The practice of a mixed methods research strategy: personal, professional and project considerations

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In this chapter I focus on three issues that are relevant and of concern to researchers in embarking on mixed methods research. First, I focus on personal issues drawing upon my own research biography and consider the factors that may influence engagement in mixed method research. Second, I consider professional issues: the opportunities and risks for researchers in engaging in mixed method research strategies. Third, I consider some project issues: what mixing methods means in practice in carrying out a research project. It is necessary before doing so to say something about the definition of the term and how I use it in this chapter.

In order to address a research question or set of research questions, researchers must devise a strategy or, as Bryman suggests, 'a general orientation to the conduct of social research' (Bryman 2004: 20). Mixed methods research design means adopting a research strategy employing more than one type of research *method* (Fielding and Fielding in press; Tashakkori and Teddlie 2003). The methods may be a mix or qualitative and quantitative methods, a mix of quantitative methods or a mix of qualitative methods. Some researchers have distinguished between mixed methods used within a single project and mixed method designs (Morse 2003), the point being that their separateness will have implications not only for analysis but also for how the data written up (Bryman, ?).

If mixed methods research is a research strategy does it represent a particular type of research design? The answer is both yes and no. Adopting a mixed method strategy may constitute a strategy in its own right or it may be subsumed within another research strategy, as in the case of adopting a case study design in which a number of different methods are embedded. Ethnography (Coffey and Atkinson 1996) and action research (Reason and Bradbury 2001) are also research strategies that may also employ more than one method; Lykes 2001).

Mixed methods research also means working with different *types of data.* It may also involve using *different investigators* – sometimes different research teams working in different research paradigms. For these reasons mixed method research is often referred to as multi-strategy research (Bryman 2004) implying the application of a number of different research strategies related to a complex range of research questions and a complex research design. On the other hand, mixed methods may form part of a long term strategy (several years) as in the case of a research programme that is pursued over time by a group of researchers applying different methods and approaches consecutively (see Kelle 2005 who cites the example of using ethnographies at a later point in a research programme to help understand previously incomprehensible statistical correlations from an earlier study). In this chapter I use the term to mean a combination of qualitative and quantitative methods within a single research project in the collection of data.

How I came to engage in mixed method research

I started my research career as a sociologist using qualitative methods, methods in which I still feel myself to be more skilled. The story of my engagement in mixed methods occurred at a particular time and place and with particular people: in the 1980s when research funders were more generous in the amount of time they allocated for methodological development than they are today, I was working in a research unit that saw its work as having policy relevance, and with co-researchers who were open to different ideas and paradigms. At this time I joined a research programme which proposed to use largely quantitative methods and was fortunate in being allowed to make a considerable contribution in influencing its development, indeed changing its methodological direction to encompass a mixed methods research strategy. The programme that I joined was designed to explore longitudinal changes in women's employment and well being after childbirth. While the size of the cohort of women was not compromised and much of the data was coded for entry on to SPSS the interview was adapted to explore the meanings that women attributed to their situations and experiences with consequences for the analysis. In fact qualitative and quantitative analysis proceeded side by side with some interesting results (Brannen 2004). I recall finding this change of direction quite unremarkable at the time until the government funder of the programme invited me to write a paper on the subject of mixed methods research (a paper that was largely intended to convince the government Office of the Chief Scientist of the value of using a mixed method strategy but also led to a training seminar for funded researchers and a text on mixed methods research (Brannen 1992)).

So why did I go on working in this way? First, I would say that the research questions I sought to address and the samples I wanted to select required a mixed method strategy. In addition I think it also had something to with the fact that in the research unit where I worked quantitative and qualitative methods were used so well that I did not feel one approach was likely to be compromised at the expense of the other. In Bryman's terms (Bryman 1988) I was influenced initially by situated pragmatic reasons and over time the approach became a taken for granted part of my methodological repertoire.

The opportunities and risks for researchers engaging in a mixed methods research strategy

I turn now to the wider context in which research is done and methodological developments take place. A mixed methods strategy represents to researchers an apparent opportunity for advancement in methodology. It also presents possible risks.

