primary research, can also vary extensively in terms of other dimensions, including type of question, breadth of question, depth of analysis and the resultant 'work done' by the review (Gough et al 2012, 2016).

How much work should be done by a review? Many people advocate rapid reviews on the grounds they are cheaper and quicker and therefore probably more timely than more substantial reviews. This is the same as in primary research where there will be different types of questions and different time and other resource constraints that lead researchers to undertake studies of different sizes and scope. There is always a balance between the different pressures. The main issue is to be aware is that it is a balance. Rapid reviews may be fit for purpose in a range of circumstances but the 'work done' by them will be less either in scope or in thoroughness than in larger reviews.

Reviews do not have to be at one or other end of these dimensions of difference of approach, question, method, or work done (Gough et al 2012, 2016); they can vary in degrees along these continua. Thematic synthesis, for example, is similar to meta-ethnography in taking an iterative approach to examining thematic components within a primary research studies but with less sociological theory involved in the process of synthesis (Thomas & Harden 2008). Framework synthesis is similar to thematic synthesis but uses some a priori structures to guide the coding of data from the primary studies and thus also the synthesis of those results (Oliver et al 2008). Framework synthesis is thus slightly more a priori and slightly less iterative in approach compared to thematic synthesis.

The mixing of dimensions of difference in reviews can be further developed with mixed methods reviews through mixing several review components in one review. One approach to mixed methods and components reviews is asking a broad question and then employing two sub-reviews to examine two aspects of the question. A common approach is to ask a sub-question and sub-review on the impact of some social intervention, as well as a sub-question and sub-review on people's views or understanding of issues related to the intervention. The combination of these aggregative theory testing and configuring theory development sub-reviews allows for a much richer and broader analysis than is available from one sub-review alone (Harden & Thomas 2010).

Even where there are not specific sub-reviews, reviews of the impact of interventions are becoming more complex through greater specification of theories of change being tested in the review. In the past, many reviews took a 'black box' approach that tested the hypothesis that some intervention has a positive impact with little attention to the reasons why this might or might not be the case. The simple 'black box' question is appropriate in some circumstances where the answer of efficacy (or of negative impact) is crucial but for many social policy interventions it is important to learn more about causal processes for at least two important reasons. First, without any understanding of cause then increasing the efficacy of an intervention is going to be trial and error. Second, in order to apply the intervention in different circumstance and contexts then an understanding of causal process can inform how such adaptions can be made. Increasingly systematic reviews of impact evaluations are testing more

complex logic models and are searching for the active ingredients of interventions using process data and techniques such as qualitative comparative analysis (Thomas et al 2014, 2016).

The concern for theory-informed evaluation is widespread but has been particularly championed by realist evaluation and synthesis (Pawson 2006). Realist approaches, however, have particular mixes of configuring and aggregative strategies. In realist synthesis, middle level theories are tested often across a number of different policy domains. The first stage of the review is a configurative synthesis that unpacks the theory under review into its assumptions of causal process and necessary conditions. This is followed by the empirical testing of each of these processes and conditions. Realist reviews tend to be richer than other reviews in the theory clarification process but the more unique feature is that the empirical testing stage is iterative and investigative rather than the more a priori approach in many other theory driven evaluation systematic reviews (Gough 2013).

Another important issue in impact evaluation reviews is the current emphasis on randomized controlled trials. These are valued highly because of the way that they control the effect of other potential intervening variables. Observational studies are seen as more open to bias due to the lack of control of variables. An example, would be that differences in employment outcomes after the initiation of a new social policy might be different to the policy or to other changes that confound the interpretation of the non-controlled outcome data. More recently a broader range of evidence has begun to be included in effectiveness reviews. There is considerable potential from the inclusion of data from very large cohort or other longitudinal data sets to both provide context and to also indicate causal effects where there is the possibility of internal controls over many variables. Similarly, routinely collected administrative data means that you can carry out simple randomized controlled trials by making adjustments in policy to some clients and then waiting until the routine data is available. In this way there is a greater linkage being achieved between experimental studies and observational data.

