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Preface

The organization and content of the three editions of *Gerontology: Perspectives and Issues* reflect the evolution of the field over the past fifteen years. A primary goal of the first edition, which was published in 1990, was to articulate an overarching paradigm—the *gerontological imagination*—to unite the field and to provide a comprehensive review of theoretical and empirical research in gerontology. The second edition, published in 1997, continued in that vein by offering chapters on a wide range of multidisciplinary topics. Similar to the first and second editions of this text, this book reviews the gerontological concepts and knowledge contained in the theories and research of various disciplines. However, this edition represents a substantial reconceptualization and reorganization that aims to develop the reader’s *gerontological imagination* by using an explicitly interdisciplinary approach.

Viewed in its entirety, this edited volume provides a broad overview of gerontological inquiry that focuses on the core questions of gerontology: What is gerontology? How does aging affect the mind and the body? How does social context influence aging and life course development? and What are the needs and interests of an older population? Although the unique contributions of specific disciplines are acknowledged, this book demonstrates that no single discipline can completely answer a core question. A comprehensive understanding of a particular aging topic comes only from integrating knowledge from different disciplines. This type of interdisciplinary inquiry is required for a variety of topics scientists seek to understand. In *Stars and Atoms* (1927) Arthur Eddington noted: “I ask you to look both ways. For the road to knowledge of the stars leads through the atom; and important knowledge of the atom has
been reached through the stars.”¹ The various facets of aging are like atoms and stars—knowledge about one can be reached through an understanding of the others.

We imagine the book will find a variety of uses. We see it as ideal for multidisciplinary and interdisciplinary courses. But it may also be useful as a supplement for discipline-based courses such as the biology, psychology, or sociology of aging. In those courses we would expect it to stretch the scope of inquiry. Whatever its use, we think the sophistication and clarity of the chapters will make it helpful for audiences at both advanced undergraduate and graduate levels. It is our hope that this book will contribute to the continued development of the gerontological imagination among current scholars of aging and the next generation of gerontologists by encouraging a broad, interdisciplinary understanding of aging.

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Finally, I acknowledge my husband, Brian Durkin, and daughter, Catherine Jean Durkin, who patiently forfeited family time so that I could write my own chapters and review the chapters contributed by others. Their encouragement and support kept me going throughout this project.

J. M. W.
Introduction

The gerontological imagination is an awareness of the process of human aging that enables one to understand the scientific contributions of a variety of researchers studying aging. In addition, this awareness allows people (not just gerontology scholars) to comprehend the links between biological, behavioral, and social structure factors that influence human aging (Ferraro, 1990, pp. 4–5).

This edited volume seeks to foster the gerontological imagination by using an interdisciplinary conceptual framework, which we refer to in chapter 1 as the fountain of gerontological discovery, to organize the chapters. This framework identifies four broad categories of gerontological inquiry—aging scholarship, physical aspects of aging, social aspects of aging, and public policy—each of which grapples with specific core questions about aging. The corresponding four parts of this book contain chapters that address these core questions from different disciplinary perspectives.

Part I, on aging scholarship, addresses two core questions: What is gerontology? Why should it be studied? In the first chapter, we address the first question by making the case that gerontology is inherently an interdisciplinary endeavor given the multifaceted nature of the aging process. We also advocate an interdisciplinary approach to gerontology

that synthesizes the contributions of specific disciplines. Kenneth Ferraro provides additional insight into gerontology in chapter 2 by discussing the historical development of the field. He identifies the key players and institutional influences that shaped the field during the 20th century and lead to the emergence of the gerontological imagination. The second core question in this section is addressed by Janet Wilmoth and Charles F. Longino, Jr. in chapter 3, which provides insight into the importance of studying aging from a demographic perspective. It highlights what is known about population aging worldwide and the characteristics of the older adult population in the United States from both formal and social demographic perspectives.

Part II focuses on the physical aspects of aging. Collectively, the chapters in this part address three core questions: Why do we age? How does aging affect the mind and the body? Can age-related changes be mitigated? David Waters provides a biological perspective on the question of why we age in chapter 4. Drawing on a broad array of literature—from evolutionary biology to research on cellular senescence, longevity genes, the endocrine system, caloric restriction, free radicals, Werner’s syndrome, and centenarians—he paints a detailed picture of the key concerns of biogerontology. Chapters 5 and 6 address the question of how aging affects the mind and the body. In chapter 5, Aimée Surprenant and Ian Neath consider how aging affects the mind from the perspective of cognitive psychology. After situating the study of cognition within gerontology and reviewing the relevant methodological issues, they provide an overview of research on, explanations of, and interventions for age-related differences in cognitive functioning. Fredric Wolinsky and Douglas Miller draw on their knowledge of public health and medical sciences when examining how aging affects physical functioning in chapter 6. They explicitly focus on conceptualizing and measuring disability in the population and the disablement process. Chapters 7 and 8 consider whether age-related changes can be mitigated. Specifically, in chapter 7 Dorothy Morré discusses the role of nutrition in healthy aging, the nutritional problems encountered in later life, and nutritional interventions for frail older adults. In chapter 8, Michael Flynn considers the effect of exercise on aging. After discussing age-related loss in muscle mass, he considers the various benefits of resistive and endurance exercise and then highlights some practical considerations for older exercisers.