First, a mixed methods strategy presents an opportunity for *skills enhancement*. In striving to create a 'knowledge society' (the goal set by the European Council for Europe for 2010), western societies have sought to increase the numbers of young people in formal training as greater emphasis is placed upon skills and their accreditation through courses and qualifications. In learning social science methodologies, this emphasis is similarly visible as students and researchers increasingly undertake training courses. The UK's Economic and Social research Council's huge investments in recent years into developing research skills and methods is a case in point. It is also now mandatory for doctoral students funded by the UK's Economic and Social Research Council to undergo training across the

spectrum of research methods, while many graduates take masters courses in social research methods before they enter doctoral programmes. Such methods of learning how to do research have overtaken former pathways notably vocational apprenticeships conducted within a particular discipline, research centre and project.

There is much to commend these new pathways into and within research, in particular the opportunity to learn about a range of methods and thus to stay open to new ways of addressing research questions. Broadening one's methodological repertoire mitigates against 'trained incapacities', as Reiss (1968) termed the issue - the entrenchment of researchers in particular methods or types of research. On the other hand, training is not the same as learning. Knowledge soon fades if not put into practice fast. As methodology acquires a higher status in the social sciences and more emphasis is placed on *displaying* methodological rigour, there is also the need to be mindful of Coser's admonition to the American Sociological Association in 1975 against producing young researchers 'with superior research skills but with *a trained incapacity to think* in theoretically innovative ways' (Coser 1975).

Second, mixed methods research is an opportunity to encourage thinking 'outside the box'. In the UK social sciences, we have seen the growing importance of *substantive fields* bringing together researchers across disciplinary boundaries. Reflecting the general fragmentation that has gone on within particular disciplines such as sociology (Platt and Hopper 1997), increased funding has been allocated by the UK's Economic and Social Research Council to programmes of research within substantive fields in which researchers bid for money for projects in those fields: for example, programmes on work, childhood, youth, migration, social exclusion. While there are undoubted benefits for researchers and other stakeholders in learning about and integrating research evidence across disciplines and within a substantive field, there may be some disadvantages, especially for researchers. It can distract attention from theoretical questions. This can happen if research is reduced to a set of skills acquired outside disciplinary boundaries, so that researchers are less exposed to the traditions of a particular discipline and may fail to acquire a secure identity within a discipline. While theoretical eclecticism may be no bad thing, such an approach risks researchers being insufficiently schooled in theoretical issues and traditions. Such weak schooling is apparent in the way grand theory in particular is imported at the writing up stage of a research project in order to strengthen or confirm research findings rather than being used in 'sensitising' ways (Blumer 1954) in earlier stages of the research process.

However, there remain strong pressures for researchers to remain securely within their own disciplines. In Britain, as increasingly elsewhere, publishing in scholarly journals has become mandatory. It remains the case that many of the most prestigious journals are discipline-based while journals devoted to methodology tend to attract particular types of method. Two journals that attract research that uses mixed methods are the *International Journal of Social Research Methodology* and the newly launched *Journal of Mixed Methods Research*.

Third, developing a mixed method strategy fits with the political currency accorded to 'practical enquiry' that speaks to policy and policymakers and which informs practice, as distinct from scientific research (Hammersley 2000). As noted above, my own initiation into mixed methods research occurred in a policy-informed research environment. In today's world, researchers are required to address the needs of

research stakeholders and users, with funders often framing our research questions for us and sometimes even our methods. On the other hand, research has always been subject to political climates and persuasions (Finch 1986, Platt 1996). In Britain we have seen a whole industry of mixed method research created around evidence based policy and over a longer time frame in the evaluation of policy (Ritchie 2003; Tashakorri and Teddlie 2003). However the downside to this is that researchers have less and less ley way to define their own research questions and to follow their own ideas.

