Sixth Edition

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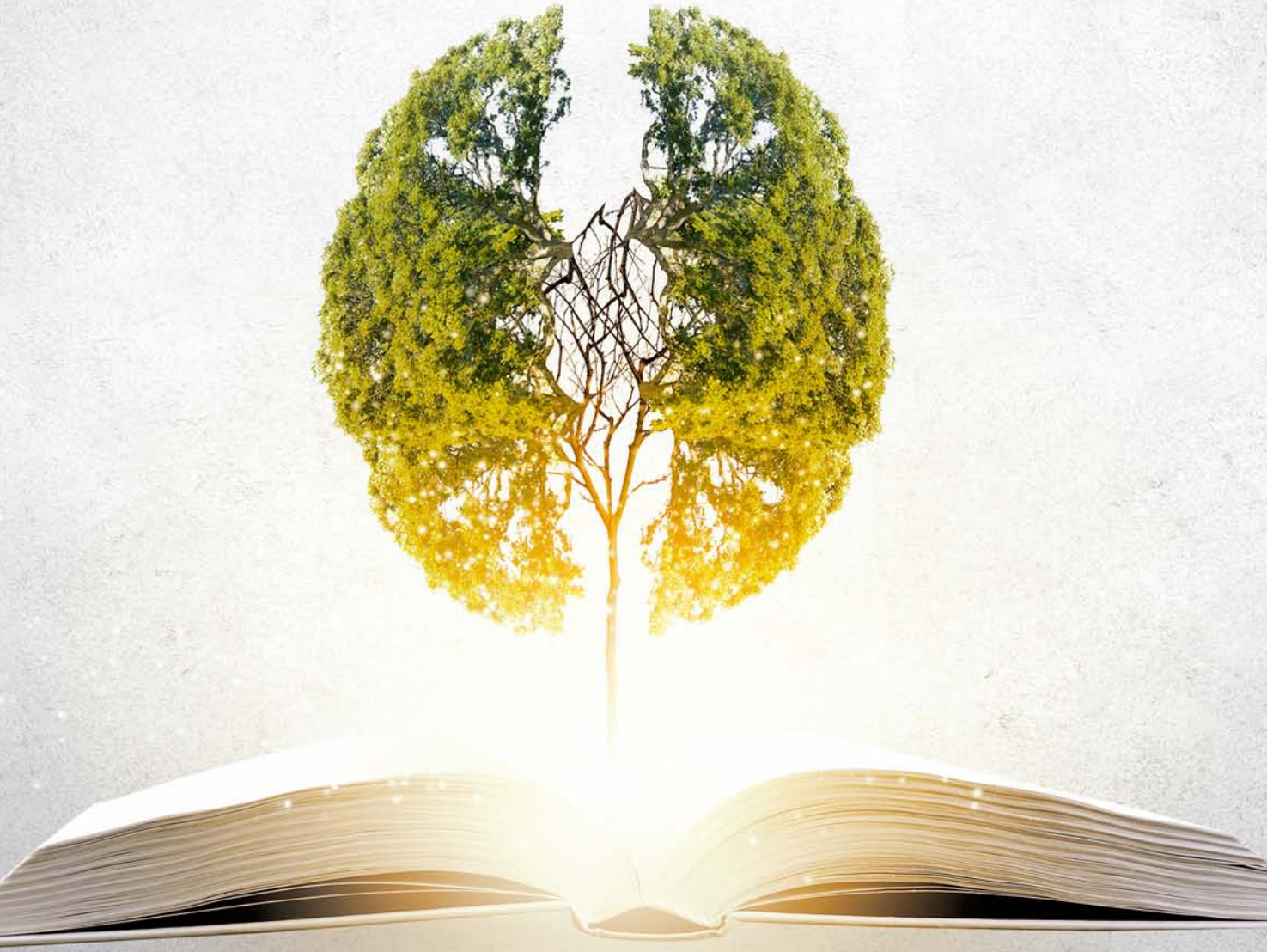
A HISTORY OF PSYCHOLOGY

The Emergence of Science and Applications



William Douglas Woody and Wayne Viney

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A History of Psychology

A History of Psychology: The Emergence of Science and Applications, Sixth Edition, traces the history of psychology from antiquity through the early twenty-first century, giving students a thorough look into psychology's origins and key developments in basic and applied psychology.

This new edition includes extensive coverage of the proliferation of applied fields since the mid-twentieth century and stronger emphases on the biological basis of psychology, new statistical techniques and qualitative methodologies, and emerging therapies. Other areas of emphasis include the globalization of psychology, the growth of interest in health psychology, the resurgence of interest in motivation, and the importance of ecopsychology and environmental psychology. Substantially revised and updated throughout, this book retains and improves its strengths from prior editions, including its strong scholarly foundation and scholarship from groups too often omitted from psychological history, including women, people of color, and scholars from outside the United States. This book also aims to engage and inspire students to recognize the power of history in their own lives and studies, to connect history to the present and the future, and to think critically and historically.

For additional resources, consult the Companion Website at www.routledge.com/cw/Woody where instructors will find lecture slides and outlines; testbanks; and how-to sources for teaching History and Systems of Psychology courses; and students will find a timeline; review questions; a complete glossary; and annotated links to relevant resources.

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A History of Psychology

The Emergence of Science and Applications

Sixth Edition

William Douglas Woody and Wayne Viney

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To Michael Wertheimer
—a mentor for both of us who serves as a continuing inspiration

And to
Lisa Woody for her enthusiasm, support, and encouragement

Finally
In loving memory of Wynona Rose Viney

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Brief Contents

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Preface

This book grew out of five earlier editions published under the title *A History of Psychology: Ideas and Context*. The first five editions included numerous distinctive features that we have preserved and amplified, but we believe the new title, *A History of Psychology: The Emergence of Science and Applications*, more accurately captures major developments in the history of the field. Substantial revisions have been necessary as a means of updating the book to include recent historical scholarship and enhanced pedagogical techniques.

Specifically, the current edition includes a more extensive review of the proliferation of applied fields since the mid-twentieth century. There are also stronger emphases on the biological basis of psychology, new statistical techniques and qualitative methodologies, and emerging therapies. The globalization of psychology, the growth of interest in health psychology, the resurgence of interest in motivation, and the importance of ecopsychology and environmental psychology are also emphasized. As with previous editions, this text strives for comprehensive examples of psychological thought from ancient Eastern and Western cultures, the Roman Empire, the Middle Ages, and the Renaissance. In the modern world, from about 1600, the focus is on intellectual traditions that contributed to the formal founding of psychology as an independent discipline. These traditions include rational and empirical philosophies, advances in physiology, development of quantitative techniques, evolutionary theory, naturalistic approaches to emotional problems, and significant humanitarian reform movements in the nineteenth century.

The text provides in-depth coverage of intellectual trends that followed psychology's formal founding in the late 1870s, with an emphasis on the major systems of thought and key developments in basic and applied psychology. We explore declining interest in systems of psychology beginning in the mid-twentieth century while recognizing the persistence of neobehavioristic, humanistic, and psychoanalytic approaches. The origin and development of the cognitive approach to psychology is pursued in detail along with what we regard as an age of specialization.

This book opens with a brief chapter on historiography that explores philosophical issues pertinent to disciplinary histories: What is history? Why study history? Is there a pattern in history? Can history be objective? We believe discussions of such questions result in more critical, engaged and informed readers who think not only about historical content, but also about the complex methodological tasks confronting the historian.

Chapter 2 introduces enduring philosophical problems encountered throughout the history of psychology: Do humans have free will? What are the methods by which we make truth claims? What is an explanation? What is the subject matter of psychology? The history of psychology is more meaningful to students who have a working knowledge of classic positions on fundamental philosophical problems. A careful reading of the materials in Chapter 2 will clarify and lend richness to topics encountered in subsequent chapters.

Psychological thought existed long before the founding of the formal discipline in the late nineteenth century. Like many comprehensive texts, this book presents examples of psychological thought encountered in ancient cultures. Greek and Roman periods are covered, but this book adds two critical features to the scholarship on ancient thought: First, psychological contributions of important early women such as Theana, Myia, and Hypatia are included. Second, in addition to reviewing the usual materials from the Greek and Roman periods, this text provides overviews of psychological thought from ancient Chinese, Indian, Babylonian, Persian, Egyptian, and Hebraic cultures. This emphasis on the broad scope of psychological thought is continued in later chapters that include contributions of Arab scholars such as Avicenna and Rhazes, Spanish scholars such as Juan Luis Vives and Juan Huarte, and neglected scholars such as Oliva Sabuco and Héloise.

The chapter on the Renaissance includes a consideration of the context that contributed to intellectual developments in this remarkable period. The plague, geographic discoveries, new inventions such as the telescope, the breakdown of authority, and the rediscovery of Greek classics had enormous influence. The works of important thinkers such as Galileo Galilei, Niccoló Machiavelli, and Michel de Montaigne are highlighted. Montaigne, a neglected figure in the history of psychology, is presented as a pivotal figure because of his powerful influence on subsequent thinkers such as Francis Bacon and René Descartes. The Renaissance period was progressive in some arenas, but the Inquisition and the witch hunts amounted to a holocaust for women.

In Chapters 8 and 9, this text devotes extensive space to the intellectual contexts that contributed to the development of psychology. We examine the influence of empiricism, rationalism, physiology, and evolutionary theory. We trace these developments in traditional detail and highlight the changing fortunes of doubt and curiosity in the works of the empiricists and rationalists. Curiosity, once regarded as a mark of vanity, was increasingly regarded as a virtue. We also include an emphasis on the key roles played by the growth of quantitative techniques and early applications of statistics by Florence Nightingale and Dorothea Dix. We call attention to the fact that psychology, as a formal discipline, was founded in an age of humanitarian reform movements (e.g., suffrage, abolition of slavery, new prison standards, universal education, and agitation by reformers for better treatment conditions for people with mental impairments and emotional disorders). We believe that extensive humanitarian reforms created a climate that helped legitimize the new discipline.

The second half of the text outlines the major classic schools or systems of psychology, emphasizing the basic and applied contributions of each school, and then examines psychological thought and applied psychology from the mid-twentieth century to the present. A description of the formal founding of psychology begins with nineteenth-century advances in psychophysics and voluntarism, an early school of psychology founded by Wilhelm Wundt. Additional consideration is given to scholars who shaped the new discipline of psychology, including Edward Bradford Titchener, Franz Brentano, Margaret Floy Washburn, Oswald Külpe, and Hermann Ebbinghaus.

The seminal works of William James and his American contemporaries figure strongly in the chapter on functionalism. The chapter on behaviorism reviews Russian reflexology, Edward Lee Thorndike's learning theory, John B. Watson's

behaviorism, and then neobehaviorists such as Clark Hull and Edward Tolman. The chapter culminates with an overview of B. F. Skinner's experimental analysis of behavior. The next chapter focuses on Gestalt psychology, an innovative school that challenged mechanistic and elementaristic approaches to psychology.

The advent of the psychodynamic school is detailed in the evolution of Sigmund Freud's psychoanalytic theory as well as resourceful challenges to his work from Alfred Adler, Carl Jung, and Karen Horney. The philosophical underpinnings of humanistic psychologies are traced in the works of scholars such as Unamuno, Kierkegaard, and Heidegger. These materials are followed by overviews of the works of Abraham Maslow, Gordon Allport, Carl Rogers, Viktor Frankl, and Joseph Rychlak.

Following the overview of humanistic psychologies we turn to a discussion of developments in the second half of the twentieth century. It is in this period that we witness a proliferation of specialized studies across basic and applied areas of psychology. The specialization is manifested partly in fifty-six divisions of the American Psychological Association that are extant as of this writing. We focus on developments in cognitive psychology, clinical psychology, biopsychology, behavioral genetics, psychopharmacology, psychoneuroimmunology, social psychology, and industrial-organizational psychology.

A final chapter, "Prospects for the Twenty-First Century," explores emerging new developments and prospects for the future. Current trends toward globalization and multiculturalism are included along with a discussion of continuing and growing work on sex and gender issues and the growing recognition of intersectionality in the psychology of prejudice and privilege. Health psychology is emerging as one of the most important developments in the opening years of the twenty-first century. We then examine positive psychology as a new and rapidly expanding field. This chapter also includes a section on ecopsychology, a central topical area for psychologists in a century where large populations must come to grips with climate change and associated geographic changes along with crowding, extinction of species, and degradation of natural resources. Next, psychologists have long been interested in the law, and we see a continuing and growing emphasis on psychology and law. We then examine recent events in psychology, including the resurgence of motivation research and innovative new quantitative and qualitative research methods. Psychologists cannot ignore religious dimensions of human life, and the psychology of religion will continue to grow in importance. We examine a recent dark moment in the history of psychology: the findings of the Hoffman Report and the revelations of psychologists' involvement in enhanced interrogation techniques. The chapter closes with a discussion of the problem of unity and disunity in the sciences including psychology.

More than five hundred new references have been added. Study questions and a glossary of terms appear at the end of each chapter. Major sections of the text are introduced with a timeline. Moreover, numerous luminaries are covered in this text that were not included in previous editions. This edition includes more images and supporting materials as well.

Some final words are in order regarding some of the historiographic and philosophical biases of the authors. Disciplinary histories, such as those about art, music, philosophy, or psychology, are commonly *internal* histories that focus on historical developments within a discipline. Although emphasis on internal developments may be the primary goal in disciplinary histories, these works are nevertheless richer if attention is also directed to *external* history—that is, to contextual political, economic, religious, philosophical, scientific, and social forces that help shape the flow of events within a discipline. In this spirit, we identify some external forces that helped shape psychology. The complex, multidimensional characteristics of the task, however, guarantee that it cannot be carried out totally successfully. The historian who may be versed in economic context for a given period of time may not be so

well versed, for example, in religious history and context. The complicated rich texture of the past is beyond the grasp of most of us. Nevertheless, an awareness that our discipline did not develop in a vacuum is itself valuable.

Another historiographic bias is illustrated in the organization of this text. We believe that nature and history are filled with real discontinuities, disjunctions, and surprises. Events, especially in the intellectual arena, seldom flow with measured, uniform, unvarying regularity. But even if the flow of events had been linear and logical, it would be impossible to present the story in such a fashion because the historian has little choice but to be selective with respect to the materials to be presented. The past is marked by a burly, robust accumulation of materials, some apparently more relevant and some less relevant to our interests. To present the story in all its thick detail would require more time than most of us could devote to the subject; hence, we must resort to the thinness of concepts. If the historian could function more as a photographer than as an artist, the product would still be based on many arbitrary decisions. In the main, we attempt to allow chronology to dictate the flow of ideas and we hope, from time to time, to capture some of the rich detail of the past. At other times, we will break with strict chronology to follow a single idea forward in time and then backtrack to follow another idea forward in time. Thus, the interests of coherence sometimes trump the dictates of chronology.

Study aids are provided in each chapter to help students focus on important materials and concepts. Key words in the text are presented in boldface to help the reader focus on major ideas. A phonic pronunciation guide for difficult names (e.g., Xenophanes [*zeh NAH fuh neez*]) is included to assist students in feeling more "at home" with the materials.

