An Introduction to Fully Integrated Mixed Methods Research

I dedicate this book to one of my high school English teachers, Naomi Manning. Increasingly aware of the advantages that came to me from attending a very strong high school in the suburbs of New York City, I want to give a "shout out" to the teacher who first introduced me to research and an appreciation for absorbing work in a quiet college library. It is from her that I learned a low-tech method for note taking on three-by-five index cards that I subsequently used in every article and book I have ever written.

An Introduction to Fully Integrated Mixed Methods Research

Elizabeth G. Creamer
Virginia Polytechnic Institute & State University

SAGE

Los Angeles | London | New Delhi
Singapore | Washington DC | Melbourne

FOR INFORMATION:

SAGE Publications, Inc.
2455 Teller Road
Thousand Oaks, California 91320
E-mail: order@sagepub.com

SAGE Publications Ltd.
1 Oliver's Yard
55 City Road
London EC1Y 1SP
United Kingdom

SAGE Publications India Pvt. Ltd.
B 1/I 1 Mohan Cooperative Industrial Area
Mathura Road, New Delhi 110 044
India

SAGE Publications Asia-Pacific Pte. Ltd.
3 Church Street
#10-04 Samsung Hub
Singapore 049483

Printed in the United States of America

ISBN 978-1-4833-5093-6

This book is printed on acid-free paper.

Acquisitions Editor:
Editorial Assistant:
Production Editor: Olivia Weber-Stenis
Copy Editor: Erin Livingston
Typesetter: Hurix Systems Pvt. Ltd.
Proofreader:
Indexer:
Cover Designer:
Marketing Manager:

17 18 19 20 21 10 9 8 7 6 5 4 3 2 1

BRIEF CONTENTS

DETAILED CONTENTS

LIST OF TABLES

LIST OF FIGURES

PREFACE

I begin with a confession. I first started teaching mixed methods in an undergraduate course in the late 1990s, finding that Creswell's (1998) dialectical approach of "turning the story" fit well within the interdisciplinary context that was my academic home. Five years later, my disciplinary affiliation shifted to one in education and I started teaching mixed methods research design courses at both the masters and doctoral level using a foundational set of textbooks well known to the mixed methods community.

My confession is that despite teaching and doing research with mixed methods for more than twenty years, I have struggled to apply some of the most fundamental concepts that have been used to distinguish the timing and priority of studies using a mixed method design. I have never been able to figure out, for example, if the term *concurrent* applies to data collection or to data analysis or to both. Similarly, the idea of a sequential design suggests a distinction between qualitative and quantitative strands that I do not find characteristic in the most innovative studies. To further compound the matter, I have never been sure if the term *mixing* has been used principally in reference to types of data or to types of analytical techniques.

Remaining under the illusion that the error in thinking was mine, the thought of undertaking the task of writing a textbook did not occur to me until I launched an initiative to design an introduction to mixed methods research class that would be delivered online. As I developed the materials for that class, I found that none of the widely adopted textbooks seemed compatible with my goals and paradigmatic orientation. One of the available options seemed too narrowly focused on a philosophical orientation and offered too little guidance for the novice researcher. Another was decidedly more prescriptive and positivist. So much space was devoted in most chapters to an explanation of quantitative and qualitative approaches that little space was actually allocated to uniquely mixed methods ways of accomplishing a particular task, like sampling. This approach was incompatible with my growing conviction that the distinctions between qualitative and quantitative approaches in practice are far more difficult to disentangle than the rhetoric implies. I was surprised to discover how little attention was devoted in most textbooks to exploring ways to mixing and to the attention that was lavished to prescribing set designs, which at this point in the development of mixed methods could be interpreted to actually discourage rather than promote meaningful interaction between data from different sources.

In addition to mixed methods, I have long taught a graduate-level course in qualitative research. My enthusiasm for the power of qualitative research, particularly in theory generation, is evident in a number of ways in this text. One way is a repeated emphasis about the contribution to explanatory power of a genuinely inductive approach to analysis and to mixing. A second way my qualitative orientation is evident is in the conviction that opportunities for innovation are largely unplanned and in the space I devote to mixed method approaches to content analysis, grounded theory, and case study research.

CONCEPTUAL FRAMEWORK

As I pursue in further detail in the first chapter, leaders in the field are still lobbying for different definitions of what constitutes mixed methods research and, most particularly, what exactly is mixed. There is general agreement that the mixed methods labels suggest that different types of data are collected and that the two are engaged in some interactive fashion. Some leaders in the field offer the conservative suggestion that mixing or integration should occur in at least one phase (e.g., Creswell & Plano Clark, 2011), while others, most notably Greene (2007), are proponents of a paradigmatic stance that embraces a more thorough saturation of the intent to engage qualitative and quantitative strands throughout the research process.

Without suggesting that such an approach is mandatory to warrant the designation of being mixed methods, I join Teddlie and Tashakkori (2009) by adopting the terminology of *fully integrated mixed designs* or *fully integrated mixed methods* to refer to research studies where the qualitative and quantitative strands are engaged in a dialectical manner at *all* stages of the study. Fully integrated mixed method studies are executed through an ongoing iterative exchange between the qualitative and quantitative strands that invites an engagement with the unexpected and often paradoxical that cannot emerge when the mindset is driven by a singular hypothesis testing framework and a linear approach to analysis. One way I maintain the focus on integration is by illustrating different ways that this can be accomplished at each stage of the design and execution of a mixed methods study.

PURPOSE

The centering of ways to integrate qualitative and quantitative data through all phases of a research project is reflected by the title for the book, and the framework of this practical textbook is intended for use in an introductory graduate-level mixed methods research course. In part because I have largely adopted terminology that is already used widely, this textbook will be useful in setting the stage for a more advanced course in mixed methods research.

The primary purpose of the text is to provide novice researchers and those new to mixed methods the tools to design, execute, and evaluate a mixed methods research study. For a class with an enrollment of master's-level students, I envision the principal

task of the text to provide a systematic way to evaluate a mixed methods publication in order to determine its contribution to knowledge and/or practice. In my experience, doctoral students bring an interest in learning how to design a credible mixed methods study to the class.

The goals for the book include the following:

1. To provide an introductory textbook for graduate students in applied disciplines in the social and behavioral sciences that reflects contemporary views, such as that mixed methods requires integration of different data sources in multiple phases of the research process.
2. To provide novice researchers and those new to mixed methods the tools to design and execute a fully integrated mixed methods study.
3. To provide supplemental materials that will assist instructors in teaching an introductory mixed methods course.
4. To introduce the terminology associated with the methodology.
5. To illustrate ways that the qualitative and quantitative strands can be integrated at all stages of the research process.
6. To provide an extended discussion of data transformation as an analytical strategy to mix qualitative and quantitative data.
7. To propose a rubric to evaluate the quality of a mixed methods research publication.
8. To illustrate key concepts by weaving references to a set of exemplary publications across chapters throughout the book.
9. To explore the use of mixed methods approaches to grounded theory, content analysis, and case study research.

I find that almost every student who enrolls in my mixed methods class does so with an intuitive enthusiasm about the potential for collecting multiple sources of data and that their principal interest is finding models that will help them design their own research study. They want help with writing a purpose statement and research questions and with setting up a study in ways that promote the meaningful integration of their data. Experience has taught me that students appreciate a relatively jargon-light, practical textbook that is dotted with multiple real-world examples that make it possible for them to apply what they have learned to their own research interests.

