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RESEARCH METHODOLOGIES

INTRODUCTION

Research and inquiry are about creating new knowledge (Habermas, 1984). Philosophy is the study of the fundamental nature of knowledge, reality, and existence—its truths, principles, and assumptions (Anderson, 2014). This book is premised on the assumption that everything in research hinges on philosophical underpinnings. But making this point is challenging because of the proliferation of methodology-related terms arising in the late 1970s and peaking in the early 1990s. Egon Guba is credited with initiating the paradigm dialogue about quantitative and qualitative research (Donmoyer, 2008). Since then, researchers have witnessed the emergence of a dizzying array of jargon used by scholars trying to address this thorny but imperative aspect of research. This scenario is exacerbated by the fact that “many researchers lack experience [or expertise] in deliberating about methodological issues, and the esoteric and unfamiliar language of philosophy can be intimidating” (MacCleave, 2006, p. 9).

This array of methodology-related terms includes *research paradigms, methodologies, methods, philosophical axioms, quantitative, qualitative, mixed methods, positivism, postpositivism, empirical, interpretive, and critical* (and one can add *postmodernism, poststructuralism, constructivism, naturalistic inquiry, critical realism*, and so on). Inconsistency in what these terms mean, alone and in relation to each other, is evident across all disciplinary literature (Cameron, 2011). Acknowledging this state of affairs, Locke, Silverman, and Spirduso (2010) sardonically noted that “the first tour through the research literature in your own area of interest is likely to reveal more variety than you would expect” (p. 80). They even coined the term *paradigmatic subspecies* (p. 80) to accommodate this diverse philosophical situation.

LEARNING OBJECTIVES

- Appreciate the history of key methodological terms
- Recognize the necessity of being able to defend any methodological choices made at the interface between philosophy and methods (methodologically responsible)
- Distinguish clearly between methodology and methods (as used in this book)
- Become familiar with the conceptual confusion, slippage, and clarity needed around three common terms: *research paradigm, research methodology, and research tradition*
- Appreciate the methodological approach used in this book (see Table 2.1)
- Explain the construct of philosophical axioms (epistemology, ontology, logic, and axiology)
- Distinguish between positivistic and postpositivistic research paradigms

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Learning Objectives (Continued)

- Compare and contrast empirical, interpretive, and critical research methodologies
- Compare and contrast quantitative, qualitative, and mixed methods methodologies
- Explain why it is necessary to match research methodology with the research question
- Understand the conventions for writing the research methodology section of a paper

The result of such philosophical diversity is terminological soup or, as Buchanan and Bryman (2007, p. 486) called it, “paradigm soup.” Actually, some of these terms have been in use for more than 400 years, adding to this linguistic and philosophical conundrum (see Figure 2.1) (Ary, Jacobs, & Sorensen, 2010; Denzin & Lincoln, 2011; Fox, 2008; Guba, 1990; Johnson & Christensen, 2012; Lockyer, 2008; Niglas, 1999; Paley, 2008; Smith, 1983). Nonetheless, researchers have the responsibility of explicitly identifying the methodological and paradigmatic underpinnings of their scholarship (Maxwell, 2013).

To address this conceptual slippage, this chapter explains and justifies the approach used in *this* book (see Table 2.1), knowing that not everyone will agree with it. Regardless, researchers and authors have to “acknowledge the paradigm debate” and rigorously defend any methodological choices “made at the interface between philosophy and methods” (Cameron, 2011, p. 101). This due diligence is necessary because, to academics, these words can mean different things. Without conceptual clarity, the integrity of any academic conversation about the interface between philosophy, methodology, and methods is compromised.

FIGURE 2.1 ■ History of Methodologically Oriented Terms

- *Scientific* and *empirical* (*quantitative*) go as far back as the 1600s (17th century), 400 years ago, with Descartes, Hume, Newton, and Comte; the classical concept of *quantity* can be traced back to Newton.
- *Qualitative-oriented* research (not named as such) emerged around the late 1700s with Kant’s *Critique of Pure Reason* (introduction of *interpretive*).
- In the 1800s (19th century), the term *positivistic* was first coined, and *positivism* reigned supreme for more than 200 years.
- The term *postpositivistic* was coined in the mid 1960s (50 years ago). The legitimacy of *positivism* began to be questioned in the 1970s by those engaged in qualitative research (e.g., feminist researchers, those advocating for critical theory, and those engaged in postmodern critiques).
- The term *qualitative research* was coined in the late 1960s by Barney Glaser and Anselm Strauss.
- In 1970, Thomas Kuhn introduced and conceptualized the terms *research paradigm* and *paradigm shifts*.
- During the past 50 years, the discussion of *quantitative* and *qualitative* has been taken to a new level. Instead of focusing on how they are different due to methods, methodologists shifted gears to focus on their philosophical underpinnings.
- In the 1980s, it was agreed that first comes *philosophy*, then *methodology* (*axioms*), then *theory*, then *method(s)*.
- Also in the early 1980s, the discussion of *mixed methods* (mixing methodological assumptions) emerged, and continues strongly, with growing acceptance.

TABLE 2.1 ■ Overview of Main Research Methodologies, With Common Methods (used with permission) [Acknowledgment: Deep, deep thanks to Dr. Anne MacCleave, Professor Emerita (MSVU), for vetting and validating the core concepts contained in this table]

Research Paradigm	Positivist		Postpositivist	
	Quantitative and Empirically Based Qualitative	Qualitative	Interpretive (Humanistic)	Critical (Power)
<p><i>Research Methodology</i></p> <p><i>Intent of Inquiry</i></p> <p>AXIOMS <i>Epistemology</i> (What counts as knowledge and ways of knowing [criteria for evaluating knowledge]? How should we study the world? What is meaningful evidence or insights? How does knowledge arise?)</p>	<p>Explore, describe, predict, control, and explain</p> <ul style="list-style-type: none"> - The one truth is out there waiting to be discovered via the scientific method - Strive for certainties, laws of behaviors, and principles that provide explanations leading to predictions and control of phenomena - Knowledge is objective (bias-free) - Knowledge is dualistic (fragmented and not connected); mind and matter are separate - Only knowledge generated using the scientific method is valid - Only things that can be seen (observed or experimented) are worthy of study - Knowledge comes from using the scientific method (experiments or nonexperimental methods) 	<p>Understand</p> <ul style="list-style-type: none"> - Truth is created, and there is more than one truth; knowledge relies on humans' interpretations of <i>their</i> world - Strive for confidence - Knowledge is constructed by people - Agreed-upon knowledge in one culture may not be valid in another culture - Takes into account social and cultural influences on knowledge creation - Knowledge is subjective or intersubjective and includes perspectives - Research is often perspective-seeking, not truth-seeking - There are many ways of knowing aside from the scientific method (e.g., stories, spiritual experiences, religion, the sacred, the mystical, wisdom, art, drama, dreams, music) - Knowledge can be cognitive, feelings, or embodied 	<p>Emancipate</p> <ul style="list-style-type: none"> - Truth is grounded in the context - Knowledge is grounded in social and historical practices - Knowledge is emancipatory, created through critically questioning the way things "have always been done" - Knowledge is about hidden power structures that permeate society - Knowledge is dialectic (transformative), consensual, and normative - Knowledge is about the world, the way things <i>really</i> are, and is subject to change 	

(Continued)

TABLE 2.1 ■ (Continued)

Research Paradigm	Positivistic	Postpositivistic	
<p><i>Ontology</i> (What should be the object of the study? What is human nature? What does it mean to be human? What counts as a meaningful statement about reality? How do people make choices? What is the nature of reality? How can reality be meaningfully portrayed?)</p>	<ul style="list-style-type: none"> - Reality is <i>out there</i>; the world is a universe of facts waiting to be discovered - There is a single reality made of discrete elements: When we find them all through the scientific method, we have a full picture of reality - A single reality exists that people cannot see - A fact is a fact; it cannot be interpreted - The true nature of reality can only be obtained by testing theories - Seeing is believing - Laws of nature can be derived from scientific data - Human nature is determined by things people are not aware of and have no control over - Humans are passive, malleable, and controllable - Reality is determined by the environment, inherited potential, or the interaction of the two - Reality is external to our consciousness (not a product of our minds) 	<ul style="list-style-type: none"> - Reality is <i>in here</i> (in people's minds and/or collectively constructed) - Social reality is relative to the observer, and everyday concepts need to be understood to appreciate this reality - The focus is on the life-world and shared meanings and understandings of that world - Reality is socially constructed via the lived experiences of people - Human nature is determined by how people see themselves - Humans are active and self-creating - Human beings can act intentionally (need capacity and opportunity) - Reality can be a product of people's minds or the interactions of persons - Reality constitutes that which is constructed by individuals in interaction within their contexts and with other people - Reality is conditional upon human experiences 	<ul style="list-style-type: none"> - Reality is <i>here and now</i> (it is material, actually of the world, not imagined) - Reality is shaped by ethnic, cultural, gender, social, and political values, and mediated by power relations - Reality is constructed within this social-historical context - Humans are <i>not</i> confined to one particular state or set of conditions; things can change - Human beings have the capacity to exercise control over social arrangements and institutions: They can create a new reality - Humans who are oppressed are able to emancipate themselves and challenge the status quo - Reality is never fully understood and is deeply shaped by power - Seek to truly understand the real circumstances (i.e., the political, social, and institutional structures) in order to change the power balance

