Designing a Qualitative Study

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CHAPTER 7

Designing a Qualitative Study

Joseph A. Maxwell

T raditionally, works on research design (most of which focus on quantitative research) have understood "design" in one of two ways. Some take designs to be fixed, standard arrangements of research conditions and methods that have their own coherence and logic, as possible answers to the question, "What research design are you using?" (e.g., Campbell & Stanley, 1967). For example, a randomized, double-blind experiment is one research design; an interrupted time-series design is another. Beyond such broad categories as ethnographies, qualitative interview studies, and case studies (which often overlap), qualitative research lacks any such elaborate typology into which studies can be pigeonholed. In addition, typologies are usually based on a limited number of features of the study, and by themselves do little to clarify the actual functioning and interrelationship of the component parts of a design.

Other models present design as a logical progression of stages or tasks, from problem formulation to the generation of conclusions or theory, that are necessary in planning or carrying out a study (e.g., Creswell, 1997; Marshall & Rossman, 1999). Such models usually resemble a flowchart with a clear starting point and goal and a specified order for doing the intermediate tasks. Although some versions of this approach are circular or iterative (see, e.g., Bickman & Rog, Chapter 1, this volume), so that later steps connect back to earlier ones, all such models are linear in the sense that they are made up of one-directional sequences of steps that represent what is seen as the optimal order for conceptualizing or conducting the different components or activities of a study.

Neither of these models adequately represents the logic and process of qualitative research. In a qualitative study, "research design should be a reflexive process operating through every stage of a project" (Hammersley & Atkinson, 1995, p. 24);

the activities of collecting and analyzing data, developing and modifying theory, elaborating or refocusing the research questions, and identifying and dealing with validity threats are usually going on more or less simultaneously, each influencing all of the others. In addition, the researcher may need to reconsider or modify any design decision during the study in response to new developments or to changes in some other aspect of the design. Grady and Wallston (1988) argue that applied research in general requires a flexible, nonsequential approach and "an entirely different model of the research process than the traditional one offered in most textbooks" (p. 10).

This does not mean that qualitative research lacks design; as Yin (1994) says, "Every type of empirical research has an implicit, if not explicit, research design" (p. 19). Qualitative research simply requires a broader and less restrictive concept of "design" than the traditional ones described above. Thus, Becker, Geer, Hughes, and Strauss (1961), authors of a classic qualitative study of medical students, begin their chapter titled "Design of the Study" by stating,

> In one sense, our study had no design. That is, we had no well-worked-out set of hypotheses to be tested, no data-gathering instruments purposely designed to secure information relevant to these hypotheses, no set of analytic procedures specified in advance. Insofar as the term "design" implies these features of elaborate prior planning, our study had none.
>
> If we take the idea of design in a larger and looser sense, using it to identify those elements of order, system, and consistency our procedures did exhibit, our study had a design. We can say what this was by describing our original view of the problem, our theoretical and methodological commitments, and the way these affected our research and were affected by it as we proceeded. (p. 17)

For these reasons, the model of design that I present here, which I call an *interactive* model, consists of the components of a research study and the ways in which these components may affect and be affected by one another. It does not presuppose any particular order for these components, or any necessary directionality of influence.

The model thus resembles the more general definition of *design* employed outside research: "An underlying scheme that governs functioning, developing, or unfolding" and "the arrangement of elements or details in a product or work of art" (Frederick et al., 1993). A good design, one in which the components work harmoniously together, promotes efficient and successful functioning; a flawed design leads to poor operation or failure.

Traditional (typological or linear) approaches to design provide a model *for* conducting the research—a prescriptive guide that arranges the components or tasks involved in planning or conducting a study in what is seen as an optimal order. In contrast, the model presented in this chapter is a model *of* as well as *for* research. It is intended to help you understand the *actual* structure of your study as well as to plan this study and carry it out. An essential feature of this model is that it treats research design as a real entity, not simply an abstraction or plan. Borrowing

Kaplan's (1964, p. 8) distinction between the "logic-in-use" and "reconstructed logic" of research, this model can be used to represent the "design-in-use" of a study, the *actual* relationships among the components of the research, as well as the intended (or reconstructed) design (Maxwell & Loomis, 2002).

This model of research design has five components, each of which addresses a different set of issues that are essential to the coherence of a study:

1. *Goals:* Why is your study worth doing? What issues do you want it to clarify, and what practices and policies do you want it to influence? Why do you want to conduct this study, and why should we care about the results?

2. *Conceptual framework*: What do you think is going on with the issues, settings, or people you plan to study? What theories, beliefs, and prior research findings will guide or inform your research, and what literature, preliminary studies, and personal experiences will you draw on for understanding the people or issues you are studying?

3. *Research questions*: What, specifically, do you want to learn or understand by doing this study? What do you not know about the things you are studying that you want to learn? What questions will your research attempt to answer, and how are these questions related to one another?

4. *Methods*: What will you actually do in conducting this study? What approaches and techniques will you use to collect and analyze your data, and how do these constitute an integrated strategy?

5. *Validity*: How might your results and conclusions be wrong? What are the plausible alternative interpretations and validity threats to these, and how will you deal with these? How can the data that you have, or that you could potentially collect, support or challenge your ideas about what's going on? Why should we believe your results?

I have not identified ethics as a separate component of research design. This isn't because I don't think ethics is important for qualitative design; on the contrary, attention to ethical issues in qualitative research is being increasingly recognized as essential (Christians, 2000; Denzin & Lincoln, 2000; Fine, Weis, Weseen, & Wong, 2000). Instead, it is because I believe that ethical concerns should be involved in *every* aspect of design. I have particularly tried to address these concerns in relation to methods, but they are also relevant to your goals, the selection of your research questions, validity concerns, and the critical assessment of your conceptual framework.

These components are not substantially different from the ones presented in many other discussions of qualitative or applied research design (e.g., LeCompte & Preissle, 1993; Lincoln & Guba, 1985; Miles & Huberman, 1994; Robson, 2002). What is innovative is the way the relationships among the components are conceptualized. In this model, the different parts of a design form an integrated and interacting whole, with each component closely tied to several others, rather than being linked in a linear or cyclic sequence. The most important relationships among these five components are displayed in Figure 7.1.
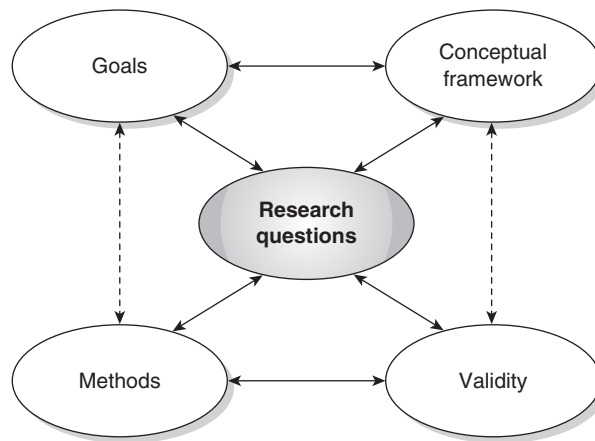
**Figure 7.1**   An Interactive Model of Research Design

SOURCE: From *Qualitative Research Design: An Interactive Approach,* by J. A. Maxwell, 2005. Copyright by SAGE.

There are also connections other than those emphasized here, some of which I have indicated by dashed lines. For example, if a goal of your study is to empower participants to conduct their own research on issues that matter to them, this will shape the methods you use, and conversely the methods that are feasible in your study will constrain your goals. Similarly, the theories and intellectual traditions you are drawing on in your research will have implications for what validity threats you see as most important and vice versa.

The upper triangle of this model should be a closely integrated unit. Your research questions should have a clear relationship to the goals of your study and should be informed by what is already known about the phenomena you are studying and the theoretical concepts and models that can be applied to these phenomena. In addition, the goals of your study should be informed by current theory and knowledge, while your decisions about what theory and knowledge are relevant depend on your goals and questions.

Similarly, the bottom triangle of the model should also be closely integrated. The methods you use must enable you to answer your research questions, and also to deal with plausible validity threats to these answers. The questions, in turn, need to be framed so as to take the feasibility of the methods and the seriousness of particular validity threats into account, while the plausibility and relevance of particular validity threats, and the ways these can be dealt with, depend on the questions and methods chosen. The research questions are the heart, or hub, of the model; they connect all the other components of the design, and should inform, and be sensitive to, these components.

There are many other factors besides these five components that should influence the design of your study; these include your research skills, the available resources, perceived problems, ethical standards, the research setting, and the data and

Figure 7.2   Contextual Factors Influencing a Research Design
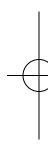
preliminary conclusions of the study. In my view, these are not part of the *design* of a study; rather, they either belong to the *environment* within which the research and its design exist or are *products* of the research. Figure 7.2 presents some of the environmental factors that can influence the design and conduct of a study.

I do not believe that there is one right model for qualitative or applied research design. However, I think that the model I present here is a useful one, for three main reasons:

1. It explicitly identifies as components of design the key issues about which decisions need to be made. These issues are therefore less likely to be ignored, and can be dealt with in a systematic manner.

2. It emphasizes the interactive nature of design decisions in qualitative and applied research, and the multiple connections among the design components.

3. It provides a model for the structure of a proposal for a qualitative study, one that clearly communicates and justifies the major design decisions and the connections among these (see Maxwell, 2005).

Because a design for your study always exists, explicitly or implicitly, it is important to *make* this design explicit, to get it out in the open, where its strengths, limitations, and implications can be clearly understood. In the remainder of this chapter, I present the main design issues involved in each of the five components of my model, and the implications of each component for the others. I do not discuss in detail how to actually *do* qualitative research, or deal in depth with the theoretical and philosophical views that have informed this approach. For additional guidance on these topics, see the contributions of Fetterman (Chapter 17, this volume) and Stewart, Shamdasani, and Rook (Chapter 18, this volume) to this *Handbook*; the more extensive treatments by Patton (2000), Eisner and Peshkin (1990), LeCompte and Preissle (1993), Glesne (2005), Weiss (1994), Miles and Huberman (1994), and Wolcott (1995); and the encyclopedic handbooks edited by Denzin and Lincoln (2005) and Given (in press). My focus here is on how to design a qualitative study that arrives at valid conclusions and successfully and efficiently achieve its goals.