Part III, which examines the social aspects of aging, answers two core questions: How does social context influence aging and life course development? How do history, culture, and biography intersect to create the life course? Each chapter in this part addresses both these questions from different disciplinary perspectives. Chapter 9, by Karen Fingerman and Brooke Baker, addresses these issues from the perspective of devel-
opmental psychology. In particular, they focus on the social and emotional aspects of aging, including the complex nature of social ties, emotional development in later life, and the challenges faced by the oldest old. In chapter 10, Linda George provides an overview of the sociological perspective on the life course. She argues that life course perspectives offer a richer, more dynamic way to understand human lives and highlight the role of social structure and social context in aging. This viewpoint is expanded in chapter 11, by Kathryn Douthit and Dale Dannefer. They make a case that cumulative advantage/disadvantage trajectories are collective and cultural phenomena that shape disease risk. Chapter 12, by Thomas Cole and Michelle Sierpina, considers the meaning(s) of age from the perspective of humanist gerontology, a flourishing subfield that involves disciplinary scholarship primarily in history, philosophy, literature, and religious studies, interdisciplinary research drawing on humanistic and social science methods, and practice in the form of bioethics and creative endeavors.

Part IV considers the issues that are directly relevant to public policy. The chapters in this part address two core questions: What are the needs and interests of an older population? How are they created and addressed? Timothy Smeeding presents an economic perspective on financial needs in later life in chapter 13. After reviewing the basic principles and models economists use to understand aging, he considers how private market decisions and public sector policies shape later life financial security. Chapter 14, by Christine Himes and Ying Fang, provides a sociological perspective on social needs in later life. In particular, it considers the social roles that older adults tend to occupy, discusses the living arrangement and care needs of older adults, and reviews the macro-level forces shaping older adults’ social needs including demographic shifts, social policy, and cultural norms. In chapter 15, Robert Hudson explores the needs and interests of older adults from the perspective of political science. After providing an overview of American social policy development, he demonstrates how the needs of older people, initially used by policy elites to legitimate establishing social programs, have transformed into interests, which are increasingly organized and politically influential.

The intent of chapters 3 through 15 is not to provide a detailed review of the age-related research in each discipline. Instead, the chapter authors were asked to consider the following questions:

1. How does your discipline approach gerontological inquiry? What types of questions are asked? What topics are of interest? What theories and methods are used?
2. What contribution does your discipline make to gerontological inquiry? Which core questions about aging is your discipline attempting to
answer? What is known and what are the cutting edge topics in this area?

3. How is your disciplinary approach to studying aging similar to and/or different from other disciplinary approaches? Are there similarities in terms of topics of interest? How does the knowledge generated by other disciplines inform your understanding?

These chapters provide a self-reflective discussion that acknowledges the contributions, limitations, and biases of each discipline’s approach to aging research. In addition, the chapters offer insight into how researchers in particular disciplines think about aging. Collectively, the chapters highlight the unique contributions particular disciplines make to gerontological inquiry and demonstrate that multiple perspectives are required to answer the core questions in our discipline.

Chapter 16 concludes this endeavor by articulating the major tenets of a gerontological imagination. In doing so, our aim is to aid the development of a paradigm for gerontology and the advancement of gerontology as a discipline.
PART I

Aging Scholarship
Gerontology textbooks and edited volumes usually provide a survey of age-related issues that is informed by various disciplinary perspectives. The degree to which disciplinary boundaries are reinforced or integrated in these publications depends on whether the text is based on a multidisciplinary or interdisciplinary approach. Although these terms are often used interchangeably, Ferraro and Chan (1997, p. 374) suggest there is an important distinction between the two approaches:

A *multidisciplinary* field of study refers to an inquiry involving a plurality of disciplines where disciplinary boundaries are maintained and the unique contributions of each are highlighted. We refer to *interdisciplinary* as an inquiry involving a plurality of disciplines where disciplinary boundaries are often muted and the joint contributions of the synergy are highlighted.