Research Paradigm	Positivist	Postpositivist	
<p><i>Logic</i> (How do people come to their understandings? What is acceptable as rigor and inference in the development of arguments, judgments, insights, revelations, or social action?)</p>	<ul style="list-style-type: none"> - Deductive, rational, formal logic - Through objective observation, experts form research questions and hypotheses and empirically test them - Concerned with prediction, control, and explanation - Clear distinction between facts and values - Strive to generalize universal laws - The goal of research is replication and theory testing, leading to control, predictions, and explanations 	<ul style="list-style-type: none"> - Inductive logic, attempting to find various interpretations of reality and recognize patterns that govern and guide human behavior - Assumes researchers can help people become aware of their unconscious thoughts - Concerned with meanings and understandings so people can live together; how people make sense of their world - Meaningful findings are more valuable than generalizations - The goal is to understand lived experiences from the point of view of those living them - The goal of research is a credible representation of the interpretations of those experiencing the phenomenon under study 	<ul style="list-style-type: none"> - Inductive logic, aimed at emancipation - Attempt to reveal ideologies and power relationships, leading to self-empowerment and emancipation - Concerned with the relationship between meanings and autonomy and with responsibility as citizens - Concerned with critiquing and changing society - The intent is to create contextualized findings - The goal of research is to reveal power relationships leading to changes in the status quo and more autonomy, inclusion, and justice - Determine sources of oppression (whether internal or external) - Focus on complex generative mechanisms that are not readily observable (e.g., it is hard to observe consciousness raising)

(Continued)

TABLE 2.1 ■ (Continued)

Research Paradigm	Positivist	Postpositivist	Values-oriented and values-driven
<p><i>Axiology</i> (What is the role of values and perceptions? The role of researchers and participants? How is what is studied influenced by the researcher and the participants? What is the relationship between the researcher and the participants?)</p>	<ul style="list-style-type: none"> - Values-neutral (often ignored) - Moral issues are beyond empirical investigation - No place for bias, values, feelings, perceptions, hopes, or expectations of either researcher or participant - Researcher tries to control for anything that can contaminate the study - The relationship between researcher and participant is objective and dualistic (separate with no interchange) 	<ul style="list-style-type: none"> - Values-laden - The intent is to uncover the beliefs, customs, and so forth that shape human behavior - Bias, feelings, hopes, expectations, perceptions, and values are central to the research process - Participants play a central role in the research, even instigating it - The perspective of the “insiders” supercedes that of the researcher - The role of the researcher is to uncover conscious and unconscious explanations people have for their life through dialogue with and among participants - The relationship between the researcher and participants is intense, prolonged, and dialogic (deep insights through interaction) 	<ul style="list-style-type: none"> - Values-oriented and values-driven - Researchers’ <i>proactive</i> values concerning social justice are central to the research - The intent is to critically examine unquestioned values, beliefs, and norms to reveal power - The researcher works in collaboration with citizen interlocutors as conversational partners in dialogue - The researcher seeks to understand the effects of power so as to help people empower themselves - The very participatory research process is grounded in terms of the insiders’ perspective, respecting that researchers have contributing expertise (balance both) - The role of the researcher is to challenge insiders with expert research findings leading to self-reflection and emancipation - The intent is to create change in society by emancipating citizens to take action - The relationship between researcher and participants is dialogic, transactional, and dialectic (transformative)

Research Paradigm	Positivist	Postpositivist	Seeking reflection, emancipation, and problem solving via:
<p>Methods Common to Each Methodology</p> <p>(Appreciating the mixed methods methodology, which employs quantitative and qualitative approaches in the same study)</p>	<p>Seeking causality, laws, and relations via:</p> <p>Quantitative:</p> <ul style="list-style-type: none"> Experiments Quasi-experiments Field experiments Surveys <p>Seeking relations and regularities via:</p> <p>Qualitative:</p> <ul style="list-style-type: none"> Quasi-experiments Field experiments Surveys Ethnoscience (new ethnography) Ethnography Phenomenology Case studies Content analysis 	<p>Seeking theory, meanings, and patterns via:</p> <ul style="list-style-type: none"> Phenomenology Case studies Content analysis Grounded theory Natural/interpretive inquiry Discourse analysis Thematic analysis Document analysis <p>Seeking meanings and interpretations via:</p> <ul style="list-style-type: none"> Case studies Discourse analysis Ethical inquiry Life history study Narrative research Hermeneutic inquiry Heuristic inquiry 	<ul style="list-style-type: none"> Action research Discourse analysis Participatory research Critical analysis Feminist inquiry Reflective phenomenology

Sources: From McGregor & Murnane (2010) with permission from John Wiley & Sons. Sources used by the authors to develop the appendix included: Howe, 1992; Lather, 1994; Niglas, 2001; MacDonald et al., 2002; Khazanchi and Munkvold, 2003; Guba and Lincoln, 2005; Ponterotto, 2005; Salmani and Akbari, 2008). Acknowledgment and deep thanks to Dr. Anne MacCleave, Professor Emerita Mount Saint Vincent University (MSVU), for vetting and validating the core concepts contained in this table.

CONCEPTUAL CONFUSION, SLIPPAGE, AND CLARITY

This section attempts the near impossible, to distinguish between the terms *research paradigm*, *research methodology* (compared to *methods*), and *research traditions*. All three terms are used in the academic world, leading to confusion because *paradigm* means thought patterns, *methodology* is linked with philosophy, and *tradition* refers to long-standing customs (see Figure 2.2). In truth, they all have some merit when trying to distinguish between (a) collecting new information (data) to answer a research question and (b) knowledge creation using interpretations of those data. On the other hand, the diverse language used to refer to this aspect of research has created a quagmire. This complex and difficult situation makes it hard for one scholar to talk to and understand another. But talk to each other they must, so this section briefly explains how the literature understands these concepts, settling on *research paradigm* and *research methodology* for this book (they mean different things).

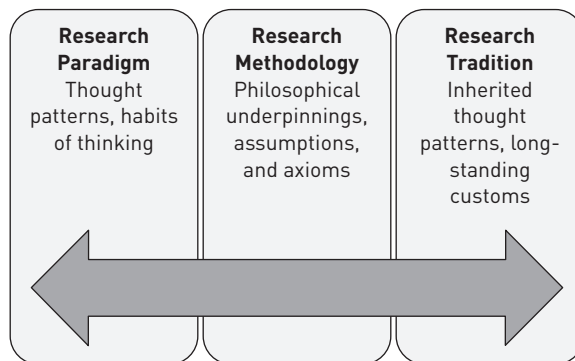
Research Paradigm

Paradigm is Latin *paradigma*, “patterns” (Harper, 2016). A paradigm is “a generally accepted explanation of things,” with the dominant paradigm providing “the focal point and measuring stick” for inquiry (Rohmann, 1999, p. 296). Paradigms are thought patterns that help people make sense of their world, *regardless* of whether they are engaged in research or not. Paradigms are habits of thinking in a particular way or of making certain assumptions about the world (others call this *worldview* or *mind-set*) (Donovan, 2010) (see Chapter 1 for a discussion of paradigms and ideologies).

The term *research paradigm*, coined by Kuhn (1962), is understood to mean “patterns of beliefs and practices that regulate inquiry within a discipline, doing so by providing the lenses, frames and processes through which investigation is accomplished” (Weaver & Olson, 2006, p. 460). Johnson and Christensen (2012) defined a research paradigm as a “perspective about research held by a community of researchers that is based on a set of shared assumptions, concepts, values, and practices” (p. 31).

These definitions make sense. After all, disciplines are groups or communities of people, and paradigms reflect a *group’s* commitment to a constellation of beliefs about viewing

FIGURE 2.2 ■ Research Paradigm, Methodology, and Tradition



the world. They are a group-licensed way of seeing reality (Botha, 1989). Normally, the philosophical notion of axioms is reserved for the term *research methodology*, as is the case in this book. Some scholars, however, characterize research *paradigms* by distinctive axioms, namely *ontology*, *axiology*, *epistemology*, *rhetoric*, *causality* and *logic*, and *methodology* (by which is meant the identification, study, and justification of research methods) (Guba, 1990; Pruyt, 2006).