Goals: Why Are You Doing This Study?

Anyone can find an unanswered, empirically answerable question to which the answer isn't *worth* knowing; as Thoreau said, it is not worthwhile to go around the world to count the cats in Zanzibar. Without a clear sense of the goals of your research, you are apt to lose your focus and spend your time and effort doing things that won't contribute to these goals. (I use *goals* here in a broad sense, to include motives, desires, and purposes—anything that leads you to do the study or that you hope to accomplish by doing it.) These goals serve two main functions for your research. First, they help guide your other design decisions to ensure that your study is *worth* doing, that you get out of it what you want. Second, they are essential to *justifying* your study, a key task of a funding or dissertation proposal. In addition, your goals inevitably shape the descriptions, interpretations, and theories you create in your research. They therefore constitute not only important *resources* that you can draw on in planning, conducting, and justifying the research, but also potential *validity threats,* or sources of bias, that you will need to deal with.

It is useful to distinguish among three kinds of goals for doing a study: personal goals, practical goals, and intellectual goals. Personal goals are those that motivate *you* to do this study; they can include a desire to change some existing situation, a curiosity about a specific phenomenon or event, or simply the need to advance your career. These personal goals often overlap with your practical or research goals, but they may also include deeply rooted individual desires and needs that bear little relationship to your "official" reasons for doing the study.

It is important that you recognize and take account of the personal goals that drive and inform your research. Eradicating or submerging your personal goals and concerns is impossible, and attempting to do so is unnecessary. What *is* necessary, in qualitative design, is that you be *aware* of these concerns and how they may be shaping your research, and that you think about how best to deal with their consequences.

To the extent that you have *not* made a careful assessment of ways in which your design decisions and data analyses are based on personal desires, you are in danger of arriving at invalid conclusions.

However, your personal reasons for wanting to conduct a study, and the experiences and perspectives in which these are grounded, are not simply a source of "bias" (see the later discussion of this issue in the section on validity); they can also provide you with a valuable source of insight, theory, and data about the phenomena you are studying (Marshall & Rossman, 1999, pp. 25–30; Strauss & Corbin, 1990, pp. 42–43). This source is discussed in the next section, in the subsection on experiential knowledge.

Two major decisions are often profoundly influenced by the researcher's personal goals. One is the topic, issue, or question selected for study. Traditionally, students have been told to base this decision on either faculty advice or the literature on their topic. However, personal goals and experiences play an important role in many research studies. Strauss and Corbin (1990) argue that

> choosing a research problem through the professional or personal experience route may seem more hazardous than through the suggested [by faculty] or literature routes. This is not necessarily true. The touchstone of your own experience may be more valuable an indicator for you of a potentially successful research endeavor. (pp. 35–36)

A second decision that is often influenced by personal goals and experiences is the choice of a qualitative approach. Locke, Spirduso, and Silverman (1993) argue that "every graduate student who is tempted to employ a qualitative design should confront one question, 'Why do I want to do a qualitative study?' and then answer it honestly" (p. 107). They emphasize that qualitative research is *not* easier than quantitative and that seeking to avoid statistics bears little relationship to having the personal interests and skills that qualitative inquiry requires (pp. 107–110). The key issue is the compatibility of your reasons for "going qualitative" with your other goals, your research questions, and the actual activities involved in doing a qualitative study.

Besides your personal goals, there are two other kinds of goals that I want to distinguish and discuss, ones that are important for other people, not just yourself: practical goals (including administrative or policy goals) and intellectual goals. Practical goals are focused on *accomplishing* something—meeting some need, changing some situation, or achieving some goal. Intellectual goals, on the other hand, are focused on *understanding* something, gaining some insight into what is going on and why this is happening. Although applied research design places much more emphasis on practical goals than does basic research, you still need to address the issues of what you want to *understand* by doing the study and how this understanding will contribute to your accomplishing your practical goals. (The issue of what you want to understand is discussed in more detail below, in the section on research questions.)

There are five particular intellectual goals for which qualitative studies are especially useful:

1. Understanding the *meaning,* for participants in the study, of the events, situations, and actions they are involved with, and of the accounts that they give of their lives and experiences. In a qualitative study, you are interested not only in the physical events and behavior taking place, but also in how the participants in your study make sense of these and how their understandings influence their behavior. The perspectives on events and actions held by the people involved in them are not simply their accounts of these events and actions, to be assessed in terms of truth or falsity; they are part of the reality that you are trying to understand, and a major influence on their behavior (Maxwell, 1992, 2004a). This focus on meaning is central to what is known as the "interpretive" approach to social science (Bredo & Feinberg, 1982; Geertz, 1973; Rabinow & Sullivan, 1979).

2. Understanding the particular context within which the participants act and the influence this context has on their actions. Qualitative researchers typically study a relatively small number of individuals or situations and preserve the individuality of each of these in their analyses, rather than collecting data from large samples and aggregating the data across individuals or situations. Thus, they are able to understand how events, actions, and meanings are shaped by the unique circumstances in which these occur.

3. Identifying unanticipated phenomena and influences and generating new, "grounded" theories about the latter. Qualitative research has long been used for this goal by survey and experimental researchers, who often conduct "exploratory" qualitative studies to help them design their questionnaires and identify variables for experimental investigation. Although qualitative research is not restricted to this exploratory role, it is still an important strength of qualitative methods.

4. Understanding the processes by which events and actions take place. Although qualitative research is not unconcerned with outcomes, a major strength of qualitative studies is their ability to get at the processes that lead to these outcomes, processes that experimental and survey research are often poor at identifying (Maxwell, 2004a).

5. Developing causal explanations. The traditional view that qualitative research cannot identify causal relationships is based on a restrictive and philosophically outdated concept of causality (Maxwell, 2004b), and both qualitative and quantitative researchers are increasingly accepting the legitimacy of using qualitative methods for causal inference (e.g., Shadish, Cook, & Campbell, 2002). Such an approach requires thinking of causality in terms of processes and mechanisms, rather than simply demonstrating regularities in the relationships between variables (Maxwell, 2004a); I discuss this in more detail in the section on research questions. Deriving causal explanations from a qualitative study is not an easy or straightforward task, but qualitative research is not different from quantitative research in this respect. Both approaches need to identify and deal with the plausible validity threats to any proposed causal explanation, as discussed below.

These intellectual goals, and the inductive, open-ended strategy that they require, give qualitative research an advantage in addressing numerous practical goals, including the following.

Generating results and theories that are understandable and experientially credible, both to the people being studied and to others (Bolster, 1983). Although quantitative data may have greater credibility for some goals and audiences, the specific detail and personal immediacy of qualitative data can lead to the greater influence of the latter in other situations. For example, I was involved in one evaluation, of how teaching rounds in one hospital department could be improved, that relied primarily on participant observation of rounds and open-ended interviews with staff physicians and residents (Maxwell, Cohen, & Reinhard, 1983). The evaluation led to decisive department action, in part because department members felt that the report, which contained detailed descriptions of activities during rounds and numerous quotes from interviews to support the analysis of the problems with rounds, "told it like it really was" rather than simply presenting numbers and generalizations to back up its recommendations.

Conducting formative studies, ones that are intended to help improve existing practice rather than simply to determine the outcomes of the program or practice being studied (Scriven, 1991). In such studies, which are particularly useful for applied research, it is more important to understand the process by which things happen in a particular situation than to measure outcomes rigorously or to compare a given situation with others.

Engaging in collaborative, action, or "empowerment" research with practitioners or research participants (e.g., Cousins & Earl, 1995; Fetterman, Kaftarian, & Wandersman, 1996; Tolman & Brydon-Miller, 2001; Whyte, 1991). The focus of qualitative research on particular contexts and their meaning for the participants in these contexts, and on the processes occurring in these contexts, makes it especially suitable for collaborations with practitioners or with members of the community being studied (Patton, 1990, pp. 129–130; Reason, 1994).

A useful way of sorting out and formulating the goals of your study is to write memos in which you reflect on your goals and motives, as well as the implications of these for your design decisions (for more information on such memos, see Maxwell, 2005, pp. 11–13; Mills, 1959, pp. 197–198; Strauss & Corbin, 1990, chap. 12). See Exercise 1.

Conceptual Framework: What Do You Think Is Going On?

The conceptual framework of your study is the system of concepts, assumptions, expectations, beliefs, and theories that supports and informs your research. Miles and Huberman (1994) state that a conceptual framework "explains, either graphically or in narrative form, the main things to be studied—the key factors, concepts, or variables—and the presumed relationships among them" (p. 18). Here, I use the term in a broader sense that also includes the actual ideas and beliefs that you hold about the phenomena studied, whether these are written down or not.

Thus, your conceptual framework is a formulation of what you think is *going on* with the phenomena you are studying—a tentative *theory* of what is happening and

why. Theory provides a model or map of *why* the world is the way it is (Strauss, 1995). It is a simplification of the world, but a simplification aimed at clarifying and explaining some aspect of how it works. It is not simply a "framework," although it can provide that, but a *story* about what you think is happening and why. A useful theory is one that tells an enlightening story about some phenomenon, one that gives you new insights and broadens your understanding of that phenomenon. The function of theory in your design is to inform the rest of the design—to help you assess your goals, develop and select realistic and relevant research questions and methods, and identify potential validity threats to your conclusions.

What is often called the "research problem" is a part of your conceptual framework, and formulating the research problem is often seen as a key task in designing your study. It is part of your conceptual framework (although it is often treated as a separate component of a research design) because it identifies something that is *going on* in the world, something that is itself problematic or that has consequences that are problematic.