AUDIENCE

The primary audience for this textbook is graduate students in applied disciplines, including all fields of education, health-related disciplines, and human development. The book also is addressed to more advanced researchers, such as postdoctoral fellows, research associates, evaluators, and those whose route to mixed methods is the product of unexpected results or the challenge to integrate qualitative and quantitative data. Regardless of the reason(s) for pursuing mixed methods research, the identification

of criteria to evaluate quality at each stage of a research project and the emphasis on illustrating ways to build in methodological transparency will be instructive to those seeking to design a persuasive mixed methods research proposal or report.

As I have written this textbook, I have tried to keep my eye on graduate students as my principal audience. When faced with a decision about what to include and what to exclude, I defaulted to the question: Is this something a newcomer to mixed methods would need to know to launch a credible mixed methods study? With this in mind, I avoid lengthy detours to synthesize and cite a large body of literature about key topics, preferring instead to acknowledge key pieces from the literature and to use exemplars to illustrate key design features.

Because I do not use a framework that first reviews the fundamentals assumptions about the different approaches taken in qualitative and quantitative research approaches at each phase of the design and execution of a research study, this book will be most useful in a course where the focus is on mixed methods or in a survey course where it is one of several required textbooks. Those who bring at least a foundational knowledge from an introductory research course will be in the best position to benefit from this book. It is less critical that readers know the ins and outs of the two approaches than it is to understand what is required to design a credible research project that has the potential to generate knowledge and/or contribute to practice.

DISTINGUISHING FEATURES

A number of features distinguish this text from other textbooks that might be selected for an introductory course in mixed methods research design. First is the repetition and expansion of the uniting metaphor of the architectural arch to represent the potential to maximize the benefits of a mixed methods approach by considering innovative ways to integrate the qualitative and quantitative strands at all stages of the design and execution of a study. Switching from an emphasis on process to product in the last chapter, the arch also proves helpful to visualize the types of conclusions that are drawn in a mixed methods study.

Secondly, the book turns repeatedly to the question about how to produce and report on high-quality mixed methods research, including by devoting a separate chapter to consider ways to evaluate the quality of a mixed methods research publication. In this chapter, the Mixed Method Evaluation Rubric (MMER) is introduced to help the novice single out models worthy of replication. In addition to items related to transparency of the rationale for using mixed methods and a way to assess the methodological grounding, the MMMER contains one item to measure the amount of mixing across the phases of the research process and a second to evaluate the engagement with diverse perspectives.

A third feature of the textbooks reflects an intentional decision to avoid introducing a whole new, complicated lexicon of mixed methods terms and designs. Instead, I offer a bridge to other methodological texts by relying on terminology that is already well ensconced in the discourse about mixed methods

Fourthly, the text is unusual in that it provides a discussion of strategies to accomplish mixing of qualitative and quantitative data during analysis, including through the process of data transformation that extends across chapters. This is a much more detailed discussion than is available elsewhere.

A fifth distinguishing feature is that I have woven repeated references to a small set of readily available journal articles from a wide variety disciplinary journals as exemplars. I have prioritized methodological transparency in their selections. I selected the exemplars with the intent of providing models of studies worthy of replication and doable within the time frame and resources typical for a doctoral student. They were not selected to illustrate a specific set of mixed methods designs but were situated in chapters in order to provide examples of different ways to accomplish a procedure like sampling or mixing during analysis. The presence of so many examples with a qualitative priority reflects my own constructivist mindset and offsets the criticism that mixed method approaches are most adaptable to a quantitative mindset. The fact that the exemplars appeared in a diverse set of journals demonstrates that while a staple in educational and health related research, mixed and multimethod approaches have been adopted in a remarkably broad range of academic fields.

None of the final set of articles featured as exemplars is authored by a figure well known to the mixed methods community. Two of the exemplars report on the results of dissertation research. This supports my contention that while foundational knowledge is an advantage, advanced expertise in mixed methods is not required to execute innovative work. This furthers the argument that it is feasible for a novice researcher with foundational knowledge of the literature to design a credible mixed methods study.

In chapters that lack a reference to an exemplary research publication, I have provided examples of some innovations reported in popular literature. The suggestions for supplemental class activities in several chapters involve developing research questions or a proposal for a research topic that has surfaced in the popular media, including an example about the use of robots to promote learning in autistic children. I have included examples from the popular media not only to pique interest but also to demonstrate the ingenious ways that researchers from multiple disciplines have come together to solve real-world problems in a collaborative manner.

ORGANIZATION OF THE BOOK

The book is organized in four parts. The first part explores foundational issues that are well known to members of the mixed methods community. The contribution of this portion of the text is framing the discussion relative to fully integrated mixed methods designs. Part 1 includes a chapter about the defining characteristics of mixed methods research and a second that reviews a classic typology of rationales that have been offered for using a mixed methods approach. The third chapter offers an original approach to framing the discussion about paradigms. Rather than linger on what now seems an outdated argument about the incompatibility of qualitative and quantitative approaches, it identifies four strains of paradigmatic reasoning that are compatible

with mixed method approaches and reflects about the role each might play in how research is designed and conducted. The fourth chapter explores distinguishing characteristics of mixed methods research designs, giving more attention to priority and less to timing than has normally been awarded. As compared to subsequent chapters, the first four chapters are the firmly rooted in foundational material that marked the emergence of a community of scholars that self-identified as mixed methods researchers.

The original contribution of the text begins to emerge most clearly as the discussion turns in Part 2 to the topic of mixing. The contribution of this section is to provide a more extended discussion of mixing, with many examples, than has been previously available.

The first chapter in Part 2 considers strategies for mixing prior to analysis, particularly during sampling and data collection. The remaining two chapters in this section provide an in-depth exploration of mixing during analysis, including through data transformation.

The third part of the book contains two chapters devoted to issues of quality. This section addresses practical dimensions of mixed methods and includes a chapter about how to evaluate the quality of a mixed method publication and suggests approaches to designing a mixed method research proposal or dissertation.

The last part of the book is devoted to addressing some lingering controversies about mixed methods, including the long-standing emphasis on a prescribed set of designs. It deconstructs the logic of combination that underlies so much of the discourse about mixed methods. Further innovation is evident in this chapter in suggestions about ways to capture the centrality of mixing in figures and flowcharts. An additional contribution of the final chapter is the introduction of the idea that attention to meta-inferences provides a window into how a study was designed.

ORGANIZATION OF EACH CHAPTER

Each chapter is organized in a similar manner. They begin with a list of goals that could quickly be translated to serve as a study guide. The chapters end with a bulleted summary of key points, a list of the terms that were introduced in the chapter, suggestions for supplemental activities to use in class, and recommendations for assigned reading to accompany the chapter. The glossary terms are highlighted and followed by a definition, which appears in italics. A glossary summarizes the terms that are introduced in the chapters.

TAKING ADVANTAGE OF THE TEXT

In addition to the recommendations for supplemental activities and readings and the exemplars, several additional features of the text are designed to support the goal of providing novice researchers and those new to mixed methods with the tools to design, execute, and evaluate a mixed methods research study. These features include the use of a template to summarize the exemplars, a list of key points at the conclusion

of each chapter, and supplemental materials that are available through the book's website.