Research Methodology

In many disciplines, the term *methodology* is used to refer to the methods used to collect, analyze, and report data (see Schneider, 2014; Trochim & Donnelly, 2007). This usage eschews the real meaning of *methodology*. *Ology* is Greek for a branch of knowledge or science. Method is Greek *methodos*, “the pursuit of knowledge” (Anderson, 2014; Harper, 2016). Taken together, *methodology* means a branch of science that studies the pursuit of knowledge. “The misuse of *methodology* obscures an important conceptual distinction between the tools of scientific investigation (properly *methods*) and the principles that determine how such tools are deployed and interpreted (*methodology*)” (*American Heritage Dictionary*, 2000).

This chapter views methodology as the philosophical underpinnings of research intended to generate new knowledge and methods as tools and techniques to collect and analyze data (Lather, 1994; MacCleave, 2006) (see Figure 2.3). To that end, this chapter focuses on methodologies, and Chapter 8 focuses on methods (and research design). In particular, *methodology* refers to knowledge creation, including what counts as knowledge and knowing, reality, logic, and the role of values in knowledge creation (i.e., four axioms, to be discussed shortly). Two common approaches to describing research methodologies are (a) quantitative, qualitative, and mixed methods and (b) empirical, interpretive, and critical. These are discussed in more detail further on in the chapter. This book uses the former as its organizational framework.

Research Traditions

Actually, some academics skirt the contentious issue of whether to use the term *research paradigm* or *research methodology* and instead use the term *research traditions* (Jacob, 1987; Schneider, 2014). A tradition is an inherited pattern of thought and a specific practice of long standing (Anderson, 2014). Kuhn (1970) said any research tradition differs along three dimensions: (a) its assumptions about nature and reality, (b) the foci of studies and major issues of interest about the phenomenon, and (c) methodology (by which he meant methods). He also noted that a tradition can occur either as an entire discipline or as a school within a discipline (e.g., subdisciplines and disciplinary specializations). For example, Jacob (1987) applied this approach to profile three subdisciplines within the discipline of education.

The term *tradition* is the least commonly used in the literature, but it was important to acknowledge it in this chapter because authors may choose to use it when reporting their study, or they might encounter it when reading literature. Patton (2002) identified 10 qualitative research *traditions* including constructivism, symbolic interaction, semiotics, hermeneutics, systems, and chaos (nonlinear dynamics). This book views these as falling within qualitative and interpretive research methodologies (see Table 2.1).

FIGURE 2.3 ■ Methodology Compared to Method

Methodology	Method
<ul style="list-style-type: none"> • Philosophical basis for research (truth-seeking or perspective-seeking); determines methods • Deals with axioms pursuant to generating <i>new knowledge</i> (i.e., reality, knowing, logic, values) • Rational or philosophical assumptions that underlie approaches to research; analysis of principles, rules, postulates (assumptions), and axioms employed by a discipline to frame research • Leads to <i>new knowledge</i> that is eventually added to a discipline's cumulative body of knowledge • Section in research paper should be called <i>Methodology</i> 	<ul style="list-style-type: none"> • Procedures or instruments used to collect and analyze data and report results or findings, determined by methodology • Deals with the technical steps taken to generate or produce <i>new data and information</i> • Documented process for managing research project that contains procedures, definitions, and explanations of the techniques used to collect, store, and analyze data and write research report • Leads to <i>new data</i> and then new knowledge when interpreted using methodological assumptions • Section in research paper should be called <i>Methods</i>

Confusion Ensues

Despite this attempt to clarify how these three constructs differ, confusion ensues. Dash (2005) said there are two main research paradigms, positivism and postpositivism (to be discussed shortly). Others claim that quantitative and qualitative are the main research paradigms, with some calling them methodologies or worldviews (Creswell, 2009; Shank & Brown, 2007). Still others claim that quantitative and positivism are the same thing and that qualitative and postpositivism are the same thing (Lin, 1998; Williams, 1998). Some scholars believe it is possible to have “positivistic qualitative” research (Paley, 2008).

Some scholars use the terms *quantitative* and *qualitative* to refer to methodologies, while others use them to refer to methods (Creswell, 2009; Shah & Corley, 2006). Some assume that there is a diversity of research traditions *within* qualitative research. Others, like this book (see Table 2.1), present qualitative as a unified approach that spans several research traditions (e.g., narrative, phenomenology) (Jacob, 1987). Shank and Brown (2007) called the quantitative and qualitative approaches worldviews (while most scholars associate the term *worldview* with paradigms). There is simply *no agreement* in the literature about this fundamental aspect of academic scholarship (Cameron, 2011).

Theory and method choices

This issue becomes even more convoluted when trying to figure out how methodology is related to both theory and method choices. Schneider (2014) acknowledged that it is very easy for authors to get it wrong when it comes to finding balance and to discerning the conceptual distinctions among methodology (philosophical), theory, and method. Creswell (1994) said the choice of theory determines whether the research is qualitative or quantitative. This book assumes the opposite, that the qualitative or quantitative nature of the research determines the relevant theory. Creswell further said that theory is independent of, or separate from, the researchers' worldview. This may be true, but theory is not necessarily independent of the methodology; that is, the assumptions of a theory should reflect the basic assumptions of reality as understood by the different research methodologies.

Example 2.1 Methodology and theory choice A qualitative researcher, interested in the emancipation of oppressed peoples, is more likely to use critical theory than economic theory. The former *assumes* people are oppressed by dominant, hegemonic ideologies and need their consciences raised so they can free themselves and change the system. Economic theory, premised on scarcity, competition, a win–lose mentality, and wealth accumulation, is better suited to explain how the hegemony arose in the first place, rather than how to climb out from under it.

REVIEW AND ENGAGEMENT

When critically reading a research report, you would

- Determine if the authors actually included a separate section or subheading called *Methodology* (with another section or subsection called *Methods*)
- Determine if they appreciated the distinction between method (sampling, data collection, and data analysis) and methodology, likely referring to qualitative, quantitative, or mixed methods (see Figures 2.2 and 2.3)
- If they did not clearly articulate the research methodology underpinning their study, determine if they provided enough information for you to deduce it
- Determine if the authors referred to research paradigms or research traditions (see Figure 2.2), and judge if this was clear or caused confusion
- Ascertain if they explained how their theory choice was affected by their research methodology
- Check to see if they explained how their methods were affected by their research methodology

METHODOLOGICAL APPROACH USED IN THIS BOOK

Respecting the long-standing conundrum of how all of these terms are separate or related, an approach *had* to be developed as the anchor for this book. That approach is set out in Table 2.1 (adapted from McGregor and Murnane, 2010, used with permission). Several sources were used to compile Table 2.1 (Guba & Lincoln, 2005; Howe, 1992; Khazanchi & Munkvold, 2003; Lather, 1994; MacDonald et al., 2002; Niglas, 2001; Ponterotto, 2005;

Salmani & Akbari, 2008). In a nutshell, the rest of the book is organized using qualitative, quantitative, and mixed methods methodologies, assuming that qualitative is postpositivistic (and includes interpretive and critical) and that quantitative is positivistic (and includes empirical).

This book further assumes that positivism and postpositivism research *paradigms* are a different construct than quantitative, qualitative, and mixed methods research *methodologies* or empirical, interpretive, and critical *methodologies* (which differ on axioms). Overall, unlike paradigms, methodologies differ according to assumptions, basic tenets, and axioms (Kuhn, 1970; Weaver & Olson, 2006). The axioms were used to compare and contrast each methodology in Table 2.1 (see the left column), and the assumptions are used in Chapter 8 to contrast quantitative methods, qualitative methods, and mixed methods (see Table 8.2). Table 2.1 also includes *positivistic qualitative* research, when numbers are used, such as with a content analysis (Paley, 2008).

As a further caveat, some researchers view other “methodological” approaches as research *traditions*, including poststructuralism, postmodernism, constructivism (naturalistic), hermeneutics, and critical realism or critical theory (Lincoln & Guba, 1985; Neuman, 2000; Niglas, 2001; Paley, 2008). For the purposes of this book, these are construed as aspects of “qualitative postpositivism,” especially interpretivism, which assumes there are many truths and many realities. Finally, in no way does Table 2.1 “imply a certain rigidity” (Paley, 2008, p. 649) in the idea of a paradigm or a methodology, giving a nod to the lack of disciplinary agreement on this idea. And, although the result of preparing and using Table 2.1 was an “oversimplification of the philosophical issues” (Paley, 2008, p. 649), it seemed justified in that this colossal topic could not be covered in sufficient detail in one chapter.