We maintain that most textbooks, edited volumes, and other teaching resources reflect the primarily multidisciplinary approach that is currently pervasive in the field. In this book we provide an interdisciplinary conceptual framework that serves as the foundation of its organization. We then consider the implications of this conceptual framework for the continued evolution of gerontology into a scientific discipline.
MULTIDISCIPLINARY APPROACH IN GERONTOLOGY?

Although gerontologists are increasingly involved in interdisciplinary endeavors, the organization of the academic aging enterprise tends to be multidisciplinary (Ferraro & Chan, 1997; Bass & Ferraro, 2000). The charter of the Gerontological Society of America (2003) “set the tone and composition of the Society as a multidisciplinary enterprise to not only promote the study of aging, but also to encourage exchanges among researchers and practitioners from various disciplines related to gerontology.” The society’s membership categories and peer-review journals demonstrate this multidisciplinary organization.

Gerontology education also reflects the multidisciplinary organization of the field. Despite their rapid proliferation, gerontology programs are most often housed in particular schools or departments (as opposed to being university-wide) and typically offer specializations, concentrations, minors, or certificates instead of a major in gerontology (Ferraro & Chan, 1997). Although the goal of these programs is to integrate information from various disciplines, the level of explicit integration provided to students through the curriculum and course content varies across institutions (Bass & Ferraro, 2000).

Furthermore, most gerontology textbooks, edited volumes, and other teaching resources reinforce a multidisciplinary approach. Some books provide an in-depth review of the age-related knowledge in a particular discipline (such as Belsky, 1999; Cavanaugh & Blanchard-Fields, 2002; Digiovanna, 2000; Matcha, 1997; Schultz, 2000). Textbooks that are more explicitly multidisciplinary devote entire chapters to reviewing the knowledge from different disciplines (such as Atchley, 2000; Cavanaugh & Whitbourne, 1999; Cox, 2001; Ferraro, 1997; Hooyman & Kiyak, 2002; Kart & Kinney, 2001; Morgan & Kunkel, 2001; Quadagno, 2002; Quadagno & Street, 1996). However, none of these texts is guided by a conceptual framework that facilitates an appreciation for how gerontological questions relate to age-related topics of inquiry or how different disciplines provide insight into those questions.

THE FOUNTAIN OF INTERDISCIPLINARY DISCOVERY IN GERONTOLOGY

An interdisciplinary approach to gerontology should consider the main areas of gerontological inquiry and then focus on the core questions within each of these areas. Figure 1.1 is based on the analogy of a fountain and serves as a heuristic diagram to highlight the process of gerontological discovery. Think of a fountain that is really a system of fountains. The
water circulates through all parts, but each part of the fountain directs the water in one direction. At the perimeter of the fountain are many small fountains or jets that propel water at a central fountain. At the base of the central fountain is a trough that catches some of the water from each jet and subsequently directs the water upward. The height of the water projected upward from the central fountain depends on the flow of water from the surrounding jets. The flow from this central fountain cascades down and ultimately returns to the small fountains, which recycle the water and continue the cycle by propelling more water at the central fountain.

The main (central) fountain is the core of gerontological discovery. It represents the basic findings of research on aging and the tenets of the gerontological imagination. It defines the field and thereby raises questions about the field of inquiry such as: What is gerontology? Why should gerontology be studied?

Each small fountain or jet represents a disciplinary approach to the study of aging. Although the disciplines are distinct, some are closer to one another than to other disciplines. The boundaries are blurred, but one may think of three main areas of discovery. The three areas with exemplary questions for gerontological discovery are:
• Physical aspects of aging. Why do we age? How does aging affect the body and the mind? Can the effects of aging be mitigated?
• Social aspects of aging. How does social context influence aging and life course development? How do history, culture, and biography intersect to create the life course?
• Public policy. What are the needs and interests of an older population? How are they created and addressed?

Although some may consider age-related public policy issues to be a subset of the social aspects of aging, this framework places public policy in a separate area to emphasize that it is shaped by information about the physical and social aspects of aging. Together, these three areas of gerontological inquiry define gerontological discovery and provide insight into a wide array of questions about the aging process and older people. Conversely, each discipline is subsequently influenced by the gerontological discovery generated by the flow of knowledge in the other areas. This continuous cycle creates the interdisciplinary flow of knowledge within the field of gerontology.

THE CONTRIBUTIONS OF SPECIFIC DISCIPLINES TO GERONTOLOGICAL DISCOVERY

Figure 1.2 extends the proposed conceptual framework by highlighting the core questions of gerontological discovery and offers some insight into the contributions of each discipline. The first row summarizes the core questions (shown in the rectangles) associated with each area of gerontological inquiry.