Another development is the concept of living reviews where a review is never finished but it updated when new research data meeting the inclusion criteria is produced. This is more than a more frequent and regular update of a review as it subtly changes the way that we think about reviews. Traditionally the main concern has been on primary research and reviews helps us to bring their findings together. With the increasing awareness of reviews and the development of living reviews, then the balance is shifting so that the starting point is evidence maps and gaps and synthesis findings and what more we need to know form future research. Living reviews make this even more explicit. If you are planning a study on an impact evaluation on a question covered by a living review then issues such as the statistical power required by the review will not be limited to study specific issues (such as the necessary effect to show a difference with the selected outcome measures) (Elliott et al 2014). The concern instead becomes the statistical power necessary in order to make a difference to the conclusions of the systematic reviews. So although reviews are primary research, the emphasis should first be on secondary research. First what do we know from secondary research, and then what more primary research to we need to further this knowledge.

Systematic reviews and the social science of research production and use
The chapter so far has considered the mapping and synthesis of research as a logical step in the research production process that enables the direct, rational use of research to inform decision making. Although this might be seen by some as an ideal form of production leading to use, the situation is rather more complex in the way that research production and use are linked

together. While systematic reviews are often designed with instrumental notions of research use in mind, they also have the potential for a broader enlightenment function, wherein they change the ways that problems are conceptualised and understood which feeds back to influence future research (Weiss 1979). Research production and research use are in dynamic interplay with each other and are increasingly characterised using a systems approach, rather than as a one-way linear or even two-way interaction (Best & Holmes 2010). Social science has a number of different roles in that process. In this final section we therefore consider the issue of how systematic reviews can be located within a wider picture of the multiple overlapping and inter-related ways in which social science enables the use of research evidence in policy and practice. Together, these roles encompass the theory and practice of policy making, the nature and foundations of research, and relations between the two. Below we consider four of these roles which we briefly discuss in turn and provide examples of relevant systematic reviews in Table 1.

A key role for social science, and the focus of this chapter so far, is the development of the social science knowledge base. Social science is a broad area of inquiry covering a variety of topic and disciplinary approaches, each with many different, often competing, ways of understanding the world. Even within a particular topic or discipline, social science may be attempting to answer many different types of question and may use many different methods of research. Studies may, for example, be theoretical, descriptive, diagnostic or evaluative. They may provide conceptual understandings of social issues which can then inform what sorts of policies would be appropriate. They may also provide data on both the extent and causes of a phenomenon that a social policy is being developed to respond to. Research may also provide information on the effects of existing social policies or the likely effect of any new policy intervention. As such, social science provides an evidence base for informing policy in all stages of the policy cycle: in defining issues and shaping agendas; in identifying options; in making choices of action; in delivering them; and then monitoring and evaluating their impact (Pollard & Court 2005).

Different types of systematic reviews can inform each of these different parts of the policy process (Lavis 2009). At the agenda setting stage, for example, reviews can enable policy actors to be aware of the nature and importance of an issue. Reviews of qualitative studies can help to identify alternative framings of the problem, whereas reviews of prevalence and other observational studies can help to establish the magnitude of the problem or the factors that contribute to it. At the policy formulation stage, when decision-makers are involved in determining the policy options and then selecting the preferred option, reviews of impact evaluations can help to characterise the benefits and harms of each option being considered. At the implementation stage, reviews of observational studies could be used to identify potential barriers to implementing a preferred option.

Policymakers and other stakeholders can find increasing numbers of all of these types of reviews. However, as the vast majority of research investment is in primary research, the knowledge base contribution of systematic reviews is still relatively small, with the exception of some very specific areas, such as clinical medicine. Also, although the number of reviews are growing there is still poor coordination between those undertaking reviews on similar issues and a lack of clarity about where reviews can be found beyond a few well known databases and review collaboration websites.

A second role for social science relates to the technical and methodological aspects of studying social issues. Social science has developed a whole range of approaches to studying these issues