New to This Edition

This edition of the text retains all the unique features that appealed to students in previous editions but also includes numerous distinctive additions as follows:

- We have reviewed and incorporated over five hundred new references. This text remains one of the most heavily referenced texts in the field.
- New materials have been included on the nature of historical consciousness to highlight research into an area with important pedagogical and substantive consequences for historical studies in general and the history of science and psychology in particular. Additionally, we have incorporated new scholarship on the historical, present, and future unity and diversity of psychology.
- There is now an outpouring of new work in biological psychology, and our text reflects this explosion. We evaluate possible neurophysiological determinants of intention and implications for free will and determinism, an issue that occupies increasing attention of historians and philosophers of science and psychology. We also address the recent history of these and related research areas such as psychoneuroimmunology, psychopharmacology, and recent technological advances in neuroscience.
- We have added a section on the significance of evolution in the development of psychology. There are now growing numbers of new books and courses on behavioral genetics, evolutionary psychology, and evolutionary interpretations of such topics as the determinants of mate selection and mate guarding.
- Beginning with the first edition, we have focused on the significance of humanitarian reform movements in shaping the development of psychology. That emphasis has been expanded in this edition by reference to the work of Alice Paul and others in the women's suffrage movement. We also call attention to likely changes in the historiography of the Inquisition based on the opening of the Vatican archives.
- There are numerous updates in this edition on the philosophy and psychology of William

James. The addition of recent scholarship on James complements a section of the text that has been recognized as a strength.

- We have incorporated new scholarship about the origins of Gestalt theory, potential outcomes of Watson's Little Albert study, particularly the claims about Albert's identity, and innovative therapies that have generated positive and rigorously studied outcomes.

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Acknowledgments

We deeply appreciate the literally thousands of students at the University of Northern Colorado, Colorado State University, and the University of Colorado Boulder who have studied previous editions of this text and have provided helpful, critical, and appreciative commentary. Their enthusiasm, generosity, and insights have played a major role in shaping this sixth edition.

We express our sincere gratitude to Dr. D. Brett King who has been involved in multiple ways with this project since its inception in the early 1990s and who served as co-author of the second and third editions of this text and as senior author of the fourth and fifth editions. Sincere appreciation is also extended to Dr. Cheri King who has made extensive contributions to this project through the first to the fifth editions. Priorities for other intellectual projects have prevented the Kings from participation in the writing of this sixth edition, but their influence remains in numerous parts of this work.

We also express appreciation to the many scholars who have offered suggestions for each of the editions of this book. A considerable number of reviewers who have helped us over the years include Thomas M. Atkinson, Lisa Best, Phillip Causey, James Choca, Steve Coleman, Edward Crossman, Robert Dippner, Marsha B. Driscoll, David Edwards, LeAnne Epling, Matthew Fanetti, Laurel Furumoto, Allan M. Hartman, Mary Henle, Margaret Ingate, Tim Koeltzow, Howard Markowitz, Michelle Merwin, John Mueller, Robert Presbie, Darrell Rudmann, Charles Jeffrey Sandoz, Elizabeth Scarborough, David Schneider, John Terrizzi, Margaret Thomas, Sara Ann Tompkins, Michael Wertheimer, and William Woodward. The intellectual resources of our reviewers have made an immeasurable contribution to this book.

It has been a pleasure to work with the publication and production teams at Taylor & Francis as we developed this edition. We are especially grateful to Editor Christina Chronister for her encouragement and strong support. Editorial Assistant Julie Toich has been extremely patient and supportive. The entire team has been admirably personable and professional throughout the entire process. We would also like to thank Jill W. Payne, who has built the supplementary materials for the companion website.

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A few additional individuals merit a special word of thanks. We would like to share our appreciation to Lisa Woody for her enduring good humor, patience, support, and wisdom.

We have each benefited immeasurably from our association with Donald A. Crosby, philosopher and Professor Emeritus from Colorado State University. Crosby's extensive expertise in the history of philosophy and his authoritative work on William James have contributed to the scope and to many of the details of this work. We express deep gratitude to Professor Emeritus Michael Wertheimer of the University of Colorado at Boulder. Both of us have been influenced by his love of history, energy, generosity, wisdom, and wit. This edition, along with the previous five editions, reflects his continuing influence.

We also express our appreciation to our children: philosophers Donald Wayne and Marcus Viney for their many contributions, especially to the first half of this work; biologist Michael David Viney for helpful and thoughtful discussions on philosophy of science and evolution; and to Nate and Ian Woody for generously sharing their father with the very demanding requirements of this project.

Finally, in loving memory of Wynona Rose Viney (1934–2009).

W.D.W and W.V.

Part 1

Historiographic and Philosophical Issues

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1 Critical Issues in Historical Studies

If we cling to our ignorance of history, error crushed to earth, will rise again, and we will have to go on solving the same old problems again and again.

—Mary Henle (1976)

The story of psychology begins in ancient times. As a self-conscious formal discipline, psychology is little more than a century old, but the subject matter captured the human imagination long before psychology became a science. In our journey, we will travel back thousands of years to visit the epic work of philosophers and scientists who wrestled with issues that continue to fascinate modern psychologists. Examining the work of early scholars on topics such as memory, emotions, dreams, perception, brain activity, learning, and mental disorders adds scope and richness to our understanding of psychology.

Our story will be more compelling if we examine problems associated with the study of history itself. A number of questions come to mind. What is history? Can the historian offer anything more than opinion? Why study history at all? Developing sensitivity to such philosophical questions makes for a more stimulating intellectual journey.

Why Study History?

The study of history is an important pursuit and numerous arguments have been proposed about why we should investigate it (see Wertheimer, 1980a). Let's take a look at a handful of the more compelling arguments.

History Enriches Our Sense of Time

In his book *The Future of an Illusion*, Sigmund Freud (1927/1961c) observed that "the less [we know] about the past and the present the more insecure must prove [our] judgment of the future" (p. 5). We live in a world of spatial, cultural, and temporal dimensions. We enrich our spatial sensitivities by traveling to other countries or studying geography. We enrich our cultural sensitivities in studies of subjects such as anthropology,

comparative religion, and sociology. If we hope to live in a broader time frame, we engage in historical studies.

In a way, history is memory. Just as there is a freedom that comes with a healthy and functional memory, so there is an intellectual freedom that comes with a broad historical perspective. In a later chapter on humanistic psychology, we'll explore the value of living in the present moment, but an exclusive emphasis on the past, the present, or the future could result in a naïve, uninformed, and isolated temporal prison. We live most fully in the here and now if we have a rich knowledge and memory for past events that contributed to the present. To neglect the past or to fail to think about the future is to impoverish the present.

History as a Contribution to Liberal Education

Robert I. Watson (1966), a historian of psychology, once remarked that psychologists, of all people, should seek to avoid "subjugation to influences of which [we are] unaware" (p. 64). Historical studies promote perspective, integration, context, and sensitivity to the fact that everything is in a complex environment of other things. Knowledge of the history of a discipline such as psychology helps us overcome the narrowness of specialization (Benjamin & Baker, 2009).

History Teaches Humility

When we study history, we are humbled by the genius, the effort, and the creative insight of previous thinkers. Helson (1972) reminds us that in history "student[s] may meet better minds in the literature than any [they] may have contact with in person" (p. 116). We may also encounter minds that have worked through problems we assumed were fresh or original. History all too often reveals that our innovative idea is a rediscovery of something known long ago. History can teach humility.

History Teaches a Healthy Skepticism

When we have an understanding of history, we are less likely to fall prey to grandiose notions, utopian dreams, and schemes that promise more than they deliver. Psychology has suffered its share of unworkable schemes, including mesmerism, phrenology, craniometry, and even some modern therapies. History teaches us to be wary of the big claim, the single method to end all methods, and the one and only definition. Helson (1972) cautioned against easy acceptance that our future lies with a solitary panacea, such as "computer models of brain function, or that there is only one psychophysical law, or that trend analysis is the last answer to statistical treatments" (p. 116). Historical knowledge counsels against the glib acceptance of the latest fad or inflated idea. Jaynes (1973a) pointed out that history may help us "liberate ourselves from the persuasions of fashions" (p. xi). At the very least, we can hope that historical knowledge will make us less gullible (Goodwin, 2005) and that historical thinking will extend into other questions in our lives.

History Influences Human Thought Processes

Henle (1976) pointed out that most of us find it difficult to see our errors or question our assumptions. She argued that human cognition is often resistant to criticism and prone to a degree of inertia or self-preservation. According to Henle, knowledge of history "gives us distance not only from our immediate objective, but from our own thinking" (p. 16). History heightens awareness of the errors of others, but also keeps us thinking straight. As Henle warned in the quotation that opened this chapter, if we are blind to the lessons

of history, then we will be doomed to solve the same old problems again and again.

Some Problems in Historiography

The term **historiography** has multiple meanings. In a narrow and literal sense, it refers to the writing of history, including techniques and strategies for investigating specific content areas. The term also encompasses philosophical questions about history and historical method (later, we will review some philosophical questions encountered in historical studies). A third meaning of *historiography* refers to the characteristics of a body of historical writings. For example, historical accounts of psychology have sometimes neglected the contributions of women, scholars from outside the United States (Burman, 2015), and other cultural minorities, and these systematic omissions and distortions carry consequences at every level of history education (Loewen, 2007). Fortunately, critical awareness of our biases has led to research that addresses how psychology has profited from the contributions of women (see Bohan, 1992a, 1992b; Gavin, 1987; O'Connell & Russo, 1983, 1988, 1990; Scarborough & Furumoto, 1987), African-American psychologists (see Guthrie, 2003; Phillips, 2000; Sawyer, 2000), and Hispanic psychologists (see Martinez & Mendoza, 1984), among others.

We will now examine questions and issues about history and historical method. What is history? What is historical consciousness? Can historians be objective? What is objectivity?

The Development of Historical Consciousness

Gilderhus (1992) suggests that peoples in traditional societies often lacked historical consciousness because immediate survival was their primary concern. Even so, survival depends on memory along with an awareness of time-based events. Temporal awareness clearly has survival value. Historical consciousness grows partly from beliefs in the significance of pivotal events in religion, politics, or science. In Hebraic literature, for example, people are encouraged to remember events associated with their delivery from Egyptian bondage. In more recent history, phrases such as *never again*, *lest we forget*, *9/11*, and *united we stand* serve as reminders of the horrors of the Holocaust or the sacrifices of war and terrorism.

Gilderhus (1992) observed that historical consciousness in Greek times grew out of attempts to separate history from mythology. The legendary Greek historian **Herodotus** (*hi RAH duh tuhs*) (c. 484–c. 425 BCE) became the first to attempt a comprehensive history of the world. Documenting contemporary episodes as well as past events, he traveled widely, made extensive notes, and gained access to eyewitness testimony whenever possible. Herodotus described physical and psychological ailments (Pridmore, 2014), and he wrote history with an emphasis on natural rather than supernatural causes.

The naturalistic approach to history was extended in the work of **Thucydides** (*thoo SIHD ih deez*) (c. 460–c. 401 BCE). Remembered for his classic *History of the Peloponnesian War*, a classic still emphasized in military science education (Wither, 2010), Thucydides documented the war between Athens and Sparta from 431 to 404 BCE. Thucydides had a passion for accuracy and for naturalistic explanations stripped of theological overtones. Aware of previous attempts to write history in terms of miracles, mysteries, and divine purposes, Thucydides insisted on discovering positive facts and presenting them in a naturalistic context. Faith in the accuracy of historical writings creates respect for written histories and may foster historical consciousness. We turn now to one of the most fundamental and challenging issues in historiography—the problem of defining history.

Historical consciousness is more than knowledge of specific histories such as the history of the American Civil War, the history of a country, or the history of an academic discipline such as

psychology. At a minimum, historical consciousness includes a sensitivity to the great range of philosophical problems associated with the writing of history, an endeavor to approach history with both critical and appreciative orientations, awareness of the dynamic ever-changing nature of historical inquiry, and an attempt to approach every subject historically (Viney, 2010). American philosopher and psychologist William James (1911) argued that "we give humanistic value to almost anything when we teach it historically. Geology, economics, [and] mechanics are humanities when taught with reference to the successive achievements of the geniuses to which these sciences owe their being. When not taught in this way, literature remains grammar, art a catalogue, history a list of dates, and natural science a sheet of formulas and weights and measures" (pp. 312–313).

What Is History?

In popular usage, the term **history** sometimes denotes the chronology of events that provides a raw material for the historian. The term also refers to stories we tell about our past. Dictionary definitions typically emphasize both meanings (i.e., history as a chronology of previous events and history as a narrative or interpretive study of the past). History has both empirical and explanatory components. The *empirical* component includes data such as unpublished letters; newspaper and Internet accounts; audio, video, or digital recordings; and official documents. The *explanatory* component refers to the efforts of historians to make sense of data. Additional perspectives about history are provided in Table 1.1.

So, how are we to define *history*? Let's begin with the idea that history has an empirical component. That is, real events that took place in the past can enter our present experiences through records. The empirical component can also include eyewitness accounts or personal experiences for more recent events. For instance, where were you on September 11, 2001? If you remember, chances are the episode is vivid in your memory. Events such as the terrorist attack on the World Trade Center resonate, in part, because they provide a way of aligning ourselves with the yardstick of history.

The task of the historian is to become acquainted with as much data as possible. Data collection may include interviews, traveling to archives to examine unpublished letters and documents, and reading old newspapers. After collecting data, the historian must engage in an interpretive study. Such study includes examining contradictions, discriminating between what is relevant and what is not, and assigning weights to different bits of evidence. In a way, the process is like working on a complicated jigsaw puzzle when we know in advance that there will always be missing pieces.

The working definition of *history* suggested here is as follows: History is the interpretive study of the events of the human past. The definition assumes empirical and explanatory components in the work of a historian.

Table 1.1 Some Perspectives on the Nature of History

History as Subjective Study
We read history through our prejudices. —Wendell Phillips
What is history but a fable agreed upon. —Napoleon I (Bonaparte)
History as a Record of the Past
History is not history unless it is the truth. —Abraham Lincoln
History as Cyclical
History repeats itself; that's just one of the things that's wrong with history. —Clarence Darrow
The Importance of History
Who cannot give an account of three thousand years remains in the darkness of inexperience. —Wolfgang Goethe
The less we know of the past, the more unreliable our judgment of the present and future. —Sigmund Freud

The Value of History

If I have seen farther than others, it is because I have stood on the shoulders of giants.

—Isaac Newton

History is the witness that testifies to the passing of time; it illumines reality, vitalizes memory, provides guidance in daily life, and brings us tidings of antiquity.

—Cicero

[W]ithout history there can be no psychology.

—Carl Jung

A Presentist View of History

Let the past serve the present.

—Mao Tse-tung

A Historicist View of History

We cannot escape history. We . . . will be remembered in spite of ourselves . . . The fiery trial through which we pass will light us down, in honor or dishonor, to the last generation.

—Abraham Lincoln

Can History Be Objective?

If we agree that history is the interpretive study of the human past, we nevertheless encounter the problem of the faithfulness or truthfulness of our interpretations. Abraham Lincoln (1856/1950) said, "History is not history unless it is the truth" (p. 149). But how can we be assured that a historical narrative is an accurate reflection of the landscape of the past? The question of objectivity is a critical issue in the philosophy of history. Historians do not usually make direct observations. Even if they did, there is no guarantee of objectivity. Historians must be selective about what they report and we are all creatures of the present and, as such, may write history in the light of present personal and cultural perspectives.