The conceptual framework of a study is often labeled the "literature review." This can be a dangerously misleading term, for three reasons. First, it can lead you to focus narrowly on "literature," ignoring other conceptual resources that may be of equal or greater importance for your study, including unpublished work, communication with other researchers, and your own experience and pilot studies. Second, it tends to generate a strategy of "covering the field" rather than focusing specifically on those studies and theories that are particularly *relevant* to your research (Maxwell, 2006). Third, it can make you think that your task is simply descriptive—to tell what previous researchers have found or what theories have been proposed. In developing a conceptual framework, your purpose is not only descriptive, but also critical; you need to treat "the literature" not as an *authority* to be deferred to, but as a useful but fallible source of *ideas* about what's going on, and to attempt to see alternative ways of framing the issues (Locke, Silverman, & Spirduso, 2004).

Another way of putting this is that the conceptual framework for your research study is something that is *constructed,* not found. It incorporates pieces that are borrowed from elsewhere, but the structure, the overall coherence, is something that *you* build, not something that exists ready-made. Becker (1986, 141ff.) systematically develops the idea that prior work provides *modules* that you can use in building your conceptual framework, modules that you need to examine critically to make sure they work effectively with the rest of your design. There are four main sources for these modules: your own experiential knowledge, existing theory and research, pilot and exploratory studies, and thought experiments. Before addressing the sources of these modules, however, I want to discuss a particularly important part of your conceptual framework—the research paradigm(s) within which you situate your work.

Connecting With a Research Paradigm

One of the critical decisions that you will need to make in designing your study is the paradigm (or paradigms) within which you will situate your work. This use

of the term *paradigm*, which derives from the work of the historian of science Thomas Kuhn, refers to a set of very general philosophical assumptions about the nature of the world (ontology) and how we can understand it (epistemology), assumptions that tend to be shared by researchers working in a specific field or tradition. Paradigms also typically include specific methodological strategies linked to these assumptions, and identify particular studies that are seen as exemplifying these assumptions and methods. At the most abstract and general level, examples of such paradigms are philosophical positions such as positivism, constructivism, realism, and pragmatism, each embodying very different ideas about reality and how we can gain knowledge of it. At a somewhat more specific level, paradigms that are relevant to qualitative research include interpretivism, critical theory, feminism, postmodernism, and phenomenology, and there are even more specific traditions within these (for more detailed guidance, see Creswell, 1997; Schram, 2005). I want to make several points about using paradigms in your research design:

1. Although some people refer to "the qualitative paradigm," there are many different paradigms within qualitative research, some of which differ radically in their assumptions and implications (see also Denzin & Lincoln, 2000; Pitman & Maxwell, 1992). You need to make explicit which paradigm(s) your work will draw on, since a clear paradigmatic stance helps guide your design decisions and to justify these decisions. Using an established paradigm (such as grounded theory, critical realism, phenomenology, or narrative research) allows you to build on a coherent and well-developed approach to research, rather than having to construct all of this yourself.

2. You don't have to adopt in total a single paradigm or tradition. It is possible to combine aspects of different paradigms and traditions, although if you do this you will need to carefully assess the compatibility of the modules that you borrow from each. Schram (2005) gives a valuable account of how he combined the ethnographic and life history traditions in his dissertation research on an experienced teacher's adjustment to a new school and community.

3. Your selection of a paradigm (or paradigms) is not a matter of free choice. You have already made many assumptions about the world, your topic, and how we can understand these, even if you have never consciously examined these. Choosing a paradigm or tradition primarily involves assessing which paradigms best fit with your own assumptions and methodological preferences; Becker (1986, pp. 16–17) makes the same point about using theory in general. Trying to work within a paradigm (or theory) that doesn't fit your assumptions is like trying to do a physically demanding job in clothes that don't fit—at best you'll be uncomfortable, at worst it will keep you from doing the job well. Such a lack of fit may not be obvious at the outset; it may only emerge as you develop your conceptual framework, research questions, and methods, since these should also be compatible with your paradigmatic stance.

Experiential Knowledge

Traditionally, what you bring to the research from your background and identity has been treated as "bias," something whose influence needs to be *eliminated*

from the design, rather than a valuable component of it. However, the explicit incorporation of your identity and experience (what Strauss, 1987, calls "experiential data") in your research has recently gained much wider theoretical and philosophical support (e.g., Berg & Smith, 1988; Denzin & Lincoln, 2000; Jansen & Peshkin, 1992; Strauss, 1987). Using this experience in your research can provide you with a major source of insights, hypotheses, and validity checks. For example, Grady and Wallston (1988, p. 41) describe how one health care researcher used insights from her own experience to design a study of why many women don't do breast self-examination.

This is not a license to impose your assumptions and values uncritically on the research. Reason (1988) uses the term *critical subjectivity* to refer to

> a quality of awareness in which we do not suppress our primary experience; nor do we allow ourselves to be swept away and overwhelmed by it; rather we raise it to consciousness and use it as part of the inquiry process. (p. 12)

However, there are few well-developed and explicit strategies for doing this. The "researcher identity memo" is one technique; this involves reflecting on, and writing down, the different aspects of your experience that are potentially relevant to your study. Example 7.1 is part of one of my own researcher identity memos, written when I was working on a paper of diversity and community; Exercise 1 involves writing your own researcher identity memo. (For more on this technique, see Maxwell, 2005.) Doing this can generate unexpected insights and connections, as well as create a valuable record of these.

Example 7.1   Identity Memo on Diversity

I can't recall when I first became interested in diversity; it's been a major concern for at least the past 20 years . . . I do remember the moment that I consciously realized that my mission in life was "to make the world safe for diversity"; I was in Regenstein Library at the University of Chicago one night in the mid-1970s talking to another student about why we had gone into anthropology, and the phrase suddenly popped into my head.

However, I never gave much thought to tracing this position any further back. I remember, as an undergraduate, attending a talk on some political topic, and being struck by two students' bringing up issues of the rights of particular groups to retain their cultural heritages; it was an issue that had never consciously occurred to me. And I'm sure that my misspent youth reading science fiction rather than studying had a powerful influence on my sense of the importance of tolerance and understanding of diversity; I wrote my essay for my application to college on tolerance in high school society. But I didn't think much about where all this came from.

(Continued)

(Continued)

It was talking to the philosopher Amelie Rorty in the summer of 1991 that really triggered my awareness of these roots. She had given a talk on the concept of moral diversity in Plato, and I gave her a copy of my draft paper on diversity and solidarity. We met for lunch several weeks later to discuss these issues, and at one point she asked me how my concern with diversity connected with my background and experiences. I was surprised by the question, and found I really couldn't answer it. She, on the other hand, had thought about this a lot, and talked about her parents emigrating from Belgium to the United States, deciding they were going to be farmers like "real Americans," and with no background in farming, buying land in rural West Virginia and learning how to survive and fit into a community composed of people very different from themselves.

This made me start thinking, and I realized that as far back as I can remember I've felt different from other people, and had a lot of difficulties as a result of this difference and my inability to "fit in" with peers, relatives, or other people generally. This was all compounded by my own shyness and tendency to isolate myself, and by the frequent moves that my family made while I was growing up.

The way in which this connects with my work on diversity is that my main strategy for dealing with my difference from others, as far back as I can remember, was *not* to try to be more *like* them (similarity-based), but to try to be *helpful* to them (contiguity-based). This is a bit oversimplified, because I also saw myself as somewhat of a "social chameleon," adapting to whatever situation I was in, but this adaptation was much more an *interactional* adaptation than one of becoming fundamentally similar to other people.

It now seems incomprehensible to me that I never saw the connections between this background and my academic work.

[The remainder of the memo discusses the specific connections between my experience and the theory of diversity and community that I had been developing, which sees both similarity (shared characteristics) and contiguity (interaction) as possible sources of solidarity and community.]

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Existing Theory and Research

The second major source of modules for your conceptual framework is existing theory and research—not simply published work, but also unpublished papers and dissertations, conference presentations, and what is in the heads of active researchers in your field (Locke, Spirduso, & Silverman, 2000). I will begin with theory, because

it is for most people the more problematic and confusing of the two, and then deal with using prior research for other purposes than as a source of theory.

Using existing theory in qualitative research has both advantages and dangers. A useful theory helps you *organize* your data. Particular pieces of information that otherwise might seem unconnected or irrelevant to one another or to your research questions can be related if you can fit them into the theory. A useful theory also *illuminates* what you are seeing in your research. It draws your attention to particular events or phenomena and sheds light on relationships that might otherwise go unnoticed or misunderstood.

However, Becker (1986) warns that the existing literature, and the assumptions embedded in it, can deform the way you frame your research, causing you to overlook important ways of conceptualizing your study or key implications of your results. The literature has the advantage of what he calls "ideological hegemony," making it difficult for you to see any phenomenon in ways that are different from those that are prevalent in the literature. Trying to fit your insights into this established framework can deform your argument, weakening its logic and making it harder for you to see what this new way of framing the phenomenon might contribute. Becker describes how existing theory and perspectives deformed his early research on marijuana use, leading him to focus on the dominant question in the literature and to ignore the most interesting implications and possibilities of his study.

Becker (1986) argues that there is no way to be sure when the established approach is wrong or misleading or when your alternative is superior. All you can do is try to identify the ideological component of the established approach, and see what happens when you abandon these assumptions. He asserts that "a serious scholar ought routinely to inspect competing ways of taking about the same subject matter," and warns, "Use the literature, don't let it use you" (p. 149; see also Mills, 1959).