at the primary research and is now (belatedly) doing the same in systematic reviews of that research. Systematic reviews are a relatively new level and form of analysis and technical development in the methods are developing quickly. As methodologies for systematic reviewing have matured, so there has grown increasing consensus over what makes a good systematic review (Gough et al 2016), though, just as in primary research, methods of review vary considerably depending upon the type of research questions being asked. Detailed guidance on the process of preparing and maintaining different systematic reviews is increasingly available, as in, for example, the handbook on undertaking Cochrane systematic reviews on the effects of healthcare interventions (Higgins & Green 2011). Guidance is also available for reporting systematic reviews. The PRISMA statement which provides reporting standards for impact reviews that focus largely on randomised controlled trials (Moher et al 2009) has recently been extended to studies with a focus on health inequity (Welch et al 2012). Readers of such reviews can be guided by the AMSTAR systematic review appraisal tool to assess their methodological quality (Shea et al 2007). Publication standards have also been developed for meta-narrative reviews and realist reviews (Wong et al 2014). Despite these developments, systematic reviews still have many methodological challenges to overcome. In addition, there are many technical, theoretical and value related issues relevant to the production of recommendations and guidance that are derived from reviews of research and other forms of evidence. A core issue is the extent that the social science methods of systematic reviews are enabling 'work to be done' in progressing our social science content knowledge.

Third, social science helps develop and support evidence-informed policy and practice by building understanding about the demand side of the equation, through systematic study of the policy-making process. Policy studies and political science are well established areas of social science, and since the 1950s have developed many theories to explain the various factors, including ideas, knowledge, interests, power and institutions, which influence the decision-making process. Systematic review authors have taken an interest in this, examining the policy literature to investigate how widespread the use of policy theories from the field of political science is to analyse the process (Gilson & Raphaely 2008). Political scientists and others are also increasingly influenced by the idea that research impact cannot be separable from the policy process as a whole. Often building on the pioneering work of Lasswell (1951) and Merton (1949), recent work emphasises the significance of different conceptions of policy making, including the stages model and the advocacy coalition framework, for our understanding of the relationship between research and policy/practice (Burton 2006; Cairney 2016; Sabatier & Jenkins-Smith 1993). A key message from such work is that the use of policy theories allows a greater understanding of the complexities of the policy-making process and why particular policy decisions were made, which can help advocates (including advocates of evidence-informed policy and practice) identify key actors and leverage points for power and influence in the process (Culleron et al 2015). The study of professional practice is also a well-developed field similarly being influenced by research use/impact interests.

As the study of policy making increasingly examines the role of research evidence, it begins to overlap with the fourth and final role for social science considered in this paper. This relates to the vital role played by social science is developing a better understanding of how research, including systematic reviews, interacts with policy and practice, through systematic study of the 'research production to use' process. Although there is a long tradition of using of research in policymaking, and the relationship between social science and policy-making has in a general sense been the subject of debate for many years, this is a fairly new and as yet under-developed field of study. Prompted by the recent resurgence of enthusiasm for evidence-informed policy making in the UK, there is interest shown by key research funding agencies,

such as the English Economic and Social Science Research Council (ESRC) and others. Concerned specifically with the relationship between research, policy and practice, this broad and growing field - what we refer to as the social science of research production and use - has a fundamental part to play in addressing recurring questions about the scale, standing and public value of the social sciences (Brewer 2013). As Davies et al (2000) among others have observed, it is something of an irony that the new policy focus on evidence-informed policy does not have a strong evidence-base underpinning it. There remains wide variation in the uptake of research evidence, whether single studies, reviews of research, or even whole programmes of work. Though systematic reviews provide an explicit and rigorous way of informing policy and practice users of research, users may face a whole array of obstacles when attempting to utilise this, or any other type of, evidence (Oliver et al 2014). It is therefore important that research in this area progresses.

Such research may include a broad range of research questions. We will briefly refer to four sub-areas of research activity connected with this developing field of study. Further examples can be found in *Evidence and Policy*, a specialist academic journal focused on research use in policy and practice.

First, there are growing numbers of output-oriented studies concerned with the measurement of research use and wider research impact. In an early example, Carol Weiss examined the way in which research was used selectively to support decisions made for reasons other than research evidence, finding that the enlightenment impact of research in informing how decision makers thought about policy issues was greater than any instrumental effect from research findings (Weiss, 1979). More recently, Wooding et al. (2007) examined how the ESRC's Future of Work research programme influenced policy and professional practice.

A second sub-area of research activity consists of process-oriented studies. Here, attention is focused on capturing *how* policy and practice decisions and actions are influenced by research, including identifying the barriers and facilitators to such use (e.g. Oliver et al 2014. Some studies are particularly concerned with user communities themselves (e.g. Gabbay & Le May 2004; Kyratsis et al 2012). Other studies offer conceptual frameworks for thinking about the concept of moving knowledge into action. Much used and cited examples include models developed by Knott and Wildavsky (1980) and Graham et al. (2006).