Still, we can't easily close the case against objectivity. Objectivity is a desirable yet elusive ideal in most intellectual endeavors. If we reject attempts at objectivity, we run into the assumption that one person's opinion is as good as another's. Objectivity offers the hope that historical narratives can rise above the prevailing climate of opinion. If such an ideal can be achieved, history can uncover mistakes of the past and can repudiate, disagree with, or tell unpopular stories. Chinese leader Mao Tse-tung (1893–1976) believed that history should serve the Communist revolution (Lifton, 1968, p. 144). But history serves best when it is free to treat political, religious, and philosophical ideologies in critical as well as appreciative ways.

Before proceeding, we should explore possible meanings of **objectivity in history**. The term *objective* could refer to a correspondence between a historical narrative and the events of the past it describes. If objectivity refers to such a correspondence, then the work of the historian is sure to be deficient. A historical narrative can never recapture the fullness of lived experience. Objectivity then, as correspondence, is suspect. Perhaps historians are more like painters than photographers. Even if they were like photographers, historical events would always offer another angle for a shot, a different way to frame the subject, a new magnification, or different films with varying sensitivity to color.

Another meaning of *objectivity* involves the attempt to portray all sides of an issue in a fair manner, even if something disagrees with the author's perspective. Objectivity, viewed in this way, is an attitude, one we may expect of a historian. In this context, the historian is reminded to be aware of ulterior motives and to hold them in check.

Before leaving the question of objectivity, let's return to Abraham Lincoln's contention that "History is not history unless it is the truth." Most historians might agree if we could add that, for any event, there is more than one possible true history. For example, the American Civil War can be regarded not as one war but as many wars. It was a different war for the South than for the North. The two sides could not even agree on the causes of the war. It was also a different war for each of the various states. From this line of reasoning, there can be multiple "true" histories of the American Civil War, each disagreeing on countless details.

The Tyranny of the Present

As noted earlier, historians are creatures of the present, but can they free themselves from natural biases imposed by current worldviews? Historians, like psychotherapists, must have a well-developed empathy for their subject. If such empathy is possible, then historians may be capable of suspending or neutralizing present biases; that is, they may literally "feel" their way back into the past so that deep and authentic understandings become a possibility. In short, we follow a commitment of "understanding the past for its own sake" (Stocking, 1965, p. 212). Stocking adds that a past-minded approach places emphasis on *understanding* the past rather than *judging* it; this perspective also avoids the temptation to use the past to glorify the present. As noted earlier, an adequate history can tell an unpopular story that is damaging to present interests. But is this ideal of past-mindedness possible? Can a historian suspend the present frame of reference with its possible distortions and prejudices? Put another way, can the historian capture an earlier era or frame of mind in all its intricacy, richness, and context? As noted, the problem resembles a common issue debated among clinical psychologists. Can we empathically "crawl into the mind" of another person or do individual differences prohibit genuine congruence of thought and feeling?

Related to this idea, **presentism** emphasizes the difficulty in divorcing historical facts from current perspectives. The presentist questions whether the historian can recapture the past with true objectivity. Buss (1977) wrote, "There is no such thing as hard-core, indubitable facts that are invariant across different theoretical explanations" (p. 254). The presentist is tuned to the effects of inevitable selective, judgmental, and contextual forces in historical scholarship. Scholars with a more past-minded orientation might counter that *because* we are aware of such forces, we can neutralize their effects.

Issues surrounding presentism and past-mindedness have stimulated discussion in the historiography of the behavioral sciences (see Ash & Woodward, 1987; Dewsbury, 1990; Furumoto, 1989; Harrison, 1987; Henle, 1989; Young, 1966). As with most issues, extremes of past-mindedness and presentism create difficulties. William James (1890/1981) once referred to absolutism as "the great disease of philosophic thought" (p. 334). Sounding a similar theme, Dewsbury (1990) raised doubts about the superiority of either approach and argued for a moderate and tolerant approach to historiography with room for past-minded and presentist orientations. Such an approach is sensitive to the role of present beliefs in our understanding and writing of history but also insists that authentic history will challenge and shape our present beliefs.

Is There a Pattern or Direction in History?

To ask whether history has a pattern or direction is to ask something about the meaning of history. Patterns offer information and the discovery of a pattern can be useful. We'll take a look at a few hypotheses about the direction of history that are applicable to the history of psychology.

CYCLICAL HYPOTHESIS As the name suggests, the **cyclical hypothesis** claims that history repeats itself. We find an ebb and flow in events marked by endless repetition. Kingdoms rise and fall, only to rise again; freedom is gained and lost, only to be regained once more. Cycles of poverty and plenty play out along with war and peace, discovery and intellectual stagnation, innocence and corruption, and revolution and stability. Even our ways of understanding, according to this view, are cyclical. A rational and scientific era may arise in one era before falling to arbitrary political or religious authority, only to see the rational-scientific method return to prominence at a later time.

Cycles exist in every science, and psychology has seen its share. For example, neuroscientists in the twentieth century wondered if the right and left hemispheres of the brain mediate different

emotional and intellectual processes, or do the hemispheres function in a more integrated fashion? Interest in lateralization of function in the cerebral hemispheres is not new. Long before modern neuroscience took an interest, Brown-Sequard (1890) wrote an article titled "Have We Two Brains or One?" The article is only one of many from that period to struggle with the problem of the lateralization of function. Another example from the history of psychology came in the early emphasis on conscious and experiential processes, only to face later rejection with the advent of behaviorism before an interest in consciousness and experience reemerged in the closing decades of the twentieth century.

LINEAR-PROGRESSIVE HYPOTHESIS A linear hypothesis can be either progressive or regressive, but let us assume optimism and consider only a linear-progressive view. According to the **linear-progressive hypothesis**, each generation builds upon discoveries from previous generations. Each new generation works up from a stronger base, giving rise to growth and progress in human knowledge and among human institutions. Brief regressions and setbacks may ensue, but the overall victory belongs to progress and growth. In a book entitled *The Good Old Days—They Were Terrible*, Bettmann (1974) recounts the hardships of American life from the end of the Civil War to the early 1900s. It was an era made almost unbearable with filth and pollution in major cities from factories, coal-fired steam engines, city streets teeming with horse manure, insects, and poor sewerage. In a time before air-conditioning, poorly ventilated houses and apartments claimed many lives during summer and winter months. Crime flourished, often beyond control, in major cities and on the frontier. "Dominating the record was, of course, the West, where the gun-happy barbarity was damned by observers both foreign and native for producing a 'great dismal swamp of civilization'" (Bettmann, 1974, p. 87). Education for women was little more than a faint hope, and school conditions remained deplorable for all but wealthy men. In the absence of refrigeration, food spoiled, and diets were lean and inadequate. Epidemics of yellow fever, tuberculosis, smallpox, whooping cough, and measles raged throughout the country. Child labor laws had not yet been enacted, and unsafe factories took an enormous toll in injuries and death, with little recourse for victims or their families. The problems, of course, intensified for people enslaved in Southern states or, earlier in United States history, across the nation. Given the adversities of earlier times, most people today would probably rather not return to the "good old days."

CHAOS HYPOTHESIS The coming of the nuclear age dampened earlier optimism about the inevitability of human progress. It became clear that the entire structure of human achievement could be brought to ruin by a chance technological accident or by the design of political systems deficient in world perspective. The Nazi genocide of European Jews during the Holocaust tested the hypothesis that progress is inevitable.

According to the **chaos hypothesis**, history itself has no overall identifiable and universal meaning. History is, as noted by Fisher (1936), simply "the play of the contingent and the unforeseen" (p. v). The meanings found in history are the meanings we impose, not meanings that inhere in history itself. This idea was captured in a letter from Jean-Paul Sartre to Albert Camus. Sartre (1965) observed, "History, apart from the man who makes it, is only an abstract and static concept, of which it can neither be said that it has an objective, nor that it has not . . . The problem is not to *know* its objective, but to *give* it one" (p. 103).

Critics maintain that chaos theory discourages any attempt to take responsibility for our future. If what happens in the future is independent of individual human belief and action, what incentive exists to shape our future?

In addition to the theories outlined earlier, providential theories claim that a deity plays a role in shaping the direction of history. Providential theories vary of course, depending

on the particular religious beliefs from which they are derived. One criticism of such theories is that they may undermine human efforts to improve the world. If the world is fordone by a decree of deity, why bother?

What Makes History?

We turn now to an issue of controversy among historians, one that holds special relevance for students of psychology. The central question here asks whether history is fashioned through the bold actions of exceptional people or the "spirit of the times" in which they live. The **great-person theory** suggests that uncommon individuals transcend the conditions of their day and shape history through their courage or wisdom or some other virtue. In contrast, the German terms **Zeitgeist** (spirit of a time) and **Ortgeist** (spirit of a place) argue that prevailing conditions, not individuals, forge historical events.

American philosopher Ralph Waldo Emerson's optimistic work titled *Self-Reliance* makes a compelling case for the great-person theory. For Emerson (1841/1981), history "resolves itself very easily into the biography of a few stout and earnest persons" (p. 138). He tells us that with Caesar, we have a Roman Empire; with Luther, the Reformation; with Fox, Quakerism; and with Wesley, Methodism. Following his lead, it is with Wundt that we have the formal discipline of psychology; with Freud, psychoanalysis; with Rorschach, the inkblot test; and so on. The great-person theory emphasizes the causal role of particular persons in particular circumstances and the ability of the individual to control or to change the direction of events.

Critics argue that the great-person theory results from an unsophisticated view of forces at work in the world; late in his life, E. G. Boring (1966) noted that the sudden insights of great people may serve as memory aids for students rather than accurate depictions of history (Rosenzweig, 1987). Causation in history is complex, so we must be tuned to multiple forces that create an idea, event, or institution. Seldom can a critical occurrence or invention be credited to the labor of a single individual. As an example, powered flight could never have developed from individual effort prior to invention of the internal combustion engine. A relevant background of invention, material, culture, education, and social support must be present to nurture a significant historical happening. In addition to promoting hero worship, the idea that one person alone is responsible for any substantial contribution ignores the complexities of life and history. The place (*Ortgeist*) and time (*Zeitgeist*) must be conducive before advances can be made.

English philosopher Herbert Spencer (1873) believed in the possibility of a "science of history" where context played a central role in historical causation. Likewise, the Canadian naturalist Grant Allen (1878a, 1878b) argued that the great intellectual achievements in ancient Greece were due to geography and other external forces rather than specific individuals. Herman Melville's *Moby-Dick* captures this philosophy of history when a crew member advises Captain Ahab to call off the chase for the albino whale. Ahab replies, "This whole act's immutably decreed. 'Twas rehearsed by thee and me a billion years before this ocean rolled. Fool! I am the Fates' lieutenant; I act under orders" (Melville, 1851/1976, pp. 548–549). Such fatalism may, of course, have its origin in a theological or naturalistic context. We should note that an extreme emphasis on environmental context may overlook the importance of individual actions in the stream of historical causation.

William James (1880) provides a different approach to the problem of historical causality. He argued that historical development is a causal interplay between people and their environment. He agreed that our environment sets boundaries, but added that human effort changes our world. According to James, any account of history that neglects the individual dissolves into vagary and incoherence (see Viney, 2001). James proposes a balanced approach where an individual's idea cannot achieve fruition without social and

material support. On the other hand, some ideas might never make a historical impact if not born in the mind of a unique and creative individual.

Disagreements over the forces that make history continue as a topic in historical scholarship. In an article titled "Genius without the 'Great Man,'" Ball (2012) suggests ways to engage with eminent figures without resorting to *hagiography* (a term originally meaning the worshipful and celebratory descriptions of the lives of saints). In this context, hagiography refers to a tendency to pedestalize individuals by giving them excessive credit for new historical developments. Continuing efforts to explore more comprehensive understandings of historical causation can be found in the ways psychology has been understood in a variety of countries (see Pickren, 2012).

The History of the History of Psychology

Interest in the history of psychology is as old as the discipline itself. Early textbook writers such as Wilhelm Wundt and William James acknowledged earlier contributions from disciplines such as physics, physiology, and philosophy. As noted, people discussed psychological topics centuries before psychology became a formal discipline. So it's no surprise that early psychologists were interested in the history of psychological ideas even while the formal discipline was in its infancy.

In addition to earlier and modern texts, numerous books of readings in the history of psychology have been published (Benjamin, 1997; Dennis, 1948; Diamond, 1974b; Fancher, 1996; Henle, Jaynes, & Sullivan, 1973; Herrnstein & Boring, 1966; Pickren & Dewsbury, 2002; Sahakian, 1968; Sexton & Misiak, 1971). Some helpful books trace the development of psychology in various countries (Hiroshi, 2002; Misiak & Sexton, 1966; Sexton & Misiak, 1976). With the growth of interest in the history of psychology, other resources have appeared that are useful to students writing term papers and to scholars conducting research. Select bibliographies show how to find biographical information on various psychologists (Benjamin, 1974; Benjamin & Heider, 1976; Zusne, 1984), and numerous guides and sourcebooks outline how to discover other kinds of information on the history of psychology. For example, Viney, Wertheimer, and Wertheimer (1979) produced a large bibliography of sources in English on the history of psychology; Watson (1974/1976, 1978) compiled three volumes that provide lists of major works from the world's great psychologists (Volume 1, 1974), a bibliography of sources about these same psychologists (Volume 2, 1976), and resources for the study of the history of psychology (1978). Benjamin and colleagues (1989) prepared a bibliography of sources in the history of psychology compiled from notes and news sections from major journals. Sokal and Rafail (1982) published a guide to manuscript collections in the history of psychology for scholars interested in archival materials. From 1927 to December 2006, the *Psychological Abstracts* was the primary guide to world literature in psychology, but the electronic search tool PsycINFO has replaced it (see Benjamin & VandenBos, 2006). In addition to PsycINFO, a wealth of source materials is available to students interested in the history of psychology. Selected examples are presented in Table 1.2.

Prior to the 1960s, scholarly work on the history of psychology was disjointed and restricted to a few isolated researchers. Only a handful of journals accepted historical articles and only a few textbooks and books of readings hit the market. Informal meetings of interested individuals occurred at the annual conventions of the American Psychological Association, but opportunities were scarce.