Templates. In many chapters, I offer an extended analysis of either a single or multiple exemplars to describe options for different procedures, such as mixed method approaches to sampling or ways to mix data during analysis. In place of the more widely used flow chart that visualizes design elements of a study but fails to consider the outcomes or inferences produced, I use a standard template to succinctly summarize key features of each of the chapter exemplars. The template contains the following information about each of the exemplars: (a) the rationale or reason for using mixed methods, (b) if the article reflects a qualitative, quantitative, or mixed priority, (c) timing of data collection, (d) timing of data analysis, (e) phases where mixing occurs, (f) inferences derived from the qualitative phases, (g) inferences derived from the quantitative phases, (h) meta-inferences, and (i) expressed value-added of using a mixing methods approach. Completed templates for all of the chapter exemplars appear in Appendix D.

The template used to summarize key features of each of the chapter exemplars offers a way to structure a summary of an article that is more inclusive than the conventional flowchart. The template maintains a balance between an interest in dissecting key facets of the way the data for the research project were collected and analyzed with an interest in the type of inferences and meta-inferences produced. This draws attention to the value-added to a mixed methods approach and what insight is actually gained by linking conclusions from the qualitative and quantitative strands.

The article template will be useful on several fronts. It can provide a useful way to facilitate discussion about additional articles that might be assigned. It is also useful as a form to collect a structured set data that would facilitate cross-case comparisons in a content analysis or literature review.

A list of key points appears at the end of each chapter. These are listed in a chapter-by-chapter summary that appears in a document in the appendices. The key points will prove useful as guides for classroom discussion, for review of course content, or to structure formative and summative evaluations in the form of multiple-choice quizzes or short-answer and essay exams.

Additional supplemental materials. Additional materials to support course instruction are available on the book's website. These include a sample syllabus with a recommended list of assigned reading. This also includes sample quiz questions for each chapter and a list of recommended individual and group assignments that can be used as class activities.

RELATED ASSIGNMENTS

The organization of this text into ten chapters creates an opportunity for instructors to tailor the course in ways that suit their interests and the students' skill levels. For a semester-long course that contains fifteen weeks, instructors might find it beneficial to end the course by allocating time to mixed methods approaches to different quantitative traditions (such as the randomized clinical trial) or to qualitative traditions

(including case study, grounded theory, content analysis and systematic reviews, the critical incident technique, action or participatory research, and/or evaluation and assessment).

Several additional assignments are compatible to the sequencing of information in the text. For doctoral students, the supplemental activities are interlinked in a way that is conducive to an assignment that I use regularly in the classes I teach: to prepare a content analysis of the use of mixed method approaches in journals in a single disciplinary area such as math education, higher education, leadership, nursing, or library science. An annotated bibliography or literature review about how mixed methods have been used to study a particular topic, like playground safety or active learning, would be suitable for a class containing largely master's students. Further exploration of examples of mixed method and interdisciplinary research appearing in the popular media would be appropriate for master's students as well.

There may be an advantage to not being one of the first generation of scholars to pioneer the development of mixed methods as a field of study. I have learned that there are other authors of more recent works who have spotted the same ambiguity in language about mixed methods designs that has troubled me for such a long time. I envision this text as a bridge between the first generation of foundational textbooks that had such a profound impact of practice and the next generation of researchers using technology and mixed methods in ways that could not possibly have been imagined by combatants in the 1980s who underscored the distinctions between qualitative and quantitative approaches. This textbook aspires to move the conversation forward by de-emphasizing a set of prescribed designs and by accepting the challenge to center attention on the explanatory power gained from the meaningful integration of different sources of data and analytical procedures.

ACKNOWLEDGMENTS

Undertaking a textbook like you will find unfolding in the subsequent ten chapters is not possible without the support of many layers of personal and editorial support. My spouse of thirty-five years, Don, receives the first round of kudos for bearing with me in the endless conversations I no doubt initiated to help unravel the logic of each and every chapter and, eventually, to tolerate my travelogue about the many rounds of revisions and copy editing. He is still wondering if I will ever actually finish the text!

I have benefited beyond measure from the guidance of two editors at SAGE. The first, Vicki Knight, guided me through the proposal stage and the writing of the first six chapters of the book before she was lured away to her next life as a retiree. Vicki was the one who taught me to look at a set of reviews and consider all the things that might have been said that weren't (e.g., the organization is poor, instrumental pieces of information are missing). I miss her sage advice and wicked sense of humor but feel fortunate to have been assigned to a second editor, Leah Fargotstein, with the experience to guide me through the steps in the process of moving from a manuscript to a final product. I have relied heavily on both Vicki and Leah for practical guidance about how to interpret reviewers' comments and how to translate those recommendations into revisions that keep to the major themes of the text. It was their network of connections that produced the list of the reviewers.

An Introduction to Fully Integrated Mixed Methods Research has benefited from the insight offered by reviewers that teach in very diverse settings. Some approach mixed methods as part of a survey course, while others teach it, as I do, in a stand-alone course. One set of reviewers stuck with me through the first six chapters, while a second set agreed to come on board to provide feedback about the remaining four chapters. After the manuscript was completed, a dedicated set of reviewers took on the even more challenging task of evaluating and providing feedback about the document as a whole. The contribution of these reviewers cannot be overstated. They have fueled many exciting ideas for additions and revisions and reinforced the value of some of the features that most distinguish this text. While it has not been possible to fully take advantage of all their suggestions, my brain continues to churn as I look to the future and think of where my mind might travel next.

My deep gratitude to the time and dedication of the following set of reviewers who gave permission to be recognized in the acknowledgments:

- James A. Bernauer, Robert Morris University
- Julie A. Cowgill, Benedictine University at Mesa

- Shannon L. David, North Dakota State University
- Mark A. Earley, Bowling Green State University
- Joan Engebretson, University of Texas Health Science Center at Houston
- Rhea Faye D. Felicilda-Reynaldo, Missouri State University
- Tina L. Freiburger, University of Wisconsin–Milwaukee
- Diane Gavin, University of Phoenix
- Leanne M. Kallemeyn, Loyola University Chicago
- Laura J. Meyer, University of Denver
- Arturo Olivárez, Jr., The University of Texas at El Paso
- Elias Ortega-Aponte, Drew University
- Juan D. Rogers, Georgia Tech
- Margaret F. Sloan, James Madison University
- Pamela Whitehouse, Midwestern State University

Elizabeth G. Creamer
September 5, 2016
Blacksburg, Virginia, and Beaufort, South Carolina

ABOUT THE AUTHOR

Elizabeth G. Creamer is a professor of educational research in the School of Education at Virginia Polytechnic Institute and State University, where she has balanced administrative and faculty roles since 1980. Beginning her career as a high school reading and English teacher, once at Virginia Tech, she initially moved into teaching course at the undergraduate level, including nearly ten years in the women's studies program where she taught courses in feminist research methods in the Center for Interdisciplinary Studies. An inclination to interdisciplinary thinking is what led her to teach her first mixed methods research course in the late 1990s. A person with broad-ranging interests, including writers and the writing process, Creamer has maintained a long-standing research agenda that centered on women's interest and success in fields in engineering and information technology. Actively engaged in a series of interrelated research projects funded by the National Science Foundation, she is coauthor of a 2007 volume, *Reconfiguring the Firewall: Recruiting Women to IT across Cultures and Continents* and in 2010, *Development and Assessment of Self-Authorship: Exploring the Concept across Cultures*. Creamer teaches both an introductory online mixed methods research design course and an advanced mixed methods research design course at the graduate level as well as an advanced qualitative research methods course with an emphasis on constructivist grounded theory. Her interest in mixed methods studies with a robust qualitative component is evident in her selection of exemplary publications for this textbook.