The second row of Figure 1.2 provides examples of specific topics that define aging scholarship (shown in the rounded rectangles). The topics are arranged on a continuum from micro-level to macro-level topics. By reading down the figure from top to bottom, you will notice that the specific topics correspond to the core questions listed in the first row. Questions about physical aspects of aging tend to deal with micro-level topics, questions about social aspects of aging span micro- and macro-level topics, and questions about age-related public policy tend to address macro-level topics. For example, the micro-level topics of cellular change, systemic change, disease, nutrition, and exercise address questions related to the physical aspects of aging. Disability, functional limitations, and mental health are at the nexus of questions about physical aging and how aging influences social functioning. Issues related to identity, personal meaning, roles, life events, transitions, and financial status address questions about the social aspects of aging. Topics related to social net-
works typically address questions about social aspects of aging, although they can be used to address questions about age-related public policy. Conversely, more macro-level topics related to institutions and society often address age-related public policy questions but can be used to address questions about the social aspects of aging as well.

The third row of Figure 1.2 lists the disciplines that are, or could potentially be, engaged in gerontological discovery. Specific disciplines

FIGURE 1.2 Interdisciplinary conceptual framework of gerontological inquiry: Core questions, specific topics, and disciplines engaged in those topics.
(shown in the ovals) are organized into five broad categories that reflect their location within academia. The placement of the disciplines across the row indicates the degree to which they are engaged in micro- or macro-level topics. Disciplines on the left side of the row tend to be engaged in micro-level topics, disciplines in the middle of the row address micro- and macro-level topics, and disciplines on the right side of the row tend to address macro-level topics. Of course, this graphical depiction is a simplification of the diversity that exists within a single discipline. Any one discipline can have a variety of subspecialties that study a range of micro- and macro-level topics. The intent of Figure 1.2, however, is to characterize the general type of contribution the discipline makes toward understanding the core questions of gerontology.

Reading down (or up) the entire length of Figure 1.2, from top to bottom (or from bottom to top), provides some insight into how different areas of academic inquiry make contributions to the aging enterprise.
For example, biomedical disciplines seek answers to questions regarding the physical aspects of aging. Specific disciplines, such as biology, chemistry, entomology, and botany, address micro-level topics regarding cellular and systemic change. Medical science, pharmacy, food science, and kinesiology are more concerned with topics such as disease, nutrition, exercise, and disability. Nursing, audiology, and speech science are also interested in topics such as disease and disability but often examine how those issues relate to social interactions.

The social and behavioral science disciplines address a range of micro- and macro-level topics that inform our understanding of the physical and social aspects of aging, as well as age-related public policy. Epidemiology and health promotion address biomedical concerns more than the other social and behavioral science disciplines by examining micro- and macro-level issues related to disease and prevention. Psychology and human development tend to be more micro in their orientation, addressing issues such as cognition or personality over the life course. At the other end of the continuum is demography, which is more macro in orientation given its concern about the implications of changing population age structure. The disciplines in the middle address a variety of micro- and macro-level topics depending on the specific subspecialty within the discipline. For example, a political scientist might be interested in the individual-level determinants of voting behavior or cross-national differences in the formation of income security programs.

The humanities also span micro- and macro-level topics but primarily address issues related to the social aspects of aging. History is an exception, given that it can be concerned with the historical development of age-related policy. Professional programs, such as law and public administration, tend to focus on macro-level issues related to the social aspects of aging and age-related public policy. Finally, engineering speaks to a variety of topics at the micro- and macro-levels. Biomedical engineers typically address micro-level topics regarding physical aging. Mechanical engineers often design products and civil engineers design environments that are more suited to the needs and functional capacity of older adults.

DEVELOPING AN INTERDISCIPLINARY UNDERSTANDING OF GERONTOLOGICAL TOPICS: AN EXAMPLE

This conceptual framework can be a powerful tool for developing an interdisciplinary understanding of specific gerontological topics. Consider, for example, how it could be used to highlight the disciplines that examine informal caregiving. Given that this topic falls under the area of social
aspects of aging, the flow of knowledge about informal caregiving tends to come from disciplines in the social and behavioral sciences and the humanities. Psychologists are often interested in the mental health outcomes of providing care. Sociologists view caregiving as a social role that is constrained by competing demands and shaped by institutional arrangements. Economists are typically concerned with the costs of providing informal care and how care provision is related to other forms of intergenerational transfers. Demographers document the characteristics of care providers and care recipients. Anthropologists focus on understanding cross-cultural differences in caregiving. Scholars in the humanities explore the experience of providing care in written work, film, performances, and historical documents. In addition, select researchers in biomedical sciences, professional programs, and engineering address informal caregiving issues from their disciplinary perspectives. However, the flow of knowledge about informal caregiving from these disciplines is not as profuse. The knowledge generated about informal caregiving by the disciplines concerned with the social aspects of aging spills over into areas that are primarily focused on the physical aspects of aging and age-related public policy. This flow of ideas among academic disciplines provides rich insight into informal caregiving. It also contributes to our general understanding of aging and the development of gerontology as a field.

