

Emergent Methods in Social Research

Practical Strategies for Combining Qualitative and Quantitative Methods: Applications to Health Research

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Practical Strategies for Combining Qualitative and Quantitative Methods: Applications to Health Research

[p. 165 ↓]

Virtually every discussion of the reasons for combining qualitative and quantitative methods begins with the recognition that different methods have different strengths. It is tempting to believe that research projects that combine the strengths of two or more methods will produce more than those same methods could offer in isolation. This possibility is even more appealing when combining qualitative and quantitative methods because this combination maximizes the ability to bring different strengths together in the same research project.

Health researchers have been especially interested in the possibility of combining qualitative and quantitative methods (see the discussions in Carey, 1993; Goering & Steiner, 1996; McKeganey, 1995; Miller & Crabtree, 1994; [p. 166 ↓] Morse, 1991; Stange, Miller, Crabtree, O'Conner, & Zyzanski, 1994; Steckler, McLeroy, Goodman, Bird, & McCormick, 1992). The most likely reason for this interest in multiple methods is the complexity of the many different factors that influence health. Given all the factors that affect virtually every aspect of health and illness, it is easy to appreciate the different strengths that different methods have to offer. Unfortunately, this appealing goal has proved elusive in practice—not just in health research but also in the many other fields that have contributed to the literature on using multiple methods. If health researchers are to succeed in combining qualitative and quantitative methods, this will require research designs that make multiple methods studies much more practical than they are now.

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Currently, there are two basic explanations for why it is so difficult to combine qualitative and quantitative methods. The first asserts that combining methods is essentially a technical problem. According to these authors (e.g., Brannen, 1992; Brewer & Hunter, 1989; Bryman, 1984, 1988; Cook & Reichardt, 1979), although it may not be easy to create effective combinations of qualitative and quantitative methods, it is essentially a technical challenge that methodologists should ultimately be able to resolve. As evidence for the viability of research designs that use both qualitative and quantitative data, authors in this tradition cite a string of studies that have done so.

The second explanation argues that the underlying problem in combining comes from conflicts between different paradigms. According to these authors (e.g., Creswell, 1994; Guba & Lincoln, 1994; Smith & Heshusius, 1986), most applications of qualitative and quantitative methods rely on very different assumptions about both the nature of knowledge and the appropriate means of generating knowledge; hence, the kinds of information that they produce are often incommensurate. Authors in this tradition point out that most studies that claim to have combined qualitative and quantitative research have typically ignored paradigm concerns and thus have not addressed these deeper issues.

Reconciling these two explanations requires careful attention to the difference between choosing methods and operating within paradigms. In particular, it is important to realize that most discussions of paradigm issues are not about the practical task of creating research designs that combine qualitative and quantitative methods. Indeed, even a casual reading of those who advocate operating within a single paradigm (e.g., Creswell, 1994; Gilboe-Ford, Campbell, & Berman, 1995; Guba & Lincoln, 1994; Smith & Heshusius, 1986) shows that these authors readily acknowledge the possibility of combining qualitative and quantitative methods. Their real concern lies with any failure to understand the larger differences between qualitative and quantitative approaches to research that go well beyond technical questions about [p. 167 ↓] how to use different methods in the same study. Similarly, those who are interested primarily in the technical aspects of combining different methods have also concluded that this can be done without violating basic paradigmatic assumptions (see Riggan, 1997, as well as the various papers in Reichardt & Rallis, 1994).

The present approach acknowledges the importance of paradigms because there is much to be gained from recognizing the deep epistemological differences between qualitative and quantitative approaches to the pursuit of knowledge. Mixing paradigms is indeed a risky business, but this should not be confused with combining methods within a clear-headed understanding of paradigms. If a particular paradigmatic stance provides the framework for a project, then the selection of an appropriate method or combination of methods does become a largely technical task. This article will address that task by introducing a series of practical research designs that can successfully guide efforts to combine qualitative and quantitative methods. As such, it is an example of the technical approach to resolving the difficulties in combining these different methods.

The most important difference between this approach to combining qualitative and quantitative methods and previous technical treatments of this issue is the current emphasis on practical aspects of research design. Much of the existing work on technical issues consists of catalogs of studies that have combined qualitative and quantitative methods (e.g., Bryman, 1988; Sieber, 1973). There has not been enough effort to make sense of the range of options that previous researchers have used, let alone to distill this past experience into a set of guidelines that would assist future work.