PART ONE

FOUNDATIONAL ISSUES

1

DEFINITIONAL ISSUES

PRINCIPAL PURPOSES OF THE CHAPTER

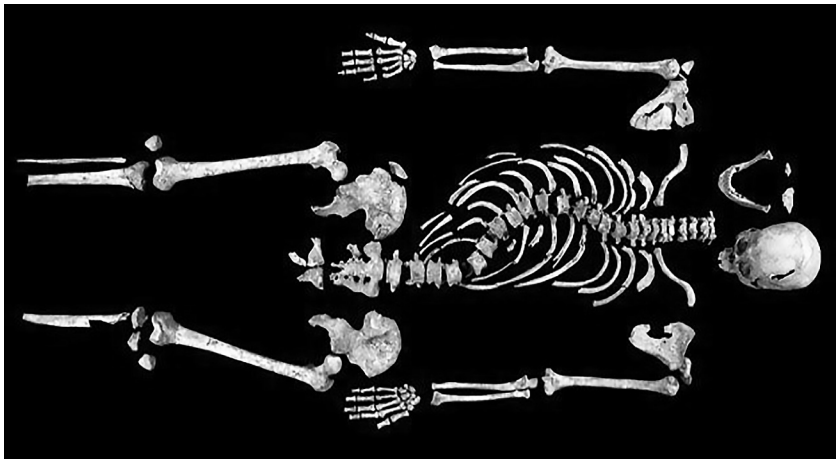
1. To introduce foundational terminology used in the mixed methods literature
2. To review several definitions of mixed methods
3. To present fully integrated mixed methods as the conceptual framework for the book

EXAMPLE FROM THE POPULAR MEDIA: LOCATING THE BONES OF RICHARD III

A team of researchers at the University of Leicester in the United Kingdom made a remarkable discovery in 2012. Struck down in the Battle of Bosworth Field, the bones of one of the monarchs of England, Richard III, had been missing for more than 500 years. Richard III was depicted as a villainous hunchback in the play by Shakespeare by the same name, where he was claimed to have yelled, "My kingdom for my horse!" before he met an ignoble end after a mad dash on foot across the battlefield. Analysis of the skeletal remains in the unmarked grave convincingly identified it as Richard's because of the pronounced curvature of the spine. He was not a hunchback, as Shakespeare portrayed him, but suffered from a scoliosis, among other ailments. Analysis of the bones revealed that Richard suffered multiple blows that could easily have accounted for his demise.

The team of researchers from the United Kingdom provide a contemporary example of how the use of multiple research methods from a variety of disciplines can unlock a mystery. The search for the bones of the long-lost monarch frustrated generations of scholars and adventurers (see Figure 1.1.). Members of the team of researchers mapped references to the location of the bones found in historical letters, diaries, and newspaper accounts to historical maps of the period and later transposed them to contemporary maps of the area. They then used map regression analysis, a statistical procedure, to pinpoint the location of the unmarked grave. Their strategies

FIGURE 1.1 ■ DISCOVERING THE BONES OF RICHARD III: A Contemporary Example of Triangulation for Convergence



proved effective, as the long-missing bones were discovered under a parking lot in the town of Leeds.

Mixed methods researchers would label the procedure used to solve the mystery of the unmarked grave as a stellar example of one of the principal reasons for using mixed methods: to enhance validity through **triangulation**. *Triangulation involves corroboration or verification through multiple data points or multiple types of data about the same phenomenon.* In the case of the discovery of the long-lost skeletal remains, locations identified in historical accounts were converted to quantitative map coordinates for further analysis. It was the triangulation of the data that ultimately led to the discovery of the unmarked grave.

The concept of triangulation is a foundational construct in mixed methods research. It is a concept that illustrates that rather than having entirely distinct methodological assumptions, there are areas of overlap in the philosophical assumptions between qualitative and quantitative research methods. Greene (2007) argued that triangulation provided an "olive branch" in the waning days of the "paradigm wars," as researchers engaged in heated disputes about the legitimacy of the newly emerging qualitative movement. Greene maintained that the mixed methods movement formally began to emerge in the mid-1980s as qualitative and quantitative researchers found common ground by endorsing the contribution of triangulation to the credibility of research findings.

PURPOSES AND GOALS OF THE CHAPTER

In this chapter, you will be introduced to many of the foundational terms used in the mixed methods literature and that you will find in the glossary. There's a description of various perspectives about the definition of mixed methods research and a

discussion of different ways to distinguish qualitative and quantitative approaches and methods. The conceptual framework for the book is presented next. The chapter closes by identifying some of the controversies associated with the foundational issues introduced in this chapter.

The goals of the chapter are to

1. review different perspectives about the definition of mixed methods research,
2. distinguish mixed method research from multimethod and quasi-mixed methods research,
3. consider some challenges in distinguishing qualitative and quantitative approaches,
4. describe a mixed method way of thinking as a logic that undergirds mixed method approaches, and
5. acknowledge concerns that are voiced about mixed method approaches.

DIFFERENT PERSPECTIVES ON THE DEFINITION OF MIXED METHODS RESEARCH

The defining characteristics of mixed methods research have continued to evolve since it first emerged as a methodological movement in the late 1980s. While consensus has yet to coalesce about all aspects of the definition, there is general agreement among mixed methods researchers about the core elements of a definition of mixed methods research. This includes the centrality of mixing as a distinguishing feature of mixed methods research and the assumption that it is both a method and a methodology. Diverse viewpoints exist, however, about the paradigmatic foundations of mixed methods as well about the type and extent of mixing that is required to satisfy a baseline definition.

The definition of mixed methods research supplied by Creswell and Plano Clark in their textbooks (2007, 2011) sidesteps the issue of paradigms but characterizes mixed methods research as having a set of guiding philosophical assumptions and a method where a qualitative and quantitative strand are mixed at some point in the study. According to them,

> Mixed method is a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis and the mixing of qualitative and quantitative approaches in many phases of the research project. As a method, it focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches, in combination, provides better understanding of research problems than either approach alone. (Creswell & Plano Clark, 2007, p. 5)

Creswell and Plano Clark's definition situates mixed methods research as both a method and methodology. According to Greene (2008), a **methodology** consists of *a coherent framework of philosophical assumptions, methods, guidelines for practice, and sociopolitical commitments*. A number of philosophical assumptions undergird mixed methods. One of these is that qualitative and quantitative data and qualitative and quantitative methods are not incompatible. A second is that there is added value by the combination of qualitative and quantitative approaches to produce more robust findings. A third is the assumption that the corroboration of multiple types of data or multiple data points (i.e., triangulation) enhances validity. A fourth philosophical assumption undergirding mixed methods is referred to as the **complementarity argument**, which *claims that the use of a combination of methods can offset the weaknesses inherent in any method*. Each of these philosophical assumptions is discussed more thoroughly in the chapter about purposes (Chapter 2).