As the example demonstrates, this conceptual framework recognizes the knowledge generated by a specific discipline but shifts the focus toward developing an interdisciplinary understanding of aging issues that transcends disciplinary boundaries. It reminds us that no single discipline is equipped to fully address a particular age-related topic, but that various disciplines speak to specific issues and together provide a more complete understanding of aging.

**IMPLICATIONS FOR DEVELOPING A DISCIPLINE**

Instead of maintaining and reinforcing disciplinary boundaries, the proposed framework focuses on the core questions of gerontology and the topics of inquiry that address those questions. It recognizes the unique contributions of specific disciplines, but it also acknowledges that no single discipline can answer the core questions that gerontologists address. This conceptual framework cultivates the gerontological imagination by explicitly integrating knowledge from different disciplines (Ferraro, 1997).

Actively encouraging the development of this type of integrated intellectual view on aging is essential for the continued development of gerontology as a scientific field. Achenbaum (1995) noted that
Gerontology will continue to open new frontiers of knowledge as long as highly trained scholars are willing to cross the boundaries of their own scientific training and appreciate the rewards of broadening their fields of vision. (p. 268)

But as an emerging field, gerontology should not only entice promising scientists who have been trained in traditional disciplines to pursue age-related research agendas. We need to cultivate an interdisciplinary gerontological imagination among the “third generation of gerontologists” (Bass & Ferraro, 2000). By developing an appreciation of the rewards of this broader view earlier in their careers, future scholars of aging will be poised to make unique scientific contributions to, and advocate for institutional arrangements within academe that will lead to the development of gerontology as a new discipline.

REFERENCES


Aging, like life itself, doesn’t belong to one academic discipline. As an object of study, it is interdisciplinary by its very nature. . . . This is good for the students because truth is too big and gets caught in the cracks between disciplinary paradigms.

Charles F. Longino, Jr.

Gerontology as a field of study is a relatively recent phenomenon. Reflections on what it means to grow older as well as the search for youthfulness have been documented from the earliest historical records. The scientific study of aging, however, was not observed until about a century ago. Many disciplines such as biology, psychology, and sociology have long been interested in aging, but gerontology as a field draws from these and other disciplines to systematically study the aging process (Katz, 1996). In this chapter, I seek to describe how gerontology began and identify some of the key elements of its evolution during the 20th century.

At the heart of this inquiry is a question of how scholars view the aging process. What are the fundamental images of aging that have shaped
scientific inquiry? Do gerontologists have a paradigm that helps define the field and articulate streams of basic and applied research? Are there concepts, principles, or approaches that scholars from varied disciplines share in the study of aging?

In considering these questions, it is important to note that paradigms—how scientists view their subject matter—are the product of a community of scientists seeking the cumulative development of knowledge on a subject. All too often, the human side of science is ignored, but science is more than theories, methods, and hypothesis testing; science is also shaped by social and political forces. Evans and Scott (1978, p. 711) helped illuminate these influences and to “bring humans back in” to our conceptions of scientific evolution. They remind us that it is easy to forget that science is also a conglomeration of people, often acting out of personal pique or institutional jealousies having nothing to do with the “understanding of the nature of things.” The politics of science is often as important a part of its history as the concepts produced.

My purpose is not to detail these social and political developments in gerontology over the past century. Achenbaum (1995) has already provided a splendid account of the history of this young science (see also Schaie & Achenbaum, 1993). Instead, the purpose is to briefly describe the evolution of the field in order to better understand the roots of an emerging paradigm on aging and why certain concepts and perspectives are given priority in this field of study.

METCHNIKOFF’S OPTIMISTIC GERONTOLOGY

It could be argued that the process of growing older has long been viewed in one of two basic ways. On the one hand, as evidenced in literature and some religions, aging has been considered an unpleasant phenomenon. A cursory review of famous quotations reveals the pessimistic view of aging (e.g., Giga Quotes, 2006). Marie Ebner-Eschenbach claimed that “age either transfigures or petrifies,” and Swift stated that “every man desires to live long; but no man would be old.” Advanced years have been seen by many as an empty success: the person survived but is left in a diminished state. According to Shakespeare, “when age is in, the wit is out.” And in many minds, aging and dying are inseparable: “Old age is an incurable disease,” wrote Seneca. For Buddha, old age, sickness, and death were closely related and exemplified suffering in life. Given these pejorative views of aging, it is not surprising that millions, including Ponce de Leon,
have been looking for a fountain of youth. As Rowe and Kahn (1998) observed, the goal of aging for many people is to imitate youth.