In contrast, the present approach highlights a set of practical research designs with a wide range of uses. In particular, for research designs to be practical, they should be (a) reasonably certain to produce fruitful outcomes and (b) ready to be used in a relatively routine fashion. Given this emphasis on practicality, most of what follows is not truly new. What is different here is the emphasis on a small number of fundamental decisions that point directly to a well-defined set of basic research designs. Even if most of what is here amounts to old wine in new bottles, if this presentation succeeds in making this valuable content more accessible to practicing researchers, that will be a considerable achievement in and of itself.

The remainder of this article consists of three basic parts. The next section summarizes a series of different motivations for combining qualitative and quantitative methods, arguing for the practicality of approaches that rely on the complementary use of different methods with different strengths. After that follows a description of research designs along with illustrative examples from existing health research studies. Finally, the concluding section [p. 168 ↓] examines a series of current issues and future directions

for research that combines multiple methods. This is an admittedly ambitious agenda and this article is actually a summary of a book-length version of these arguments (Morgan, in press), which will consider the uses for this approach in a variety of disciplines including health research.

Motivations for Combining Qualitative and Quantitative Methods

In a particularly systematic review of the literature on combining qualitative and quantitative methods, Greene, Caracelli, and Graham (1989; see also Caracelli & Greene, 1997, and Greene & Caracelli, 1997) point to the importance of distinguishing between broad motivations for combining different methods and specific research designs for meeting these goals. Although the present goal is to generate research designs, such designs must be matched to an appropriate set of motivations for combining qualitative and quantitative methods.

To understand the various motivations for combining methods, it helps to consider the history of this field. Like so many of the ideas that have guided social science methodology over the past several decades, the goal of combining the different strengths of different methods received its major impetus from the work of Donald Campbell and his colleagues. Campbell was especially interested in the question of how to cross-validate results on the same research question by using multiple methods. Important discussions on combining different methods occur in the work that Campbell and his colleagues did on unobtrusive measures (Webb, Campbell, Schwartz, & Sechrest, 1966) and the multitrait-multimethod matrix (Campbell & Fiske, 1959).

What distinguishes the work of Campbell and his colleagues is an emphasis on the convergence or confirmation of results across different methods. In essence, one is conducting two different studies in hopes of coming up with the same conclusions from each, thereby demonstrating that the results are not due simply to an artifact or invalidity associated with a particular method. Denzin's (1970) original work on triangulation is probably the best-known statement of this approach and it is explicitly based on arguments from Webb et al. (1966). Unfortunately, the term *triangulation* has

come to have so many meanings (Mitchell, 1986; Sandelowski, 1995) that it is safer to use words like *convergence* or *confirmation* when referring to the goals of seeking cross-validation between methods.

Despite this important early history, the goal of seeking convergent findings has been a rather rare motivation for combining qualitative and [p. 169 ↓] quantitative methods in more recent research. One reason for this decrease in interest has been the impasse that arises when results fail to converge (Chesla, 1992; Trend, 1979). This decrease in interest has also been a response to the amount of effort that goes into the fairly limited goal of producing convergent findings. Put simply, most health researchers and others working on applied problems cannot afford to put this much effort into finding the same thing twice.

As researchers have sought alternatives to convergence, one version or another of complementarity has consistently been among the most common motivations for combining qualitative and quantitative methods. The key goal in studies that pursue complementarity is to use the strengths of one method to enhance the performance of the other method. Health researchers are particularly likely to try to connect the strengths of different methods to address the complexity of their research topics—especially when a project's goals include both pure research and applied uses in practice settings.

Unfortunately, the popularity of complementarity has been accompanied by a considerable amount of confusion. One problem has been the lack of specificity in its definition. For example, Greene et al. (1989) said the goal for complementarity is “to measure overlapping but also different facets of a phenomenon, yielding an enriched, elaborated understanding of that phenomenon,” while also summarizing its purposes as seeking “elaboration, enhancement, illustration, clarification of the results from one method with the results from the other method” (p. 258-259). The broad scope of this definition makes it possible to invoke complementarity as the underlying justification for an exceedingly wide range of research goals.