The definition Creswell and Plano Clark supply also refers to mixed methods as a distinct **method**. A method *consists of a systematic and coherent set of agreed-upon practices and procedures for conducting empirical research.* As a method, their definition stipulates that a study should contain both qualitative and quantitative strands and that these strands are mixed or integrated at some point in the study. As an additional element of methods, Creswell and Plano Clark champion the position that one of the core characteristics of mixed method research is the use of a taxonomy of research designs for planning and conducting a study. As will be discussed more thoroughly in Chapter 4, not everyone shares their enthusiasm for using a prescribed set of models or designs as a guide for designing and executing mixed methods studies.

THE CENTRALITY OF MIXING TO THE DEFINITION OF MIXED METHODS RESEARCH

While agreement has yet to coalesce about each and every aspect of the definition of mixed methods research, there is little disagreement about the centrality of mixing or the integration of qualitative data or strands as being a defining element of mixed methods research. The term *mixing* is part of the specialized language of mixed methods researchers. **Mixing** *is the linking, merging, or embedding of qualitative and quantitative strands of a mixed methods study*. It is not present when the strands of mixed methods study are kept parallel or distinct.

Creswell and Tashakkori (2007) share the following view about the centrality of mixing to the definition of mixed methods research: "Mixed methods research is simply more than reporting two distinct strands of quantitative and qualitative research; these studies must also integrate, link or connect these strands in some way" (p. 108). Teddlie and Tashakkori (2009) label a study containing *both a qualitative and quantitative strand but lacking any point of interface between the two as* **quasi-mixed methods**.

The centrality of mixing to the definition of mixed methods research is one fixture that distinguishes it from **multimethod studies**, which *occur when more than one qualitative approach or more than one quantitative approach is used in a single study*. This might be the case, for example, when two deductive (hypothesis-testing) or two inductive (hypothesis-generating) approaches to the analysis are used. Multimethod research is not restricted to combining qualitative and quantitative approaches (Hunter & Brewer, 2015). Yin (2006) maintained that the more mixing that occurs across phases of the research process, the more easily the research can be distinguished from what should otherwise be labeled as multimethod.

DISTINGUISHING QUALITATIVE AND QUANTITATIVE APPROACHES

It is surprisingly difficult to pinpoint a workable distinction between qualitative and quantitative research that holds up under scrutiny. By *workable*, I mean useful in determining if a study meets at least a minimal expectation to warrant the use of the label *mixed methods*, regardless of the label affixed to it by its authors. Most markers put forward to distinguish the two do not hold up in practice. While frustration with identifying ways to distinguish the two is so powerful that it has led more than one author to dismiss the distinction as meaningless (e.g., Maxwell, 2010; Newman & Hitchcock, 2011; Ridenour & Newman, 2008; Sale, Lohfeld, & Brazil, 2002), it is so embedded in the rhetoric and practice of day-to-day work of social scientists that it cannot be waved off for philosophical reasons.

Greene (2007) proposed a concrete rule of thumb for distinguishing between qualitative and quantitative approaches that requires little judgment from the reader. She took the position that a principal way to distinguish is during data collection: The data in qualitative research are words; in quantitative research, the data are numbers. Some take this straightforward dichotomy one step further and distinguish quantitative research by its use of statistical procedures and quantification and qualitative research as the absence of that.

Bryman (2004, p. 448) agreed that the word–number distinction is the most basic way to distinguish qualitative and quantitative research but acknowledged that the distinction is not a clean-cut one because it is simply not accurate to characterize qualitative research as being devoid of quantification. Bryman observed, "There is clearly some confusion concerning whether the quantification of qualitative, unstructured data is indicative of a quantitative or a qualitative approach" (2004, p. 100).

Many other strategies have been used to distinguish quantitative and qualitative approaches. Focusing on the design phase of a research project, Ercikan and Roth (2006), for example, argued that quantitative and qualitative research tends to be associated with different types of purposes and research questions. In their perspective, both methods can be used to answer descriptive questions. The qualitative strand is more likely than the quantitative strand to be used to answer *what* and *how* questions about a process.

Some of what can be seen in the published examples of mixed methods research demonstrates the complexity of using a simple dichotomy such as words versus numbers to distinguish qualitative and quantitative approaches. Nowhere is this more evident than in the fairly sizable body of content analyses that have examined the use of mixed methods in all kinds of different disciplinary areas (e.g., Hart, Smith, Swars, & Smith, 2009; Hauser, 2013; Powell, Mihalas, Onwuegbuzie, & Daley, 2008). An example of how the word–number dichotomy does not hold up in practice is evident in a recent content analysis of research articles in distance education by Hauser (2013). Hauser was reflexive about the struggle she encountered when she tried to classify the methods used in each article by applying the tried and true qualitative–quantitative distinction of words and numbers. She observed,

> In [my] review of the literature for this study, [I] found articles that stated that they were quantitative but did not perform statistical analysis and reported no statistical results. [I] also found articles that were declared to be qualitative and collected data using open-ended questions but reported results using statistical methods only and did not include any qualitative analysis or report data in a descriptive format. (p. 156)

The quantification of qualitative data accounted for a good deal of the struggle Hauser experienced in discerning the differences between a qualitative and quantitative approach. She simplified matters by reducing it to a matter of quantification. She categorized any method that reported statistical results as quantitative and only considered the study to have a qualitative phase if the qualitative data were reported without quantification. She applied the mixed methods label without any expectation that the two types of results could be integrated.

QUALITATIVE AND QUANTITATIVE APPROACHES AS DIFFERENT ANALYTICAL STRATEGIES

When I am trying to determine if a study described in a publication meets my minimal definition of mixed methods research, I find it most helpful to first assess if the analytical procedures in a mixed method publication include a deductive and an inductive element. Although this viewpoint is not without its detractors, I consider a deductive and an inductive component to be the baseline, minimal standard to warrant the designation as mixed methods. The two approaches to analysis are sometimes distinguished as moving from the general to the specific (deductive) or the specific to the general (inductive). The borderline between the two can be surprisingly murky.

I find that many graduate students have trouble escaping their methodological socialization and incorporating an inductive or emergent approach that is free as it is humanely possible to be of preconceptions. Similarly, when analyzing a pool of

articles flagged as mixed methods, it is not uncommon to discover that many authors approached the analysis of both types of data deductively. A deductive analytical strategy can be framed to test the constructs or relationship proposed in a theoretical framework. The predilection to a deductive mindset may explain why researchers applying the tools of content analyses to a body of mixed methods articles often conclude that the quantitative strand was given priority.

Although this foundational assumption is often violated, inductive reasoning is most often associated with an emergent or qualitative approach. In this approach, a researcher approaches his or her data with an open mind and without imposing a comprehensive theoretical framework. An inductive approach generates hypotheses rather than confirms them. Inductive analytical strategies are much more likely to be missing from a mixed methods study than deductive ones. It is my experience that the emergent strand of a mixed methods study is most likely to produce unexpected findings. It invites further exploration of the unexpected and thus, I argue, is most likely to produce innovative insight.

The description of the research strategies used to pinpoint the location of the bones of the impulsive king illustrates that like many things methodological, the distinction between the deductive and inductive phases of a mixed methods project is not always obvious. The emergent or inductive phase occurred as the researchers analyzed a variety of written narratives identifying the location of where the king had been unceremoniously dumped in an unmarked grave after defeat in battle. The accounts were so contradictory and were relative to such a variety of landmarks that repeated efforts by prior teams had not been successful. The quantitative or deductive phase of the research occurred as the team of researchers linked the accounts in credible historical documents with map coordinates. Mixed methods researchers refer to the process of turning words into numbers as *data transformation*. In the case of the missing king, a statistical procedure subsequently was applied to the transformed data to finally pinpoint the exact location of the skeletal remains.