The mid-1960s ushered in a dramatic change. During this period, the *Journal of the History of the Behavioral Sciences* was first published in January 1965 and, ten months later, the Archives of the History of American Psychology were established in Ohio at the University of Akron. That same year, the American Psychological Association approved the formation of Division 26, the Division of the History of Psychology, later renamed the Society

Table 1.2 Selected Source Materials for Students Interested in the History of Psychology

Source	*Brief Description*
PsycINFO	Primary electronic search tool and guide to world literature in psychology. Includes extensive references on historical materials.
History of Psychology	Flagship journal for the Society for the History of Psychology.
Journal of the History of the Behavioral Sciences	Includes articles on the history of psychology as well as histories of other behavioral sciences.
History of the Human Sciences	Interdisciplinary journal with historical articles in fields such as anthropology, political science, psychology, and sociology.
Theory and Psychology	Bimonthly journal with articles on the conceptual foundations of psychology including historical underpinnings.
Journal of the History of the Neurosciences	Organ of the International Society for the History of the Neurosciences. Includes historical articles on basic, clinical, and behavioral neurosciences.
American Psychologist	Flagship journal of the American Psychological Association. Includes archival documents, obituaries of well-known psychologists, and occasional historical articles.
American Journal of Psychology	Founded by G. Stanley Hall in 1887, explores the basic science of psychology. Often includes articles on the history of psychology.
Classics in the History of Psychology	A website containing hundreds of full-text classic articles in the history of psychology (http://psychclassics.yorku.ca/).
This Week in the History of Psychology	Podcasts consisting of twenty-five-minute interviews with experts on landmark events in the history of psychology (www.yorku.ca/christo/podcasts/).

for the History of Psychology. Psychologists interested in history quickly established physical, organizational, and social support for scholarly activities. In 1967, the first graduate program offering a Ph.D. in the history of psychology was established at the University of New Hampshire. A year later, another important society was launched—Cheiron, the International Society for the History of Behavioral and Social Sciences (the inspiration for the society's name came from Cheiron, a centaur in Greek mythology known for wisdom, knowledge, and immortality). As the history of psychology has grown into a self-aware discipline that integrates psychological scholarship with historical research techniques, these changes have brought important benefits, particularly in the rigor of our scholarship (Berrios, 2014) as well as potential costs (Pettit & Davidson, 2014).

In the twenty-first century, the history of psychology remains an invaluable topic of study. A survey of more than seven hundred psychology departments in American colleges and universities revealed that over 80 percent offer undergraduate courses in the history of psychology (Fuchs & Viney, 2002). Such courses are typically taught during the junior or senior year and sometimes serve as capstone courses for psychology majors. Further, accredited graduate programs in counseling and clinical psychology include instruction on the history of psychology as a core part of graduate education. Most departments of psychology offer a history course as a component of undergraduate and graduate education. Though professional organizations such as Cheiron and Division 26 (History of Psychology) of the American Psychological Association have weathered ups and downs in membership, researchers remain interested in the area. Because of the growth of scholarly work, the American Psychological Association approved a journal, *History of Psychology*, launched in 1998 under the initial editorship of Michael M. Sokal, a prominent historian of science who also served as president of the History of Science Society. Today, the history of psychology can be considered as an important facet of the history of science.

Despite these ongoing gains, the history of psychology as a field faces important challenges. Unlike many subtopics, external funding is extremely limited. A study published at the outset of the twenty-first century found that many departments plan to eliminate the course in the history of psychology when the current instructor retires (Fuchs & Viney, 2002). In some ways, the administrative aspects of universities challenge the place of the history of psychology in the larger discipline.

The history of psychology is an intrinsically interesting subject, covering groundbreaking thinkers and a wealth of ideas about human and animal nature. From the ideas of the earliest Greeks about mental illness, to concepts of childhood in the Middle Ages, to the nineteenth-century vision of a new discipline called psychology—the story is a fascinating and worthwhile adventure. Finally, and perhaps more urgently, the historical study of psychology provides an invigorating perspective on the present scene that would be difficult if not impossible to achieve in any other way.

Review Questions

1. List and briefly describe five reasons for the study of history.
2. What is historiography? What issues are typically studied in historiography?
3. What is history? Do you agree that history has an empirical component?
4. In what sense can the historian be objective?
5. List and describe three hypotheses regarding the pattern or direction of history.
6. Describe specific developments in the latter part of the twentieth century that contributed to the advance of scholarly work in the history of psychology.

Glossary

chaos hypothesis The belief that there is no pattern or direction in history; history has no meaning except that attributed to it by humans.

cyclical hypothesis The belief that history can be understood in terms of repetitive patterns or cycles. For example, it might be argued that freedom is lost, only to be regained and lost again; thus, there is endless repetition.

great-person theory The view that unique individuals play a causal role in history. Contrast with *Zeitgeist* and *Ortgeist.*

Herodotus (c. 484–c. 425 BCE) First great Greek historian to write history with an emphasis on natural rather than supernatural causes.

historiography The writing of history along with the study of the methodological and philosophical issues that are pertinent to the work of the historian.

history The interpretive study of the events of the human past.

linear-progressive hypothesis A view of history marked by belief in the inevitable growth and progress of human knowledge and institutions.

objectivity in history An attitude of the historical researcher marked by an attempt to present fairly all sides of an issue.

Ortgeist The spirit of the place. Contrasts with the great-person theory of history and emphasizes the importance of place and time (*Zeitgeist*) as conditions for the production and acceptance of new ideas.

presentism An orientation toward history emphasizing the pervasive influence of current prejudices on the interpretation of past events.

Thucydides (c. 460–c. 401 BCE) Greek historian and author of the *History of the Peloponnesian War.* He worked to achieve accurate naturalistic accounts of historical events.

Zeitgeist The spirit of the time. Contrasts with the great-person theory of history and emphasizes the importance of time and place (*Ortgeist*) as conditions for the production and acceptance of new ideas.

2 Philosophical Issues

> *But man, proud man, Drest in a little briefe authoritie, Most ignorant of what he's most assur'd (His glassie Essence) like an angry Ape Plaies such phantastique tricks before high heauen, As makes the Angels weepe.*
>
> —William Shakespeare (1604–1605/1964)

A study of the history of psychology is much more meaningful if you are aware of perennial psychological themes and issues that have emerged and re-emerged since antiquity (Robinson, 2013). In this chapter, we'll examine critical historical and philosophical problems and issues that shaped psychology's development.

Epistemology

The term **epistemology** is derived from the Greek *episteme*, which means to understand or to know. Epistemology is a branch of philosophy concerned with theories of knowledge. As you might guess, psychologists have had a long-standing curiosity about epistemological issues. For example, Jean Piaget (1896–1980) was trained in zoology and gained fame for his studies of human cognitive development, but he didn't consider himself a biologist or a psychologist. Instead, Piaget viewed himself as a student of **genetic epistemology**, the study of the ways we solve problems as a function of our age and level of development. As a genetic epistemologist, Piaget demonstrated that our understanding of the world and our ways of solving problems evolve as we mature. Let's take a look at epistemological issues that hold special relevance for psychologists.

A Priori and A Posteriori Knowledge

As you read the history of psychology, you'll encounter the idea that certain truths are presumed to be known a priori. What does that mean? The philosophical term **a priori** comes from the Latin meaning "from what is prior" or "from what comes before." By contrast, the term **a posteriori** means "from what comes later." *A posteriori* refers to that which is derived from or comes after experience and *a priori* refers to self-evident truths given in experience without learning. For example, if *A* is larger than *B* and *B* is larger than *C*, then *A* is larger than *C*. The truth of

the proposition seems intuitively obvious. No one would deny that the proposition itself is known through experience. That is, without experience, we would not even know about the proposition. But we can still claim to know the truth of the relationships among *A, B*, and *C* through intellectual insight alone. In other words, we can grasp certain relationships without learning or benefit of prior experience. According to the theory of a priori knowledge, it can be argued, for example, that one could immediately grasp the truth of a statement such as "We cannot both exist and not exist at the same time."

Philosophers and psychologists have struggled with the role of the a priori in human knowledge. Extreme claims contribute to the problem. For instance, some thinkers argue that knowledge of good and evil is known a priori. On the other extreme, we encounter the argument that all knowledge is dependent on experience. Psychologists emphasize the centrality of experience as the basis of knowledge. But like philosophers, we wrestle with evidence that some relationships are discerned without learning or previous experience.

Nativism versus Empiricism

This issue is a close relative to the issue of a priori and a posteriori knowledge. **Nativism** holds that some perceptions are operational from birth, built in as a natural outcome of the structural and functional properties of the nervous system. By contrast, **empiricism** holds that all perceptions are learned or developed from experience. The problem of depth perception illustrates the dispute between nativists and empiricists. We have the ability to see our world in three dimensions, but do we learn to see in depth or is depth perception a natural or unlearned ability? Classic research suggests that newborns have perceptual abilities that may not be learned. Gibson and Walk (1960) constructed a visual cliff, a platform that ended in a steep drop but was covered by a bridge of transparent glass. Although it was safe to cross the transparent bridge, baby goats and chicks only a few hours old avoided the visual cliff. Wertheimer (1961) demonstrated that newborn human infants, only minutes old, will turn their heads in the direction of a sound. Is the turning of the head learned or is it a native ability? Later in the text, we explore the work of philosophers and psychologists who examine these issues.

Instinct versus Learning

The problem of **instinct** versus **learning** has had a turbulent history during psychology's modern era (see Diamond, 1971, 1974a). Many early psychologists stressed the role of instincts in human and animal psychology. William McDougall (1871–1938) was perhaps the best example of an early theorist who believed that instincts play a central role in human life. McDougall (1908/1960) claimed that instincts operate in diverse behaviors such as curiosity, fighting, and maternal behavior. After a time, a group of psychologists called behaviorists replaced instinct theories with an emphasis on learning. Behaviorists assumed that we learn to be aggressive, to be inquisitive, and to be good parents. Behaviorist research showed that some behaviors assumed to be instinctual were subject to learning. In early studies, Zing-Yang Kuo (1898–1970) demonstrated that rat killing by cats is more subject to learning than anybody of the time had believed (1921, 1924). Depending on rearing conditions, baby kittens may grow to become rat killers but may also grow up fearful of rats or may grow tolerant or even cooperative, living peacefully in the same cages with rats and eating and drinking from the same dishes. Kuo showed that the conditioning history of the individual kitten is a key to understanding that kitten's later interaction with rats. Across these and other studies, Kuo (1924) sought to break down the nature–nurture distinction in psychology (Honeycutt, 2011).

Although behaviorism demonstrated the importance of learning, it did not banish instinct

theory from psychology. Interest in the topic accelerated after World War II. Ethologists such as Konrad Lorenz (1903–1989) and Nikolaas "Niko" Tinbergen (1907–1988) and sociobiologists such as Edward O. Wilson (b. 1929) contributed new insights to the area. Desmond Morris's 1967 best-selling book *The Naked Ape* also stimulated public awareness of instinct theory.

Terms such as *a priori*, *nativism*, and *instinct* refer to abilities or capacities built into living systems. Important differences appear in the capacities denoted by these terms. For example, a priori knowledge is more cognitive than an instinct, which appears with a high degree of automaticity. A native ability such as the innate capacity to see in depth also seems less cognitive than a priori knowledge, which refers to real intellectual insight or the capacity to discern certain fundamental relationships. Terms such as *a posteriori*, *empiricism*, and *learning* are somewhat comparable because they stress the importance of experience.

What Are the Criteria by Which We Claim to Know Truth?

As human beings, we live our lives and make decisions based on epistemological categories that serve as guides to knowledge. On what grounds can we claim to have knowledge? On the grounds of authority? What about reason? Faith? Personal observation? Science? A clash of epistemologies provides the essential ingredient in disputes between science and law, between science and religion, and even between scientists and other scientists. Let's take a look at common epistemological criteria used as a basis for knowledge.

AUTHORITY Reference to **authority** is the most common method of assessing truth. During childhood, we incorporate the values, beliefs, and judgments of our parents. They serve as original authorities during our formative years. As we mature, we find authority everywhere in modern culture—teachers, sacred texts, the media, cultural institutions, political and religious leaders, and legal codes. We often neglect independent verification or substantiation—the word of the authority is sufficient.

In his 1947 book *Man for Himself*, psychologist Erich Fromm (1900–1980) provided a thoughtful analysis of the problem of authority. For Fromm, the great sin in authoritarian epistemology is to become too much like the authority. If we become as knowledgeable as the authority, we no longer need its information and direction. As a means of survival, some authorities discourage questions and restrict information so followers will not discover contradictory opinions. Authorities may encourage study, but only if it is sanctioned and determined to be "safe." Abuse often begins when an authority claims to be the exclusive and complete basis of knowledge.

History uncovers countless examples of the abuse of authority. The Spanish theologian Michael Servetus (1511–1553) was branded a heretic for not conforming to accepted scripture. He was burned at the stake. Almost a half-century later, Giordano Bruno (1548–1600) was condemned to the same fate for unorthodox religious, scientific, and political opinions. The executions of Bruno and Servetus exemplify how commitment to authority can crush threatening ideas. Shakespeare's quotation at the beginning of this chapter may have been rooted in outrage at the abuse of authority.

Unfortunately, authoritarian abuse is not a historical relic. Abusive authoritarian forces steal into art, literature, science, religion, politics, and people themselves. The 1978 mass suicide of over nine hundred Americans in Jonestown, Guyana (see *Time*, 1978; Layton, 1998) remains a tragic example of abusive authoritarian control. The balance between necessary and abusive authority is a critical problem confronting every human group, particularly because people easily rationalize or even idealize authority, even abusive authority (Woody, 2009).

Within the history of psychology, we will encounter the problem of authority over and over again. Despite potential for abuse, authority

has utilitarian value. The scientist, for example, may rely on other scientists and experiments for fresh insights. Authority can be useful, but there is a potential for problems when it cannot be tested, questioned, or doubted.

EMPIRICISM The term *empiricism* is derived from Greek and Latin terms that were close in meaning to our word *experience*. In contemporary usage, empiricism refers to a theory of knowledge where experience plays a central role. Experience of the world depends on sensory information. According to empiricism, knowledge is based on observable facts represented in experience. As the story of the history of psychology unfolds, we will see that empiricism is often contrasted with rationalism, our next topic. Empiricists can be discovered in most historical periods and places, but Great Britain boasted a line of thinkers who gave priority to experience. John Locke (1632–1704) argued that there is nothing in the intellect that was not previously in the senses. An earlier British empiricist, Francis Bacon (1561–1626), has been called the Great Herald of the Empirical Spirit because of his campaign to encourage observation and data collection. For Bacon, we should rely less on authority and more on the empirical method.

From an uncritical standpoint, empiricism seems an obvious alternative to authority as a way of obtaining knowledge. But empiricism as a way of knowing is not free of problems. First, as discussed with a priori and a posteriori knowledge, certain forms of knowledge may not depend on sensory information. We also know that sensory information can be unreliable. The senses are easily conditioned by emotion, social context, learning, and motivation. It is little wonder that philosophers and psychologists raised questions about the adequacy of empiricism as a way of knowing.

RATIONALISM The term **rationalism** comes from the same Latin root as the term *reason*. Rationalists argue that the mind has innate organizing principles so information from the senses is filtered and patterned in ways that shape thinking. Rationalists believe sensory information alone is not an adequate basis for knowledge. They emphasize the activity of mind, the capacity to reason, and the ability to discern some meanings on an intuitive basis. Early philosophers and scientists such as Descartes, Galileo, Leibniz, and Kant advocated rationalism.

Early psychologists and philosophers debated whether the new psychology should be based on empiricism or rationalism. As early as 1732, Christian von Wolff wrote a book titled *Empirical Psychology*; two years later, he wrote a complementary book titled *Rational Psychology*. In the United States, Laurens Hickok also wrote separate books under the titles of *Rational Psychology* (1849) and *Empirical Psychology* (1854). Early writers believed rationalism and empiricism offered useful but different methods. As we will see in Chapters 6 and 7, the tensions between rational and empirical psychology remain with us.