The third sub-area of research activity is concerned with strategies to enhance and support the use of research evidence in decision making. In recent years, many different initiatives have been developed to improve the communication, interpretation, and uptake of research with the aim of helping decision-makers of different types make better use of research. Systematic reviews and resultant user guidance have emerged as important tools in many areas of public policy, helping strengthen the bridge from knowing to doing. Other ways of trying to narrow the gap between research production and use include communication and marketing strategies and the use of specialist knowledge brokerage services. Social science is fundamental to both the design and evaluation of these strategies. There is now a considerable body of research, including systematic reviews, evaluating the impact of strategies designed to help decision-makers of different types make better use of research (Langer et al 2016). The results of a recent review of reviews in this area has shown that many strategies are not effective when used in isolation. We need to examine the mechanisms of evidence use in order to better understand and more efficiently study which combination of strategies are most effective (Langer et al 2016). In essence we need more theoretical work to help understand these processes, and use this to inform the implementation and delivery of such strategies.

Finally, there is a considerable body of research activity concerned with how evidence-informed interventions are put into practice (or not) in real world settings. The focus of this emerging area of social science - the field of implementation science - is less on facilitating the use of systematic reviews and other sources of evidence in policy development and decision making, and more on achieving the changes that the research recommends. In other words, the overall goal is on helping accelerate the spread of evidence-based practice, programmes and policies. Often those implementing these will have some knowledge of the research underlying the recommended actions, but this is not always necessary. The intent is mainly to change behaviour in line with what the research-based guidance advises. As the aim is often to investigate and address major bottlenecks (e.g. social, behavioural and economic) that impede effective implementation, understanding the behaviour of professionals and other stakeholders is central. To that end, implementation science draws upon the theories and techniques of behaviour change research: for example, the examination of (and intervention in) the capacity, opportunity and motivation for behaviour to change (Michie et al 2014).

Conclusion: the many roles of social science in research production and use

This chapter has focused on the role of systematic review as a resource for policy making.

In doing so it has argued that policy is often about social science issues and so social science should be able to inform policy making. Although simple in principle, finding relevant, reliable research can be difficult in practice, even for researchers. Systematic reviews have an important role in providing a formal explicit method for mapping, synthesising and enabling wider access to existing research, thereby increasing potential for its use. They can be applied to all research questions and to all areas of research. As a secondary (or meta) level method of research analysis, reviews employ a range of methods depending on the research question being asked (just as with variations in question and method in primary research). Although reviews are often designed with instrumental notions of research use in mind, it is acknowledged that they also have potential for a broader function within the complex, interactive process between research production and use, changing the ways that problems are conceptualised and understood. A further important consideration is that the current 'impact agenda' seems to focus more on impact alone (policy initiatives to encourage all academics to have impact with all of their research) rather than a concern for the quality and consistency of the evidence base informing that impact. Systematic reviews are useful here in providing a broader understanding than can be provided by any given individual or an unrepresentative sample of studies.

All of these issues can be understood within a wider view of how social science relates to research production and use. The chapter identified some of the overlapping and inter-related ways in which social science enables the use of research evidence in policy and practice: in initial policy discussions, the policy choices that flow from these, and the resultant practical implications of decisions taken.

These roles relate to:

1. the development of the knowledge base about social issues
2. the technical and methodological aspects of studying social issues.
3. building understanding about the demand side of the equation – the nature of policy and practice

4. building understanding of how research, including systematic reviews, interacts with policy and practice, with the intention of enabling such interactions to become more frequent and useful. For example: (i) measuring research use and wider research impact; (ii) capturing the processes by which use/impact occurs; (iii) studying strategies to improve the use of research in decision making; and (iv) studying how to achieve evidence informed behaviour change (implementation science).

Systematic reviews, in mapping research activity and in synthesizing research results, can be located within each of these four roles. The results of these reviews (telling us what has been studied and what these studies have found out) also feedback to inform future research and so influence the nature of social science and social science methods. In addition, research production and use are driven by policies and practices which are themselves open to research study.

In sum, systematic reviews have a central and a dynamic interactive role in mapping and synthesizing research as part of the research production and use process, but they also have a dynamic and interactive role in mapping and synthesizing evidence on each of the stages of the research production to use system.