On the other hand, history is replete with positive or noble images of growing older. Robert Browning, in the poem, “Rabbi Ben Ezra,” exhorted, “Grow old along with me! The best is yet to be, the last of life, for which the first was made.” Joubert asserted that “old age takes from the man of intellect no qualities save those that are useless to wisdom.” Plato described a form of compensation with aging: “The spiritual eyesight improves as the physical eyesight declines.” These voices acknowledge the many challenges of aging, but conclude that growing older is still a good thing.

Although both the negative and positive images of aging have been lodged in literature, philosophy, and religion for centuries, both of these views of aging have also been expressed to some degree in science, including medical science. Consider the perspective expressed in *The Household Physician*, published during the early 20th century (Buffum et al., 1929, p. 550):

Growth, maturity, and decline are the three periods which divide and measure human life.

During growth, the deposit of new matter takes place more rapidly than the decay or waste which is also going on.

During healthy maturity, waste and increase are exactly equal, the one taking place just as rapidly as the other.

The decline of old age reverses the order of growth, and waste outstrips addition. The newly deposited matter comes, but not so rapidly as it is cast away.

This text also characterized periods of the aging process ranging from “declining age” (50 to 60 years old) to the stage of “decrepitude or second infancy” (80 years old to the end of life).

Most contemporary gerontologists scoff at such descriptions of the aging process and characterizations of life stages. Those views are now not only regarded as inaccurate but with disdain, because the image of aging during the first half of the 20th century was often anchored in a decremental model. Recall, however, that only about 4 percent of the U.S. population was 65 years of age or older at the beginning of the 20th century. Indeed, if one examines human history around the globe, the demography of aging is qualitatively different now than it was in times past, and this demographic destiny has helped to fuel the engine of gerontology: the scientific study of aging.

Later life was widely viewed by scientists and physicians of the time as a period of major and inexorable decline in physical and mental function. A Russian-born zoologist and professor at the Pasteur Institute
recognized the substance of the decline but led the early charge to ques-
tion the inexorability of it. Elie Metchnikoff (1903) described old age as
a period of time when “the body becomes an easy prey to pernicious in-
fluences and diseases” (p. 229), but he staunchly questioned the in-
evitable of old age as a period of decline. In many ways, he may be
considered the father of gerontology, for he argued that “scientific study
of old age and of the means of modifying its pathological character will
make life longer and happier. Although modern knowledge is still imper-
fect, there is no reason to be pessimistic on the subject of old age” (p.
261). Metchnikoff was a realist but not a pessimist. The tenor of his book
*The Nature of Man* was not that science needs to cure aging by stopping
its progression, but that science can help the process of aging by both ex-
tending life and improving the quality of it.

It is not surprising that gerontology was born in Europe at the hands
of Metchnikoff. Medicine was much more advanced in Europe than in
the United States at the turn of the 20th century. European scientists such
as Cheyne, Charcot, Morgagni, and Carlisle rapidly advanced the field of
pathology, often by studying case histories of older patients. Metch-
nikoff’s career was launched in Russia, but matured with scientists in
Messina, Italy, and later in Paris (Achenbaum, 1995). He drew from these
experiences to advance his own theory of how phagocytes (leukocytes)
defend the body from acute infection. This work garnered praise from
Virchow and Pasteur and set the stage for his later research.

Metchnikoff (1903) valued the later years of life and argued that a
science of aging could pay huge dividends to humanity: “I think it ex-
tremely probable that the scientific study of old age and of death, two
branches of science that may be called *gerontology* and thanatology, will
bring about great modifications in the course of the last period of life”
(pp. 297–298). Thus, Metchnikoff embraced the scientific progress in
pathology and immunology but pushed for more direct interest in aging.

A later book, *The Prolongation of Life* (1910), developed Metch-
nikoff’s theory of natural death, treating it as analogous to sleep. His the-

As for the early 20th century, Metchnikoff’s legacy is as significant as
his contributions to medicine. His work laid the foundation for the field of
gerontology, and his advocacy for the study of aging continues to influence
the scientific community today.
I. L. Nascher (1909), a physician, sparked American interest in the systematic study of aging by naming a new medical specialty, geriatrics. He saw “senility,” or old age, as a distinct phase of the life course that merited careful examination. Five years later, he published *Geriatrics: The Diseases of Old Age and Their Treatment, Including Physiological Old Age, Home and Institutional Care, and Medico-Legal Relations* (1914). He founded the New York Geriatrics Society in 1915. Although *Geriatrics* covered all of the topics described in its long title, over 80 percent of its pages were devoted to “pathological old age.” Nascher saw old age as rife with disease, but he attempted to distinguish aging from disease processes. He also argued that social context was important to understanding aging, an insight that helped to launch geriatrics and gerontology in a multidisciplinary posture. In a sense, Nascher was echoing the axiom of Rudolph Virchow, the nineteenth-century German pathologist, that “medicine is a social science.” Nascher’s interest, however, was developing the field of geriatrics with sensitivity to what social science and social epidemiology could contribute.