Another source of confusion about complementarity has come from practical difficulties in maintaining the balance between methods in such projects. At one extreme, a smaller, complementary method may be merely tacked on to the principal study. At the

other extreme, what was originally a complementary study may come to dominate the overall project. Thus, although the intrinsic goal of complementing one method with another is easily stated, specific projects that accomplish this purpose have been harder to design.

Both the popularity of complementarity as a motivation and the confusion about this actual use point to the importance of developing practical research designs based on complementarity. Such designs are the subject of the remainder of this article. It is important to underscore, however, that advancing research designs based on complementarity do not deny the value of other motivations for multimethod research. Sandelowski (1995) provides a useful discussion of different motivations for combining methods, and other discussions on this topic can also be found in Breitmayer et al. (1993), Greene et al. (1989), Morgan (in press), and Rossman and Wilson (1985, 1994).

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Research Designs Based on Complementary Assistance

The emphasis in the current approach to combining qualitative and quantitative methods is on research design. The core of this approach is an effort to integrate the complementary strengths of different methods through a division of labor. This amounts to using a qualitative and quantitative method of different but well-coordinated purposes within the same overall research project. This division of labor is accomplished through two basic decisions: a priority decision that pairs a principal method with a complementary method and a sequence decision that determines whether the complementary precedes or follows the principal method.

Both the strategy of assigning priority to one method and the strategy of sequencing the two methods have been included in many of the existing statements about combining qualitative and quantitative methods (Creswell, 1994; Greene et al., 1989; Miles & Huberman, 1994; Morse, 1991; Sieber, 1973). Thus, it bears repeating that the current

presentation is a practical integration and simplification of that earlier work, rather than a truly innovative approach to these issues.

The Priority Decision. The first research-design decision determines the extent to which either the qualitative or quantitative method will be the principal tool for gathering the project's data. One obvious but often impractical alternative is to give the two methods equal priority. Although this will create a fully realized data set for each method, it begs the question of how to analyze this combination of data in any coherent fashion (Morse, 1991). Making the two methods equally important leads directly to the requirement for a third effort to connect what was learned from each, along with the additional threat that the knowledge gained from the two methods may be either incommensurate or downright contradictory.

A more practical strategy is to designate one of the methods as the principal means of data collection and then to design the complementary method so that it effectively assists the principal one. This division of labor can use either a qualitative or a quantitative technique as the principal method. The choice of a complementary method then depends on what each candidate might add to the principal method. In other words, the first step in the research design process is to select a principal data collection method that has the strengths that are most important to the project's goals. The second step is to select a contrasting complementary method that offers a set of strengths that can add to the research design's overall ability to meet the project's goals.

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This division of labor builds on the recognition that different methods have different strengths. Some projects that are principally quantitative can be strengthened through a well-selected set of complementary qualitative methods, whereas other qualitative projects can be supplemented by the strengths that quantitative methods offer. Of course, there is no requirement that any given project use multiple methods. For many purposes, the strengths of a single well-selected principal method will be entirely sufficient.

The Sequence Decision. The second design decision in this approach concerns the sequence or order in which the qualitative and quantitative data are used. Once again, the real question is how to connect different types of information in ways that maximize their contributions to the success of the overall research project; from a practical point of view, the most difficult design is one that uses both methods simultaneously. Part of the problem is logistical: How do you support two very different field efforts at the same time? More important, however, is the question of how to coordinate what is being learned from the two approaches. Qualitative and quantitative methods operate according to very different time lines, so creating connections between them can be a very complex problem in research design. The more practical strategy is to use the two methods in sequence so that what is learned from one adds to what is learned from the other.

A simple way to decide which method should be used first is to build on the decision about which method will be principal. At the beginning of a project, the basic goal is to optimize the effectiveness of the principal method so that one option is to use preliminary inputs from a different method to improve the main data collection strategy. Near the end of a project, the goal is to maximize the value of what is already in hand, so a second option is to follow up with a different type of information that will add new strengths to the existing data. Thus, sequence decisions depend not so much on whether a complementary method (either qualitative or quantitative) comes first, as a preliminary input to the principal method, or second, as a follow-up to the principal method.