References

Banzi, R., Moja, L., Pistotti, V., Facchini, A., and Liberati, A. (2011). Conceptual frameworks and empirical approaches used to assess the impact of health research: an overview of reviews. *Health Research Policy and Systems*, 9(26).

Bergs, J., Lambrechts, F., Simons, P., Vlayen, A., Marneffe, W., Hellings, J., Cleemput, I., and Vandijck, D. (2015). Barriers and facilitators related to the implementation of surgical safety checklists: a systematic review of the qualitative evidence. *BMJ Quality and Safety,* bmjqs-2015-004021.

Best, A, and Holmes, B. (2010) Systems thinking, knowledge and action: towards better models and methods. *Evidence & Policy: A Journal of Research, Debate and Practice*, 6(2), pp 145-159.

Brewer, J.D. (2013). *The public value of the social sciences*. London: Bloomsbury.

Brunton, J., Thomas, J. and Graziosi S (2016) Review management through information technology. In: D. Gough. S. Oliver and J. Thomas eds, *Introduction to Systematic Reviews*, 2nd ed. London: Sage, pp XX-XX.

Burton, P. (2006). Modernising the policy process. Making policy research more significant? *Policy Studies*, 27(3), pp173-195.

Cairney, P. (2016). *The politics of evidence based policy making*. Palgrave Macmillan.

Chalmers, I. and Glasziou (2016). Systematic reviews and research waste. *Lancet*, 387 (10014), pp122-123.

Cullerton, K., Donnet, T., Lee, A. and Gallegos, D. (2015). Using political science to progress public health nutrition: a systematic review. *Public Health Nutrition*, 1 (9).

Davies, H.T.O., Nutley, S.M. and Smith, P.C. (eds.) (2000). *What works? Evidence-based policy and practice in public services*. Bristol: Policy Press.

Davies, H., Nutley, S., and Walter, I. (2008). Why 'knowledge transfer' is misconceived for applied social research. *J Health Serv Res Policy,* 13(3), pp188-90.

Davies, P., Walker, A.E., Grimshaw, J.M. (2010). A systematic review of the use of theory in the design of guideline dissemination and implementation strategies and interpretation of the results of rigorous evaluations. *Implement Sci.*, 5 (14).

Elliott, J.H., Turner, T., Clavisi, O., Thomas, J., Higgins, J.P.T., Mavergames, C., and Gruen, R.L. (2014). Living Systematic Reviews: An Emerging Opportunity to Narrow the Evidence-Practice Gap. *PLoS Medicine,* 11(2).

Gabbay, J., and Le May, A. (2004). Evidence based guidelines or collectively constructed "mindlines?" Ethnographic study of knowledge management in primary care. *British Medical Journal*, 329: 1013.

Gilson, L and Raphaely, N. (2008). The terrain of health policy analysis in low and middle income countries: a review of published literature 1994–2007. *Health Policy Plan,* 23. pp.294–307.

Gough, D. (2007). Weight of evidence: a framework for the appraisal of the quality and relevance of evidence. *Research Papers in Education,* 22(2), pp213-228.

Gough, D. (2013). Meta-narrative and realist reviews: guidance, rules, publication standards and quality appraisal. *BMC Med,* 11(22).

Gough, D., Oliver, S., and Thomas, J. (2016) *Introduction to Systematic Reviews,* 2nd ed. London: Sage.

Gough D, Thomas J, Oliver S (XXX) Clarifying differences between review designs and methods. *Systematic Reviews*, 1 (28).

Graham, I.D., Logan, J., Harrison, M.B., Straus, S.E and Tetroe, J. (2006). Lost in knowledge translation: time for a map? *Journal of Continuing Education in the Health Professions*, 26(1) pp.13-24.

Harden, A., and Thomas, J. (2010). Mixed methods and systematic reviews: examples and emerging issues**.** In: A. Tashakkori and C. Teddie C. ed., *Handbook of Mixed Methods in the Social and Behavioral Sciences*. 2nd ed, London: Sage, pp749-774.

Higgins, J. P. T., and Green, S. (Eds.). (2011). *Cochrane handbook for systematic reviews of interventions*. Chichester: Wiley-Blackwell.

Jamal, F., Bertotti, M., Lorenc, T. and Harden, A. (2013). Reviewing conceptualisations of community: reflections on a meta-narrative approach. *Qualitative Research*, 15 (3) pp. 1-20.