In the next decade, G. Stanley Hall, a psychologist, played a pivotal role in establishing the field of gerontology in the United States. Hall was best known for his work *Adolescence*, published in 1904, but his interest in later life swelled over the years, culminating in the publication of *Senescence: The Last Half of Life* during 1922. The book also expressed Hall’s personal reflections on aging—he was 78 years of age when *Senescence* was published (Achenbaum, 1995). Since then, scores of scientists, especially in psychology, have launched their careers by studying child development and moved on to studying later life during their middle or later years. (Recall that Metchnikoff’s research interest in aging grew during middle age.) Hall (1922, p. vii) described his odyssey in the introduction:

My own life work, such as it is, as a genetic psychologist was devoted for years to the study of infancy and childhood, then to the phenomena of youth, later to adulthood and the stage of sex maturity. To complete a long-cherished program I have now finally tried, aided by the first-hand knowledge that advancing years have brought, to understand better the two last and closing stages of human life.

The two last and closing stages of human life according to Hall were senescence, “which begins in the early forties, or before in woman,” and “senectitude, the post-climacteric or old age proper” (p. vii). Hall developed his views on aging from the writings of some of Europe’s best scholars.
interested in aging, most notably Charcot; his own personal observations; and “questionnaire returns” from “mostly eminent and some very distinguished old people, both acquaintances and strangers” (p. 321). Hall weaves both the pessimistic and optimistic views of aging into the book. On the one hand, he frequently laments life for “the old.” “Disguise it as we will, old age is now only too commonly a hateful and even ghastly thing” (p. 195). He asserts that the period between 45 and 65 “has very new and great temptations” (pp. 24–25) because people are forced to confront their own finitude and the “great fatigue” (p. 366). On the other hand, Hall experimented with health promotion during his years of retirement and concluded that “old age may become the most satisfying and deeply enjoyable stage of life” (p. 379). He also suggests that aging may lead to a more optimistic orientation (p. 382):

How different we find old age from what we had expected or observed it to be; how little there is in common between what we feel toward it and the way we find it regarded by our juniors; and how hard it is to conform to their expectations of us! . . . Instead of descending toward a deep, dark valley we stand, in fact, before a delectable mountain, from the summit of which, if we can only reach it, we can view the world in a clearer light and in truer perspective than the race has yet attained. It is all only a question of strength and endurance.

Thus, Hall inventoried a litany of physical and mental illnesses and peculiarities, but asserted that later life can be quite fulfilling, even liberating in some respects. Thomas Cole (1993) argued that this tension reflects the emerging dualism of gerontology that captured morbidity and frailty on the one hand, and wisdom and serenity on the other. Indeed, it could be argued that an essential component of the gerontological imagination is an awareness of the many challenges posed by growing older coupled with an appreciation for varied ways in which people face and adapt to the challenges.

THE INSTITUTIONAL SUBSTRATE

Achenbaum (1995) argued that much of gerontology’s early growth was the result of a set of individuals exploring and raising interest in the systematic study of aging. Beginning in the 1930s, however, an institutional matrix developed to greatly accelerate the growth of gerontology. To begin, many foundations committed to research on social and behavioral aspects of human development were launched between 1905 and 1930 (e.g., Milbank Memorial, Carnegie, Rockefeller, and Kellogg). The year
1930 saw the establishment of both the National Institute of Health (later renamed the National Institutes of Health) and the Josiah Macy, Jr., Foundation. The early focus of most of these organizations was real-life problems, and much of the interest centered on child development (from infancy to youth). The Macy Foundation took a broader perspective, including the study of aging and the diseases of later life. In 1931, the foundation contacted Edmund Vincent Cowdry, an anatomist at Washington University, for scientific guidance on its philanthropic initiatives (Achenbaum, 1995). After several years of investigating arteriosclerosis and editing a handbook bearing that name, Cowdry suggested that the Macy leadership support the fledgling field of gerontology. The foundation agreed and did so in several ways.