Four Basic Designs. Taken together, the priority and sequence decisions lead to four basic families of research designs, depending on whether (a) the principal method is either qualitative or quantitative and (b) the complementary method occurs as a preliminary or a follow-up stage to the principal method. Taken together, this Priority-Sequence Model produces a 2 x 2 table. Table 8.1 summarizes these four possibilities and provides generic examples of their use in health research.

Because the two priority and sequence decisions that create Table 8.1 have been discovered several times, it is not surprising that the four basic designs [p. 172 ↓] that result have also been discussed in earlier work. Among those statements, Morse's (1991) statement is well known to health researchers; much of what is presented in

this Priority-Sequence Model was already present in her work as well. One especially useful feature of Morse's article is the convenient [p. 173 ↓] notion that it provides for summarizing each of the four cells in Table 8.1. In her system, a study's principal method appears in capital letters (shown in Table 8.1 as QUAL and QUANT), and the complementary method is in lowercase letters (shown in Table 8.1 as qual and quant); the ordering of the two methods—joined by an arrow—shows the sequence in which they are used.

Table 8.1

<i>Priority Decision</i>		
Complementary Method: <i>Preliminary Sequence Decision</i>	1. Qualitative Preliminary qual → QUANT	2. Quantitative Preliminary quant → QUAL
	<p>Purposes: Smaller qualitative study helps guide the data collection in a principally quantitative study.</p> <p>→ can generate hypothesis, develop content for questionnaires and interventions, etc.</p> <p>Example: Focus groups help develop culturally sensitive versions of a new health promotion campaign.</p>	<p>Purposes: Smaller quantitative study helps guide the data collection in a principally qualitative study.</p> <p>→ can guide purposive sampling, establish preliminary results to pursue in depth, etc.</p> <p>Example: A survey of different units in a hospital locates sites for more extensive ethnographic data collection.</p>
Complementary Method: <i>Follow-up</i>	3. Qualitative Follow-up QUANT → qual	4. Quantitative Follow-up QUAL → quant
	<p>Purposes: Smaller qualitative study helps evaluate and interpret results from a principally quantitative study.</p> <p>→ can provide interpretations for poorly understood results, help explain outliers, etc.</p> <p>Example: In-depth interviews help explain why one clinic generates higher levels of patient satisfaction.</p>	<p>Purposes: Smaller quantitative study helps evaluate and interpret results from a principally qualitative study.</p> <p>→ can generalize results to different samples, test elements of emergent theories, etc.</p> <p>Example: A statewide survey of a school-based health program pursues earlier results from a case study.</p>

Each cell in the Priority-Sequence Model is named for the use of the complementary method associated with that cell. Thus, Cell 1 contains research designs that use a qualitative preliminary study to contribute to a study that is principally quantitative, whereas Cell 2 contains designs that use a quantitative preliminary study to enhance a study that is principally qualitative, and so forth. The remainder of this section describes the research designs represented by the four cells in Table 8.1 and provides an example of health research using each of these basic designs.

The first cell of the Priority-Sequence Model shows research designs in which a smaller, preliminary qualitative study provides complementary assistance in developing a larger quantitative study. Such studies are principally quantitative research, but they begin by using some qualitative methods to improve the effectiveness of the quantitative research that follows. The classic example would be beginning a survey / research project with a qualitative method, such as focus groups, to develop the content of the questionnaire. This would use the strengths of qualitative methods for exploratory work to help ensure that the survey not only covers the important topics but also asks about them in an appropriate fashion. By the same logic, preliminary qualitative data can also help ensure the effectiveness of experimental and quasi-experimental designs. For example, it might be possible to improve the effectiveness of an intervention program by conducting preliminary qualitative research about how to match the program's goals to the needs and preferences of people who participate in it.

A concrete, health-related example of a study using a preliminary qualitative design is O'Brien's (1993) use of focus groups to develop the content for a survey of gay and bisexual men on the topic of AIDS/HIV. O'Brien describes in some detail how she used the focus group discussions to generate questionnaire items related to such topics as safer sex and personal relationships. She also discusses how the focus groups contributed to her larger project by providing insight into recruitment issues. Because gay and bisexual individuals can be a difficult population to locate, the focus groups provided valuable information about possible routes for locating survey respondents as well as useful advice about how to conduct the recruitment for the survey in a nonthreatening way. (Other health-related examples of complementary designs that use preliminary qualitative studies include the development of survey instruments by Bauman & Adair, 1992, and Fultz & Herzog, 1993, [p. 174 ↓] as well as the development of intervention programs by De Vries, Weijts, Dijkstra, & Kok, 1992, and Hughes, Lawther, & Eadie, 1996.)