A review of relevant prior research can serve several other purposes in your design besides providing you with existing theory (see Locke et al., 2004; Strauss, 1987, pp. 48–56). First, you can use it to develop a *justification* for your study—to show how your work will address an important need or unanswered question. Second, it can inform your *decisions about methods,* suggesting alternative approaches or revealing potential problems with your plans. Third, it can be a source of *data* that you can use to test or modify your theories. You can see if existing theory, the results of your pilot research, or your experiential understanding is supported or challenged by previous studies. Finally, you can use ideas in the literature to help you *generate* theory, rather than simply borrowing such theory from the literature.

Pilot and Exploratory Studies

Pilot studies serve some of the same functions as prior research, but they can be focused more precisely on your own concerns and theories. You can design pilot studies specifically to test your ideas or methods and explore their implications, or to inductively develop *grounded* theory. One particular use that pilot studies have in qualitative research is to generate an understanding of the concepts and theories held by the people you are studying—what I have called "interpretation" (Maxwell, 1992).

This is not simply a source of additional concepts for your theory; instead, it provides you with an understanding of the *meaning* that these phenomena and events have for the actors who are involved in them, and the perspectives that inform their actions. In a qualitative study, these meanings and perspectives should constitute an important focus of your theory; as discussed earlier, they are one of the things your theory is *about,* not simply a source of theoretical insights and building blocks for the latter.

Thought Experiments

Thought experiments have a long and respected tradition in the physical sciences (much of Einstein's work was based on thought experiments) but have received little attention in discussions of research design, particularly qualitative research design. Thought experiments draw on both theory and experience to answer "what if" questions, to seek out the logical implications of various properties of the phenomena you want to study. They can be used both to test your current theory for logical problems and to generate new theoretical insights. They encourage creativity and a sense of exploration and can help you make explicit the experiential knowledge that you already possess. Finally, they are easy to do, once you develop the skill. Valuable discussions of thought experiments in the social sciences are presented by Mills (1959) and Lave and March (1975).

Experience, prior theory and research, pilot studies, and thought experiments are the four major sources of the conceptual framework for your study. The ways in which you can put together a useful and valid conceptual framework from these sources are particular to each study, and not something for which any cookbook exists. The main thing to keep in mind is the need for integration of these components with one another and with your goals and research questions.

Concept Mapping

A particularly valuable tool for generating and understanding these connections in your research is a technique known as concept mapping (Miles & Huberman, 1994; Novak & Gowin, 1984). Kane and Trochim (Chapter 14, this volume) provide an overview of concept mapping but focus on using concept mapping with groups of stakeholders for organizational improvement or evaluation, employing mainly quantitative techniques. However, concept mapping has many other uses, including clarification and development of your own ideas about what's going on with the phenomena you want to study. Exercise 2 is designed to help you develop an initial concept map for your study (for additional guidance, see the sources above and Maxwell, 2005).

Research Questions: What Do You Want to Understand?

Your research questions—what you specifically want to learn or understand by doing your study—are at the heart of your research design. They are the one

component that directly connects to all the other components of the design. More than any other aspect of your design, your research questions will have an influence on, and should be responsive to, every other part of your study.

This is different from seeing research questions as the *starting point* or primary determinant of the design. Models of design that place the formulation of research questions at the beginning of the design process, and that see these questions as determining the other aspects of the design, don't do justice to the interactive and inductive nature of qualitative research. The research questions in a qualitative study should not be formulated in detail until the goals and conceptual framework (and sometimes general aspects of the sampling and data collection) of the design are clarified, and should remain sensitive and adaptable to the implications of other parts of the design. Often, you will need to do a significant part of the research before it is clear to you what specific research questions it makes sense to try to answer.

This does not mean that qualitative researchers should, or usually do, begin studies with *no* questions, simply going into the field with "open minds" and seeing what is there to be investigated. Every researcher begins with a substantial base of experience and theoretical knowledge, and these inevitably generate certain questions about the phenomena studied. These initial questions frame the study in important ways, influence decisions about methods, and are one basis for further focusing and development of more specific questions. However, these specific questions are generally the *result* of an interactive design process, rather than the starting point for that process. For example, Suman Bhattacharjea (1994; see also Maxwell, 2005, p. 66) spent a year doing field research on women's roles in a Pakistani educational district office before she was able to focus on two specific research questions and submit her dissertation proposal; at that point, she had also developed several hypotheses as tentative answers to these questions.

The Functions of Research Questions

In your research design, the research questions serve two main functions: to help you focus the study (the questions' relationship to your goals and conceptual framework) and to give you guidance for how to conduct it (their relationship to methods and validity). A design in which the research questions are too general or too diffuse creates difficulties both for conducting the study—in knowing what site or informants to choose, what data to collect, and how to analyze these data—and for clearly connecting what you learn to your goals and existing knowledge (Miles & Huberman, 1994, pp. 22–25). Research questions that are precisely framed too early in the study, on the other hand, may lead you to overlook areas of theory or prior experience that are relevant to your understanding of what is going on, or cause you to pay too little attention to a wide range of data early in the study, data that can reveal important and unanticipated phenomena and relationships.

A third problem is that you may be smuggling unexamined assumptions into the research questions themselves, imposing a conceptual framework that doesn't fit the reality you are studying. A research question such as "How do elementary school teachers deal with the experience of isolation from their colleagues in their

classrooms?" assumes that teachers *do* experience such isolation. Such an assumption needs to be carefully examined and justified, and without this justification it might be better to frame such a question as a tentative subquestion to broader questions about the nature of classroom teachers' experience of their work and their relations with colleagues.

For all these reasons, there is real danger to your study if you do not carefully formulate your research questions in connection with the other components of your design. Your research questions need to take account of what you want to accomplish by doing the study (your goals), and of what is already known about the things you want to study and your tentative theories about these phenomena (your conceptual framework). There is no reason to pose research questions for which the answers are already available, that don't clearly connect to what you think is actually going on, or that would have no direct relevance to your goals in doing the research.

Likewise, your research questions need to be ones that are answerable by the kind of study you can actually conduct. There is no value to posing questions that no feasible study could answer, either because the data that could answer them could not be obtained, or because any conclusions you might draw from these data would be subject to serious validity threats.

A common problem in the development of research questions is confusion between research issues (what you want to *understand* by doing the study) and practical issues (what you want to *accomplish*). Your research questions need to *connect* clearly to your practical concerns, but in general an empirical study cannot directly answer practical questions such as, "How can I improve this program?" or "What is the best way to increase students' knowledge of science?" To address such practical questions, you need to focus on what you don't *understand* about the phenomena you are studying, and investigate what is really going on with these phenomena. For example, the practical goal of Martha Regan-Smith's (1992) dissertation research was to improve the teaching of the basic sciences in medical school (see Maxwell, 2005, 117ff.). However, her research questions focused not on this goal but on what exceptional teachers in her school did that helped students learn science— something she had realized that she didn't know and that she believed would have important implications for how to improve such teaching overall.

A second confusion, one that can create problems for interview studies, is that between *research* questions and *interview* questions. Your research questions identify the things that you want to understand; your interview questions generate the data that you need to understand these things. This distinction is discussed in more detail below, in the section on methods.

There are three issues that you should keep in mind in formulating research questions for applied social research. First, research questions may legitimately be framed in particular as well as general terms. There is a strong tendency in basic research to state research questions in general terms, such as, "How do students deal with racial and ethnic difference in multiracial schools?" and then to "operationalize" these questions by selecting a particular sample or site. This tendency can be counterproductive when the goal of your study is to understand and improve some particular program, situation, or practice. In applied research,

it is often more appropriate to formulate research questions in particular terms, such as, "How do students at North High School deal with racial and ethnic difference?"

Second, some researchers believe that questions should be stated in terms of what the respondents report or what can be directly observed, rather than in terms of inferred behavior, beliefs, or causal influences. This is what I call an instrumentalist or positivist, rather than a realist, approach to research questions (Maxwell, 1992; Norris, 1983). Instrumentalists formulate their questions in terms of observable or measurable data and are suspicious of inferences to things that cannot be defined in terms of such data. For example, instrumentalists would reject a question such as, "How do exemplary teachers help medical students learn science?" and replace it with questions such as, "How do medical students *report that* exemplary teachers help them learn science?" or "How are exemplary teachers *observed to teach* basic science?"

Realists, in contrast, don't assume that research questions about feelings, beliefs, intentions, prior behavior, effects, and so on need to be reduced to, or reframed as, questions about the actual data that one uses. Instead, they treat their data as fallible *evidence* about these phenomena, to be used critically to develop and test ideas about what is going on (Campbell, 1988; Maxwell, 1992).

The main risk of using instrumentalist questions is that you will lose sight of what you are really interested in, and define your study in ways that obscure the actual phenomena you want to investigate, ending up with a rigorous but uninteresting conclusion. As in the joke about the man who was looking for his keys under the streetlight (rather than where he dropped them) because the light was better there, you may never find what you started out to look for. An instrumentalist approach to your research questions may also make it more difficult for your study to address important goals of your study directly, and it can inhibit your theorizing about phenomena that are not directly observable.

My own preference is to use realist questions and to address, as systematically and rigorously as possible, the validity threats that this approach involves. The seriousness of these validity threats (such as self-report bias) needs to be assessed in the context of a particular study; these threats are often not as serious as instrumentalists imply. There are also effective ways to address these threats in a qualitative design, which I discuss below in the section on validity. The risk of trivializing your study by restricting your questions to what can be directly observed is usually more serious than the risk of drawing invalid conclusions. As the statistician John Tukey (1962) put it, "Far better an approximate answer to the right question, which is often vague, than an exact answer to the wrong question, which can always be made precise" (p. 13).

One issue that is not entirely a matter of realism versus instrumentalism is whether research questions in interview studies should be framed in terms of the respondents' perceptions or beliefs rather than the actual state of affairs. You should base this decision not simply on the seriousness of the validity threats, but also on what you actually want to understand. In many qualitative studies, the real interest is in how participants make sense of what has happened, and how this perspective informs their actions, rather than determining precisely what took place.