Fourth, opportunities for mixed methods research strategies are occurring with the increasing importance paid to cross-national research in the context of sizable research budgets provided by the European Union and the escalation in the size of the research projects they fund. Many EU projects typically comprise context mapping exercises, involving the synthesis and secondary analysis of quantitative data together with policy analysis involving documentary methods and intensive research methods that address the micro level (Hantrais 2005). This contextualising work is essential to cross-national research. However, there is a danger that such data sets are collected but are not integrated into a comparative analysis nor sufficiently inform research outputs.

Finally, with the growth of strategic and practically oriented research which meets the needs of users, there is increased emphasis upon dissemination. Researchers must speak at least two languages – the technical language of research and a language which makes research results accessible to a wide variety of audiences. Thus words become as important as numbers. Mixed methods research allows for both. However the different presentational modes of presenting quantitative and qualitative data can sit awkwardly together in the written outputs or may prove too unwieldy to be put together.

Mixed methods research strategies offer therefore both opportunities and risks. They offer creative possibilities for addressing research questions in terms of a range of methods. However these possibilities should not take the place of creative thinking. Mixed methods may come into their own at a time in which social science research has first and foremost to be of practical relevance and applicable to policy fields. Practical relevance should not substitute for theoretical relevance. The opportunity to learn new research skills is to be welcomed and is particularly encouraging of cross-disciplinary collaboration but should not undermine disciplines and theoretical concerns.

What mixing methods means in practice in a research project

To understand what a mixed method strategy involves it is necessary to be attentive to the points in the research process at which qualitative and quantitative methods are brought to bear (Brannen 2004, 2005); the outcomes in terms of what researchers make of the different kinds of data in the analysis and writing up their research; and the epistemological assumptions underpinning the choice of each method and their intended use (Moran-Ellis et al 2006).

This involves working backwards: from the accounts of the outcomes of mixing methods to how they were intended to be used. What researchers claim on behalf of

their methodological practice is not always what they deliver. As Bryman (2006b) has described, there is likely to be a slippage between researchers' research plans and their execution. Practices may belie the person's intentions. While researchers may initially justify their approach in terms of tailoring methods to research questions, in practice they may make references to the *outcomes* of the research. So that while the choice of methods may start off as central to the research design being chosen in relation to research questions and their epistemological framing, the possibilities and constraints of the research process, including those encountered during the data analysis phase, may divert the original plan or intention. For example, a researcher may decide during the interpretation of the data that to address a theoretical debate that was not considered at the time of writing the research proposal. A researcher may decide during analysis that there is no time to exploit fully all the data and so on. This is not necessarily to criticise the work but merely a point of methodological reflection that needs to be explored in writing about methodological practice, one's own or those of others.

In exploring how researchers apply mixed method research strategy, I have focussed upon some of my own work and some studies discussed in the 2005 Special Issue of *The International Journal of Social Research Methodology:* Theory and Practice (IJSRM) that was devoted to mixed methods research. This small sample of mixed methods studies cannot be seen to representative of mixed methods research but straddles much, though far from all, of the continuum of different types of mixed methods strategies. The mixed method studies are of three types:

(a) mixed methods studies where the quantitative component of the study was more dominant and the researchers specialised in quantitative work; in these cases this preceded the qualitative component (4 studies)
(b) mixed methods studies where the qualitative component had priority and the researchers identified themselves primarily as qualitative researchers; the qualitative component similarly followed on from the quantitative component (2 studies)
(a) Lastly a study in which the quantitative component came last and where neither approach appeared to dominate (1 study)

In discussing these studies I have tried to unpick how qualitative and quantitative methods were justified, how the data from each method were used and how they contributed to explanations and understandings generated by the research. On this basis I propose some general issues to explore in assessing the value of mixed methods studies.

Studies where the quantitative component dominated and preceded the qualitative

In this group of studies, the quantitative method involved large-scale longitudinal research. Not surprisingly, the main rationale given rested on the usefulness of the longitudinal design for assessing change rather than that of a mixed method research design (Plewis and Mason 2005: 188; Sammons et al 2005: 213). Other rationales given related to the need for particular statistical techniques such as regression analysis, clustered samples and multi level modelling. The additional use of qualitative methods in these studies to look at particular groups or sites were likewise justified in terms of another research design – case study – rather than focussing

upon the benefits of mixed strategy design *per se*. The qualitative case studies were selected on the basis of the quantitative findings collected from the longitudinal study in order to assist in their clarification.