CONCEPTUALIZING QUALITATIVE AND QUANTITATIVE APPROACHES ON A CONTINUUM

Teddlie and Tashakkori (2009) were not the first to conceptualize qualitative and quantitative approaches not as polar opposites but as a continuum with points that overlap at the center. The extreme points on the continuum might be taken to reflect a "purist" stance. The depiction of qualitative and quantitative approaches intersecting at the center of a methodological continuum communicates that the boundaries between the two approaches are not impervious. It provides a counterpoint to the argument taken by purists that qualitative and quantitative approaches are so different that intermingling the two is impossible. The notion of a continuum highlights that there is significant variability in the paradigmatic assumptions of researchers using

TABLE 1.1 ■ Potential Contributions of Qualitative and Quantitative Approaches to a Mixed Methods Study by Phase

Phases of the Research Process	Quantitative	Qualitative
Design	Variable oriented (offers breadth) Addresses *what* and *why* questions	Case oriented (offers depth) Process oriented Can also address *how* questions
Data collection	Numbers	Words
Sampling	Allows for generalizability	Can pursue negative case or exemplary case
Analysis	Deductive Confirmatory Used to test theory	Context bound Inductive and sometimes emergent Exploratory Used to produce or modify theory
Inferences	Interpretations that extend the data	Interpretations that extend the data

different types of either qualitative or quantitative approaches. Purists at either end of the continuum are the groups of researchers most likely to find the idea of integrating qualitative and quantitative approaches as an anathema to their philosophical standpoint.

Rather than reinforcing the idea that qualitative and quantitative are starkly different approaches, I have organized Table 1.1. to illustrate the potential contribution of each to constructing a well-designed mixed method study. Table 1.1. lists the potential contribution of combining different aspects of qualitative and quantitative approaches at each phase of the research process. I put a different spin on the complementarity argument in this table. While it is often argued that one reason to use mixed methods is to offset the weaknesses of each method, I have set up the table in such a way as to emphasize the potential gains of using both qualitative and quantitative approaches in a single study.

Table 1.1. offers some ideas about how a researcher might borrow strengths from each approach to build a stronger study. The table is not meant to represent a menu or to imply that it is likely that, even at the design stage, a researcher should or could incorporate all of the listed elements. It does endorse the idea that some of strengths of each approach can be incorporated in a well-designed mixed methods study.

Quantitative and qualitative approaches are each acknowledged as having their own distinct baggage of weaknesses. Qualitative research, for example, is often criticized as if the small, nonrepresentative sample means the results are anecdotal. Quantitative research, on the other hand, may be questioned for its inability to explain why or how an intervention succeeded or failed or why differences in outcomes between

groups occurred. In response to these criticisms, in the process of laying out the plans for a mixed methods research project, a researcher might choose, for example, to bolster the representativeness of the sample used in the qualitative strand of a study by employing some quantitative sampling strategies and by ensuring that data from some members of the sample are used in both the qualitative and quantitative strands.

Even as I have found over the years that the inductive/deductive distinction is a workable baseline for distinguishing qualitative and quantitative strands of a mixed methods study and appreciate its emphasis on the analytical phases of a project, I recognize that it might well be argued that it is too simplistic to distinguish qualitative and quantitative methods by concentrating on a single phase of a study. This is one of several areas where there is a considerable gap between academic rhetoric and actual practice.

Quite a number of authors have used relatively strong language to voice their objections about the simplistic assumption that qualitative and quantitative methods are distinct and always readily distinguishable in practice. Ridenour and Newman (2008) labeled it a "false dichotomy." Ercikan and Roth (2006) pointedly observed, "Polarization of research into qualitative and quantitative is neither meaningful nor reflective of the realities of research" (p. 20). A British researcher, Bryman (2004), took a similarly forceful stand when he wrote, "We should be wary of assuming that in writing and talking about quantitative and qualitative research, we are referring to two absolutely divergent and inconsistent research strategies" (p. 446). Creswell (2011) called the two methods "a binary distinction that doesn't hold in practice" (p. 272).

MIXED METHODS AS A LOGIC OF INQUIRY

Two influential academics, Maxwell (2004, 2010) and Small (2011), are among those who refrain from using the term *method* to distinguish quantitative and qualitative research and argue that it is too simplistic to distinguish them by methods alone. This is consistent with the views of an early adapter of mixed methods, Jennifer C. Greene (2007), who argued that mixed methods are not simply the combination of methods and types of data but a different way of knowing or making sense of the world. Small (2011) used the phrases "ways of knowing" and "logic of inquiry" to characterize a dialectical stance.

Greene (2007) coined the expression "a mixed method way of thinking" to refer to a dialectical way of thinking or mindset that deliberately engages complexity and a multiplistic mental models. This is a perspective shared by interdisciplinary researchers who begin a project with a mindset that the disciplines will introduce different perspectives. Greene's mixed method way of thinking involves a philosophical mindset along with a valuing of diverse voices, which probably emerges from Greene's involvement throughout her career in issues of social justice and the evaluation social programs designed to promote equity as well as her axiological commitment to respecting diverse viewpoints.

Johnson, Onwuegbuzie, and Turner (2007) endorse the view of mixed methods as an approach to knowledge that deliberately sets out to consider multiple viewpoints. This axiological commitment is evident in Greene's position: "A mixed methods way

of thinking aspires to better understand complex social phenomenon by intentionally include multiple ways of knowing and valuing and by respectfully valuing differences" (2007, p. 17). The view of reality as multiple is part of a paradigmatic view about the nature of reality.

Another way to conceptualize Greene's mixed method way of thinking is a holistic Gestalt that frames an entire research project from the first glimmer of an idea through to its final phase of execution and delivery. That is quite different from the practical reality that many researchers come to use mixed methods without much forethought but as the result of a search for a research approach that might explain unexpected or contradictory results or the failure of participants in a funded project or evaluation to achieve the desired outcomes or gains.

Greene's dialectical stance about mixed methods is about the deliberate engagement of paradox and difference. It is what I am calling a *logic of inquiry*. She positions it as being at odds with one of the principal justifications that has been put forward for using mixed methods, which is to enhance the credibility of results by triangulating multiple sources of different kinds of data. Rather than privileging convergence, consensus, and corroboration, Greene's position places equal priority on divergence, dissonance, and contradiction. This position shares with the scientific method a value awarded to weighing multiple competing hypotheses. At the same time, it recognizes the value-added that emerges from confirming results across settings and with multiple types of data.

Evaluation and Mixed Methods

Mixed method approaches to evaluation are a case in point of how a logic of inquiry can inform all phases of the design and execution of a research project. **Evaluation research** *is focused on program development. It "involves the triangulation of qualitative and quantitative methods to examine acceptability, integrity, and effectiveness of intervention methods as both a formative and summative process*" (Nastasi et al., 2007, p. 166). Data gathering during the formative phases of an evaluation is geared to find ways to improve the effectiveness of the intervention or program. Summative data provides evidence of gains or outcomes that measure the effectiveness of the intervention.