Moving across to the second cell, these designs use preliminary quantitative methods to contribute to a principally qualitative study. In this case, the knowledge provided by an initial small-scale use of quantitative methods helps to guide the decisions that the researcher makes in the larger qualitative research project. The classic example is a preliminary survey or census of a field setting either to guide the selection of sites and informants or to provide a context for understanding the contacts that one does make.

Preliminary quantitative results can also help focus the analysis of large amounts of qualitative data. For example, if tabulations from a preliminary survey reveal interesting patterns of association, a detailed qualitative analysis can provide a much richer understanding of why these patterns exist or how they operate.

Dimond, Caserta, and Lund (1994) provide an example of a preliminary quantitative study in their investigation of factors that influenced levels of depression among older, bereaved spouses. Using a larger survey, Dimond et al. used standardized scores on an assessment to select five respondents who had a uniformly low level of depression during their first 2 years of widowhood and another five respondents who had a uniformly high level of depression in that same period. In-depth qualitative interviews revealed that the major difference between the two groups was the importance of additional life events among those who had consistently high levels of depression. Dimond et al. then discuss the implications of the impacts of further, more recent losses. (Other health-related examples of complementary designs that used preliminary quantitative studies to generate purposive samples for largely qualitative investigations are Hough, Lewis, & Woods, 1991, and Millette, 1993.)

The third cell returns to qualitative methods that complement a principally quantitative research effort, but in this case, they serve as a follow-up to the quantitative study. Here, the qualitative methods typically provide interpretive resources for understanding the results from the quantitative research. One classic example would be using qualitative methods to learn why a poorly functioning intervention program did not work as well as expected. Follow-up qualitative data can also provide insights into why strongly held hypotheses did not prove out in survey research. Weinholtz, Kacer, and Rocklin (1995) refer to such designs as using qualitative data to salvage quantitative work. For example, if the results of a survey contradict the original hypotheses, it may make sense to elicit an explanation from the respondents who provided the data rather than engage in isolated speculation about what went wrong.

An example of a follow-up qualitative design is Ornstein et al.'s (1993) use of focus groups to investigate the results of an unsuccessful intervention [p. 175 ↓] program that encouraged people to come in for preventive cholesterol screenings. The intervention study used patients' birthdays as a landmark event for sending out letters that suggested that they come in for a screening. As often happens with mail-out

reminder programs, these letters were widely ignored. Rather than simply accepting this pessimistic outcome, Ornstein et al. conducted four follow-up focus groups among people who had not responded, with the goal of learning how the researchers could improve the effectiveness of such mailings. One problem that they uncovered was that the letter was perceived as an unexpected bill. The groups also pointed out ways to improve the content and the format of the reminder letter itself, along with the importance of providing patients with an easy way to make that appointment. (Another example of a complementary design that used a follow-up qualitative study is described in Stange et al., 1994; this involved a qualitative investigation of why a diabetes intervention program was effective for only a subset of the patients.)

The final cell consists of designs that use complementary quantitative studies to follow up on research projects that are principally qualitative. Here, the quantitative methods provide a means to expand on what was learned through the qualitative study. The classic use for this design is to explore the generalizability or transferability of conclusions from qualitative research. For example, proponents of case studies often want to know something about the relevance of their observations beyond the specific limits of that one group of people at that one point in time (i.e., the transferability of their results). Even a small quantitative follow-up can typically cover a much larger sample or range of settings than were present in the initial, in-depth qualitative research.