Finally, many researchers (consciously or unconsciously) focus their questions on variance rather than process (Maxwell, 2004a; Mohr, 1982, 1995, 1996). Variance questions deal with difference and correlation; they often begin with "Is there," "Does," "How much," or "To what extent." For example, a variance approach to Martha Regan-Smith's (1992) study would ask questions such as, "Do exemplary medical school teachers differ from others in their teaching of basic science?" or "Is there a relationship between teachers' behavior and students' learning?" and attempt to measure these differences and relationships. Process questions, in contrast, focus on *how* and *why* things happen, rather than *whether* there is a particular difference or relationship or how much it is explained by other variables. Regan-Smith's actual questions focused on *how* these teachers helped students learn—that is, the process by which their teaching helped the students learn.

In a qualitative study, it can be dangerous for you to frame your research questions in a way that focuses on differences and their explanation. This may lead you to begin thinking in variance terms, to try to identify the variables that will account for observed or hypothesized differences, and to overlook the real strength of a qualitative approach, which is in understanding the process by which phenomena take place. Variance questions are often best answered by quantitative approaches, which are powerful ways of determining *whether* a particular result is causally related to one or another variable, and to *what extent* these are related. However, qualitative research is often better at showing *how* this occurred. Variance questions are legitimate in qualitative research, but they are often best grounded in the answers to prior process questions (Maxwell 2004a).

Qualitative researchers therefore tend to generate two kinds of questions that are much better suited to process theory than to variance theory: (1) questions about the *meaning* of events and activities to the people involved in them and (2) questions about the influence of the physical and social *context* on these events and activities. (See the earlier discussion of meaning and context as research goals.) Because both of these types of questions involve situation-specific phenomena, they do not lend themselves to the kinds of comparison and control that variance theory requires. Instead, they generally involve an open-ended, inductive approach to discover what these meanings and influences are and *how* they are involved in these events and activities—an inherently processual orientation.

Developing relevant, focused, answerable research questions takes time; such questions cannot be thrown together quickly, nor in most studies can they be definitively formulated before data collection and analysis begin. Generating good questions requires that you pay attention not just to the questions themselves but to their connections with all the other design components: the goals that answering the questions might serve, the implications for your questions of your conceptual framework, the methods you could use to answer the questions, and the validity threats you will need to address. As is true with the other components of your design, writing memos about these issues is an extremely useful tool for developing your questions (Maxwell, 2005, pp. 76–78).

Methods: What Will You Actually Do?

There is no "cookbook" for doing qualitative research. The appropriate answer to almost any question about the use of qualitative methods is, "It depends." The value and feasibility of your research methods cannot be guaranteed by your adhering to methodological rules; rather, they depend on the specific setting and phenomena you are studying and the actual consequences of your strategy for studying it.

Prestructuring a Qualitative Study

One of the most important issues in designing a qualitative study is how much you should attempt to prestructure your methods. Structured approaches can help ensure the comparability of data across sources and researchers and are therefore particularly useful in answering variance questions, questions that deal with *differences* between things and the explanation for these differences. Unstructured approaches, in contrast, allow the researcher to focus on the *particular* phenomena studied; they trade generalizability and comparability for internal validity and contextual understanding and are particularly useful for understanding the processes that led to specific outcomes, what Huberman and Miles (1988) call "local causality." Sayer (1992, 241ff.) refers to these two approaches as "extensive" and "intensive" research designs, respectively.

However, Miles and Huberman (1994) warn that

> highly inductive, loosely designed studies make good sense when experienced researchers have plenty of time and are exploring exotic cultures, understudied phenomena, or very complex social phenomena. But if you're new to qualitative studies and are looking at a better understood phenomenon within a familiar culture or subculture, a loose, inductive design is a waste of time. Months of fieldwork and voluminous case studies may yield only a few banalities. (p. 17)

They also point out that prestructuring reduces the amount of data that you have to deal with, functioning as a form of preanalysis that simplifies the analytic work required.

Unfortunately, most discussions of this issue treat prestructuring as a single dimension, and view it in terms of metaphors such as hard versus soft and tight versus loose. Such metaphors have powerful connotations (although they are different for different people) that can lead you to overlook or ignore the numerous ways in which studies can vary, not just in the *amount* of prestructuring, but in *how* prestructuring is used. For example, you could employ an extremely open approach to data collection, but use these data for a confirmatory test of explicit hypotheses based on a prior theory (e.g., Festinger, Riecker, & Schachter, 1956). In contrast, the approach often known as ethnoscience or cognitive anthropology (Werner & Schoepfle, 1987a, 1987b) employs highly structured data collection techniques, but interprets these data in a largely inductive manner with very few preestablished

categories. Thus, the decision you face is not primarily *whether* or *to what extent* you prestructure your study, but *in what ways* you do this, and *why.*

Finally, it is worth keeping in mind that you can lay out a *tentative* plan for some aspects of your study in considerable detail, but leave open the possibility of substantially revising this if necessary. Emergent insights may require new sampling plans, different kinds of data, and different analytic strategies.

I distinguish four main components of qualitative methods:

1. The research relationship that you establish with those you study

2. Sampling: what times, settings, or individuals you select to observe or interview, and what other sources of information you decide to use

3. Data collection: how you gather the information you will use

4. Data analysis: what you do with this information to make sense of it

It is useful to think of all these components as involving *design* decisions—key issues that you should consider in planning your study and that you should rethink as you are engaged in it.

Negotiating a Research Relationship

Your relationships with the people in your study can be complex and changeable, and these relationships will necessarily affect you as the "research instrument," as well as have implications for other components of your research design. My changing relationships with the people in the Inuit community in which I conducted my dissertation research (Maxwell, 1986) had a profound effect not only on my own state of mind, but also on who I was able to interview, my opportunities for observation of social life, the quality of the data I collected, the research questions I was able to answer, and my ability to test my conclusions. The term *reflexivity* (Hammersley & Atkinson, 1995) is often used for this unavoidable mutual influence of the research participants and the researcher on each other.

There are also philosophical, ethical, and political issues that should inform the kind of relationship that you want to establish. In recent years, there has been a growing interest in alternatives to the traditional style of research, including participatory action research, collaborative research, feminist research, critical ethnography, and empowerment research (see Denzin & Lincoln, 2005; Fetterman et al., 1996; Oja & Smulyan, 1989; Whyte, 1991). Each of these modes of research involves different sorts of relationships between the researcher and the participants in the research and has different implications for the rest of the research design.

Thus, it is important that you think about the kinds of relationships you want to have with the people whom you study, and what you need to do to establish such relationships. I see these as *design decisions,* not simply as external factors that may affect your design. Although they are not completely under your control and cannot be defined precisely in advance, they are still matters that require systematic planning and reflection if your design is to be as coherent as possible.

Decisions About Sampling: Where, When, Who, and What

Whenever you have a choice about when and where to observe, whom to talk to, or what information sources to focus on, you are faced with a sampling decision. Even a single case study involves a choice of this case rather than others, as well as requiring sampling decisions *within* the case itself. Miles and Huberman (1994, pp. 27–34) and LeCompte and Preissle (1993, pp. 56–85) provide valuable discussions of particular sampling issues; here, I want to talk more generally about the nature and purposes of sampling in qualitative research.

Works on quantitative research generally treat anything other than probability sampling as "convenience sampling," and strongly discourage the latter. For qualitative research, this ignores the fact that most sampling in qualitative research is neither probability sampling nor convenience sampling, but falls into a third category: purposeful sampling (Patton, 1990, 169ff.). This is a strategy in which particular settings, persons, or events are deliberately selected for the important information they can provide that cannot be gotten as well from other choices.

There are several important uses for purposeful sampling. First, it can be used to achieve representativeness or typicality of the settings, individuals, or activities selected. A small sample that has been systematically selected for typicality and relative homogeneity provides far more confidence that the conclusions adequately represent the average members of the population than does a sample of the same size that incorporates substantial random or accidental variation. Second, purposeful sampling can be used to capture adequately the heterogeneity in the population. The goal here is to ensure that the conclusions adequately represent the entire *range* of variation rather than only the typical members or some subset of this range. Third, a sample can be purposefully selected to allow for the examination of cases that are critical for the theories that the study began with or that have subsequently been developed. Finally, purposeful sampling can be used to establish particular comparisons to illuminate the reasons for differences between settings or individuals, a common strategy in multicase qualitative studies.

You should not make sampling decisions in isolation from the rest of your design. They should take into account your research relationship with study participants, the feasibility of data collection and analysis, and validity concerns, as well as your goals and conceptual framework. In addition, feasible sampling decisions often require considerable knowledge of the setting studied, and you will need to alter them as you learn more about what decisions will work best to give you the data you need.

Decisions About Data Collection

Most qualitative methods texts devote considerable space to the strengths and limitations of particular data collection methods (see particularly, Bogdan & Biklen, 2006; Emerson, Fretz, & Shaw, 1995; Patton, 2000; Weiss, 1994), so I won't deal with these issues here. Instead, I want to address two key design issues in selecting and using data collection methods: the relationship between research questions and data collection methods, and the triangulation of different methods.

Although researchers often talk about "operationalizing" their research questions, or of "translating" the research questions into interview questions, this language is a vestigial remnant of logical positivism that bears little relationship to qualitative research practice. There is no way to convert research questions into useful methods decisions; your methods are the *means* to answering your research questions, not a logical transformation of the latter. Their selection depends not only on your research questions, but on the actual research situation and what will work most effectively in that situation to give you the data you need. For example, your interview questions should be judged not by whether they can be logically derived from your research questions, but by whether they provide the *data* that will contribute to answering these questions, an issue that may require pilot testing a variety of questions or actually conducting a significant number of the interviews. You need to anticipate, as best you can, how particular interview questions or other data collection strategies will actually work in practice. In addition, your interview questions and observational strategies will generally be far more focused, context-specific, and diverse than the broad, general research questions that define what you seek to understand in conducting the study. The development of a good data collection plan requires creativity and insight, not a mechanical translation of your research questions into methods.