Knott, J., and Wildavsky, A. (1980). If dissemination is the solution, what is the problem? *Knowledge, Creation, Diffusion, Utilization,* 1: 537-78.

Kyratsis, Y., Ahmad, R., and Holmes, A. (2012). Making sense of evidence in management decisions: the role of research-based knowledge on innovation adoption and implementation in healthcare. Study protocol. *Implement Sci*. 7:22.

Langer, L. Tripney J., and Gough, D. (2016). *The Science of Using Science Knowledge*. London: Alliance for Useful Evidence.

Lasswell, H.D. (1951). The policy orientation, in D. Lerner & H.D. Lasswell (eds.) *The Policy Sciences*. Stanford, CA: Standford University Press.

Lavis, J.N. (2009). How can we support the use of systematic reviews in policymaking? *PLoS Med*. 6(11):e1000141

Liabo, K., Gough, D, and Harden, A. (2016). Quality and relevance appraisal. In: D. Gough. S. Oliver and J. Thomas eds, *Introduction to Systematic Reviews*, 2nd ed. London: Sage, pp XX-XX.

Liverani, M., Hawkins, B., and Parkhurst, JO. (2013). Political and institutional influences on the use of evidence in public health policy. A systematic review. *PLoS ONE*, 8(10): e77404. doi:10.1371/journal.pone.0077404.

Merton, R.K. (1949). *Social theory and social structure: toward the codification of theory and research*. Glencoe, IL: Free Press.

Michie, S., Johnston, M., West, R., Abraham, C., Hardeman, W., and Wood, C. (2014). Designing Behavior Change Interventions: The Behaviour Change Wheel and Behavior Change Techniques. *Annals of Behavioral Medicine, 47*, S157.

Milat, A., Bauman, A., and Redman, S. (2015). A narrative review of research impact assessment models and methods. *Health Research Policy and Systems*. 13:18.

Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med* 6(6): e1000097. doi:10.1371/journal.pmed1000097

Noblit, G., and Hare, R.D. (1988) *Meta-ethnography: synthesizing qualitative studies*. Newbury Park NY: Sage Publications.

Oliver, K., Innvar, S., Lorenc, T., Woodman, J. and Thomas J (2014). Systematic review of barriers to and facilitators of the use of evidence by policymakers. *BMC Health Services Research,* 14 (2).

Oliver, S., Liabo, K., Stewart, R., and Rees, R. (2015) Public involvement in research: making sense of the diversity. *J Health Serv Res Policy*. 20(1), pp45-51.

Oliver, S., Rees, R., Clarke-Jones, L., Milne, R., Oakley, A.R., Gabbay, J., Stein, K., Buchanan, P., and Gyte, G. (2008). A multidimensional conceptual framework for analysing public involvement in health services research. *Health Exp.,* 11, pp72–84

O'Mara-Eves, A., Thomas, J., McNaught, J., Miwa, M., and Ananiadou, S. (2015). Using text mining for study identification in systematic reviews: a systematic review of current approaches. *Systematic Reviews*, 4**:**5. DOI: 10.1186/2046-4053-4-5.

Pawson, R. (2006). *Evidenced-based policy: a realist perspective.* London: Sage.

Pollard, A. and Court, J. (2005). How Civil Society Organisations Use Evidence to Influence Policy Processes: A literature review, ODI Working Paper 249, London: ODI.

Sabatier, PA., and Jenkins-Smith, H.C. (Eds.) (1993). *Policy change and learning: an advocacy coalition approa*ch. Boulder, CO: Westview Press.

Sandelowski, M., Voils, C.J., Leeman, J., and Crandlee, J.L. (2012). Mapping the Mixed Methods-Mixed Research Synthesis Terrain. *Journal of Mixed Methods Research*, 6(4), pp317-331.

Schucan Bird K., and Tripney, J. (2011). Systematic literature searching in policy relevant, inter-disciplinary reviews: an example from culture and sport. *Research Synthesis Methods*, 2(3), pp163-173.

Shea, B.J., Grimshaw, J.M., Wells, G.A., Boers, M., Andersson, N., Hamel, C., Porter, A.C., Tugwell, P., Moher, D. and Bouter, L.M. (2007). Development of AMSTAR: a measurement tool to assess the methodological quality of systematic reviews. *BMC Med Res Methodol*, 15, 7:10. PMID: 17302989.