Borkan, Quirk, and Sullivan (1991) provide a health-related example of a follow-up quantitative study. By analyzing narrative interviews with hip-fracture patients, Borkan et al. developed an explanatory model that showed systematic differences in how patients thought about both the causes of their problem and the factors affecting their recovery. They then collected data from brief surveys on activities of daily living (ADLs) at several points after the patients' injuries. The patients' statements with regard to the key themes in the narrative analysis were consistently related to their level of ADL functioning. Borkan et al. were thus able to demonstrate that hip-fracture patients' ways of making meaning of their falls had important effects on their recovery. (Another example of a complementary design that used a follow-up qualitative study is Nichols-Casebolt & Spakes, 1995, who first used detailed qualitative interviews to discover women's perspectives on families in crisis and then located secondary quantitative data that would help convince policy makers of the importance of their finding.)

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Current Issues and Future Directions

Although there are many ways to make complementary uses of qualitative and quantitative methods, the four possibilities in the Priority-Sequence Model of Table 8.1 summarize much of the existing work in this area. Some of these designs are, however, more common than others. At present, the most frequently used designs are those in Cell 1: preliminary qualitative studies to complement research that is principally quantitative. Examples of the designs in Cells 2 and 3 are less common but still relatively easy to find. Designs matching Cell 2 are used by anthropologists, especially those working in the area of health (e.g., Pelto & Pelto, 1978), who frequently begin with brief quantitative studies prior to more intensive qualitative fieldwork. Designs using Cell 3 are increasingly common among surveys researchers, who use qualitative follow-up interviews to expand on what was learned from the analysis of their questionnaires.

It is instructive that the least common and most problematic designs are those associated with Cell 4, in which follow-up quantitative research complements a principally qualitative study. One notable problem is that such designs promote the perception that qualitative results must be treated as tentative until they are confirmed by qualitative research (Morse, 1996). Arguably, this is largely a matter of perception. There is nothing about these designs that implies that qualitative research is inadequate or incomplete; instead the argument is that qualitative methods have a different set of strengths that can, in some cases and for some purposes, add to what is achieved through qualitative research alone. Yet, because qualitative researchers feel that they have been attacked in the past about the ability of their work to stand on its own, they are understandably sensitive to any implication that their work requires supplementation.

Of course, the logic of the Priority-Sequence Model in Table 8.1 also argues that quantitative projects are equally likely to benefit from a complementary use of qualitative methods, but that claim can also cause problems. For example, one might misinterpret the present framework as claiming that qualitative methods are most useful as a supplement to quantitative work, simply because the designs in Cell 1 are currently the

most common. Yet from the present perspective, preliminary qualitative studies are but one of four equally useful possibilities.

The broader point here is that assertions about the value of research designs raise political as well as technical issues. Designs from both Cell 1 and Cell 4 are tied to political issues about the relative standing of qualitative and quantitative methods within the social sciences. It would be nice to believe that in an apolitical and ahistorical world, researchers would be equally likely [p. 177 ↓] to use all four designs from the Priority-Sequence Model. Obviously, we do not live in such a world, and political considerations make some of these designs easier to get funded and published than others. As long as this is so, qualitative researchers (and quantitative ones as well) are quite right to make sure that the value of their work is not misunderstood or denigrated.

These questions about the relative standing of qualitative and quantitative methods reflect the long-standing debate between the partisans of these two different approaches to research. Unfortunately, debates about using either qualitative or quantitative methods in isolation can easily lead to mistaken conclusions about how to use them in combination. In particular, outspoken advocacy for either qualitative or quantitative methods as the one true way almost inherently leads to a rejection of any attempt to combine them. Clearly, there is a great deal of political as well as technical work that needs to be done to pave the path for combining qualitative and quantitative methods. The efforts to address these ideological rifts are, however, quite different from the technical goals set out here.

In considering what this presentation has accomplished, it is important to reiterate that the four designs in the Priority-Sequence Model are not the only or even necessarily the best ways to combine qualitative and quantitative methods. What is best depends entirely on the goals of a given research project. These designs are specifically tailored to purposes associated with complementary combinations of methods, but as the earlier discussion indicated, there are a variety of other motivations for combining qualitative and quantitative methods. Although variations on the four designs in the Priority-Sequence Model may be useful for these other purposes, it is just as likely that other motivations will call for designs that go beyond anything discussed here.