Methodological Responsibility in an Ideal World

Before explaining the components of Table 2.1, consider that, in an ideal world, researchers would live an examined life wherein they are aware of the paradigms shaping their life. They would also be aware of the different research methodologies and how they affect the entire research enterprise. With this paradigmatic and methodological awareness, researchers would consciously choose a research question while fully cognizant of which methodology is most appropriate to generate the information required to address it, leading to new knowledge. They would be able to reconcile any disconnect between *personal* worldviews and their assumptions about *research* (see Neuman, 2000; Schneider, 2014). For example, they might personally eschew the scientific worldview, favoring a life-oriented paradigm; yet, they would choose to conduct an empirical experiment because it was the best approach to answer their research question.

In particular, with methodological awareness, they would be able to consciously shift their point of view and see the world from a variety of paradigmatic stances (Donmoyer, 2008), choosing the approach that best answers their research question (Ary et al., 2010). On the whole, however, personal paradigms and research methodologies are usually unexamined, subliminal aspects of scholarship (Neuman, 2000; Tashakkori & Teddlie, 1998). For that reason, this book is focused on the deep importance of understanding how the philosophical underpinnings of research profoundly shape the choice of research question, research design, theory, methods, reporting of results or findings, and discussion and conclusions.

Each of the key building blocks of Table 2.1 is now addressed, starting with (a) the philosophical *axioms* (the left column) and moving to (b) research *paradigms* (positivism and postpositivism), followed with (c) each of two approaches to methodologies: (i) empirical, interpretive, and critical *methodologies* and (ii) qualitative, quantitative, and mixed methods *methodologies*. As a caveat, recognizing the confusion caused by the interchangeability of all of these terms, the rest of the book consistently uses these terms as clarified in the following text.

REVIEW AND ENGAGEMENT

When critically reading a research report, you would

- Confirm if the authors convinced you that they are reflexive about their research and are philosophically aware—hence, methodologically responsible
- Ascertain if the methodology they chose for their study best reflects their research questions

PHILOSOPHICAL AXIOMS

All research entails knowledge creation, generation, or production (depending on the methodology), meaning authors need to address issues of methodology (the study of knowledge creation) and relevant philosophical underpinnings (Dudovski, 2016). Methodology is a branch of philosophy that analyzes the principles and procedures of inquiry in disciplinary studies (Anderson, 2014). Philosophy has several fields of inquiry (Rohmann, 1999), with four branches of philosophy pertaining to the notion of *research methodology* (see Figure 2.4): (a) Metaphysics (ontology) studies the nature of reality and of being and becoming, (b) epistemology is concerned with the nature and the scope of knowledge, (c) logic involves the study of valid argument forms and truth claims, and (d) axiology studies values, especially the role of the researchers' values in research (Ryan & Cooper, 2007). These philosophical foundations are the crux of all research, whether or not authors acknowledge them in their paper (Neuman, 2000).

Paley (2008) defined the various approaches to research as an “encapsulated and rather rigid set of ontological, epistemological . . . beliefs” (p. 650). He was referring to the axioms of research methodologies. *Axiom*, a philosophical concept, is Latin *axioma*, “that which commends itself as evident” (Harper, 2016). In philosophy, an axiom is an authoritative statement about reality, knowledge, logic, or values. An axiom is regarded as established, accepted, or self-evidently true (Cicovacki, 2009; *Oxford American College Dictionary*, 2002). These four axioms were used to help profile the paradigmatic and methodological approaches used in this book (see Table 2.1).

As a caveat, most academics link the notion of philosophical *axioms* to the empirical–interpretive–critical model of research methodologies (Kim, 2003), rather than the qualitative–quantitative–mixed methods model, which is differentiated by *assumptions* (see Chapter 8, Table 8.2). These two ideas are quite different. An axiom is a self-evident truth that *requires no proof* (never needs to be questioned). An assumption is a supposition that

FIGURE 2.4 ■ Four Methodological Axioms

<p style="text-align: center;">Ontology</p> <p style="text-align: center;">Reality Greek <i>ontos</i> “to be”</p> <ul style="list-style-type: none"> • What counts as nature, existence, feelings, reality, being, and becoming? • What is the ultimate nature of things? 	<p style="text-align: center;">Epistemology</p> <p style="text-align: center;">Knowledge Greek <i>episteme</i> “knowledge” and <i>logos</i> “study of”</p> <ul style="list-style-type: none"> • What counts as knowledge (is worthy of knowing)? • How do people know what they know? How did they come to know it?
<p style="text-align: center;">Axiology</p> <p style="text-align: center;">Greek <i>axi</i> “value, worth”</p> <ul style="list-style-type: none"> • What counts as fundamental values? What is their role in research? • What are consciousness (moral choices), ethics, and normative judgments? 	<p style="text-align: center;">Logic</p> <p style="text-align: center;">Greek <i>logike</i> “reasoning”</p> <ul style="list-style-type: none"> • What habits of mind are acceptable for reasoning, inference, and arguing one’s position? • What logic is acceptable for forming thoughts, conclusions, opinions, judgments, revelations, or insights?

is taken for granted *without questioning* or proof, when it probably should have been questioned (Anglika, 2008).

Example 2.2 Axiomatic statement A researcher could say, “I hold as *axiomatic* that reality is out there waiting to be discovered. With enough value-neutral and objective studies using the scientific method, the truth about reality can be found using deductive logic.” Such an authoritative statement reflects the positivistic, empirical research methodology. Despite that others (i.e., those who assume other things about knowledge creation) may not agree with this statement, this researcher assumes this authoritative statement cannot be challenged because it is *true*.

By acknowledging the axiomatic underpinnings of their research, authors tell readers that they are reflexive and philosophically aware. They are able to link the abstract ideas of philosophy to the concrete practices of research. By not questioning assumptions, researchers may not be able to justify or defend their research design to more discerning parties (Neuman, 2000).

REVIEW AND ENGAGEMENT

When critically reading a research report, you would

- Determine if the authors referred to one or more philosophical axioms (see Figure 2.4 and Table 2.3), ideally in concert with mention of empirical, interpretive, and/or critical methodologies
- Judge if the scope and depth of their discussion of philosophical axioms affected your critical assessment of the quality of their paper

POSITIVISM AND POSTPOSITIVISM

As noted, this book uses positivism and postpositivism as the two overarching research *paradigms* under which research *methodologies* can be categorized (Alaranta, 2006; Creswell, 1994; Gephart, 1999; Kim, 2003). Table 2.2 profiles their main assumptive differences (Lin, 1998; Ritchie & Lewis, 2003). Not everyone agrees with this stance of using these two labels for overarching paradigmatic constructs. For instance, Ponterotto (2005) proposed three key research paradigms, positioning (a) postpositivism as a *strand of positivism* but identifying (b) constructivism/interpretivism and (c) critical/ideological as the other two dominant paradigms (rather than methodologies). In a strange twist, Creswell (2009) used the term *postpositivism* to refer to what others call positivism (i.e., reductionism, determinism, empirical observation, and theory verification).

Historically, in the early 1800s, social scholars assumed they could study human behavior by copying or adapting the assumptions and methods used to study natural phenomena (i.e., positivism). Eventually, social scientists began to question the correctness of this assumption. They had discovered that positivistic assumptions do not hold when examining human behavior because humans are “qualitatively different” from nature. Humans can think, learn, and reflect, and they possess motives and reasons for their actions. Not so for stars, chemical compounds, objects, or other species. Eventually, qualitative research emerged because enough people accepted that “adjustments to the natural science approach” were not enough. Instead, “an entirely separate, special kind of science” was needed, which became known as postpositivistic (and qualitative) (Neuman, 2000, p. 96).

Positivistic Research Paradigm

The term *positivism* was coined 200 years ago by Auguste Comte (early to middle 1800s). Positivism is a strand of philosophy that recognizes only that which can be scientifically verified or logically proved (Anderson, 2014). The term stems from Comte’s assertion that academic disciplines and the human mind progress through three stages: (a) theological preoccupations, (b) metaphysical speculations, and (c) their full and perfect development marked by the *positive* state. The latter stage confines itself to the study of experimental facts and their relations, representing perfect human knowledge. He felt that in the positive stage, people would “work for the progress of humanity by studying it (science and education), loving it (religion), beautifying it (fine arts), and enriching it (industry)” (Sauvage, 1913, p. 2). This would all be achieved by reducing human knowledge to “sense experiences [experiments] and empirical associations” (p. 2) (i.e., positivism).