In addition, qualitative studies generally rely on the integration of data from a variety of methods and sources of information, a general principle known as triangulation (Denzin, 1970). This strategy reduces the risk that your conclusions will reflect only the systematic biases or limitations of a specific method, and allows you to gain a better assessment of the validity and generality of the explanations that you develop. Triangulation is also discussed below in the section on validity.

Decisions About Data Analysis

Analysis is often conceptually separated from design, especially by writers who see design as what happens *before* the data are actually collected. Here, I treat analysis as a part of design (Coffey & Atkinson, 1996, p. 6), and as something that must itself be designed. Every qualitative study requires decisions about how the analysis will be done, and these decisions should influence, and be influenced by, the rest of the design.

A basic principle of qualitative research is that data analysis should be conducted simultaneously with data collection (Coffey & Atkinson, 1996, p. 2). This allows you to progressively focus your interviews and observations, and to decide how to test your emerging conclusions.

Strategies for qualitative analysis fall into three main groups: categorizing strategies (such as coding and thematic analysis), connecting strategies (such as narrative analysis and individual case studies), and memos and displays (for a more detailed discussion, see Coffey & Atkinson, 1996; Dey, 1993; Maxwell, 2005). These methods can, and generally should, be combined, but I will begin by discussing them separately.

The main categorizing strategy in qualitative research is coding. This is rather different from coding in quantitative research, which consists of applying a pre-established set of categories to the data according to explicit, unambiguous rules,

with the primary goal being to generate frequency counts of the items in each category. In qualitative research, in contrast, the goal of coding is not to produce counts of things but to "fracture" (Strauss, 1987, p. 29) the data and rearrange it into categories that facilitate comparison between things in the same category and between categories. These categories may be derived from existing theory, inductively generated during the research (the basis for what Glaser & Strauss, 1967, term *grounded theory*), or drawn from the categories of the people studied (what anthropologists call "emic" categories). Such categorizing makes it much easier for you to develop a general understanding of what is going on, to generate themes and theoretical concepts, and to organize and retrieve your data to test and support these general ideas. (An excellent practical source on coding is Bogdan & Biklen, 2006.)

However, fracturing and categorizing your data can lead to the neglect of contextual relationships among these data, relationships based on contiguity rather than similarity (Maxwell & Miller, 2008), and can create analytic blinders, preventing you from seeing alternative ways of understanding your data. Atkinson (1992) describes how his initial categorizing analysis of data on the teaching of general medicine affected his subsequent analysis of the teaching of surgery:

> On rereading the surgery notes, I initially found it difficult to *escape* those categories I had initially established [for medicine]. Understandably, they furnished a powerful conceptual grid . . . The notes as I confronted them had been fragmented into the constituent themes. (pp. 458–459)

An important set of distinctions in planning your categorizing analysis is between what I call organizational, substantive, and theoretical categories (Maxwell, 2005). Organizational categories are generally broad subjects or issues that you establish prior to your interviews or observations, or that could usually have been anticipated. McMillan and Schumacher (2001) refer to these as *topics* rather than categories, stating that "a topic is the descriptive name for the subject matter of the segment. You are not, at this time, asking 'What is said?' which identifies the meaning of the segment" (p. 469). In a study of elementary school principals' practices of retaining children in a grade, examples of such categories are "retention," "policy," "goals," "alternatives," and "consequences" (p. 470). Organizational categories function primarily as "bins" for sorting the data for further analysis. They may be useful as chapter or section headings in presenting your results, but they don't help much with the actual work of making sense of what's going on.

This latter task requires substantive and/or theoretical categories, ones that provide some insight into what's going on. These latter categories can often be seen as subcategories of the organizational ones, but they are generally *not* subcategories that, in advance, you could have known would be significant, unless you are already fairly familiar with the kind of participants or setting you're studying or are using a well-developed theory. They implicitly make some sort of claim about the topic being studied—that is, they could be *wrong,* rather than simply being conceptual boxes for holding data.

Substantive categories are primarily *descriptive,* in a broad sense that include description of participants' concepts and beliefs; they stay close to the data categorized and don't

inherently imply a more abstract theory. In the study of grade retention mentioned above, examples of substantive categories would be "retention as failure," "retention as a last resort," "self-confidence as a goal," "parent's willingness to try alternatives," and "not being in control (of the decision)" (drawn from McMillan & Schumacher, 2001, p. 472). Substantive categories are often inductively developed through a close "open coding" of the data (Corbin & Strauss, 2007). They can be used in *developing* a more general theory of what's going on, but they don't *depend on* this theory.

Theoretical categories, in contrast, place the coded data into a more general or abstract framework. These categories may be derived either from prior theory or from an inductively developed theory (in which case the concepts and the theory are usually developed concurrently). They usually represent the *researcher's* concepts (what are called "etic" categories), rather than denoting participants' own concepts ("emic" concepts). For example, the categories "nativist," "remediationist," or "interactionist," used to classify teachers' beliefs about grade retention in terms of prior analytic distinctions (Smith & Shepard, 1988), would be theoretical.

The distinction between organizational categories and substantive or theoretical categories is important because some qualitative researchers use mostly organizational categories to formally analyze their data, and don't systematically develop and apply substantive or theoretical categories in developing their conclusions. The more data you have, the more important it is to create the latter types of categories; with any significant amount of data, you can't hold all the data relevant to particular substantive or theoretical points in your mind, and need a formal organization and retrieval system. In addition, creating substantive categories is particularly important for ideas (including participants' ideas) that don't fit into existing organizational or theoretical categories; such substantive ideas may get lost, or never developed, unless they can be captured in explicit categories. Consequently, you need to include strategies for developing substantive and theoretical categories in your design.

Connecting strategies, instead of fracturing the initial text into discrete elements and re-sorting it into categories, attempt to understand the data (usually, but not necessarily, an interview transcript or other textual material) in context, using various methods to identify the relationships among the different elements of the text. Such strategies include some forms of case studies (Patton, 1990), profiles (Seidman, 1991), some types of narrative analysis (Coffey & Atkinson, 1996), and ethnographic microanalysis (Erickson, 1992). What all these strategies have in common is that they look for relationships that connect statements and events within a particular context into a coherent whole. Atkinson (1992) states,

> I am now much less inclined to fragment the notes into relatively small segments. Instead, I am just as interested in reading episodes and passages at greater length, with a correspondingly different attitude toward the act of reading and hence of analysis. Rather than constructing my account like a patchwork quilt, I feel more like working with the whole cloth . . . To be more precise, what now concerns me is the nature of these products as *texts.* (p. 460)

The distinction between categorizing and connecting strategies has important implications for your research questions. A research question that asks about the

way events in a specific context are connected cannot be answered by an exclusively categorizing analysis (Agar, 1991). Conversely, a question about similarities and differences across settings or individuals, or about general themes in your data, cannot be answered by an exclusively connecting analysis. Your analysis strategies have to be compatible with the questions you are asking. Both categorizing and connecting strategies are legitimate and valuable tools in qualitative analysis, and a study that relies on only one of these runs the risk of missing important insights.

The third category of analytic tools, memos and displays, is also a key part of qualitative analysis (Miles & Huberman, 1994, pp. 72–75; Strauss & Corbin, 1990, pp. 197–223). As discussed above, memos can perform functions not related to data analysis, such as reflection on methods, theory, or goals. However, displays and memos are valuable *analytic* techniques for the same reasons that they are useful for other purposes: They facilitate your thinking about relationships in your data and make your ideas and analyses visible and retrievable. You should write memos frequently while you are doing data analysis, in order to stimulate and capture your ideas about your data. Displays (Miles & Huberman, 1994), which include matrices or tables, networks or concept maps, and various other forms, also serve two other purposes: data reduction and the presentation of data or analysis in a form that allows you to see it as a whole.

There are now a substantial number of computer programs available for analyzing qualitative data (Weitzman, 2000). Although none of these programs eliminate the need to read your data and create your own concepts and relationships, they can enormously simplify the task of coding and retrieving data in a large project. However, most of these programs are designed primarily for categorizing analysis, and may distort your analytic strategy to favor such approaches (see Example 7.2). So-called hypertext programs (Coffey & Atkinson, 1996, pp. 181–186) allow you to create electronic links, representing any sort of connection you want, among data within a particular context, but the openness of such programs can make them difficult for less experienced researchers to use effectively. A few of the more structured programs, such as ATLAS/ti and HyperRESEARCH, enable you not only to create links among data chunks, codes, and memos, but also to display the resulting networks.

Example 7.2   A Mismatch Between Questions and Analysis

Mike Agar (1991) was once asked by a foundation to review a report on an interview study that they had commissioned, investigating how historians worked. The researchers had used the computer program The Ethnograph to segment and code the interviews by topic and collect together all the segments on the same topic; the report discussed each of these topics and provided examples of how the historians talked about these. However, the foundation felt that the report hadn't really answered their questions, which

(Continued)

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had to do with how individual historians thought about their work—their theories about how the different topics were connected, and the relationships that they saw between their thinking, actions, and results.

Answering the latter question would have required an analysis that elucidated these connections in each historian's interview. However, the categorizing analysis on which the report was based fragmented these connections, destroying the contextual unity of each historian's views and allowing only a collective presentation of shared concerns. Agar argues that the fault was not with The Ethnograph, which is extremely useful for answering questions that require categorization, but with its misapplication. He comments that "The Ethnograph represents a *part of* an ethnographic research process. When the part is taken for the whole, you get a pathological metonym that can lead you straight to the right answer to the wrong question" (p. 181).

SOURCE: From "The Right Brain Strikes Back, by M. Agar in *Using Computers in Qualitative Research* edited by N. G. Fielding and R. M. Lee, 1991. Copyright by SAGE.