AESTHETICISM **Aestheticism** is a doctrine that the principles of beauty apply to other arenas of thought. In this sense, aestheticism is an epistemology or way of knowing; for aestheticists, inquiry itself is a search for truth and beauty. This perspective is well illustrated in the book *The Double Helix* by Watson (1968). After Watson and Crick constructed the DNA model, the comment was made that the model was "too pretty not to be true" (Watson, 1968, p. 134). The aesthetic test has been of historical importance in the humanities— especially in art and music— but scientists also seem to delight in a beautiful model or theory. Physicist Paul Dirac, as quoted by Brush (1974b), "stated that a theorist should prefer beautiful equations to uglier ones that yield closer agreement with experimental data" (p. 1167).

PRAGMATISM Pragmatic philosophy offers still another perspective on epistemology. The term **pragmatism** is derived from a Greek root, translated as *pragma*, which refers to "things accomplished" or "things done." In this tradition,

Francis Bacon believed we should emphasize theories and propositions that can be tested. Immanuel Kant used the term *pragmatic* to refer to that which is prudent. Under the late nineteenth-century leadership of Charles Sanders Peirce (pronounced *purse*) and William James, pragmatism became a major philosophical movement. Peirce and James emphasized the practical consequences of theories, definitions, ideas, and concepts. In typical American fashion, James talked about the "cash value" of an idea. Does the idea produce real productive work that makes a difference in the world of experience? Or does it lead to dead ends and muddled thinking? James believed that viable ideas produce sustained intellectual and physical work. He argued that a definition does not close our intellectual quest; on the contrary, a good definition raises questions and invigorates additional work (see James, 1907/1975b).

For the pragmatist, the world is in flux, and concepts must be altered and updated to be responsive to new discoveries. Concepts can outlive their usefulness and may need to be discarded. As methods improve and cultural biases shift, truth itself changes. Pragmatism judges truth in terms of utility or workability, but this is not the whole story. Rather, pragmatism calls for a deep awareness of change, particularly changes in methods and worldviews, and a suspicion of big claims that cover too much territory. James (1876b) revealed his pragmatic side when he defined philosophy as the "habit of always seeing an alternative" (p. 178).

One problem with pragmatism is that an idea or concept may appear sterile or unworkable in the present intellectual context but may yield important truths at a later time. The Copernican model of the solar system appeared unworkable at first, but later revolutionized our knowledge of astrophysics. A naïve, extreme, or corrupted dose of pragmatism may discourage inquiry. William James and other pragmatists, however, would never permit such a consequence. James was more interested in opening than in closing doors (see James, 1909/1977).

SKEPTICISM According to **skepticism**, all truth claims are suspect and must be questioned. So it might appear counterintuitive to include skepticism as a way of knowing, but in the words of Rauch (1993), "all of your conclusions, every single one of them, may need to be corrected" (p. 45). Rauch argues for an epistemic humility that encourages skeptical analysis as an essential part of science and all honest inquiry. We need not surrender provisional knowledge, but we must be suspicious of certitude because there is always a new perspective or a fresh discovery that challenges old conclusions. Skepticism, as a method of discovering problems, can serve as a potent source of progress and knowledge. A society that discourages critical analysis and skepticism risks freezing the knowledge industry. In contrast, a society that encourages a skeptical ethic along with an evolutionary epistemology will be dynamic and open to the discovery mission (see Harrison, 2006). A productive and progressive science thrives on adversarial positions, conflicting theories, healthy curiosity, and a sincere skeptical attitude. Later in the text, we'll see how curiosity was considered a sin for centuries and how such a view resulted in intellectual stagnation. We will also show how skepticism in the late Renaissance period stimulated the development of modern science.

The Role of Emotions in Knowledge

Emotions play in our belief structures, complicating the problem of human knowledge. It can be challenging to sort out our competing beliefs when we are dispassionate. When emotions such as hate, fear, love, and anger enter the picture, our knowledge problems are compounded. Throughout this text, we will visit tensions between authority and reason. Though emotions may attach to either authority *or* reason, strong emotions are more likely to be associated with authority than with reason. Nevertheless, the dissonance associated with the violation of reason may be a source of emotion.

Let us return, however, to a consideration of emotion and its relation to authority. Authority is visible in our most vulnerable moments such as birth, marriage or other long-term commitments, illness, tragedy, and death. We sing to authority songs of praise, gratitude, thanksgiving, worship, and allegiance. Though protest music attacks authority, it is rare to encounter music inspired by claims of reason or logic, but it is common to encounter music inspired by claims of authority. We create symbols inspired by authority and then idolize those symbols and pledge our allegiance to them. We set aside special holidays to celebrate authority, and we participate in self-denial and in rituals that underscore our loyalty and commitment. Failure to observe a ritual is often a source of the most intense anxiety and self-criticism. Our personal identity is seldom tied to reason like the character of Mr. Spock in the classic *Star Trek* movies and television series. Personal identities of the overwhelming majority, even in matters such as dress and food, reflect authorities. Deviance may trigger legitimate fears of social ostracism. For example, people who undergo a dramatic conversion from one belief to another may be disowned by parents or other authorities (Jacoby, 2016). Though science values openness, a scientific community may ostracize a scientist who deviates from standard practice.

Emotional problems are compounded when we believe that authority is absolute and immune from questioning. When reason and authority clash, as they often do, the problem is both intellectual and emotional (Viney & Woody, 2017). The emotional power of authority is reflected in memory. Memorization is a valued activity in authority systems, and those who can recite the words of authority from memory are held up as role models. Children, especially, are encouraged to commit the words of authority to memory. A mechanical recitation is often more valued than a reflective and creative analysis.

We will see that the history of science generally and of psychology specifically, is partly a history of shifting epistemologies. Few topics are as important to human welfare and survival as epistemology, yet the subject is avoided or neglected because of its vexing questions. Unfortunately, emotion coupled with ignorance and the inevitable blind spots encountered in all belief systems undermine the critical reflection necessary to understand belief structures. The problem of knowledge is not a trivial or irrelevant metaphysical issue. It is a practical problem relevant to daily life and should thus be confronted in a vigorous and honest fashion. The Shakespeare quotation is a poetic reminder of the certitude that often accompanies ignorance and its consequences.

We come full circle to our original question. On what grounds can we lay claim to knowledge? We turn now to the interplay between science and epistemology.

Science and Epistemology

Conceived as a way of knowing, science can be understood in terms of epistemological assumptions and commitments that include empirical, rational, pragmatic, and aesthetic components. From the beginning of the modern period, philosophers of science have studied scientific methodology, but they could not agree on what science is or how it operates. Later, we will observe disagreements about the nature of science, particularly between Francis Bacon and René Descartes, two of the original modern philosophers of science. Because of long-standing disagreements about scientific methodology, we must caution against assuming that there is only *one* traditional view of science. In what follows, we will examine three critical thinkers to gain insight into their philosophies about science and epistemology.

KARL RAIMOND POPPER Sir **Karl Raimond Popper (1902–1994)** was born in Vienna, where he studied mathematics, physics, and philosophy at the University of Vienna. His 1935 book *The Logic of Scientific Discovery* is a classic in the philosophy of science. He had a long and distinguished career and enjoyed extensive

acclaim for his unique work in the philosophy of science.

Popper argued that consistent positive observational evidence does not justify universal conclusions. For example, every observed swan (thus far) may have been white, but we are not therefore justified in making a claim that *all* swans *must be* white. The observation of a single black swan falsifies the claim. According to Popper, the integrity of science hinges on an honest quest for negative instances or disconfirmation. Survivability is not the first task of a good theory; rather, a good theory possesses the virtues of simplicity, clarity, testability, and falsifiability. A theory that is not falsifiable is a theory that is vague and that cannot be subjected to rigorous tests. For example, during the witch hunts in the late Renaissance a numb or insensitive part of the body was sometimes explained as the point of entry of demons into the body. Such an explanation is vague; it does not lend itself to empirical testing. How would one set up an experiment to test such an explanation?

Popper (1959) was basically offering a "theory of theories" (p. 59). His larger vision of the scientific enterprise is that it is by no means a basis for certitude. What Popper offers is an evolutionary epistemology that emphasizes the crucial role of explicit and rigorous theories in scientific thought. He likened scientific theories to "nets cast to catch what we call 'the world': to rationalize, to explain, and to master it. We endeavor to make the mesh ever finer and finer" (p. 59). There is the hope of progress, but no grounds for certainty. According to Popper, genuine scientific theory is not invulnerable, and a major characteristic of science is that it does evolve.

Popper's philosophy of science has been criticized (Toulmin, 1972; Kitcher, 1982) but it has served as an important attempt to set up a demarcation between science and those pseudosciences that focus exclusively on confirmation but that ignore negative instances.

THOMAS S. KUHN As the author of *The Structure of Scientific Revolutions*, **Thomas S. Kuhn (1922–1996)** wrote one of the most influential books in the history and philosophy of science. Kuhn was initially interested in theoretical physics, but after assisting with an elementary science course for nonscientists, his interests shifted to the history and philosophy of science. Specifically, he confessed that historical scientific studies "radically undermined some of [his] basic conceptions about the nature of science and the reasons for its special success" (Kuhn, 1970, p. v).

Kuhn's work emphasized the importance of understanding science in terms of community structures and historical development. The scientific community shares an intellectual background, standard reference sources, textbooks, ways of solving problems, and values. The community exerts pressures on the individual, especially during student years and in early scientific-professional years when the young scientist is establishing a reputation. Kuhn did not mean that the scientific community is a closed club. Such an interpretation is an unfortunate "popular caricature of Kuhn's position" (Kitcher, 1982, p. 168). Kuhn recognized the diversities that exist in the scientific community. Nevertheless, there is much that community members share in common.

Kuhn was interested in the evolution of science over time. Competing schools of thought mark early prescientific development and are prone to quarrel over basic definitions, methods, and assumptions. He noted that the early stages of electrical research gave rise to competing views about the nature of electricity. The same is true in psychology as early psychologists engaged in vigorous debates over subject matter and appropriate methods.

Kuhn (1970) notes that the early search for research consensus is difficult because "all of the facts that could possibly pertain to the development of a given science are likely to seem equally relevant. As a result, early fact-gathering is a far more nearly random activity than the one that subsequent scientific development makes familiar" (p. 15). In time, one competing school will prevail over the others. The dominant school

attracts a loyal following while promising a set of problems worthy of sustained study. The leading school now dictates the intellectual agenda, ushering in a transition to what Kuhn called **normal science**.

Normal science has a record of past achievement; it defines problem areas and provides methods of practice. Most scientists work in this tradition. When the time is right, Kuhn tells us, a **paradigm** emerges as an elaboration on the meaning of normal science. In a sociological sense, paradigm refers to "the entire constellation of beliefs, values, techniques, and so on, shared by members of a given community" (Kuhn, 1970, p. 175). The term also refers to conventional ways of approaching and solving problems. Paradigms define boundaries within which scientists do their work and clarify the legitimate methods of analysis and ways of looking at problems.

In the course of normal science, serendipitous findings and anomalies cannot be ignored. Sometimes discoveries occur through accidents and at other times are theory driven. Kuhn (1970) noted that X-rays are "a classic case of discovery through accident, a type that occurs more frequently than the impersonal standards of scientific reporting allow us easily to realize" (p. 57). He described events that led German physicist Wilhelm Conrad Röntgen (1845–1923) to discover X-rays and how even a notable scientist such as Lord Kelvin (1824–1907) believed they were a hoax. The prevailing paradigm had not predicted or anticipated Röntgen's X-ray discovery, but it was a finding that could not be ignored.

In most cases, efforts are made to assimilate new discoveries or anomalies into the prevailing paradigm. Such efforts are understandable because the scientific community has a vested interest in the traditional paradigm. It has commanded loyalties and lifetimes of hard work. However, tests of competing theories that lead to a succession of anomalous findings can become so compelling they cannot be ignored (Joireman & Van Lange, 2015). Such a turn of events creates a crisis that causes some members of the community to lose faith. The community response is predictable: Some try to find ad hoc hypotheses to rescue the paradigm, whereas others search for new ways to organize the larger picture.

According to Kuhn, scientific revolutions are marked by new and more successful organizations of the world. With a paradigm shift, a new vision replaces the old way of seeing things. Kuhn (1970) noted that his "book portrays scientific development as a succession of tradition-bound periods punctuated by noncumulative breaks" (p. 208). Following a revolution, the old paradigm is rejected and scientists return to a normal science that operates within the new paradigm.

Both Kuhn and Popper advanced evolutionary epistemologies, and both challenged absolutistic approaches to science. Kuhn has a broader interpretation of what counts as legitimate science than does Popper. Mopping-up activities, accidental discoveries, and descriptive studies all comprise the business of science. Kuhn has been criticized for covering too much ground with the term *paradigm*. He acknowledged the criticism and attempted to correct it. Kuhn's model of science was subjected to the same criticism leveled against Popper—namely, that it does not do justice to the extreme diversity in the history of science. We turn now to a third orientation that offers a radical difference from Popper and Kuhn.

PAUL K. FEYERABEND In his book *Science in the Making*, Joel Hildebrand, a chemist and former president of the American Chemical Association, challenged the idea that there is *one* scientific method. Hildebrand (1957) argued that "to be successful in unlocking doors concealing nature's secrets, a person must have ingenuity. If [we do] not have the key for the lock, [we] must not hesitate to pick it, to climb in a window, or even kick in a panel" (p. 26). Hildebrand argues that scientific success values ingenuity and determination more than method.

Hildebrand's statement is by no means esoteric. In *Reflections of a Physicist*, Percy W. Bridgman (1955) said, "there is no scientific method as such" (p. 416). In that same source, he pointed out that scientists do not follow

"any prescribed course of action . . .[;] science is what scientists do, and there are as many scientific methods as there are individual scientists" (p. 83). Zoologist P. B. Medawar (1984) shared the same sentiment in his book *The Limits of Science*: "There is indeed no such thing as 'the' scientific method. A scientist uses a very great variety of stratagems . . . [and] no procedure of discovery can be logically scripted" (p. 51).

Medawar challenged the idea that breakthroughs follow a calculus of discovery. Perhaps some discoveries arrive in such a neat fashion, but he argued for the role of serendipity in science. Consider again the discovery of X-rays. Medawar (1984, p. 46) asks us to imagine a scientist prior to 1900 approaching a funding agency with a proposal "to discover a means of making human flesh transparent." The idea would be greeted with scorn. Still, the discovery of X-rays didn't follow any preplanned logical pathway connected to scientific goal setting.

Hildebrand, Bridgman, and Medawar do not wish to undermine respect for science. Quite the contrary, they have a keen interest in scientific advancement. What they are saying is that science is not as tidy, objective, and coherent as we have been led to believe. Similar themes are advanced by Brush (1974b), Cartwright (1999), and Swan (2015).