Thus Hoyles et al (2005) in their study of children's mathematical reasoning took as their main method longitudinal quantitative methods in order to track progress in mathematics - in terms of attainment and reasoning - of children attending randomly selected schools within nine geographically diverse English regions. They also strategically selected samples - particular groups of pupils from the quantitative study - for qualitative investigation, notably those whose progress in mathematics reasoning decreased over time (lower at Time 2 than at Time1) and where the children's ability to calculate mathematically increased. They employed interviews with students to explore these findings further. Similarly, Sammons et al (2005) employed a longitudinal quantitative design to explore the effects of pre-school education on children's attainment and development at entry to school (the sample was drawn from six English local authorities and six types of pre-school provision). They selected a small number of the early education centres from their original sample on the basis of their contrasting profiles.

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A second feature of these studies is also apparent. At an early stage of the research process there appears to have been a transformation of the data: data from the qualitative case study were transformed into a quantitative form during data processing. Thus Hoyles et al in their study of pupils' mathematical reasoning turned their qualitative data into four types of reasoning signalled by mathematical symbols c1 to c4 (p. 229). Similarly, Sammons et al (2005) who carried out qualitative case studies of early education centres coded the qualitative data so that the 'reduced data' (p219) were used to provide statistical explanations for the outcome data produced in the quantitative longitudinal study. Thus a key concept that was derived from the qualitative data analysis appears to have been transformed into a quantitative variable and correlated with outcome variables.

In this latter case, it seems that qualitative data were used to explain the quantitative results. Indeed in this latter study the considerable extent to which the quantitative component dominated this study is evident in the strategy whereby the fieldworkers doing the qualitative case studies were required to 'protect' themselves from knowledge of the quantitative results in order to avoid bias. This suggests that the study in question while using qualitative methods analysed the data within a set of assumptions typically associated with positivistic research concerning bias and neutrality rather than using all the data to inform understanding, as is required in case study designs (Yin 2003 and b) and ethnographic and qualitative research (Delamont 2004).

Yet, in justifying their research strategy, it is interesting that the rationale given for different methods is in terms of offering 'complementary strengths' and minimising weaknesses 'associated with reliance on only one paradigm' (p221). That is the researchers in reflecting upon mixed methods seek to identify themselves *less* in terms of a single cluster of epistemological assumptions while their practice suggests the methods are applied very much from *within* a particular cluster or paradigm.

In a third example, Blatchford (2005) justifies using a mixed method strategy and also a longitudinal design to investigate the relationship between classroom size and pupils' educational achievement. (The quantitative sample consisted of 10,000 children from a random selection of schools.) Blatchford's rationale is framed in terms of the power of mixed methods to 'reconcile inconsistencies in previous research'. Quantitative information was required to examine associations or relationships statistically - class size, adult-pupil ratios, teacher time and pupil behaviour etc. He also noted that
qualitative methods were needed to assess such relationships in particular case studies. However he suggested that in the analysis phase 'priorities had to be set and some areas of investigation received more attention than others.' (2005: 204). In this study the analysis sought statistical links between class size and educational achievement. This latter type of quantitative analysis dominated despite the researchers having collected 'fine grained data on classroom processes' that lend themselves to other kinds of analysis, for example to do with understanding process of learning in different classroom environments. The qualitative data are put to limited use, as Blatchford himself notes: the qualitative data could have been analysed both qualitatively and quantitatively. Again transformation of the qualitative data into quantitative data took place during the data processing phase.