Evaluations are meant first and foremost to be useful and to improve the effectiveness of the implementation of a new program in a specific context. Their commitment to engage different viewpoints makes them highly compatible with a mixed method way of thinking. Despite their usefulness, reports generated from an evaluation often do not see the light of day or reach a wide audience because they are so context specific.

CONCEPTUAL FRAMEWORK—FULLY INTEGRATED MIXED METHODS RESEARCH

As with Greene's mixed method way of thinking, the conceptual framework that is woven throughout this book is presented as a logic of inquiry. I distinguish it from a paradigm because it does not explicitly address assumptions about the nature of

reality (i.e., ontology) or the nature of knowledge and how it is constructed (i.e., epistemology). It is an overriding mindset that finds the practice of keeping the qualitative and quantitative strands as parallel but not converging unthinkable. It provides a way of thinking about mixed methods research that is not a prescriptive model for how the research should be conducted. My conceptual framework places equal priority on the qualitative and quantitative strands. As compared to Greene's way of framing mixed methods research, my conceptual framework shifts the emphasis on exploring contradiction and paradox out of the center.

I extend Teddlie and Tashakkori's (2009) expression, **fully integrated mixed methods research**, to refer to an overall Gestalt or holistic perspective that weaves throughout the phases of a research project. Teddlie and Tashakkori defined this as "a family of mixed methods designs in which mixing occurs in an interactive manner at all stages of the study" (2009, p. 335). I define it *as an approach to mixed methods research where there is the intention to mix or integrate the qualitative and quantitative strands of study throughout each of the stages or phases of the research process*. That means that strategies are used to weave together qualitative and quantitative strategies throughout each of the five **phases** or **stages** of a study (*the steps in the process of completing a research study: planning and design, data collection, sampling, analysis, and drawing inferences*). This involves sustained reflexivity about the contribution of both the qualitative and quantitative strands of a study. A commitment to this type of perspective is based on the belief that isolating a mixed methods way of thinking to one stage of the research process does not optimize the potential value-added of mixed methods.

The approach to fully integrated mixed methods research as a logic of inquiry places qualitative and quantitative approaches on equal footing as different but equally legitimate ways of knowing and understanding complex social phenomenon. One of the challenges researchers face when using mixed methods is to maintain, rather than sidestep, the differences between accepted philosophical assumptions and the procedures of each qualitative and quantitative approach.

The value-added of a fully integrated approach to mixed methods lies primarily in the potential of integrating or mixing the qualitative and quantitative strands, including the tenacious pursuit of differences in interpretation that arise during the qualitative and quantitative analysis. My approach in this textbook is to identify strategies that can be used to facilitate the integration of the qualitative and quantitative strands throughout the research process. As this is part of the logic of inquiry I present, my approach is both philosophical and practical.

THE ARCHITECTURAL ARCH AS A METAPHOR

I have found it helpful to visualize my conceptual framework through the metaphor of an architectural arch and to use the keystone that appears at the apex of ideal arches to represent **inferences**. In mixed methods, these are *conclusions or interpretations drawn from the results of the analysis in the quantitative, qualitative, and mixing strands*.

Through conversations with engineers, I have become aware how the qualities of the ideal arch match what I see as the full potential of mixed methods.

There are parallels between how an ideal arch is constructed and the execution of the two strands of a mixed methods study. This kind of arch is built from the ground up with two sides. In my conceptual framework, this represents the unique contributions of qualitative and quantitative approaches. One side cannot stand without the other. In a perfect arch, each of the building blocks are wedge shaped and added one by one, working toward the apex that is added as the last step. This is like the systematic, step-by-step process of executing a research procedure, such as occurs by using the constant comparative method to develop a grounded theory. This is consistent with a constructivist paradigm or view of knowledge that maintains that rather than being discovered in one fell swoop, knowledge is built from the ground up, generally one small increment at time.

An ideal arch has qualities that also characterize the outcomes of paradigm-shifting research. These can be seen in Figure 1.2. This is a photo of an arch in a remote location at Lake Titicaca in Peru that I happen to have visited.

FIGURE 1.2 ■ Freestanding Arch at Lake Titicaca, Peru

Two salient characteristics of an ideal arch are that they are durable while at the same time often aesthetically pleasing. Some still survive in the aqueducts built during Roman times throughout Europe and the near East, such as the example shown in Figure 1.2., which can stand independent of a surrounding structure. When there is a surrounding structure, such as the famous Arche de Triumph in Paris erected after World War II, it is the arch that is supporting the structure around it. The structure is not the mechanism holding up the arch.

Another direct connection between an ideal architectural arch and the essence of a fully integrated approach to mixed methods lies with the keystone. Hidden by decoration or in plain sight, a keystone is the apex of the ideal arch. Figure 1.3. is a photo of an ideal arch with a keystone.

A keystone is a wedge-shaped piece of building material that is the last piece slipped into this kind of arch. It is not a part of all arches. The wings of an arch create perfect tension by resting against the keystone. Once the keystone is set in place, each side is equally strong because each wedge-shaped piece shares the load equally. This makes it a highly efficient structure. This is like "pure" mixed methods, where the

FIGURE 1.3 ■ Ideal Arch with a Keystone

qualitative and quantitative strands are given equal priority (Johnson, Onwuegbuzie, & Turner, 2007). To stand, arches do not need the building material that is added above it, to the sides of it, or behind it to form an archway in a building. When it is well designed and the tension is equally distributed and supported, an arch can stand indefinitely, even as the building around it topples in the face of time.

I see parallels between the role of a keystone in an ideal arch and role of inferences in high-quality mixed methods research. *Inferences* are generalizations or interpretations constructed by the researcher that go beyond the results, participants, context, and sometimes theory and that vary by level abstraction (Ercikan & Roth, 2006). Inferences have many attributes; some, for example, pursue implications for future research, practice, policy, and/or theory. There are additional types of inferences in mixed methods that are not found in other research approaches.

A **meta-inference** is a type of inference that is unique to mixed methods. According to Teddlie and Tashakkori, meta-inferences *are inferences that link, compare, contrast, or modify inferences generated by the qualitative and quantitative strands* (2009, p. 300). It introduces an additional layer of abstraction by weaving together two or more inferences. A meta-inference is closely tied to the results of the analysis but is constructed in such a way that it links or merges results from the qualitative and quantitative strands. The keystone serves as a metaphor for different types of inferences, including those that link results from the qualitative and quantitative strands and those that merge them. Examples of these different types of inferences are presented Part 2 of this book.

Arches can be built more cheaply by omitting the keystone and using a horizontal beam. A horizontal beam is a more common link between the vertical supports, but it is not as durable or aesthetically pleasing as the circular arch. Figure 1.4. is a photo of this kind of arch, also ancient and also in Peru. It is called Gate of the Sun and was constructed 1,500 years ago from a single piece of stone. It shows that the weak point of this kind of nonideal arch is at the center of the beam. This is where, without a keystone, the horizontal beam introduces pressure that is not offset by other elements of the design.

To me, the kind of nonideal, horizontal beam we see in Figure 1.4. represents a particular kind of mixing when drawing conclusions. There is a bridge between the qualitative and quantitative strands of a study, but this is often done in a way that merely juxtaposes them. This form of mixing presents results or findings from the two strands of the study as independent conclusions or inferences, without any superordinate inference that intermingles them. There is a telltale signal for this kind of mixing. You can see it in the results discussion section of a research article that is labeled with separate sections to summarize the qualitative and quantitative results without providing an additional section that brings together the two results to introduce an additional layer of meaning. On occasion, this kind of organizational strategy can allow two contradictory findings to remain unaddressed.