TABLE 2.2 ■ Comparison of Assumptions of the Positivist and Postpositivist Research Paradigms

Positivist Paradigm Assumptions	Postpositivist Paradigm Assumptions
<ul style="list-style-type: none"> The only way people can be <i>positive</i> that the knowledge is true is if it was discovered using the scientific method 	<ul style="list-style-type: none"> Denies positivism, assuming there are many ways of knowing aside from using the scientific method
<ul style="list-style-type: none"> Empirical data derived from experiments and observations are interpreted using deductive reasoning 	<ul style="list-style-type: none"> Rather than testing hypotheses, the intent is to generate hypotheses through inductive reasoning
<ul style="list-style-type: none"> Human knowledge is based on unchallengeable, rock-solid foundations 	<ul style="list-style-type: none"> Human knowledge is based on human conjecture (opinion based on incomplete evidence)
<ul style="list-style-type: none"> The only authentic knowledge is that based on senses, experiences, and positive verification 	<ul style="list-style-type: none"> Authentic knowledge arises from the search for meaning, understandings, and power relations
<ul style="list-style-type: none"> The intent is to discover general laws applicable to everyone (generalizability) 	<ul style="list-style-type: none"> The intent is to help people in specific cultural and social contexts better understand and/or change their world
<ul style="list-style-type: none"> Individual <i>theories</i> must shift in the face of new evidence 	<ul style="list-style-type: none"> <i>Worldviews</i> must shift in the face of new insights
<ul style="list-style-type: none"> Seeks to identify details with hypotheses that can be tested or identified in other cases 	<ul style="list-style-type: none"> Seeks to combine details into belief systems whose manifestations are specific to a case
<ul style="list-style-type: none"> Does so by identifying general abstract patterns 	<ul style="list-style-type: none"> Does so by showing how the general patterns look in real life (in practice)
<ul style="list-style-type: none"> Identifies the existence of causal relationships 	<ul style="list-style-type: none"> Produces detailed explanations of causal mechanisms
<ul style="list-style-type: none"> Cannot explain how the causal mechanism works, only that there is one 	<ul style="list-style-type: none"> Explains how the causal mechanism works (how particular variables interact)

In the 1920s and 1930s, *logical positivism* emerged as a philosophical movement (also known as *logical empiricism*). It is associated with the Vienna Circle, comprising a group of mathematicians, scientists, and philosophers who banded together after the First World War. Intent on reducing human knowledge to logical and scientific foundations, they posited there are only two sources of knowledge, (a) logical reasoning and logical analysis and (b) empirical experience (experiments and observations). Logical knowledge includes mathematics, and empirical knowledge includes the natural sciences (e.g., physics, biology, and psychology). The main tenets of logical positivism are (a) the verifiability principle, (b) the logical structure of scientific theories (formal, deductive logic), and (c) probability (Folse, 2000; Paley, 2008). Eventually, Karl Popper eschewed the quest for verification, advocating instead the falsifiability of scientific hypotheses rather than their confirmation (Kemerling, 2011). If something is falsifiable, it can be proven false.

Although it began in Europe, logical positivism especially flourished in the United States, in the climate of the philosophy of *American pragmatism*. This strand of philosophy evaluates theories or beliefs in terms of the success of their practical application (Anderson, 2014; Folse, 2000; Paley, 2008). This philosophy holds that most philosophical topics are best viewed in terms of their practical uses and successes (e.g., the nature of knowledge,

meaning, belief, and science) (Gutek, 2014). And, although the movement eventually broke down, five very strong ideas persist to this day: “first, that there are logical relations between theory and observation and second, that explanations consist of law-like generalizations from which the occurrence of specific events can be deduced” (Paley, 2008, p. 647). An enthusiasm for statistics is a third hangover of positivism (Paley, 2008). Fourth is the tendency for objective, value- and bias-free research and jargon (vocabulary), and fifth is the idea that humans are objects to be observed by detached scientists (Smith, 1983).

In contemporary times, the positivistic research paradigm assumes that the only way people can be *positive* that the knowledge is true is if it was created using the scientific method (see Chapter 9), which consists of generating hypotheses as explanations of phenomena and then designing experiments to test these hypotheses. This encompasses the empirical methodology, meaning numerical data are derived from experiments and observations (Rohmann, 1999). Science strives to discover universal laws for society (akin to universal laws for nature). And philosophical problems and paradoxes are assumed to be resolved using logical analysis, leading to more clear scientific theories.

As previously noted, positivism is best known for the principle of verifiability and its resultant penchant for quantifiability, especially using numbers and statistics (Paley, 2008). Not surprisingly, then, a wide range of statistical measures has been developed as a means of measuring reliability and validity, the two criteria taken as evidence of intellectual rigor (logically valid) in the positivistic paradigm (see Chapter 10). If all of the rules of the scientific method are followed, people should feel comfortable with their judgments, their conclusions, and any actions based on their interpretation of the results (Nahrin, 2015).

In this whole process, it is imperative that the entire exercise is objective (value free) so as to reduce researchers’ biased interpretations of the results. Also, value neutral means the researchers’ choice of what to study should be influenced not by their values, beliefs, or interests but by objective criteria. For example, they can study about values, but their values cannot influence the study. Also, science is viewed as isolated from human beings, who are seen as objects to be studied and controlled. Most empirical research is contrived, happening in a laboratory or a controlled setting. And reductionism is an important tenet of positivism, involving understanding problems by reducing them to their simplest elements, thereby negating any appreciation for life’s complexities (Nahrin, 2015; Salmani & Akbari, 2008). By the 1970s, scholars were beginning to debate the merit and legitimacy of using positivism in social research (Neuman, 2000; Ritchie & Lewis, 2003), leading to a research paradigm that is now called postpositivism.

Postpositivistic Research Paradigm

Post is Latin, “afterwards” (Harper, 2016). Some scholars disagree with the term *post-positivism* because they think it incorrectly implies positivism is over. They advocate instead the term *nonpositivism* (Dash, 2005; Hunt, 1991). That being said, this chapter uses the well-accepted label of postpositivism as the overarching term for a research paradigm that denies positivism (Neuman, 2000; Niglas, 2001; Zammito, 2004), with justification.

In the late 1800s and early 1900s, Max Weber developed the concept of *Verstehen* (understanding); thus began the early stages of the postpositivistic movement. Weber believed that social realities need to be understood from the perspective of the person living them (the subject) rather than the person observing them (the object) (Fox, 2008; Smith, 1983). The actual term *postpositivistic research paradigm* was coined in the mid 1960s and

assumes there are many ways of knowing *aside* from using the scientific method. There is a place for the voice and role of the researcher and of the study participants. Humans are seen as central to the research process, rather than isolated from it. This notion emerged when Karl Popper and Thomas Kuhn popularized the idea of thinking about science in ways *other than* positivism (Zammito, 2004).

The postpositivistic research paradigm generates hypotheses (for future studies) through inductive reasoning, striving to (a) understand why something or someone operates in the manner that it does (interpretation) or (b) reveal power relationships and structures (critical). It assumes that research is value laden, subjective (within a person's mind), and intersubjective (shared by more than one conscious mind), even value driven within the critical stance. Postpositivistic research usually happens in natural settings (i.e., communities and daily lives). The intent of the research varies, but it can include (a) seeking patterns and commonalities; (b) discovering underlying meanings and structures; (c) revealing beliefs, kinships, and ways of living; (d) placing experiences into words and narratives; and (e) uncovering ideologies and power relationships (Lather, 1994; Thorne, 2000).

Postpositivistic researchers strive for trustworthiness criteria by endeavoring to achieve rigor through credibility, transferability, dependability, and confirmability. Authenticity criteria (i.e., fairness, ontological, educative, catalytic, and tactical) become paramount when participants are involved in the research design (Guba & Lincoln, 2005; Koch, 1996; Shah & Corley, 2006) (see Chapter 8, Table 8.5).

REVIEW AND ENGAGEMENT

When critically reading a research report, you would

- Check to see if the authors knowledgeably used the term *positivistic* or *postpositivistic* (see Tables 2.1 and 2.2)
- Determine, if they did use these terms, if they used them correctly (given their historical and current meanings)

EMPIRICAL, INTERPRETIVE, AND CRITICAL METHODOLOGIES

In addition to qualitative, quantitative, and mixed methods methodologies (to be discussed shortly), this book embraced another approach to methodologies: (a) empirical (positivistic, scientific), (b) interpretive, and (c) critical, the latter two falling under the postpositivistic paradigm umbrella (Kim, 2003, Neuman, 2000; Weaver & Olson, 2006). Each of these three approaches to knowledge creation differs along the four axioms outlined earlier (see Figure 2.4 and Table 2.3). Much more detail is provided in Table 2.1. In essence, the interpretive and critical methodologies provide “nonpositivistic alternatives” to the long-standing positivistic (empirical) approach to knowledge creation (Neuman, 2000, p. 96).