Studies where the quantitative component preceded but was subsidiary to the qualitative component

These exemplars are taken from my own research. In an article in the Special Issue I gave an example of a study in which a more highly resourced qualitative study (in terms of researcher time) was preceded by a questionnaire survey (Brannen 2005). I have used several such designs. The study quoted there concerned children 's concepts of care and their contribution to family life (Brannen et al 2000). The first phase was a self-completion questionnaire survey of school-based populations in mixed ethnic areas of London - of around 1,000 children aged 11-12. The second phase involved a sub sample drawn from the survey of groups of children and their parents living in different types of family/ household (63 households). This second phase employed a semi-structured interview with children and separately with mothers or main carers, with other methods embedded in the interviews with the children. The primary rationale for doing a survey was for the purposive sampling of cases to be studied qualitatively – children living in different types of household structures. Gaining access to children via schools was considered the only feasible method. A second rationale is also given namely to provide *contextual* information about the populations of children from which the cases were selected. The rationale for the qualitative study concerned the main aims of the study namely to understand children's experiences of living in different types of families and to explore their own concepts of care.

Although not reported in the paper in question, the data analysis stuck mainly to these aims. However an examination of the main publication (Brannen et al 2000) shows that the survey was used to provide extensive data on reported behaviour on particular items that were listed in the questionnaire such as children's contribution to family work and their views and reports of parental practices carried out by mothers and fathers, issues that were *not systematically* explored though covered in the interviews. However in reflecting upon the methodology of the study the authors focus upon the

way the different data work together to give a holistic picture of children's concepts and experiences of care. Significantly, though, they concluded that children's perspectives, even accessed via a range of methods, do not emerge as authors of their own stories of family life. Rather children's understandings have to be pieced together in a way that researchers have to read between the lines, drawing upon multiple sources of data, including the reports of the children's mothers, and also a number of different qualitative methods that were linked to the interviews. In the book no play is made of the fact of the mixed method design while the transformation of data was limited, for example the use of questionnaire survey data as a basis for classifying the household types which in the interviews were found in most cases to provide similar information.

A recent study *(*Brannen et al 2007 in press) that was not discussed in my article in the Journal's Special Issue concerning how four groups of workers who care for vulnerable children 'come to care'. The study adopted a complex iterative approach in which biographical case studies were sandwiched between surveys (a postal survey from which respondents were later followed up in a telephone survey).

The different methods broadly addressed different time frames including two surveys of the same four sets of childcare workers conducted at an interval of a year and a sub set of biographical case studies sandwiched between the surveys that provided insight into workers' perspectives over time and their own life course. The different methods therefore had different purposes. A strength of the first (postal) survey was expected among other things to lie in its potential as a sampling source for the biographical case studies and for a follow-up telephone survey a year later to determine the work destinations of childcare workers over time. In addition the surveys and a set of interviews with managers sought to provide contextual information on large groups of childcare workers and the local authorities and services in which they were located. The surveys therefore provided extensive data on *group* characteristics patterns for example the work experiences of the different groups and their management of work-family responsibilities. While the survey questions were in general designed to address different research questions from the biographical interviews, inevitably it was necessary to ask some that were similar. However the contexts in which the particular data were collected were taken into account in their analysis and interpretation, including the time frames adopted by informants and the specific contexts in which questions were posed and responses given.

The data sources were integrated largely in two ways as suggested in the methodological literature (Brannen 1992, 2004, Greene et al 1989). The main mode of integration was complementarity in which each data source and data analysis addressed rather differently framed research questions. A second mode of integration was also relevant namely the use of survey evidence as a basis for further exploration and to initiate new questions to be explored in the biographical case study interviews.

Some contradictions arose between different types of evidence notably between the survey evidence and the biographical interviews. The postal survey questionnaire was designed to generate extensive data on each childcare group and across the groups: the responses to the set questions were pre-coded and no account could therefore be taken of what respondents had in mind when they answered the questions. Thus the postal survey data concerning care workers' future employment intentions were

difficult to interpret and in some cases proved unreliable predictors of later actions as reported in the telephone survey. This is not an issue of reliability as normally understood in the methodological literature but to do with the way in which present time infuses perceptions of the future so that workers' experiences of their present jobs shaped how they presented their future work intentions at a particular moment *in* time.