Linking Methods and Questions

A useful technique for linking your research questions and methods (and also other aspects of your design) is a matrix in which you list your questions and identify how each of the components of your methods will help you get the data to answer these questions. Such a matrix displays the *logic* of your methods decisions. Figure 7.3 is an example of how such a matrix can be used; Exercise 3 helps you develop such a matrix for your own study.

Validity: How Might You Be Wrong?

Quantitative and experimental researchers generally attempt to design, in advance, controls that will deal with both anticipated and unanticipated threats to validity. Qualitative researchers, on the other hand, rarely have the benefit of formal comparisons, sampling strategies, or statistical manipulations that "control for" the effect of particular variables, and they must try to rule out most validity threats after the research has begun, by using evidence collected during the research itself to make these "alternative hypotheses" implausible. This approach requires you to identify the *specific* threat in question and to develop ways to attempt to rule out that particular threat. It is clearly impossible to list here all, or even the most important, validity threats to the conclusions of a qualitative study, but I want to discuss two broad types of threats to validity that are often raised in relation to qualitative

What do I need to know?	Why do I need to know this?	What kind of data will answer the questions?	Where can I find the data?	Whom do I contact for access?	Timelines for acquisition
What are the truancy rates for American Indian students?	To assess the impact of attendance on American Indian students' persistence in school	Computerized student attendance records	Attendance offices; assistant principal's offices for all schools	Mr. Joe Smith, high school assistant principal; Dr. Amanda Jones, middle school principal	August: Establish student database; October: Update; June: Final tally
What is the academic achievement of the students in the study?	To assess the impact of academic performance on American Indian students' persistence in school	Norm- and criterion-referenced test scores; grades on teacher-made tests; grades on report cards; student portfolios	Counseling offices	High school and middle school counselors; classroom teachers	Compilation #1: End of semester; Compilation #2: End of school year
What is the English-language proficiency of the students?	To assess the relationship between language proficiency, academic performance, and persistence in school	Language-assessment test scores; classroom teacher attitude surveys; ESL class grades	Counseling offices; ESL teachers' offices	Counselors' test records; classroom teachers	Collect test scores Sept. 15; Teacher survey, Oct. 10–15; ESL class grades, end of fall semester and end of school year
What do American Indian students dislike about school?	To discover what factors lead to antischool attitudes among American Indian students	Formal and informal student interviews; student survey	Homeroom classes; meetings with individual students	Principals of high school and middle schools; parents of students; homeroom teachers	Obtain student and parent consent forms, Aug.–Sept.; Student interviews, Oct.–May 30; Student survey, first week in May

Figure 7.3   Adaptation of the Data Planning Matrix for a Study of American Indian At-Risk High School Students (*Continued*)

What do I need to know?	Why do I need to know this?	What kind of data will answer the questions?	Where can I find the data?	Whom do I contact for access?	Timelines for acquisition
What do students plan to do after high school?	To assess the degree to which coherent post–high school career planning affects high school completion	Student survey; follow-up survey of students attending college and getting jobs	Counseling offices; Tribal Social Services office; Dept. of Probation; Alumni Association	Homeroom teachers; school personnel; parents; former students; community social service workers	Student survey, first week in May; Follow-up survey, summer and fall
What do teachers think about their students' capabilities?	To assess teacher expectations of student success	Teacher survey; teacher interviews	—	Building principals; individual classroom teachers	Teacher interviews, November (subgroup); Teacher survey, April (all teachers)
What do teachers know about the home culture of their students?	To assess teachers' cultural awareness	Teacher interviews; teacher survey; logs of participation in staff development activities	Individual teachers' classrooms and records	Building principals; individual classroom teachers; assistant superintendent for staff development	Teacher interviews, November (subgroup); Teacher survey, April (all teachers)
What do teachers do to integrate knowledge of the student's home culture community into their teaching?	To assess the degree of discontinuity between school culture and home culture	Teachers' lesson plans; classroom observations; logs of participation in staff development activities	Individual teachers' classrooms and records	Building principals; individual classroom teachers; assistant superintendent for staff development	Lesson plans, Dec.–June; Observations, Sept. 1–May 30; Staff development, June logs

Figure 7.3   Adaptation of the Data Planning Matrix for a Study of American Indian At-Risk High School Students

studies: researcher bias, and the effect of the researcher on the setting or individuals studied, generally known as reactivity.

Bias refers to ways in which data collection or analysis are distorted by the researcher's theory, values, or preconceptions. It is clearly impossible to deal with these problems by eliminating these theories, preconceptions, or values, as discussed earlier. Nor is it usually appropriate to try to "standardize" the researcher to achieve reliability; in qualitative research, the main concern is not with eliminating *variance* between researchers in the values and expectations that they bring to the study but with understanding how a particular researcher's values influence the conduct and conclusions of the study. As one qualitative researcher, Fred Hess, has phrased it, validity in qualitative research is the result not of indifference, but of integrity (personal communication).

Reactivity is another problem that is often raised about qualitative studies. The approach to reactivity of most quantitative research, of trying to "control for" the effect of the researcher, is appropriate to a "variance theory" perspective, in which the goal is to prevent researcher *variability* from being an unwanted cause of variability in the outcome variables. However, eliminating the *actual* influence of the researcher is impossible (Hammersley & Atkinson, 1995), and the goal in a qualitative study is not to eliminate this influence but to understand it and to use it productively.

For participant observation studies, reactivity is generally *not* as serious a validity threat as many people believe. Becker (1970, 45ff.) points out that in natural settings, an observer is generally much less of an influence on participants' behavior than is the setting itself (though there are clearly exceptions to this, such as settings in which illegal behavior occurs). For all types of interviews, in contrast, the interviewer has a powerful and inescapable influence on the data collected; what the interviewee says is *always* a function of the interviewer and the interview situation (Briggs, 1986; Mishler, 1986). Although there are some things that you can do to prevent the more undesirable consequences of this (such as avoiding leading questions), trying to "minimize" your effect on the interviewee is an impossible goal. As discussed above for "bias," what is important is to understand *how* you are influencing what the interviewee says, and how to most productively (and ethically) use this influence to answer your research questions.

Validity Tests: A Checklist

I discuss below some of the most important strategies you can use in a qualitative study to deal with particular validity threats and thereby increase the credibility of your conclusions. Miles and Huberman (1994, 262ff.) include a more extensive list, having some overlap with mine, and other lists are given by Becker (1970), Kidder (1981), Guba and Lincoln (1989), and Patton (2000). Not every strategy will work in a given study, and even trying to apply all the ones that are feasible might not be an efficient use of your time. As noted above, you need to think in terms of *specific* validity threats and what strategies are best able to deal with these.

1. *Intensive, long-term involvement:* Becker and Geer (1957) claim that long-term participant observation provides more complete data about specific situations and events than any other method. Not only does it provide more, and more different kinds, of data, but the data are more direct and less dependent on inference. Repeated observations and interviews, as well as the sustained presence of the researcher in the setting studied, can help rule out spurious associations and premature theories. They also allow a much greater opportunity to develop and test alternative hypotheses during the course of the research. For example, Becker (1970, pp. 49–51) argues that his lengthy participant observation research with medical students not only allowed him to get beyond their public expressions of cynicism about a medical career and uncover an idealistic perspective, but also enabled him to understand the processes by which these different views were expressed in different social situations and how students dealt with the conflicts between these perspectives.

2. *"Rich" data:* Both long-term involvement and intensive interviews enable you to collect "rich" data, data that are detailed and varied enough that they provide a full and revealing picture of what is going on (Becker, 1970, 51ff.). In interview studies, such data generally require verbatim transcripts of the interviews, not just notes on what you felt was significant. For observation, rich data are the product of detailed, descriptive note-taking (or videotaping and transcribing) of the specific, concrete events that you observe. Becker (1970) argued that such data

> counter the twin dangers of respondent duplicity and observer bias by making it difficult for respondents to produce data that uniformly support a mistaken conclusion, just as they make it difficult for the observer to restrict his observations so that he sees only what supports his prejudices and expectations. (p. 53)

3. *Respondent validation:* Respondent validation (Bryman, 1988, pp. 78–80; Lincoln & Guba, 1985, refer to this as "member checks") is systematically soliciting feedback about one's data and conclusions from the people you are studying. This is the single most important way of ruling out the possibility of misinterpreting the meaning of what participants say and do and the perspective they have on what is going on, as well as being an important way of identifying your own biases and misunderstandings of what you observed. However, participants' feedback is no more inherently valid than their interview responses; both should be taken simply as *evidence* regarding the validity of your account (see also Hammersley & Atkinson, 1995).

4. *Searching for discrepant evidence and negative cases:* Identifying and analyzing discrepant data and negative cases is a key part of the logic of validity testing in qualitative research. Instances that cannot be accounted for by a particular interpretation or explanation can point up important defects in that account. However, there are times when an apparently discrepant instance is not persuasive, as when the interpretation of the discrepant data is itself in doubt. The basic principle here is that you need to rigorously examine both the supporting and discrepant data to assess whether it is more plausible to retain or modify the conclusion, being aware of all of the pressures to ignore data that do not fit your conclusions. In particularly

difficult cases, the best you may be able to do is to report the discrepant evidence and allow readers to evaluate this and draw their own conclusions (Wolcott, 1990).

5. *Triangulation:* Triangulation—collecting information from a diverse range of individuals and settings, using a variety of methods—was discussed earlier. This strategy reduces the risk of chance associations and of systematic biases due to a specific method and allows a better assessment of the generality of the explanations that one develops. The most extensive discussion of triangulation as a validity-testing strategy in qualitative research is by Fielding and Fielding (1986).

6. *Quasi-Statistics:* Many of the conclusions of qualitative studies have an implicit quantitative component. Any claim that a particular phenomenon is typical, rare, or prevalent in the setting or population studied is an inherently quantitative claim and requires some quantitative support. Becker (1970) coined the term *quasi-statistics* to refer to the use of simple numerical results that can be readily derived from the data. He argues that "one of the greatest faults in most observational case studies has been their failure to make explicit the quasi-statistical basis of their conclusions" (pp. 81–82).