TABLE 2.3 ■ Philosophical Assumptions (Axioms) of Empirical, Interpretive, and Critical Research Methodologies

	Empirical Methodology	Interpretive Methodology	Critical Methodology
Ontology (reality)	Assumes reality is <i>out there</i> in the universe waiting to be discovered. Do enough studies and collect enough data, and eventually a full picture of reality will emerge	Assumes reality is <i>in here</i> (in people's minds, and collectively construed via lived experiences of a phenomenon); there are multiple realities	Assumes reality is material, here and now, shaped by ethnic, cultural, gender, social, and political values. It is mediated by power relations. Reality is constructed within this historical-social context
Epistemology (knowledge and knowing)	The one truth is out there waiting to be discovered, and knowledge is created using the scientific method	There is more than one truth because there are multiple realities; knowledge is constructed or created by people. Truth is based on people's interpretations and meanings of their world	Knowledge and truths are grounded in context; knowledge is dialectic; truth is liberating and in flux
Logic (arguments and claims)	Deductive logic (rational, formal, objective)	Inductive logic (patterns, meanings, multiple interpretations)	Inductive logic in hopes of revealing power and influence, leading to personal autonomy and empowerment
Axiology (values)	Values neutral; there is no place for the <i>researcher's</i> feelings, opinions, values, perceptions, or expectations	Values laden; bias, hopes, feelings, expectations, and perceptions of participants and researcher play a central role	Values driven and values oriented; the researcher's proactive values concerning social justice are key to the research

Habermas's Theory of Communication

Habermas (1984), a contemporary German philosopher, also addressed knowledge creation from these three approaches. His theory of communication posited three domains of human knowledge: (a) empirical-analytic (technical), (b) cultural-hermeneutical interpretive (practical), and (c) critical (emancipatory). These domains of human interest determine what people will accept as knowledge—respectively, (a) technical actions related to work, (b) social interactions related to intersubjective communications, and (c) critical self-knowledge and system knowledge related to emancipation (see also Brown & Paolucci, 1979).

First, the empirical-analytic approach to knowledge creation assumes that nature and society are possible objects of inquiry and new knowledge, based on prediction and control of natural and social environments. Second, the interpretive approach to knowledge creation assumes that features of everyday life and human interactions are possible objects of inquiry and new knowledge. Human societies depend on (a) action-oriented (inter)personal

understandings that operate within cultural life and (b) the *interpretive* competencies that translate these understandings into the practical conduct of life (Habermas, 1984).

Third, the critical (emancipatory) domain assumes that social criticism, sociopolitical ideologies and power structures, and personal self-delusions (plus consciousness awareness) are possible objects of inquiry and new knowledge. Human emancipation involves critical self-reflection so as to overcome dogmatism, compulsion, and domination. Knowledge is emancipatory and transformative, created through critically questioning the way things are and have always been (i.e., power). Emancipatory knowledge deals with the power relationships between marginalized voices and mainstream hegemonic power brokers (i.e., the dominance of one group over others) (Habermas, 1984).

In short, *empirical* knowledge is objective, not influenced by the personal feelings or opinions of the researcher. This knowledge (gleaned from *one* study) is assumed to reflect other populations not included in the study (generalizable). *Interpretive* knowledge is subjective, gained by the researcher while interpreting the meanings and understandings expressed by participants in a study. That knowledge is context specific and likely inter-subjectively shared by other individuals or the culture under study. *Critical* knowledge is normative. Its creation frees people from inner compulsions and unnecessary social control by those in power, wielding hegemonic influence over society. This knowledge arises from discourse among people experiencing this control. Through this discourse, they are humanized, gain emancipation, and are empowered to change the situation (Brown & Paolucci, 1979; Habermas, 1984).

Matching Methodology With Research Intent

Each of these three research methodologies (empirical, interpretive, and critical) answers basic questions about research quite differently. Authors can “study the same topic from any of these approaches, but each approach implies going about it differently” (Neuman, 2000, p. 120). Table 2.4 provides an illustration of this idea, using consumer debt as an example. What researchers try to accomplish (their intent) will vary with the methodological approach chosen to underpin their study. Their ultimate research design is based on the axioms from each particular approach, and if done responsibly, their research report will share “the back-ground reasoning on which [the study] was originally based” (Neuman, 2000, p. 123).

REVIEW AND ENGAGEMENT

When critically reading a research report, you would

- Determine if the authors referred to one or more philosophical axioms (see Figure 2.4 and Table 2.3), ideally in concert with mention of empirical, interpretive, and/or critical methodologies
- Ascertain if they referred to knowledge creation as a reason for their research and if, by chance, they mentioned empirical, interpretive, or critical knowledge
- Comment on whether the authors linked their research question with their research methodology (see Table 2.4)

TABLE 2.4 ■ Examples of Research Intent Within the Empirical, Interpretive, and Critical Research Methodologies

Positivism Paradigm Quantitative Methodology	Postpositivism Paradigm Qualitative Methodology	
Empirical Methodology Intent is prediction, explanation, and control	Interpretive Methodology Intent is understandings	Critical Methodology Intent is power and liberation
Methodological Framings of Research Problem Consumer Debt as Example		
The intent is to <i>explain</i> or <i>predict</i> why people get in debt so the results of the study can be used to <i>control</i> human behavior, leading to less debt. The researcher will use the scientific method to design the research project (likely including a survey instrument), focusing on facts and/or objective assessment of attitudes. Seen as an expert, the researcher's results can be used to legitimize prescriptive policy or design consumer education curricula so as to <i>control</i> people's financial behavior, leading to less indebtedness, more solvency, and more credit savviness.	The intent is to <i>understand</i> what is happening (indebtedness), how people who are in debt feel about it, how these conscious and unconscious feelings came to be, and how these new, shared meanings affect their lives. The researcher designs the study in such a way that dialogue ensues with and among those in debt to identify patterns of behavior that lead to indebtedness, as explained by those experiencing this event. Methods could include case studies, storytelling, or content or thematic analysis of interview transcripts. Findings are used to help the indebted person gain a better understanding of his or her lived experiences with being in debt. With these new insights, humans are capable of intentionally changing their behavior, given the right circumstances, but behavior change is <i>not</i> the intent of the research.	The intent is to <i>reveal power</i> relationships in society that are embedded in existing societal institutions (e.g., consumer society, marketplaces, lending practices, government policies). This is achieved by facilitating participation and transactions with and amongst citizens in such a way that their consciousness is raised about the fact that they are oppressed (they also may know this but feel incapable of taking action). This emancipatory process leads to personal self-empowerment to take steps toward changing their own circumstances and the entire consumerism system. Research methods focus on social justice, inclusion, and liberation and can include action research, critical analysis, and reflective phenomenology. The intent is to give voice to the participants, leading to social change.

QUANTITATIVE, QUALITATIVE, AND MIXED METHODS METHODOLOGIES

The other popular approach to labeling research methodologies emerged during the 1970s and early 1990s and is used to structure the rest of this book. It is the “quantitative–qualitative–mixed methods” approach, so named by Guba (1990). Ary et al. (2010) explained that first came quantitative, then qualitative (see Figure 2.1). The emergence

of qualitative led to “the paradigm wars” (p. 559), with people in agreement that these approaches to knowledge creation are distinct due to their philosophical underpinnings but in disagreement about whether they should (or could) both be used in the *same* study (see Donmoyer, 2008). Purists said no, and pragmatists said yes, leading to mixed methods, the third methodological approach in this triad (Guba, 1990; Tashakkori & Teddlie, 1998).

Quantitative and Qualitative Methodologies

Quantitative and qualitative methodologies differ on their assumptions about how to approach research. Fundamentally, the quantitative methodology originated in positivism, with qualitative arising as a push back to positivism (Ary et al., 2010; Wiersma & Jurs, 2009). This approach to distinguishing between the two methodologies is different from the axiom approach previously discussed (see Figure 2.4). Table 2.5 profiles the main assumptive differences between qualitative and quantitative research methodologies, with more detail available in Chapter 8, Table 8.2 (Johnson & Christensen, 2012; Shank & Brown, 2007; Suter, 2012; Weaver & Olson, 2006; Wiersma & Jurs, 2009).

Compared to quantitative researchers, qualitative researchers are “more concerned about uncovering knowledge about how people feel and think in the circumstances in which they find themselves, than making judgements about whether those thoughts and feelings are valid” (Cole, 2006, p. 26). Qualitative research is about meanings and understandings, as perceived and expressed by those living the phenomenon (Shank & Brown, 2007; Smith, 1983). Meaning is Old English *mænan*, “intent, a sense of, import”

TABLE 2.5 ■ Assumptions Underpinning Qualitative and Quantitative Research Methodologies

Qualitative Methodological Assumptions	Quantitative Methodological Assumptions
<ul style="list-style-type: none"> • Research is best conducted in the natural setting (uninterrupted) • A social phenomenon needs to be understood from the perspective of those living it • Meanings derived from data are context specific (one setting) • Data are words (nonnumerical); phenomena are too complex to reduce to numbers • Researchers can be observers or participants and are the key data collection instrument • Theory can emerge from the data (and research can be atheoretical) • Hypotheses must emerge from the data • Reality can be studied using exploration, observation, and interaction • Conclusions can be drawn using inductive logic (specific to general) • Findings can be presented using narrative 	<ul style="list-style-type: none"> • Research is best conducted in a controlled environment (scientific method) • Relationships and causal mechanisms (objectively) need to be determined • Meanings derived from data should apply to other settings (context free) • Data are numbers; phenomena can be reduced to simplest parts (using numbers) • Researchers can and should distance themselves from the study • The study can be theory based from the onset • The study can start with hypotheses that are tested to find the truth • Reality can be studied using experimental and nonexperimental methods • Conclusions can be drawn using deductive logic (general to specific) • Results can be presented statistically

(Harper, 2016). Meaning is defined as an explanation of what the words were intended to express when someone used them (Anderson, 2014).