The case material was also used to generate *new themes* that were not therefore reflected in the survey evidence. Hence it was necessary to carry out analysis not envisaged in the design of the project. For example, a number of problematic aspects were raised by childcare workers in their biographical interviews concerning coping with work-family responsibilities which related to the particularities of their occupations. These were not reflected in the survey evidence. Indeed the survey evidence suggested a more positive picture in that most respondents suggested that they managed their work – family responsibilities successfully. Of course the two sets of evidence may not necessarily be seen to conflict but rather to suggest that while most people 'get by' on an everyday basis, challenges and tensions remain.

However, although the survey data were drawn upon in writing up these data, in much of the analysis the main thrust lay in the qualitative material either used as individual case studies to extrapolate about the social processes involved in becoming a care worker or as exemplars to illustrate the thematic analysis carried out across the case material (the latter being the more common type of qualitative analysis).

Studies where the qualitative component precedes the quantitative

Examples where qualitative methods precede quantitative methods as an explicit form of mixed methods research design appear less easy to find. In practice however in survey research it is commonplace for a qualitative pilot study to be carried out to test the meaning of questions to be used in the survey instrument. Also in psychology most personality scales are based on prior clinical research. Hammond's mixed methods study reported in the IJSRM Special Issue is justified as part of a new programme of research on the wider benefits of adult learning (Hammond 2005). It claims to use qualitative research as a way of establishing significant variables for isolation and examination in an existing national longitudinal data set. The rationale for the qualitative phase (biographical interviews) was that the research area was under-researched and the research questions relatively unformulated (p241). The quantitative study was an existing cohort study (the 1958 National Child Development Study – NCDS) and the main justification for doing the research and gaining the funding, given the emphasis currently placed upon exploitation of these expensive data sets. The qualitative component was conceived as a 'mapping ' exercise carried out to inform the research design and implementation of the quantitative phase: the identification of variables for the quantitative analysis (p243). This has parallels with qualitative pilot work as a prologue to a survey although in this case the qualitative material was to be analysed in its own right.

Interestingly, despite its use of large scale longitudinal survey data, this article contrasts with others in this Special Issue that draw upon similar data sets. This author is insistent that causal outcomes should not be inferred from the quantitative evidence. While suggesting that the qualitative data was used to identify appropriate analysis

for the quantitative part of the research project, she also insists that that these data should *not* be used to explain quantitatively arrived at outcomes, as in the other studies discussed above, but to interrogate them further (Hammond 2005: p 244).

Unusually for studies in educational research this author goes on to cite results found in the quantitative analysis that are contradicted by evidence from the biographical interviews. For example, Hammond reports that the effect of adult learning on life satisfaction found in the NCDS cohort analysis was greater for men than for women while women reported themselves in the interviews to be positive about the courses they had taken. On this issue the biographical interviews were regarded as being 'more sensitive' than the quantitative measure. She also suggests that the interview data showed that improved sense of well being in the present was not necessarily incompatible with a negative view of the future. The quantitative data is found wanting in having conflated satisfaction with 'life so far' and with 'life in the future' (see for a similar critique of quantitative data by Brannen and Nilsen 2007).

Similarly, another finding from the cohort study suggesting marginal benefits to individuals of taking several adult education courses was modified by the earlier qualitative evidence: that taking courses may act as a replacement activity for those who lacked informal support networks, thus balancing out the additional beneficial effects of courses. By contrast, further contradictions are explained in term of the lack of representativeness of the qualitative study.

One factor that may explain why Hammond took up the contradictions between the survey and interview evidence is the priority she gave to the biographical interviews and the identification of the researcher in question with a qualitative approach (although the latter is not explicitly stated). In any event the biographical interviews were conducted *before* the quantitative analyses and were used to shape which analyses were done in the quantitative analysis. Hence the qualitative data threw up hypotheses while the quantitative data set could be used to reject or confirm the qualitative evidence. Another factor perhaps is that the researcher in question had no stake in creating or shaping the quantitative data set (since these data had already been collected). Indeed while the research design was shaped by the existence of this cohort study, there was no protocol suggesting the ways in which it might be useful in pursuing this programme of research.