In a 1975 book titled *Against Method*, **Paul K. Feyerabend (1924–1994)** outlined an anarchistic theory of knowledge. Although acknowledging the negative implications of anarchism, especially for political science, he finds appropriate and healthy implications for anarchism in epistemology and science. His analysis of the history of science offers a vigorous disagreement with Popper and Kuhn. Feyerabend (1975) contended,

> The idea of a method that contains firm, unchanging, and absolutely binding principles for conducting the business of science meets considerable difficulty when confronted with the results of historical research—there is not a single rule, however plausible, and however firmly grounded in epistemology, that is not violated at some time or other. It becomes evident that such violations are not accidental events; they are not results of insufficient knowledge or of inattention which might have been avoided. On the contrary, we see that they are necessary for progress.
>
> (p. 23)

Feyerabend went on to say that conscious decisions to break from conventional wisdom and method are not only facts in the history of science but necessary to the progress of science. In his thinking, successful and creative scientists break or reverse rules, defend ad hoc hypotheses, work inductively and then deductively, and work sometimes for unity and sometimes for plurality. The rule, he tells us, is *anything goes*.

Feyerabend (1975) argued that "even a law-and-order science will succeed only if anarchistic moves are occasionally allowed to take place" (p. 26). Drawing on examples from the history of science as evidence, he suggested that "the idea of a fixed method, or of a fixed theory of rationality, rests on too naive a view of [human beings and their] social surroundings" (Feyerabend, 1975, p. 27, 1988).

Feyerabend's position should not be viewed as a debunking or skepticism regarding science. However, his position calls for closer scrutiny of the history of scientific discovery. He also encourages more detailed empirical analysis of what scientists actually do. For example, is the hands-on lab work of the chemist the same method as the astronomer calculating the trajectory of a comet? Does the theoretical mathematician use the same methods as the marine biologist who studies the feeding habits of sharks? Is there one scientific method adapted for various fields of science or is there a diversity of methods within specific disciplines? Does this assumption of a single method inhibit our inquiry (Hood, 2013)? If there is no *one* scientific method, are there at least features (e.g., the importance of quantification) that all methods share?

Relevance of Epistemology to Psychology

Early psychologists disagreed about the appropriate methodology for the new psychology. Should there be one method or many? If there is but one, which should it be? The philosophy of science dictates such questions. From some points of view, the scientific status of psychology hinges on methodological purity. Other philosophy-of-science considerations dictate psychology's status among the sciences. Within Kuhn's scheme, psychology could be regarded as a pre-paradigmatic science. It enjoys higher status in Feyerabend's scheme if for no other reason than that the methodological purity of all the sciences is called into question. Further, there is wider latitude of acceptance in Feyerabend's scheme about what constitutes "normal science."

The issues raised here are of historical interest, but they also command the attention of contemporary scientists and philosophers. As we proceed through the history of psychology, we will encounter questions about the nature of science and the scientific status of psychology.

The Problem of Causality

From the time of Aristotle to the present, philosophers and scientists have debated the nature and meaning of causation. Contributing to the richness of the problem are questions concerning the possible influence of unconscious processes in human life, the role of intention or purpose in determining behavior, and the question of whether the individual can be an agent of change (i.e., a cause). In what follows, we will review classic and modern approaches to the problem of causation.

Aristotle struggled with the meaning of causation, paving the way for centuries of debate and speculation on the issue. He believed that causation is not a simple one-dimensional affair. To know the cause of anything, we must understand several things. First, we must understand what conditions led up to the event. Aristotle referred to antecedent conditions as the **efficient cause**, essentially that which sets a thing in motion. When domino *B* falls after being hit by *A*, we can say that the movement of *A* is the efficient cause of the fall of *B*. Aristotle also believed we need to understand the material structure of a thing to understand causation. When a physician takes a hammer and strikes the patellar tendon, the knee reflex will cause the patient's leg to kick. If the physician's hammer is the efficient cause of the reflex, there must also be a material cause. In this case, we would not observe the reflex if there had been nerve or muscle damage. So part of the cause of the reflex is the material structure of the knee including the nerves, tendons, and muscles. In other words, the reflex depends on a physical substrate, which Aristotle called the **material cause**. Domino *A* (an efficient cause) impacting domino *B* could knock *B* over if both were made of the same material. But if *B* were made of lead and *A* of light wood, then *B* would not fall when impacted by *A*. The so-called causal sequence depends on a material structure as well as antecedent conditions.

Aristotle described a third kind of cause known as the **formal cause**. This refers to the form, shape, or identifying properties of a thing. A sculptor may chisel away at two pieces of granite, using one to create a bust of Beethoven and the other to shape a likeness of Mozart. For both busts, the material is the same but the form is different. The formal cause carries information value. The functional or causal properties of a thing depend on form. Domino *B* would not fall when impacted by *A* if it were too short or different in form than *A*. So form may also be essential to an understanding of a causal sequence. An airplane could be constructed of appropriate material (material cause) and have an excellent propulsion system (efficient cause), but if the wing were damaged or poorly designed (formal cause), the plane would not fly.

According to Aristotle, if you want to understand a sequence of events, you need to know its goal or purpose. Let's return to the knee reflex

example. The physician was conducting a neurological exam, so she used a small hammer to tap the patient's knee. That was her purpose. Aristotle called this the **final cause**, the end or purpose for which a change was produced. Aristotle might say you cannot understand the knee reflex, or rather the cause of the knee reflex, until you understand the physician's intention or purpose.

For Aristotle, knowledge of causation rests on understanding antecedent conditions, material, form, and the purpose for which a thing was intended. Aristotle believed in a balance of all four dimensions of causation. His student, Theophrastus, believed science should concern itself primarily with material and efficient causation and not with final causation.

The Aristotelian notion of final causation should not be confused with teleological interpretations of the world encountered in numerous theological beliefs. The term **teleology** refers to purpose or design. Technically, *teleology* can be defined as the investigation of evidence that there is design or purpose in nature. The assumption of design leads to the next question: What was the origin of the design or purpose? There are two types of teleological answers to that question. **Intrinsic teleology** is the position that design, order, and purpose are immanent in nature—simple manifestations or characteristics of nature. But **extrinsic teleology** makes the claim that any design in nature reflects the work of a designer and that the designer has imbued the design with the designer's own purpose. Though Aristotle believed in an unmoved mover (God), it is questionable as to whether he would subscribe to the kind of teleology encountered in some theologies.

Intrinsic teleology has become archaic in physics and chemistry. Psychologists can't dismiss intrinsic teleology as easily. Despite attempts by behaviorists to build a psychological science like physics based on material and efficient causation, teleology or purpose has constituted a persistent problem for psychologists. Even if the *will* is rarely discussed in contemporary psychology, many psychologists have found it difficult, if not impossible, to resist expressions such as *goal-directed, intention, plans, purposive behavior, anticipation*, and *expectancy*. Such terms, unless defined in unusual ways, suggest intrinsic teleology or final causation. But can human behavior be explained with the same material and efficient causation used to explain the movement of a billiard ball, the trajectory of a comet, or the changes in the metabolism of a cell? Or must we invoke some form of final causation to account for the complexity of human behavior? We will encounter opposition to teleological explanations in the works of theorists such as Jacques Loeb, John B. Watson, Clark Hull, and B. F. Skinner, while theorists such as William McDougall, Edward Chace Tolman, and Gordon Allport favor teleological explanations. Rychlak and Rychlak (1990a, 1990b) and Rychlak (1994) insist that teleological assumptions play a critical role in psychology.

You may have heard the familiar warning that correlation does not imply causation. But neither does correlation imply that there is not a causal relationship between two events. Correlation is neutral with respect to the question of causation. Perhaps causation is not a scientific construct. Maybe it is simply a historical and philosophical curiosity. To be sure, there are those who are content to study correlations or functional relationships. But the idea of causality is so entrenched in common sense that it refuses to vanish. Some still argue that science entails a search for fundamental processes that underlie and explain correlational data.

In psychology, questions associated with the problem of causality will show themselves time after time. Some of the questions are as follows: To what extent do events influence us that are not a part of our consciousness? If unconscious processes influence us, then can we claim to be rational or free? Is it possible to build an adequate science of human experience and behavior on the basis of material and efficient causes? Can we rise above cause-and-effect relations and exercise freedom of choice? This question will recur throughout the book.

Free Will and Determinism

Do we have some degree of control over the direction of our lives or are all things, including human experience and behavior, subject to the laws of causation? Is there anything that is uncaused? Such questions lie at the heart of one of philosophy's oldest problems. Several of psychology's greatest figures have dedicated serious consideration to this issue. Sigmund Freud, John Watson, Ivan Pavlov, and B. F. Skinner stand in the determinist camp, whereas William James, Carl Jung, Gordon Allport, and Carl Rogers are committed to a belief in freedom of choice. The issue of free will and determinism is an issue with far-reaching implications for psychology, science, the law, and theories of punishment. If humans have some degree of freedom, then a psychology based on strict determinism cannot do justice to its subject matter. On the other hand, if causality exists in nature—including human nature—then belief in freedom of choice is unwarranted or may even work against scientific investigations. This issue is more alive now than a half-century ago. It has been the subject of numerous books and articles in psychology (see Bloom, 2014; Boyer, 2014; Burns, 2014; Eagleman, 2011; Harris, 2012; Lawton & Churchland, 2013; Viney & Parker, 2016).

The doctrine of **free will** assumes that people make choices that are to some degree independent of antecedent conditions. It assumes we can, at least somewhat, rise above genetic, chemical, physical, and social influences. We can anticipate alternatives in the decision-making process and weigh their possible outcomes. Behavior may be predictable, but there's an element of unpredictability in our actions. If we feel we can rise above causal forces, we're more likely to view ourselves as rational or responsible creatures. By the way, most advocates of free will do not attribute this quality to animals.

Most people who believe in free will agree that environmental and genetic forces impose limitations on us, but they still believe in at least some freedom of choice. Although free will proponents may disagree about the power of the causes that affect our lives, they are likely to believe that the person or the self is not simply passive or reactive. Instead, the self acts on the environment with awareness and purpose. Let's take a look at arguments in support of free will.

1. *Argument for an adequate explanation of human experience.* Psychologists have never been able to make perfect predictions of simple, let alone complex, behavior. For example, there's no way we can write biographies in advance. Such predictive failure challenges the adequacy of strict determinism. The determinist position struggles with the spontaneity and unpredictability in human behavior. Those who endorse free will claim that their position offers a better fit with our observations and theories about experience and behavior. The free will perspective is embarrassed by neither our regularities nor our irregularities, uncertainties, and novelties.
2. *Logical contradictions in determinism.* Proponents of free will argue that if determinism is true, a determinist cannot logically declare that he or she *believes* in determinism. Why? Because the determinist is not the real believer. Belief is a mere consequence of antecedents. According to determinism, the very words *I believe in determinism* are conditioned by more fundamental forces. It is not that one believes in determinism, but that consequences have transpired to result in the statement *I believe in determinism*. Strict determinism implies a passive nature about the self that is well illustrated in B. F. Skinner's (1983a) statement, "If I am right about human behavior, I have written the autobiography of a nonperson" (p. 32).
3. *Argument from morality.* Free will believers argue that determinism makes a mess of morality. According to determinism, any immoral behavior can be explained in terms of causes that had no prevision of the ends they were achieving. In other words, individuals are not responsible for their actions.

Indeed, the term *responsibility* is a hollow term—it means little more than ability to respond.

4. *Argument from indeterminism.* Promoters of free will argue that strict determinism is a pre-twentieth-century concept that is no longer applicable in the physical sciences. Following quantum theory and Heisenberg's uncertainty principle, the physical world must now be viewed from a probabilistic rather than a strictly causal framework. The doctrine of **indeterminism** holds that it is not possible to apply strict cause-and-effect explanations in the world of subatomic particles. This well-known doctrine has led some individuals to argue that indeterminism applies to psychology. Although indeterminism is not identical with purposive free will, an indeterminist would tell us that human behavior is characterized by an inherent uncertainty.

As you can guess, the free will perspective has not gone unchallenged. **Determinism** states that there are causes, both known and unknown, for every behavior or experience. Taylor (1967b) defined *determinism* as the philosophical doctrine that "states that for everything that ever happens there are conditions such that, given them, nothing else could happen" (p. 359).

The great physicist Albert Einstein (1879–1955) proclaimed, "God doesn't play dice with the universe" (Michelmore, 1962, p. 128). As a determinist, Einstein believed that the law of cause and effect operates at every level of reality. He once remarked that "God is clever, but . . . not malicious" (Michelmore, 1962, p. 111). Einstein is suggesting that the world, because of its lawfulness, is knowable. It may be difficult to discover causes and laws, but with persistence we *can* make discoveries. This is the optimistic side of determinism: Nature is knowable, and problems can be solved when cause-and-effect relations are discovered.

Belief in freedom of the will may discourage inquiry (such a belief may have delayed the development of a scientific psychology). In this respect, the determinist offers the following rebuttal to indeterminism: Even if indeterminism applies to the world of fundamental particles, it is not applicable in larger physical systems. A system as complicated, say, as a basketball remains as a reliable and determinate system, even if the behavior of the smallest physical units sustaining it is indeterminate. Historically, science has always proceeded on the assumption of the lawfulness or statistical regularity of its subject matter. But now let us turn to a few major arguments in defense of determinism.

1. *Historical argument.* The history of the free will–determinism controversy is a history of victories for determinism and retreats for the theory of free will. With increasing knowledge of brain structure and function, lawful explanations are extended to an ever-widening spectrum of behaviors. The term *will* once occupied a great amount of space in psychology textbooks, but as knowledge progressed, we had less need for the term. In the history of neuroscience, for example, mechanistic explanations have replaced explanations based on the will on countless occasions.
2. *Argument from morality.* The determinist can counter free will arguments by stating that belief in free will can also make a mess of morality. Many of history's most barbaric practices were justified on the grounds that the victim had made a free choice and now deserved punishment. From medieval times, aggressive witch-hunts led to the persecution of people who allegedly used free will to make a pact with the devil.
3. *Argument from reasonable expectancy.* As we think about our world, we develop reasonable expectations that things are lawful. The world is not capricious; given a specific set of weather conditions, we can have a reasonable expectation that a Chinook wind will hit Boulder, Colorado, within a specified period of time. In a similar manner, we may

reasonably expect stress and other circumstances to contribute to an emotional breakdown. We don't need to attribute the breakdown to an act of free choice. Most of us live our lives on the basis of reasonable expectations. If an expectation is not confirmed, we assume we neglected to take some variable into consideration. Without determinism, we have no grounds for reasonable expectations about the world.

The free will–determinism debate is a defining issue for psychology. Throughout the book, we will outline where various psychologists stand on this issue. As noted, the issue is alive and well in contemporary psychology. With the advance of the neurosciences, the debates over free will and determinism have, if anything, intensified and grown more technical (see Baer et al., 2008; Libet, 1985; Schlosser, 2012; Wegner, 2002). Many of the recent debates have centered around research on neurophysiological precursors of intentions. If intentions lack automaticity and some degree of causal efficacy, do we have free will? If the conclusion is negative, we are still haunted by vexing existential questions raised by William James (1979a). Am I the author of nothing? What does it mean to face a world foredone?

The Mind–Body Problem

The mind–body problem belongs to a subdisciplinary area of philosophy known as *ontology*. Philosophers have used the term **ontology** in diverse ways. For our purposes, we can define it as the study of the nature and relations of being. When we ask, "what is real?" we are asking an ontological question. Is the mind real? Is there a mind that is somehow independent from the brain? What is the relationship between the mind and the brain? Is there one fundamental reality (monism), two (dualism), or perhaps many (pluralism)? If there is more than one reality, how do the various types of reality coexist—and do they influence each other? Do psychologists study the mind or do they study only behavior? All of these are ontological questions because they ask the essential question: What is real? Let's explore some traditional solutions to ontological problems.