Quasi-statistics not only allows you to test and support claims that are inherently quantitative, but also enable you to assess the *amount* of evidence in your data that bears on a particular conclusion or threat, such as how many discrepant instances exist and from how many different sources they were obtained.

7. *Comparison:* Although explicit comparisons (such as control groups) for the purpose of assessing validity threats are mainly associated with quantitative research, there are valid uses for comparison in qualitative studies, particularly multisite studies (e.g., Miles & Huberman, 1994, p. 237). In addition, single case studies often incorporate implicit comparisons that contribute to the interpretability of the case. For examples, Martha Regan-Smith (1992), in her "uncontrolled" study of how exemplary medical school teachers helped students learn, used both the existing literature on "typical" medical school teaching and her own extensive knowledge of this topic to determine what was distinctive about the teachers she studied. Furthermore, the students that she interviewed explicitly contrasted these teachers with others whom they felt were not as helpful to them, explaining not only what the exemplary teachers did that increased their learning, but *why* this was helpful.

Exercise 4 is designed to help you identify, and develop strategies to deal with, the most important validity threats to your conclusions.

Generalization in Qualitative Research

Qualitative researchers often study only a single setting or a small number of individuals or sites, using theoretical or purposeful rather than probability sampling, and rarely make explicit claims about the generalizability of their accounts. Indeed, the value of a qualitative study may depend on its *lack* of generalizability in the sense of being representative of a larger population; it may provide an account of a setting or population that is illuminating as an extreme case or "ideal type." Freidson (1975), for his study of social controls on work in a medical group

practice, deliberately selected an atypical practice, one in which the physicians were better trained and more "progressive" than usual and that was structured precisely to deal with the problems that he was studying. He argues that the documented failure of social controls in this case provides a far stronger argument for the generalizability of his conclusions than would the study of a "typical" practice.

The generalizability of qualitative studies is usually based not on explicit sampling of some defined population to which the results can be extended, but on the development of a theory that can be extended to other cases (Becker, 1991; Ragin, 1987); Yin (1994) refers to this as "analytic," as opposed to statistical, generalization. For this reason, Guba and Lincoln (1989) prefer to talk of "transferability" rather than "generalizability" in qualitative research. Hammersley (1992, pp. 189–191) and Weiss (1994, pp. 26–29) list a number of features that lend credibility to generalizations made from case studies or nonrandom samples, including respondents' own assessments of generalizability, the similarity of dynamics and constraints to other situations, the presumed depth or universality of the phenomenon studied, and corroboration from other studies. However, none of these permits the kind of precise extrapolation of results to defined populations that probability sampling allows.

Conclusion

Harry Wolcott (1990) provided a useful metaphor for research design: "Some of the best advice I've ever seen for writers happened to be included with the directions I found for assembling a new wheelbarrow: *Make sure all parts are properly in place before tightening*" (p. 47). Like a wheelbarrow, your research design not only needs to have all the required parts, it has to work—to function smoothly and accomplish its tasks. This requires attention to the connections among the different parts of the design—what I call *coherence*. There isn't one right way to create a coherent qualitative design; in this chapter I have tried to give you the tools that will enable you to put together a way that works for you and your research.

Discussion Questions

The following questions are ones that are valuable to review before beginning (or continuing) with the design of a qualitative study.

1. Why are you thinking of doing a *qualitative* study of the topic you've chosen? How would your study use the strengths of qualitative research? How would it deal with the limitations of qualitative research?

2. What do you already know or believe about your topic or problem? Where do these beliefs come from? How do the different beliefs fit together into a coherent picture of this topic or problem?

3. What do you *not* know about your topic or problem that a qualitative study could help you understand?

4. What types of settings or individuals would be most productive to select for your study, in terms of answering your research questions? Why? What practical issues would you need to deal with to do this? What compromises might be required to make your study feasible and how would these affect your ability to answer your questions?

5. What relationships do you already have, or could you create, with potential settings or individuals you could select for your study? How could these relationships help or hinder your study? What relationships do you *want* to create with the individuals and settings you select?

6. What data collection methods would best provide the information you need to answer your research questions? Why? Could you combine different methods to better answer your questions?

7. How would you need to analyze your data to answer your questions? Why? If you use a categorizing approach, how would you develop and apply your coding categories? What could connecting strategies contribute to your analysis?

8. What are the most serious potential validity threats to the conclusions you might draw from your study? What could you do (in your design as a whole, not just data collection and analysis) to address these threats?

Exercises

These exercises give you an opportunity to work through several of the most important issues in designing a qualitative study. Other important issues are addressed in the discussion questions.

Exercise 1: Researcher Identity Memo

The purpose of this exercise is to help you identify the goals, experiences, assumptions, feelings, and values that are most relevant to your planned research and to reflect on how these could inform and influence your research (see Example 7.1).

I would begin working on this memo by "brainstorming" whatever comes to mind when you think about prior experiences that relate to your topic, and jotting these down without immediately trying to organize or analyze them. Then, try to identify the issues most likely to be important in your research, think about the implications of these, and organize your reflections. There are two broad types of questions that it is productive to reflect on in this memo.

1. What prior experiences have you had that are relevant to your topic or setting? What assumptions about your topic or setting have resulted from these experiences? What goals have emerged from these? How have these experiences, assumptions, and goals shaped your decision to choose this topic, and the way you are approaching this project?

2. What potential advantages do you think these goals, beliefs, and experiences have for your study? What potential disadvantages do you think these may create for you, and how might you deal with these?

Exercise 2: Developing Research Questions

This exercise involves both developing an initial set of research questions and trying to connect these questions to the other four components of your design. At this point, your ideas may still be very tentative; you can repeat this exercise as you get a better idea of what your study will look like.

1. Begin by thinking about your goals for this study. What could you learn in a research study that would help accomplish these goals? What research questions does this suggest? Conversely, how do any research questions you may already have formulated connect to your goals in conducting the study? How will answering these specific questions help you achieve your goals? Which questions are most interesting to you, personally, practically, or intellectually?

2. Next, connect these research questions to your conceptual framework. What would answering these questions tell you that you don't already know? Where are the places in this framework that you don't understand adequately or where you need to test your ideas? What could you learn in a research study that would help you better understand what's going on with these phenomena? What changes or additions to your questions does your framework suggest? Conversely, are there places where your questions imply things that should be in your framework, but aren't?

3. Now focus. What questions are most central for your study? How do these questions form a coherent set that will guide your study? You can't study everything interesting about your topic; start making choices. Three or four main questions are usually a reasonable maximum for a qualitative study, although you can have additional subquestions for each of the main questions.

4. In addition, you need to consider how you could actually answer the questions you pose. What methods would you need to use to collect data that would answer these questions? Conversely, what questions can a qualitative study of the kind you are planning productively address? At this point in your planning, this may primarily involve "thought experiments" about the way you will conduct the study, the kinds of data you will collect, and the analyses you will perform on these data. This part of the exercise is one you can usefully repeat when you have developed your methods and validity concerns in more detail.

5. Assess the potential answers to your questions in terms of validity. What are the plausible validity threats and alternative explanations that you would have to rule out? How might you be wrong, and what implications does this have for the way you frame your questions?

Don't get stuck on trying to precisely frame your research questions or in specifying in detail how to measure things or gain access to data that would answer your questions. Try to develop some meaningful and important questions that would be *worth* answering. Feasibility is obviously an important issue in doing research, but focusing on it at the beginning can abort a potentially valuable study.

A valuable additional step is to share your questions and your reflections on these with a small group of fellow students or colleagues. Ask them if they understand the

questions and why these would be worth answering, what other questions or changes in the questions they would suggest, and what problems they see in trying to answer them. If possible, tape record the discussion; afterward, listen to the tape and take notes.

Exercise 3: Questions × Methods Matrix

This exercise (based on Figure 7.3) helps you display the logical connections between your research questions and your selection, data collection, and data analysis decisions. Doing this isn't a mechanical process; it requires thinking about *how* your methods can provide answers to your research questions. Start with your questions and ask what data you would need, how you could get these data, and how you could analyze them to answer these questions. You can also work in the other direction: Ask yourself *why* you want to collect and analyze the data in the way you propose—what will you learn from this?

Your matrix should include columns for research questions, selection decisions, data collection methods, and kinds of analyses, but you can add any other columns you think would be useful in explaining the logic of your design. You should also include a *justification* for the choices you make in the matrix, either as a separate discussion, by question, of the rationale for your choices in each row, or by including this as a column in the matrix itself (as in Figure 7.3). This exercise is intended to help you *make* your methods decisions, not as a final formulation of these, so it may require you to revise your questions, your planned methods, or both.

Exercise 4: Identifying and Dealing With Validity Threats

1. What are the most serious validity threats that you need to be concerned with in your study? In other words, what are the main ways in which you might be mistaken about what's going on, and what issues will your potential audiences be most concerned about? These threats can include alternative theories or interpretations of your data, as well as potential methodological flaws. Be as specific as you can, rather than just listing general categories. Also, think about *why* you believe these might be serious threats.

2. What could you do in your research design (including data collection and data analysis) to deal with these threats and increase the credibility of your conclusions? This includes ways of testing your interpretations and conclusions, and of investigating the existence and plausibility of alternative interpretations and conclusions (e.g., could your analysis of your data be biased by your preconceptions about your topic? How could you test this?). Start by brainstorming possible solutions, and then consider which of these strategies are *practical* for your study, as well as effective.

Remember that some validity threats are unavoidable; you will need to acknowledge these in your proposal or in the conclusions to your study, but no one expects you to have airtight answers to *every* possible threat. The key issue is how plausible and how serious these unavoidable threats are.

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