What might some of these further designs be? One obvious limitation of the schema in Table 8.1 is that it deliberately omits the middle options of either giving qualitative and quantitative data equal priority or using them both at the same time. Using these middle options, it would be entirely possible to design a project in which neither method had priority over the other and both were used simultaneously. It may make sense to call this design true triangulation. The current emphasis on complementarity argues that true triangulation is often not the most useful design for combining quantitative and qualitative data—at least at present. Instead, designs that achieve complementarity through a division of labor, such as those in the Priority-Sequence Model, are often easier to implement and more likely to lead to productive combinations of qualitative and quantitative data. In other words, they are more practical.

Of course, one does not have to proceed all the way to true triangulation to develop further extensions of the four basic designs in the [p. 178 ↓] Priority-Sequence Model of Table 8.1. There clearly can be designs that maintain a division of labor between a principal method and a complementary method while using the two together rather than in sequence. Morse (1991) offers a notation for such designs that replaces the arrow from sequencing with a plus sign; for example, QUAL+quant would indicate a smaller quantitative study that was essentially simultaneous with a larger qualitative study. Alternatively, it is quite possible to create a largely sequential division of labor between two methods that both receive relatively equal priority. These options amount to possibilities that lie somewhere between true triangulation and the present use of both priority and sequence decisions. If we learn how to design projects that effectively and routinely combine qualitative and quantitative methods without relying on either a priority decision or a sequence decision, then this may lead toward practical approaches to true triangulation.

Even if social scientists do manage to develop a set of practical and effective designs for combining qualitative and quantitative methods, there is still the question of who will do the work. How reasonable is it that one person would have the necessary expertise to direct all aspects of such a study? Within the division of labor approach presented here, it is at least possible that one person would have all the requisite skills. In particular, because one of the methods is being used only in a complementary fashion, complete mastery of that method may not be necessary.

At this point, the best way to support studies that combine methods is often to create a team that combines expertise, but the designs based on complementarity in the Priority-Sequence Model can present a distinct difficulty for teams. The problem is that these designs ask one set of professionals to subordinate their skills into a secondary role. Signs of this tension already exist in the most prevalent of the current combinations from Table 8.1—the use of qualitative methods as preliminary input into a larger quantitative project (e.g., Laurie & Sullivan, 1991). For a team-based approach to work, there have to be clear expectations about what each piece of the work consists of and why it is being done. The researchers in charge of the principal method need to be very clear about what they are asking from the other members of the team, and those in charge of the complementary method need to have a clear understanding of what they are being asked to do.

A different approach to integrating the resources that are necessary in mixed-methods studies is creating specific roles for those who have expertise in combining qualitative and quantitative methods. Rather than requiring that such boundary crossers be equally expert in both methods, this approach would emphasize a new set of skills related to coordinating combinations of qualitative and quantitative methods. As evidence that there is nothing new [p. 179 ↓] under the sun, it has been more than 50 years since Paul Lazarfeld (1944) explicitly called for experts such as these to shuttle back and forth between qualitative interviewing and survey research.

This discussion of whether the expertise to combine qualitative and quantitative methods should exist within individual researchers or teams is based on further presumption that is worth examining: The proper approach to combining methods lies within a specific research project. One alternative would be to achieve integration across a researcher's larger program of studies. A researcher could thus pursue a program of studies that alternated between qualitative and quantitative projects devoted to the same phenomenon (e.g., Rank, 1992). This form of integration amounts to a variation on the sequencing of different methods. Another alternative to integration at the project level would be to pursue the integration of the qualitative and quantitative research across a field of studies. In that case, experts in each method would concentrate on their own technical expertise, but they would use the knowledge produced by other methods as inputs to their own work. One example of this approach

is Rotter and Frankel's (1992) integrated review of qualitative and quantitative research on the medical dialogue.

The last alternative raises questions about the extent to which we now create isolated pools of knowledge—some from qualitative research traditions and some from quantitative research traditions. Why this is so once again raises issues that go well beyond the goals of this article. Even so, it would be hard to argue in favor of a Tower of Babel approach, in which researchers pursue similar issues while purposely limiting their ability to communicate with each other. In this vein, some have claimed that the forms of knowledge produced by qualitative and quantitative approaches are so incommensurate that such communication truly is impossible. This is, however, an empirical question, and not a matter of purpose philosophy. Until we, as researchers, investigate what it takes to combine qualitative and quantitative methods, we will never know what is possible.

David L. Morgan

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