Monism

According to monistic philosophy, everything belongs in some intimate way to everything else. As an elegant solution to the problem of ontology, **monism** suggests that reality, whatever it is, is all of one piece. If everything belongs in an intimate way to every other thing, then nothing is alien or foreign because all things are part of one thing. What appears as foreign or alien is only a product of the present gaps in our knowledge. Monism offers hope for a unity of knowledge because we all study the same thing, but at different levels and from diverse perspectives. One form of monism nurtures the belief that psychology is reducible to the field of physics. Although monism appeals to simplicity, a major problem arises because monists can't agree about what the one and only reality is. Monism, in fact, comes in oppositional forms. Let's consider them and their implications for the mind–brain problem.

MATERIALISM **Materialism** is a monistic ontology characterized by the belief that matter is the fundamental constituent of all things. A material monist might argue that the body exists, but not the mind. Terms such as *mind*, *spirit*, and *consciousness* are understood in terms of the material, efficient, and formal operations of brain activity (Lawton & Churchland, 2013). It follows that there is no mind–brain problem as such because all so-called mental activity is reducible to physical, chemical, or physiological processes. Many key figures such as Democritus, Thomas Hobbes, Julien Offray de la Mettrie, Herman von Helmholtz, Ivan Pavlov, and John B. Watson were materialists.

IDEALISM As an alternative to materialism, **idealism** emphasizes mind or spirit as the

preeminent feature of life. It represents a radical departure from materialism and a different emphasis with respect to the mind–body problem. According to idealism, as the term is employed in philosophy, the mental world of experience is foundational to all science and, for that matter, all knowledge. It would be impossible to know anything apart from consciousness or experience. Thus, the mental world (experience, awareness, consciousness) has priority—it is the only world to which we have immediate access. The material world is regarded as derivative—an intellectual or philosophical product that has its origin in the world of experience. For the idealist, psychology is the science that studies mental processes and experience. Further, an idealist would argue that all science begins with experience and is about experience. Thus, it is the mind or the mental world that has ontological status. The material world is a construction—a mere by-product of a more important reality. Several key figures, including Plato, George Berkeley, and Gustav Fechner, identified with idealism.

DOUBLE-ASPECT MONISM This variety of monism displays sensitivity to the claims of materialism and idealism. **Double-aspect monism** emphasizes the idea that there is a language for mental processes and a language for underlying physical processes, but both languages refer to the same reality. We use words such as *mind, experience, consciousness, awareness*, and *thinking*. We also have a rich and growing language that refers to fundamental physical structures and processes such as neurons, neurotransmitters, cell assemblies, and synaptic transmission. According to double-aspect monism, both languages are legitimate but both refer to the same underlying reality approached from two perspectives. Benedict Spinoza, an early advocate of double-aspect theory, argued that human beings may be described in mentalistic terms or in the language of the physical sciences. The two languages provide different perspectives just as one may describe a coin from the perspective of either side. According to double-aspect theory, the mind–body problem is a problem of language. The ontological problem, however, remains. What is real? Is reality reduced to words? Despite its problems, double-aspect theory can embrace a tolerant and robust approach to psychology that includes legitimate roles for descriptions that refer to mental and to physical processes.

EPIPHENOMENALISM A final version of monism, **epiphenomenalism**, is often classified as a dualistic position, but for reasons that shall soon be apparent, it is more accurately classified as a monistic position. An *epiphenomenon* is an appearance or a kind of "overflow" resulting from the operation of something that is more basic or fundamental. According to epiphenomenalism, mental processes (e.g., thought, consciousness, cognitions) are a kind of "overflow" or by-product of brain activity. The mental world has no independent status; it is a mere epiphenomenon or appearance. According to epiphenomenalism, causality always runs one way, from the physical to the mental. There is no mental causation because the mind has no independent status apart from its physical substrate. Epiphenomenalism is clearly a variation of materialism.

Dualism

In contrast with monism, **dualism** asserts that there are two fundamental orders of reality—mind and body. Each has ontic (i.e., real) status. Naïvely, most of us experience the reality of mental processes; we also experience the reality of the physical world. According to the dualistic position, we are assured that neither the mental nor the physical world is a mere appearance. For all its popular appeal, at least to the Westerner, dualism presents a major problem. If there are two orders of reality, how do they get along with each other? Can one influence the other? Or can each influence the other, and if so, how? Most dualistic mind–body positions address the issue of how mind and body collaborate. Let's examine the better-known positions.

INTERACTIONISM According to **interactionism**, sometimes called the *commonsense* position, mental events are real—they influence each other and they influence bodily events. Bodily events also influence each other and mental events. Although interactionism sometimes appeals to common sense, it is not without problems. First, interactionists have difficulty specifying how an immaterial mental system can be causal with respect to a physical system (or, for that matter, how a material system can be causal with respect to an immaterial one). Second, a major problem centers around the locus of interaction. Where do mind and body influence each other? René Descartes, history's most famous interactionist, addressed this problem with considerable courage and suggested that the pineal gland, located in the center of the head, is the seat of interaction. Centuries later, we have found that people can function fairly well following a pinealectomy. In this sense, Descartes's theory of the locus of interaction was testable but was demonstrated to be wrong. Descartes also failed to show how a mental event can influence physical events and vice versa. His followers' subsequent attempts also proved unsuccessful. For all its commonsense appeal, interactionism leaves us with more questions than answers.

PSYCHOPHYSICAL PARALLELISM According to **psychophysical parallelism**, mental events are real, and they influence other mental events. Bodily events are also real, and they influence other bodily events. Mental events cannot, however, influence bodily events, and bodily events cannot influence mental events. The two orders of reality are nevertheless, by definition, parallel with each other. That is, whatever is happening in one order is happening simultaneously in the other order. The philosopher Gottfried Wilhelm Leibniz, the best-known advocate of this position, provides an intriguing allegory. Imagine that mind and body are like two clocks on a wall, each displaying the same time. They are synchronized but independent. One clock has no causal influence over the other, yet they function in agreement with each other. According to Leibniz, mind and body are by definition parallel, but there is no causal influence between these two independent orders of reality.

Parallelism avoids the problems encountered in the interactionist position, but at a considerable expense—it flies in the face of common sense. Most of us, for example, assume that the experience of pain is connected to the chance encounter with the hot stove top and the resulting burn. The burn is both mental and physical, and there appears to be a causal connection between them, even though the supporter of parallelism must argue that they are independent yet harmonious. The larger problem is that parallelism implies a kind of preestablished harmony between mind and body. Explaining how preestablished harmony works might prove more difficult than explaining an interaction.

EMERGENTISM The philosophical position known as **emergentism**, in at least one of its variations, argues that mental processes are produced by brain processes, but are qualitatively different. For example, the experience of a toothache emerges out of complex neurological activity that may have been activated by decay or some kind of damage. The experience itself, though emerging out of bodily activity, is not captured by descriptions of bodily activity. The experience seems to have a career of its own and a reality that is qualitatively set apart. To clarify, let's take an analogy from chemistry. Salt is a product of sodium and chloride, yet the compound salt has unique properties that differ from sodium and chloride. Sodium alone or chloride alone can be lethal to the living organism, yet when combined in the form of salt, they can prove vital to life. The compound seems to have "emergent" properties of its own that are not a simple summation of separate elements. In a similar manner, mental processes, though produced by brain processes, are radically and qualitatively different. The experience of a sunrise, a poem, or a symphonic passage emerges from brain activity, but the global mental experience with its inspirational,

affective, and associative meanings appears to be a reality unto itself quite different qualitatively from the underlying firing of neurons or the neurochemical activities in the synapse.

Emergentism is by no means a unified or consistent philosophical orientation. There are varieties of emergentism such as epiphenomenalism that are more consistent with monism (Crick, 1994), but other varieties that are more consistent with dualism. Thus, an emergentist might argue that causal forces work from the parts to the whole and from the whole to the parts. Such an argument is consistent with a functional or pragmatic dualism, if not a metaphysical dualism. Let us turn now to another approach to the problem of ontology.

Pluralism

A final commonsense belief is that we live in a "multiverse" of separate orders of things. Ontological **pluralism** embraces the reality of mind and body but also insists that these two orders do not exhaust the possibilities. In a discussion of ontological pluralism, MacCormac (1990) pointed out that concepts arise "from physical brain processes . . . but they do not always find their origin solely in brain activity" (p. 417). A concept may have its origin in any of a great number of cultural sources, but because it depends on the physical system for its expression, its causal sources can be diverse. An ontological pluralist may believe that there are many separate real things, including different types of conscious experience and other orders of reality that do not obey rules that we know. Pluralism raises even more problems than interactionism. For each separate reality we posit, we must now struggle with the problem of the interaction of that reality with others. For example, as the mind–body theorist must struggle with how mind and body influence each other, a pluralist may struggle with mind–body interactions as well as the problem of theodicy (the relation of God to the world) and other actual or potential interactions. It is little wonder that those with unity-loving natures are repulsed by pluralism—it is a messy philosophy. But the pluralist would insist that the world is not simple and that our complex and messy world can only be described by similar theories. Pluralism has been a continuing subject of interest in philosophy and science throughout the twentieth century and into the twenty-first century (see Ford, 1990; James, 1909/1977; Reck, 1990).

A major variation on pluralism could be labeled **attributive pluralism**. This position emphasizes the relationship between an object and the words used to describe the object. People, as users of words, may attribute various qualities to an object. For example, let's take the question, *what is a sunset?* A plurality of possible descriptions exists as an answer. Now imagine that we pose this question to a sample of different professionals. If we called on a physicist, a musician, a neuroscientist, an artist, a psychologist, and a poet, we would find a delightful array of explanations. The musician might invite us to listen to a new composition, "The Sunset Symphony," capturing the sunset as an auditory experience. Not to be outdone, the artist shows us a canvas depicting a sun fading above a seascape, revealed in vivid oil paint. Both are aesthetic representations, but we may ask, what is the real sunset? Does the physicist have the answer with all her elegant mathematical formulae? What about the neuroscientist who shares impressive monitoring of retinal images and occipital activity? Does the psychologist's analysis of the perceptual process offer the answer? Or even his normative testing on what sunsets mean to different people. Or shall we give the poet the final word? To adjudicate the claims of our scholars, we might convene a panel of philosophers consisting of two monists and two pluralists. The monists agree that the true sunset is one thing but disagree on what that one thing is—for one it is physical, for the other, experiential. One of the pluralists argues that there are many objective sunsets. The other contends that there are many legitimate descriptive modes: Sunsets are, after all, what we

describe them to be. The most fundamental reality is, therefore, our words. But the other pluralist insists that realities exist beyond our words.

Let us now leave the mind–body problem, with the comment that the various schools and systems of psychology we encounter will disagree with each other on this issue. We will encounter materialists, double-aspect theorists, pluralists, interactionists, and others. A major key to understanding a given school or system will be to assess that school's or system's position on the mind–body problem.

Psychogeny

A close relative of the study of mind–body relations is encountered in the problem of psychogeny (*sy KAW gin ee*). The term **psychogeny** is derived from the Greek term **psyche** (*sy kee*), which has been translated as *spirit*, *soul*, *mind*, or *consciousness*. Each of these terms has different connotations, but they also share something in common in that they each refer to a principle of existence that embodies mentalistic concepts such as awareness, consciousness, sentience, or experience. Psychogeny may be defined as the study of the origin of psyche or the study of theories of the origin of psyche. Two very broad theories are briefly reviewed in the materials that follow, but more detailed discussion is available (see Viney & Woody, 1995).

PSYCHOGENIC IDENTITY THEORY Two key features of **psychogenic identity theory** are that (1) psyche is instilled in the primitive biological substratum of the organism at a given point in time, and (2) there is continuity or identity between the psychically endowed biological substratum and the later mature, self-reflective, fully conscious adult. Psychogenic identity theorists have never been able to agree with each other about the time of infusion of psyche into the body. For centuries, theologians argued that an embryo becomes human at forty days if it is male and eighty days if it is female (see De Rosa, 1988). More recently, a popular belief claimed that psyche is instilled at fertilization. Kuhse and Singer (1993), in their work on embryo experimentation, note, "what this claim amounts to is that the newly fertilized egg, the early embryo, and I are in some sense of the term, the same individual" (p. 66). Because of its emphasis on the independence of psyche, psychogenic identity theory is consistent with idealism and some forms of dualism. Although identity theory has popular appeal, it is not without a host of problems, many of which surfaced from recent work in embryo experimentation.

An example of a major problem with psychogenic identity theory is encountered in research on microsurgical sectioning of fertilized eggs. According to some forms of psychogenic identity theory, conception (the fertilization of an egg) marks the entry point of psyche into its material substrate. A colony of cells (a morula or blastocyst) develops following conception and results, according to psychogenic identity theory, in one body and one psyche. But we now know that following conception the morula can be surgically divided resulting in two, three, four, or more individuals. Each piece can be transplanted into a host, and we can artificially create twins, triplets, or quadruplets. Such procedures have long been used in the production of dairy cattle (see Seidel & Elsden, 1989) and are in theory, if not practice, available to humans (see Elmer-DeWitt, 1993). At conception, according to psychogenic identity theory, there was one psyche and one body. But assume now that the developing blastocyst is cut in half and there are now two bodies. If both bodies possess a psyche, the second psyche must have been instilled *after* conception. Thus, the theory of the entry of psyche exclusively at the time of conception raises important questions.

There are other problems for psychogenic identity theory. For example, in the early days of pregnancy, two separate colonies of cells (twins) developing in the uterus may float together and now form one individual—a chimera (see Austin, 1989). If both bodies possessed a psyche prior to floating together, what happened to the second

psyche after the two came together? Clearly, for all of its popular appeal, psychogenic identity theory is not without serious problems. We now consider a second theory of psychogeny.

PSYCHOGENIC EMERGENTISM **Psychogenic emergentism** is an alternative theory of the origin of psyche. Psyche, according to this position, has no independent origin of its own, but rather develops with the developing body. Further, the complexity and the functional properties of the mental arena are dependent on the health and well-being of the organism. Psychogenic emergentism avoids the problems of identity theory, but comes with a set of problems of its own.

One of the major problems associated with psychogenic emergentism has to do with the arbitrary time of emergence. According to the theory, psyche is associated with some arbitrary level of neural complexity, but how much complexity is required? Is there some remote sense in which a single cell is conscious? Is a colony of cells, without a nervous system and without a circulatory system, conscious? At the other end of the scale, one might insist that consciousness is not consciousness until it is aware of itself. But how do we know when an organism has the capacity for reflective self-awareness? Psychogenic emergentism suffers the same problem as identity theory. Neither theory provides a satisfactory scientific answer regarding the time of infusion or emergence of psyche into a material substrate.

Another problem for psychogenic emergentism has to do with the experienced continuity of consciousness. I am the same *I* or *me* today as many years ago. Although my world may have been unstable resulting in experiences I could never have imagined and although I may not believe the same things I once did, it is nevertheless the same me who has changed. The persistent and obstinate nature of experienced continuity challenges psychogenic emergentism. We live in a constantly changing world that should result in major shifts in psyche, yet most of us experience ourselves to be remarkably consistent over time.