At this point in the evolution of mixed methods as a distinct methodological tradition, the idea of fully integrated mixed methods studies is more of an ideal than a reality widely evident in the literature. It is still very common to come across a research publication broadcasting a mixed methods label but this is no acknowledgement

FIGURE 1.4 ■ Gate of the Sun

of the body of methodological literature that supports it. As much as I value the resourcefulness of researchers using mixed methods to pursue unexpected results, I find it hard to imagine that a researcher could achieve a fully integrated study (i.e., create a perfect arch) without familiarity with the methodological literature and without deliberately setting out to do so.

"MIXED UP" METHODS

Despite the explosion of the use of mixed methods across many academic disciplines, there is no doubt that a group of academics object, sometimes vociferously, to the use of mixed methods. Some of their reasons are philosophical; others are practical. One overriding concern deals with the assumption that there is no logic of inquiry in mixed methods.

Those with the most deep-seated concerns about mixed methods are probably those that are the most reflexive about the paradigmatic assumptions underlying their use of either a qualitative or a quantitative tradition. In my experience, these are most likely to be researchers that have a strong preference for qualitative methods. Among the group voicing objections would be those, perhaps who might be appropriately labeled as "purists," who see qualitative and quantitative research as being conducted with entirely different paradigmatic assumptions about the nature of reality and how knowledge is constructed. Members of this group might have difficulty imagining a mind so nimble as to be able to simultaneously value insight gained from the perspective of a single case study with those derived from sophisticated statistical procedures. The view that mixed methods researchers are attempting to merge clashing paradigms is pursued in further detail in Chapter 3.

Others who express strong reservations about mixed methods may do so with practical concerns in mind. There is no question that some mixed methods studies are ambitious in design. Often, research about the effectiveness of an educational or health-related activity or program can involve multiple stages, researchers with diverse areas of expertise, and a far more ambitious time span than can realistically be undertaken by a graduate student. This is not always the case, however. There are some standard templates for the design of mixed methods studies, such as the basic triangulation design, that are not overly ambitious for a master's thesis or dissertation. In this type of design, qualitative and quantitative data might be collected simultaneously in a single questionnaire through the inclusion of both close-ended and open-ended questions. There is an extended discussion of designs that are realistic for dissertation research in Chapter 9.

Probably the greatest accusation behind derisive references to "mixed-up" methods is the suspicion that mixed methods provides an endorsement of wholesale piracy of analytical and sampling strategies without concern for the methodological and philosophical assumptions that accompany them. This kind of piracy is not particular to mixed methods, however. Misuse of labels to characterize research is not an uncommon feature of the published research, particularly in journals without a strong methodological interest. It occurs, for example, when so-called ethnographic interviews do not emanate from fieldwork or when the label *grounded theory* is inappropriately affixed to research that is conducted to test a preexisting theoretical framework.

The issue here is not pointing to a weakness inherent in the foundational assumptions about the purposes of mixed methods research but the often-uninformed application of the label to research that has not had the benefit of being embedded in the foundational literature about it. This would be the group of researchers that are mixed up about appropriate uses of mixed methods.

Mixed methods should not be taken as an excuse to violate the foundational philosophical assumptions (i.e., logic of inquiry) of either the qualitative or quantitative tradition. In quantitative research, this includes relatively large sample sizes and sampling strategies designed to provide support for claims that the results are generalizable to other settings. In qualitative research, foundational assumptions include concern for capturing the lived experience of participants and for recognizing the interplay between individual attitudes and behavior and the environmental and cultural context. There is no lack of elegant mixed method studies that manage to effectively incorporate the strengths of both perspectives without violating their foundational assumptions.

CONTROVERSIES INVOLVING FOUNDATIONAL ISSUES

Methodologists writing about mixed methods often do so with the goal of advancing the quality of the design and execution of mixed methods studies in practice. Not surprisingly, with growing consensus about key elements of the definition of mixed

methods, standards applied to evaluate the quality of these studies have grown more exacting over time. Some types of studies that might have once have been accepted as meeting some minimal definition of mixed methods no longer fit comfortably in that mold. One of these is what I might call "eternally parallel" studies, where the qualitative and quantitative strands are never considered in tandem. A second is where there are multiple sources and types of data, but these are analyzed in isolation of each other. I have already discussed the problem of studies that lack a genuine inductive or emergent strand.

Some of the most substantive advances in thinking in mixed methods involve the topic of mixing. As noted earlier, while there seems to be strong agreement that some form of mixing is mandatory to meet any minimal definition, there is still a pull and tug of what this should look like and the strategies that can be used to execute it. Growing consensus about the centrality of mixing to the definition of mixed methods brings into question the legitimacy of the claim that a study is mixed methods when the qualitative and quantitative strands are kept parallel and never genuinely engaged except in a perfunctory way with a sentence or two at the inference stage. These studies might more accurately be classified as another type of multimethod study.

There are plenty of good examples of research envisioned that, for very practical reasons, unexpectedly turn to mixed methods. There are multiple legitimate reasons for this. It is not uncommon, for example, for authors completing a quantitative study to unexpectedly find it expedient to add a qualitative phase to explain contradictory or puzzling findings or to explore why an intervention did not have the intended effects.

I do not share the objection to applying the label of mixed methods to studies that evolve into mixed methods but were not initially conceptualized that way. While not realistic for research designed to meet the requirements of a dissertation, the complex nature of the phenomenon being studied and the years of time and resources devoted to multiphase studies are probably two of the forces that led to the emergence of mixed methods as a distinct methodology. Often supported by external funding, the continued growth of these large-scale projects and their increasingly interdisciplinary nature make it difficult to keep up with their creative introduction of different ways to apply mixed methods.

We close the chapter with a summary of key points and a list of the terms introduced in the chapter.

Summary of Key Points

1. Just because someone completes a qualitative and quantitative phase does not necessarily mean it is a mixed methods study.
2. Mixed methods are both a research method and a research methodology.
3. A study is not mixed methods if there is no mixing or integration of the qualitative and quantitative strands.
4. Deductive and inductive analytical procedures are required to meet a minimal definition of mixed methods research.
5. The contribution of triangulation to enhancing validity is one of the key rationales for using mixed methods.
6. Because qualitative researchers often use numbers to report their results, the word–number distinction between qualitative and quantitative methods is only marginally useful.
7. One of the challenges researchers face when using mixed methods is to honor the fundamental philosophical assumptions of qualitative and quantitative approaches.
8. Fully integrated mixed methods take place when interaction between the qualitative and quantitative strands occurs at all stages of the study.

Key Terms

- Complementarity argument
- Evaluation research
- Fully integrated mixed methods research
- Inferences
- Meta-inference
- Method
- Methodology
- Mixing
- Multimethod studies
- Phases or stages
- Quasi-mixed methods
- Triangulation

Supplemental Activity

1. Create a table that summarizes similarities and differences in the definitions of mixed methods offered by various researchers in Table 1 in the article by Johnson, Onwuegbuzie, and Turner (2007).

Recommended Reading

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research, 1*(2), 112–133.