Qualitative *meaning* differs from quantitative meaning (Locke et al., 2010; Shank & Brown, 2007; Smith, 1983), as shown in Table 2.6. In qualitative research, meaning is key to understandings, with researchers looking for patterns in the data in search of meaning (Shank & Brown, 2007). *Truth* also has different connotations in qualitative and quantitative work. Succinctly, quantitative scholars assume truth is out there waiting to be discovered while qualitative researchers assume truth is internal to people, either created or agreed to (Smith, 1983) (see also Table 2.1).

Mixed Methods Methodology (Mixing Assumptions)

Mixed methods is the term commonly used to refer to a study that combines assumptions *and* methods from both qualitative and quantitative approaches. Although a better term for this enterprise is *mixed paradigms* (Caracelli & Greene, 1997, p. 19), this chapter uses the term *mixed methods* (with hesitation). Indeed, people's definitions of what constitute mixed methods are "diverse and differentiated in terms of what was being mixed, the stage in the research process where [sic] the mixing occurred, the extent [sic] of the mixing, the purpose of the mixing and the drive behind the research" (Cameron, 2011, p. 96). In this book, Chapter 10 discusses what is involved in conducting a study using both types of methods (techniques and procedures to sample, collect, and analyze data). To complement

TABLE 2.6 ■ Meaning and Truth in the Qualitative and Quantitative Research Methodologies

	Qualitative Methodology	Quantitative Methodology
Meaning	<ul style="list-style-type: none"> • Meaning is the person • People hold meaning • People make meaning out of their own experiences or take meaning from others • The whole point of research is to examine the processes and types of meaning people might create in, or take from, their world (operationalized during research) • Observations are internal • People are an integral part of reality (and there are multiple realities that differ across time and space for a phenomenon) 	<ul style="list-style-type: none"> • Meaning is the world • Things hold meaning • Meaning comes from abstract laws of nature or the operations of things in the world • Issues of meaning must be settled before testing hypotheses and theories (operationalized before) • Observations are external • Things are separate from reality (there is one reality for a phenomenon)
Truth	<ul style="list-style-type: none"> • Reality is created by people, meaning what is claimed as true about that reality is purely internal to people • Ontological truth: what is agreed to at any particular point and place in time • Coherent truth: because reality is created, truth has to be constructed 	<ul style="list-style-type: none"> • Reality is out there waiting to be discovered • Truth exists independently of what is in our minds • Something is true if it corresponds with existing reality and false if it does not

this discussion, this chapter focuses on *mixing assumptions* and whether or not this is possible or desirable.

For the remainder of this section, the term *mixed methods* is hereby viewed as *mixed methodology*, defined as “the broad inquiry logic that guides the selection of specific methods [and research questions]” (Teddlie & Tashakkori, 2010, p. 5). The term *inquiry logic* refers to the problems and interests of those engaged in learning about and inquiring into phenomena (Mosier, 1968). Regarding this logic, the “*thoughtful* mixing of assumptions . . . can be very helpful” (Johnson & Christensen, 2012, p. 31). But not everyone agrees that mixing them is a good idea or even possible (see Figure 2.5).

Kim (2003) believed that *empirical*, *interpretive*, and *critical* can all be used to study a phenomenon but not in the *same* study because their axioms are at odds with each other. Platt (1986) used this logic: (a) *Positivism* and *postpositivism* are not compatible because they hold different assumptions; (b) *quantitative* and *qualitative* correspond to them respectively; thus, (c) the latter two cannot be used in one study because their fundamental assumptions

FIGURE 2.5 ■ Disagreement on Mixing Assumptions (Methodologies)

<p>Cannot Use Methodologies in Same Study</p>	<ul style="list-style-type: none"> • Cannot mix methodologies in the same study because they have mutually exclusive assumptions, but they can be used in separate studies to address the same research problem; however, this would necessitate different research questions
<p>Can Use Methodologies in Same Study</p>	<ul style="list-style-type: none"> • Can mix methodologies as long as researchers acknowledge they are combining different logics of inference to answer different research questions (different logics to arrive at conclusions - <i>reconstructed logic</i> for quantitative and <i>logic-in-use</i> for qualitative)
<p>Be Pragmatic</p>	<ul style="list-style-type: none"> • Do not wait for philosophers to settle this issue. Researchers can combine methodologies as long as they are accountable for all assumptions, and provide a justification for mixing assumptions, relative to their research questions
<p>Desirable to Combine Positivistic and Postpositivistic</p>	<ul style="list-style-type: none"> • Researchers should not privilege positivistic because they can be used to explain each other. Positivistic confirms there is a causal link (or an association), and postpositivistic helps explain the link (interactions or associations between variables)

differ too much. Shah and Corley (2006) and Niglas (2001) concurred that *qualitative* and *quantitative* cannot be mixed because they have mutually exclusive epistemological positions (i.e., what counts as knowledge and knowing).

From a more liberal and progressive stance, Lin (1998) believed that combining positivistic and postpositivistic paradigmatic approaches in one study is possible as long as researchers remember that they are combining two different *logics of inference*. This term refers to the act or process of deriving logical conclusions from premises known and presumed to be true (i.e., assumptions). To reach their conclusions, quantitative (empirical) researchers would use *reconstructed logic* while quantitative researchers would use *logic-in-use* (Maxwell, 2008) (see Chapter 8). Lin (1998) argued that it is “precisely because the logics of inference are different, and suited for answering different questions, that research combining both logics is effective” (p. 163) (see also Johnson & Christensen, 2012). Lin (1998) explained that positivistic work can find causal mechanisms, and postpositivistic research can help explain how the mechanism works.

In attempts to mediate this situation, Kim (2003) maintained that not all disciplines view research methodologies as incompatible; rather, some disciplines prefer or advocate for one over the other (see also Botha, 1989). Kim tempered this thought by cautioning authors to not favor the positivistic paradigm and associated methodologies to the exclusion of postpositivism. Niglas (2001) and Trochim and Donnelly (2007) advocated for pragmatism, meaning researchers can use whichever approach they want *as long as* they are accountable for any *assumptions* they bring to their work. At a minimum, authors reporting mixed methods studies must justify *mixing assumptions* and *logics of inference* and clearly articulate their philosophical positions on this still unsettled aspect of scholarship. This especially involves matching the research question with the methodology (see Table 2.4), as discussed in the next section.

REVIEW AND ENGAGEMENT

When critically reading a research report, you would

- Determine if the authors provided some level of discussion of the assumptions behind the methodology they chose for their research design (see Tables 2.3 and 2.5): qualitative, quantitative, or mixed methods
- Ascertain if they addressed the topics of meaning and truth and how they are understood within the methodology used in their study (see Table 2.6)
- Check to see if they justified using a mixed methods (mixed assumptions) methodology, providing a cogent discussion, ideally with some mention of logics of inference
- Ascertain if their research questions correlated with their research methodology (qualitative, quantitative, or mixed methods)

RESEARCH METHODOLOGY AND RESEARCH QUESTION ALIGNMENT

Research paradigms and research methodologies can become so ingrained that they influence the very choices of the questions deemed worthy of study, the methods used to conduct the study, and the theoretical lens for interpreting the results and findings

(Rohmann, 1999), knowingly or not. *When* the researcher should pose a research question is still under dispute, relative to the research methodology (see Figure 2.6).

First, Wiersma and Jurs (2009) suggested that researchers tend to pose their research question first. Only then do they identify the pertinent research methodology (philosophical assumptions) from the words they chose in their question and proceed to develop their research design using the appropriate methods. Similarly, Dudovskiy (2016) claimed that the underlying philosophy of a study will reflect the researcher's assumptions (and worldviews), intimating that the latter come first, followed with clarification of pertinent research methodology. In plain language, researchers will pick a research problem of interest to them and *then* align it with the appropriate research methodology. Only then do they create their research design logic and logistics (see Chapter 8).

Second, some scholars believe that researchers consciously choose a research methodology, from which the research questions will naturally flow (Ary et al., 2010). These scholars would know that the research methodology exists regardless of their own worldviews. Sometimes they align, and sometimes they do not. What matters is that the research question and the research methodology align (see Table 2.4). For example, if a scholar is concerned with power relations in society, it is a natural progression to the critical (emancipatory) research methodology. In another instance, a scholar may personally prefer empirical research but appreciate that she or he cannot answer a research question focused on what a phenomenon *means* to the people living it unless an interpretive (qualitative) research methodology is used to create the research design. The scholar's personal worldview would not get in the way of her or his research methodology.