Thomas, J., and Harden, A, (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Med Res Methodol*, 8**,** 45

Thomas, J., O'Mara-Eves, A., and Brunton, G. (2014). Using Qualitative Comparative Analysis (QCA) in systematic reviews of complex interventions: a worked example. *Systematic Reviews*. 3, 67.

Thomas, J., O'Mara-Eves, A., Harden, A. and Newman, M. (2016). Synthesis methods for developing and exploring theory. Frameworks or themes. In: D. Gough. S. Oliver and J. Thomas eds, Introduction to Systematic Reviews, 2nd ed. London: Sage, pp XX-XX.

Van Eerd, D., Cole, D., Keown, K., Irvin, E., Kramer, D., Brenneman, G.J., Kohn, M.K., Mahood, Q., Slack, T., Amick III, B.C., Phipps, D., Garcia, J., and Morassaei, S. (2011). *Report on knowledge transfer and exchange practices: a systematic review of the quality and types of instruments used to assess KTE implementation and impact*. Toronto: Institute for Work & Health.

Weiss, C. H. (1979). The Many Meanings of Research Utilization. *Public Administration Review*, 39(5), 426–431.

Welch, V., Petticrew, M., Tugwell, P., Moher, D., O'Neill, J., Waters, E., et al. (2012). PRISMA-Equity 2012 Extension: Reporting Guidelines for Systematic Reviews with a Focus on Health Equity. *PLoS Med* 9(10): e1001333.

Wong, G., Greenhalgh, T., Westhorp, G. and Pawson, R. (2014). Development of methodological guidance, publication standards and training materials for realist and meta-narrative reviews: the RAMESES (Realist And Meta-narrative Evidence Syntheses - Evolving Standards) project. *Health Serv Deliv Res* 2(30).

Wooding, S., Nason, E., Klautzer, L., Rubin J., Hanney, S., and Grant, J. (2007). Policy and practice impacts of research funded by the Economic and Social Research Council. A case study of the Future of Work programme, approach and analysis. RAND Corporation.

Table 1. Examples of systematic review issues in the four roles of social science in enabling evidence-informed policy and practice

SOCIAL SCIENCE ROLE	SYSTEMATIC REVIEW EXAMPLES
1. Developing the knowledge base about social issues	There are now many hundreds of thousands of systematic reviews on substantive topics of potential interest to policymakers, practitioners and other users of research. For example: • Meta-narrative review of the conceptualization of community (Jamal et al 2014) • Systematic review evaluating different truancy interventions seeking to improve school attendance of chronic truant students (Maynard et al 2013)
2. Developing the technical and methodological aspects of studying social issues	Advances in systematic review methodology: • Use of text mining to assist in screening potentially relevant studies (Brunton et al 2016) including a systematic review of current approaches relating to use of this technology (O'Mara-Eves et al 2015)

3. Building understanding about the demand side of the equation – the nature of policy and practice	This is a relatively new area for systematic review and there are only small numbers of such analyses. For example: • Systematic review examining a body of public health policy literature to identify whether theories of the policy process have been used to analyse why policy decisions have occurred (Cullerton et al 2015) • Systematic review focusing on the complex interface between politics, policy, and the use of evidence (Liverani et al 2013)
4. Building understanding of how research, including systematic reviews, interacts with policy and practice	Sub-areas: (i) Measuring research use and wider research impact: • Although there are increasing numbers of primary studies assessing the use and wider impacts of research, this body of literature has not yet been subject to systematic review • Overview of reviews to identify the most common approaches to research impact assessment (Banzi et al 2011) (ii) Capturing processes by which use/impact occurs • Systematic review of barriers and facilitators related to the use of evidence by policymakers (Oliver et al 2014) • Narrative review of conceptual models (Milat et al 2015) (iii) Studying strategies to improve the use of research in decision making • Systematic review of research on strategies to increase research use in decision-making (Langer et al 2016) • Systematic review of the quality and types of instruments used to assess implementation and impact of such strategies (Van Eerd et al 2011) (iv) Studying how to achieve evidence informed behaviour change (implementation science). • Systematic review of the use of theory in the design of guideline dissemination and implementation strategies (Davies et al 2010) • Systematic review of barriers and facilitators related to the implementation of surgical safety checklists (Bergs et al 2015)