The psychogenic emergentist might argue that pathological discontinuities and disassociations exist in personality, often resulting from environmental changes or neurological damage. Such a rebuttal appears appropriate. Discontinuities in personality may well present a challenge to identity theory with its emphasis on a somewhat autonomous psyche. But it is also true that continuity of personality, especially in the face of change or even crisis, presents a challenge to emergentism with its emphasis on a more fragile and dependent psyche. There are many other problems and issues, including some interesting moral issues, associated with both theories (see Viney & Woody, 1995).

The relationship of mind and brain, like the problem of free will and determinism, is neither a relic of the past nor exclusively a philosophical problem. Indeed, there may be a greater outpouring of scholarly work on this problem at the dawn of the twenty-first century than at any other time in history. Contemporary philosophers, biologists, neuroscientists, computer scientists, and psychologists have produced a wealth of thoughtful approaches to the problem (see Buncombe, 1995; Crick, 1994; Dennett, 1991; Edelman, 1992; Searle, 1992, 1995a, 1995b; Tye, 1995). The mystery of the mental arena remains as elusive as ever, but contemporary advances in the neurosciences, the computing sciences, biology, psychology, and philosophy may provide additional pieces for a puzzle that is of unparalleled complexity.

The Problem of Explanation

The word *explain* comes from the Latin *explanare*, which means to make plain, flatten, or spread out. As we use it, the word *explain* refers to attempts to interpret or understand events or relationships. If you've worked with small children, you know a single word can satisfy as a nominal explanation. A child may be content to learn that "this dog is a collie, but that one is a golden retriever." Before long, we learn that

words are arbitrary, so deeper understandings and more nuanced interpretations are needed. Simple words or phrases seldom explain anything. For example, throughout history and in the present, the word *free will* is offered as an explanation for desirable and undesirable behaviors—many legal and religious systems draw on this explanation. However, scientists often hold nagging and legitimate concerns about whether free will can explain anything (see Viney, 1990). Explanations based on the words of an authority are also problematic but very common in most cultural settings. Aristotle's causes, covered earlier in this chapter, can be regarded as the "four be-causes" in that they explain why things happen. For example, the billiard ball rolls into the pocket because external forces propelled it. This explanation is based on material and efficient causation. Now consider a different example: Wynona decided to go for lunch because she was hungry. This is a teleological explanation based on intention or purpose. Four additional explanatory modes encountered in science and in psychology are covered in the following section. Whether there is any explanatory mode free of problems is arguable.

Explanation by Analogies and Comparisons

The term *analogy* comes from the Greek *analogia*, referring to proportion or equality of ratios. In everyday use, *analogy* refers to the idea that one thing is somewhat like another thing even though the two are also different. Scientists have drawn analogies between the structure of atoms and the structure of our solar system. René Descartes compared nerves to water pipes. In medical circles, cholesterol is compared to sticky deposits that clog pipes.

Explanations by comparisons are central to the development of human cognitive processes. Small children use comparisons to form concepts. A kitten is to a cat as a puppy is to a dog, or a car is to a driver as an airplane is to a pilot. In politics, comparisons are used in pejorative ways when Democrats are compared to Communists and Republicans to Fascists. Such comparisons underscore the danger of thinking in terms of comparisons and analogies. An emphasis on the similarities between one thing and another can lead to overgeneralization, faulty thinking, or outright error.

Let's consider a greater problem that happens when we overemphasize the explanatory legitimacy of presumed similarities. A judge, while sentencing a teenager, acknowledged that the juvenile came from a disadvantaged home. The judge added that scores of other teenagers come from disadvantaged backgrounds but don't commit crimes. What are the problems with the comparison made by the judge? Further careful analysis will reveal all kinds of differences between the subject and the comparison targets. One purpose of science (and all critical and responsible thinking) is to engage in the relentless pursuit of the hidden and visible differences that make real differences in the world. Superficial and shallow comparisons based on presumed likenesses are unworthy of serious thinkers. Analogies may be helpful, but they should evoke deep suspicions (see Simanek, 2014). At best, analogies and comparisons offer programs for more intellectual work. At worst, they promote intellectual laziness.

MODELS AS EXPLANATIONS Models in science are comparable to analogies (see Eacker, 1975; Hesse, 1967), but more sophisticated. The term *model* in scientific literature refers to a conceptual framework marked by attempts to find logical, structural, or functional similarities between one thing and another. Psychologists have used steam boiler models to explain emotional expression. The greater the pressure generated in a steam boiler, the greater the need for a release of energy, or an explosion will occur. The model suggests that the pressures of living generate energy. If such energy is "bottled up" or not released through healthy exercise and verbal expression, then a nervous breakdown may

result. The same cautions that apply to simple analogies apply to models. A model may be helpful, but it may fail to do justice to the target it seeks to explain. Later, we will encounter a school of humanistic psychology that rejects all models in favor of a direct study of human beings.

NUMERICAL EXPLANATIONS Science has made remarkable progress in quantifying an increasing range of natural phenomena. This development is so critical that later sections are devoted to often surprising quantitative breakthroughs that influenced the emerging science of psychology. An early pioneer in the area named Francis Galton believed that every bodily and mental attribute could be quantified and summarized in a mathematical formula. In this tradition, formulae have been written to describe sensory thresholds, intellectual ability, mortality expectations, the relative contributions of heredity and environment to specific behaviors, and a host of other areas. Such formulae provide descriptive and predictive tools for the scientist, but can a mathematical formula unpack the deeper nature of the target it seeks to explain? Is intelligence the same as an intelligence quotient? In a way, we return to the same problem we encountered with analogies. When can we be sure we have a real identity between one thing and another? Quantitative explanations are integral to science, but may leave us grasping for more nuanced truths.

NEUROLOGICAL AND PHYSIOLOGICAL EXPLANATIONS The advent of brain sciences brought a growing faith that human experience and behavior can be explained in terms of underlying neurophysiological processes. As explored in later chapters, recent history has witnessed unprecedented advances in our understanding of the relationship between the nervous system and psychological processes. But can we believe that underlying neural processes offer adequate explanations for psychological events? There's no question we benefit from knowing that deposits of amyloidal plaques in nerve structures are associated with Alzheimer's disease. The discovery of such plaques may uncover a piece of the puzzle and even suggest intervention techniques, but we may still lack an adequate explanation for the disease's role in experience and behavior. We must still struggle with the possible roles of heredity, diet, exercise, a more penetrating analysis of the chemistry of amyloidal proteins, immune reactions to such proteins, and so forth. Biochemical explanations, though useful, may leave us without a satisfactory explanation of the ultimate causes and characteristics of the disease and, particularly, the experience of the disease. The virtue of neuroscience centers on its practical and heuristic values. A concept or a theory with heuristic value is one that leads to productive new ideas and hypotheses. Neurological and physiological explanations lead to questions of a biochemical, chemical, or physical nature. Each level of analysis presents new mysteries but may fail to provide an adequate explanatory framework relevant to all the dimensions of a problem. As noted earlier, no explanation is free of problems. As we explore how scholars throughout history have explained psychological phenomena, it is helpful to think critically about the problem of explanation. In what sense are analogies and models helpful and in what sense are they misleading? Does the identification of a physiological or neurological correlate of a psychological event do justice to the complexity of that event? There are schools of thought (e.g., the Gestalt school and the psychology of William James), as well as cognitive psychologists (Lombrozo, 2015), and neuroscientists (Uttal, 2001, 2013), who question whether one level of explanation (e.g., the neurological level) can ever do justice to another level (e.g., the psychological level). We will revisit the problem of explanation in new and interesting ways.

In addition to the philosophical problems mentioned in this chapter, additional problems are of special interest for psychologists. Do human beings have an essential built-in moral nature (i.e., are we morally good, evil, or simply neutral at birth)? What is the appropriate unit

of study in psychology? Should we focus on part processes such as reflex activity or should we focus on the whole organism in its natural environment? Such issues and others like them will surface as we consider the various systems of psychology. If you are interested, several resources focus on philosophical issues in psychology (Eacker, 1972, 1975; Rubenstein & Slife, 1988; Wertheimer, 1972).

Review Questions

1. Define the term *epistemology.*
2. Distinguish between a priori and a posteriori knowledge.
3. Differentiate between nativist and empiricist accounts of depth perception.
4. Briefly explain at least five different ways of assessing truth.
5. What risks come with the reliance on authority for knowledge?
6. According to Karl Popper, what is the key distinguishing feature between a legitimate science and pseudoscience?
7. Trace Kuhn's view on the development of science. What does Kuhn mean by terms such as *normal science* and *paradigm*?
8. If you were arguing for Feyerabend's philosophy of science, what evidence would you employ?
9. List and briefly describe Aristotle's four kinds of causation.
10. Distinguish between intrinsic and extrinsic teleology.
11. Advance three arguments in support of determinism and three arguments in defense of free will.
12. Outline two monistic and two dualistic approaches to mind and brain.
13. Which of the various mind–brain positions seems most adequate to you? What are some of the problems with this position?
14. Outline two major problems for psychogenic identity theory encountered in recent research on embryo experimentation.
15. What are the strengths and weaknesses of arguments by analogy?

Glossary

aestheticism The belief that the principles of beauty are applicable to other arenas of thought. In epistemology, aestheticism attempts to integrate truth and beauty.

a posteriori Literally, *from what is later*. Generally refers to the belief that knowledge is dependent on experience and past learning. Contrast with *a priori*.

a priori Literally, *from what is prior*. Generally refers to the presumed capacity to discern truths through intellectual insights with minimal dependence on past experience and past learning. Contrast with *a posteriori*.

attributive pluralism Emphasizes the varieties of descriptive modes applicable for most phenomena. For example, a sunset may be described in the language of physics, anthropology, psychology, or any of a variety of other disciplinary languages. Events can also be described poetically or musically.

authority One of the most common tests of truth. Reference to books, institutions, legal codes, or other people as appropriate and adequate repositories of knowledge.

determinism The belief in universal causation. Implies that whatever happens is based on antecedents such that, given them, nothing else could happen. Contrast with *free will*.

double-aspect monism A mind–brain position emphasizing the availability of two languages to describe the same phenomena. In this case, there is the language of physiology versus language that employs mentalistic concepts. The position assumes that both refer to the same underlying reality.

dualism The belief that there are two fundamentally different realities. For example, mental processes are considered by the dualist to be largely independent and qualitatively different from brain processes.

efficient cause According to Aristotle, the force that sets a thing in motion. Thus, domino *A*, impacting domino *B*, is the efficient cause of the fall of *B*.

emergentism A mind–brain position embracing the idea that mental processes are produced by brain processes. Some emergentists believe that mental processes, though produced by brain processes, are qualitatively different from the physical system from which they emerge.

empiricism A philosophical position that emphasizes the importance of experience, observation, and learning in the acquisition of knowledge.

epiphenomenalism A mind–body position marked by the belief that physical events are causal with respect to mental events. Mental events are viewed as completely dependent on physical functions and, as such, have no independent existence or causal efficacy.

epistemology A branch of philosophy concerned with problems of knowledge such as what can we know or how can we know?

extrinsic teleology The view that design or order in nature reflects the work of a designer.

Feyerabend, Paul K. (1924–1994) Philosopher of science who has argued for an anarchistic epistemology marked by belief that there is no such thing as a single unified and unchanging scientific method.

final cause According to Aristotle, the goals or purposes for which an action was intended.

formal cause The form or shape that contributes to a causal sequence. Thus, an airplane could not fly if critical components were not shaped properly.

free will The assumption that human beings make choices that are to some degree independent of antecedent conditions. Contrast with *determinism*.

genetic epistemology The study of ways of knowing and ways of solving problems as a function of developmental level.

idealism A philosophical orientation emphasizing mind or spirit as the preeminent feature of life. Contrast with *materialism*.

indeterminism The doctrine that it is impossible to apply strict cause-and-effect explanations to events at the subatomic level.

instinct An organized sequence of behaviors characteristic of a given species. It is assumed that instinctive behaviors are not learned.

interactionism A commonsense belief in the interdependence of the mental and the physical realms. According to this position, mental events may be causal with respect to physical events and vice versa.

intrinsic teleology The position that design, order, and purpose are immanent in nature.

Kuhn, Thomas S. (1922–1996) A philosopher of science who emphasized the importance of understanding science in terms of its community structures and evolutionary processes. His book *The Structure of Scientific Revolutions* is one of the most influential works in its field in the twentieth century.

learning Any change in performance or behavior that is attributable to the effects of practice or experience.

material cause Aristotle's contention that things behave as they do partly because of their material structure. For example, a billiard ball could not function properly if it were made of cork or rubber.

materialism A monistic ontology characterized by the belief that all real things are composed exclusively of matter. Implies that all being can be understood in terms of the principles of material structure.

monism The position that reality is one thing. Thus, everything relates to everything else in a completely interconnected world. Contrast with *pluralism*.

nativism The position that there are perceptions that are built in or operational from birth and that are informative about the world. For example, the nativist argues that we have an innate capacity to see in depth. Contrast with *empiricism*.

normal science A notion introduced by Thomas Kuhn that refers to conventional ways of solving problems in science at a given time or during the reign of a particular paradigm.

ontology A branch of philosophy that studies the nature and relations of being. Considers the question, "what is real?"

paradigm According to Thomas Kuhn, the beliefs, attitudes, values, methods, and assumptions that guide the intellectual community at a given time.

pluralism The belief that there are many real things and many different orders of reality. Contrast with *monism*.

Popper, Karl Raimond (1902–1994) Mathematician and philosopher noted for a hypothetico-deductive approach to science. His book *The Logic of Scientific Discovery* is one of the classics in the philosophy of science.

pragmatism A U.S. philosophical movement associated with the work of Charles S. Pierce and William James. James emphasized the close connections between empiricism, pluralism, and pragmatism. According to pragmatism, concepts must be judged in terms of their cash value or the practical work they do in the world. Thus, truth is judged by utility and the practical consequences achieved by an idea.

psyche The Greek term for soul or mind. Includes mental processes such as thought, memory, sensation, and perception.

psychogenic emergentism The idea that mental processes develop or emerge with the development of the body.

psychogenic identity theory A theory of the origin of psyche that stresses the continuity or identity of the psychically endowed biological substratum of the organism and the later mature, self-reflective, fully conscious adult.

psychogeny Literally, the origin of psyche. Theories of the origin of psyche.

psychophysical parallelism A mind–brain doctrine that assumes the independent existence of mental and physical events. According to parallelism, the mental and the physical are, by definition, congruent. They do not interact with each other; rather, they are like two clocks that always agree on the time, but are nevertheless independent systems.

rationalism A philosophical orientation deriving from the Latin *ratio*, meaning to reason or think. Rationalist philosophers emphasize a priori knowledge, deduction, and an active mind that selectively organizes sensory data.

skepticism The philosophical position that all truth claims are suspect and must be questioned.

teleology Refers to purpose or design. According to Aristotle, design or purpose is an intrinsic part of the natural order. Thus, it is the purpose of a seed to sprout under the proper conditions and grow into a plant. Such a teleology can be thought of as intrinsic and is in contrast with the extrinsic teleology encountered in certain religions. Extrinsic teleology implies that things do what they do because they fulfill purposes imposed by a deity.

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