FIGURE 2.6 ■ Aligning Research Question With Research Methodology



Third, in other cases, researchers never question their research methodology or worry about the genesis of their research questions because they have been socialized into disciplinary blinders, with many disciplines adhering to specific methodologies, especially the empirical, quantitative, positivistic methodology (Weaver & Olson, 2006). In light of this, Weaver and Olson (2006) urged disciplines to avoid uncritically prescribing one mode of inquiry and knowledge creation. This would remove the paradigmatic blinders.

Regardless, the research methodology and the research question must be consistent (Wiersma & Jurs, 2009). Ary et al. (2010) concurred, advising that the research methodology must be suitable for what is being studied and what one wants to find out—that is, suitable for the research question (see Table 2.4).

REVIEW AND ENGAGEMENT

When critically reading a research report, you would

- Determine if the authors ensured that their research methodology and research questions were consistent—in other words, that the research methods (determined by the methodology) were appropriate to answer the research question (see Table 2.4)
- Ascertain if they explained *how* the research question was affected by their research methodology (see Table 2.4)
- Check to see if they commented on *when* they posed their research question (see Figure 2.6)

WRITING THE RESEARCH METHODOLOGY SECTION OF A PAPER

When writing their papers, authors rarely explicitly indicate which research paradigm or methodological approach(es) shaped their study. Nonetheless, this key aspect of research should be “candidly expressed [and] made explicit and shared” (Neuman, 2000, p. 122). It will likely comprise one paragraph (longer for a thesis or dissertation), which should include (a) identification of the specific research methodology used in the study; (b) the reasons for choosing this particular methodology; and (c) a discussion of how it informed the [research question], the research strategy in general, and the choice of methods in particular (Dudovskiy, 2016).

Because it usually prefaces the Methods section, which reports what *was* done to sample, collect, and analyze data, any discussion of methodological decisions should be written in past tense unless it is a research proposal (future tense), where the researcher is seeking approval of his or her research design, meaning the research has not yet happened.

Example 2.3 Reporting a qualitative research methodology (adapted from Murnane’s 2008 doctoral dissertation, pp. 42–43, references in the original)

This research will be conducted through the **interpretive paradigm**, which views research as a way of better understanding reality, as well as the researcher him- or

herself, within a given context (Koetting, 1984). Because of the contextual nature of **interpretive research**, it is imperative to better understand a particular setting and activities that are specific to the organization in addition to just gathering data. For that reason, appropriate ontological, epistemological, axiological, and rhetorical components were observed to achieve this understanding. **Ontologically**, there are many realities based on the researcher's interaction with the participants as well as the researcher's and participants' experiences occurring **naturally** (Khazanchi & Munkvold, 2003; Ponterotto, 2005). The research subjects develop the interpretive researcher's view of their reality, and the **nature of the knowledge** attained is conceptual with regard to the participants' **meanings** (Baranov, 2004; Berrell & MacPherson, 1995; Gephart, 1999). **Epistemologically**, the researcher and the study participants are completely dependent on one another as they work together to create knowledge throughout the study; therefore, **objectivity** is not a goal for this work (Khazanchi & Munkvold, 2003; Ponterotto, 2005). **Axiologically**, the researcher's and participants' **values** are integral to the research process and are incorporated into the study (Ponterotto, 2005). Lincoln and Guba (1985) define "values" as judges of preference or choice and include preferences grounded in assumptions, theories, perspectives, and social norms. The researcher's **biases** are also acknowledged as part of the axiology. From a **rhetorical** perspective, the narrative is personal and involved and written from the viewpoint of the researcher (Ponterotto, 2005), the desired reporting structure for a narrative presentation of the research findings. The **case study method** will be used because it is consistent with the **narrative** presentation of **findings**, where the description of a real situation and context is required (Stake, 1978; Yin, 2003).

Compared to the thoroughness of Example 2.3, in reality, what usually appears in a paper is a very truncated statement, something like "This *qualitative* study employed the case study *method* to address the *research question*." Although authors seldom use axiomatic terms (e.g., *epistemology* and *ontology*), the words *interpretive* and *critical* appear quite often, as do *qualitative*, *quantitative*, and *mixed methods* (less so *positivistic* and *postpositivistic*). Authors of empirical studies hardly ever self-identify as using a "positivistic, quantitative research methodology." They believe (subliminally, perhaps) that this clarification is unnecessary because all empirical studies follow the same research protocol (i.e., the scientific method), which is self-evident, needing no explanation or justification. The information in this chapter strived to foster responsible methodological decisions and reporting, as a precursor to the actual Methods section.

REVIEW AND ENGAGEMENT

When critically reading a research report, you would

- Confirm that the authors clearly explained which methodology they used, linking it with their theory and method choices
- Ascertain if they at least provided enough information for you to deduce their research methodology

FINAL JUDGMENT ON THE METHODOLOGY ELEMENT OF A RESEARCH PAPER

Taking *all* of the **Review and Engagement** criteria into account, what is your final judgment of the methodology element of the paper that you are critically reading?

CHAPTER SUMMARY

This chapter tackled the very challenging task of distinguishing between an array of methodology-related terms and how each relates to research questions, research design, and methods. After briefly describing the provenance of the most common terms (see Figure 2.1), the discussion turned to three overarching terms: *research paradigm*, *methodology*, and *tradition* (see Figure 2.2). This section acknowledged that there is simply no agreement in the academy about what these terms mean and how they should be used. What is agreed to is that they impact the research question, methods, and theory choices (see Table 2.4). This book, and this chapter in particular, also clearly distinguished between methodology and method (see Figure 2.3).

After clarifying the approach used in this book (see Table 2.1), all four key aspects of this approach were then discussed: (a) philosophical axioms (see Figure 2.4); (b) positivistic and postpositivistic research paradigms (see Table 2.2); and (c) empirical, interpretive, and critical research methodologies (see Table 2.3) (along with Habermas's three approaches to knowledge creation). After clarifying that the book uses (d) the quantitative, qualitative, and mixed methods methodology approach, each of these methodologies is described (see Tables 2.5 and 2.6 and Figure 2.5). The chapter concluded with a discussion of the importance of aligning research methodology and research question (see Table 2.4 and Figure 2.6) and some basic conventions for writing the research methodology section of a research report.

REVIEW AND DISCUSSION QUESTIONS

1. Had you ever heard of the idea of methodology before reading this chapter? Explain your reaction to this key research convention.
2. What are your thoughts about *the very idea* of “a methodology”? Does *the idea* make sense? What is your knee-jerk reaction to the concept? After reading this chapter, what is your mental image of the concept (how do you picture it in your mind)?
3. What is the difference between methodology and method, as explained in this chapter (see Figure 2.3)? What is the connection between methodology and methods in a research design?
4. After reading this chapter, find someone who might be interested and explain to him or her the approach to methodology that is used in this book (see Table 2.1).
5. One approach to methodology is based on philosophy, including four axioms dealing with what counts as knowledge, reality, logic, and the role of values (see Figure 2.4). How comfortable are you with this *philosophical*

idea? How easy (ease of effort/no worries) or hard (anxiety and/or difficulty) was it to intellectually grasp this *philosophical* aspect of research? Explain your answer.

6. Explain in plain language the main differences between the empirical, interpretive, and critical research methodologies (see Table 2.3).
7. How new to you were the ideas of positivism and postpositivism? Are you more comfortable with these concepts after reading this chapter? Why or why not? (See Table 2.2.)
8. Another approach to methodology is quantitative, qualitative, and mixed methods. How do these three approaches differ on their assumptions about research? In particular, how comfortable are you with mixing assumptions in a research design (mixed methods)? (See Table 2.5 and Figure 2.5.)
9. How are positivism/postpositivism and qualitative/quantitative connected?
10. Methodologies are *supposed* to come first (be the axis of everything), then be *followed* by the research question, the logic used for research design, the theory, and finally the method(s) (data collection, analysis, interpretation, and reporting). Do you agree with the role that methodologies are *supposed to* play in research? Explain your answer.
11. What is your opinion about the *many ways* of categorizing, labeling, and conceiving methodologies (there is no one, agreed-to approach)? Explain your thoughts on this topic and provide justifications for your arguments.
12. What impact do you think this range of approaches has on being able to understand and use the idea when critiquing research? Are there too many or too few? Is it too confusing or too obscure, or is there too much uncertainty? Is it very clear, straightforward, or clear as mud? Explain your thoughts on this topic, and provide justifications for your arguments.
13. Explain the intended relationship between the research question and the research methodology. Which do you think should come first? Justify your answer (see Figure 2.6).