However what is interesting about the rationale given for this iterative use of qualitative work to test quantitative evidence (that in turn may be refuted by the qualitative evidence) is the rationale given: namely the way mixed method strategy can pose new lines of questioning (Greene, Caracelli and Graham, 1989) – a result not necessarily anticipated at the outset of the research project.

Conclusions

This chapter considered some issues that shape whether researchers use a mixed method research strategy and also some that they may wish to take note of in deciding to do so.

In this chapter I have sidestepped deliberately issues around the commensurality of qualitative with quantitative data (as in notions of triangulation) as contrasted with the

separate treatment approach in which it is assumed that the methods address different research questions and the data are seen as irreducible. Such issues are typically discussed in terms of paradigm differences. For example, Smith and Heshusius (1986) take the view that qualitative and quantitative data cannot be combined because they arise from different paradigms. Rather I have started from the standpoint of the researcher, that is from their own 'research habitus' (in Bourdieu's meaning of the term - Bourdieu 1990) – their own biographies, skills, interests and research environments, the kinds of research questions they seek to address, together with the kinds of analyses they expect to generate from their data. The chapter began with reference to my own research biography showing how a qualitative researcher is drawn into mixed methods though force of circumstance while retaining an allegiance to particular types of research question and particular styles of research. It then went on to suggest a number of opportunities posed by mixed method research strategies which arise in the wider context in which funded research is currently carried out (in the UK) and pointed to the risks as well as the opportunities for researchers' professional development.

The last section of the chapter moved to the project level and the practice of a mixed methods research strategy involving both qualitative and quantitative methods within a single project. It emphasised that assessing the application of a mixed methods strategy is problematic given that methodological reflections and claims take place at the end of the research process when the results are written up. Three types of studies were considered in relation to the ordering of the methods, the primary identification of the researcher writing about methodological practice, and the dominant assumptions that appeared to influence the work. The three types of mixed method research considered here appeared to use the different types of data they collected in different ways. In the first group of studies where the quantitative component was dominant, the qualitative data and their manipulation were shaped by the nature of the research questions that were set in the (first) quantitative part of the project. The qualitative data were moreover treated and transformed in effect into quantitative variables and into a quantitative mode with the purpose of fleshing out the explanations required for the quantitative results. While this also seemed to be true in part at least in the study in which equal weight was given to the qualitative phase that preceded the quantitative phase (analysis of a national cohort survey), in this study the discrepancies found in posing similar questions to both the qualitative and quantitative data sets led to further interrogation of both data sets. However any methodological issues concerning the differences between the methods (in terms of the types of knowledge generated) were downplayed in favour of the new research questions suggested in this process.

In the studies in which the subsidiary quantitative component preceded the qualitative phase, the modalities of the different types of data were maintained and were not treated as commensurate. Instead they were intermeshed in presenting a synthesised analysis in the writing up the studies (Pawson 1995). As Moran-Ellis et al (2006) suggest, this integration of data arising from a mixed methods strategy takes place as part of the *interpretative process*, referred to as 'analytic or interpretative integration'. By contrast, integration in the dominating quantitative mode happens during *data processing* when the data are transformed in ways that allow the researchers to use the data to address the same issue or set of issues.

In conclusion, in considering whether to undertake mixed method research it is important first of all to take into account the research questions we seek to address. Second, we should take account of our biographies, past and current methodological resources and the *potential* resources available to us and how far these are likely to support the use of such a strategy. The latter should not deter us from trying out different approaches however. In this latter case it is therefore important to give due consideration to the building of research teams and research environments in order to engage in mixed methods research strategies. Third, the wider policy and practical context in which research is carried out is an important influence upon the kinds of research that we do and the methods that we use.

Mixed method research should not be considered a tool kit, a technical fix or belt and braces approach. Mixed methods research is challenging in the justification or research design phase of research and in becoming skilled in different methods. It is also challenging in the discovery phase in which we have to make sense of our data in relation to the questions we sought to ask, the methods used and the type of data generated, and in making claims about our research findings. It requires a great deal of reflectivity throughout the research process.

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7047