While Cowdry was primarily interested in the biology of aging, especially the aging of tissue fluids, John Dewey, a board member of the Macy Foundation, argued for a more multidisciplinary approach to gerontology. Of course, a multidisciplinary approach was evident in the thinking of Nascher and Hall, but Dewey urged Cowdry to make sure it manifested itself at the foundation. Cowdry sought assistance in this endeavor, and Lawrence K. Frank, an economist, joined the foundation in 1936.

Cowdry (1939) edited the first systematic anthology for gerontology, *Problems of Ageing: Biological and Medical Aspects*, with the support of the Josiah Macy, Jr., Foundation. Lawrence Frank wrote the Foreword and Dewey the Introduction to the first edition. A good indication of Dewey’s argument to link biological and cultural analyses is found in his introduction to *Problems of Ageing* (Cowdry, 1939, p. xxvi):

> Biological processes are at the roots of the problems and of the methods of solving them, but the biological processes take place in economic, political and cultural contexts. They are inextricably interwoven with these contexts so that one reacts upon the other in all sorts of intricate ways. We need to know the ways in which social contexts react back into biological processes as well as to know the ways in which the biological processes condition social life. This is the problem to which attention is invited.

Cowdry selected a distinguished set of contributors to review the extant body of knowledge. There were a couple of chapters on personality and psychological aspects, but the bulk of the book focused on anatomical systems. Thus, it possessed enough breadth to call it multidisciplinary—ranging from biology to demography—but the coverage of the social and behavioral sciences was modest. It became the major handbook for gerontology through several editions and demonstrated the interest in the biological and medical sciences. Most of its content was
framed in a problem orientation, as manifest in its title. The problem orientation was not surprising given Cowdry’s interest in the biology of aging and his previous book, *Arteriosclerosis* (1933). The problem orientation in the volume intensified in later editions as new chapters on arteriosclerosis and cancer were added (Lansing, 1952). Social and economic issues were covered more extensively in later editions, but again the emphasis was on the problems of aging.

While the problem orientation became strong after Cowdry’s book, it is clear that some scholars of the time questioned the problem orientation (see, e.g., Lawton, 1943). Lawton’s anthology included chapters by E. T. Hall (“Creative Urge in Older People”) and his own “Aging Mental Abilities and Their Preservation.” Lawrence Frank’s (1946, p. 8) observation a few years later in the inaugural issue of the *Journal of Gerontology* was another indication that the study of aging should not focus on the problems of aging: “There is a widespread feeling of defeatism about old age as if the last years of life, the period of later maturity, were inevitably a barren, tragic time of decline and frustration.”

It is clear that Cowdry eventually moved beyond the problem orientation as witnessed by the title of his book *Aging Better*, published in 1972. More generally, the field of gerontology made the transition from an orientation based on the premise that aging is a social problem to an orientation that aging is a topic for scientific investigation (Maddox & Wiley, 1976).

**PARADIGM PIONEERS AND INSTITUTIONAL LEADERS**

One year after the first edition of *Problems of Ageing* was published, the U.S. Public Health Service (PHS), with assistance from the Macy Foundation, hired a specialist for aging research. Edward Stieglitz held the position for only a year before Nathan Shock joined the PHS. Shock’s studies in organic chemistry at Purdue University and in biochemistry and psychology at the University of Chicago prepared him well for discussing aging with scientists from a variety of fields. Shock soon became the director of the Gerontology Research Center, a position he held for over 30 years. He may be best known as the principal investigator of the Baltimore Longitudinal Study (BLSA), begun in 1958. He was a key actor in developing the intellectual and institutional fabric from which gerontology was woven.

Besides being an advocate for the systematic study of aging and directing the Gerontology Research Center at the National Institute on Aging (NIA), Shock’s scientific contributions were paradigm defining. He was a prolific author, with over 350 publications. His research findings be-
came some of the fundamental building blocks of the emerging paradigm for gerontology. Shock provided compelling evidence that all biological functions do not diminish with age (Shock et al., 1984), countering the problem orientation to the study of aging. Psychologists with the BLSA, especially Costa, McCrae, and Arenberg (1983), showed that there is considerable personality stability over the life course. Shock’s distinguished career helped separate aging from disease processes and define what is now known as “normal aging.” A few months before his death in 1989, Shock composed six axioms for aging research (Baker & Achenbaum, 1992, p. 262; see also Achenbaum, 1995).

1. Give me a testable hypothesis. It is worth a thousand theories.
2. Formulate questions to address basic mechanisms of aging and design scientifically rigorous protocols to examine those questions.
3. Focus research on the processes of aging over the entire life span. Studies on older individuals may tell one much about diseases in later life but are not likely to yield information about the basic mechanisms of aging.
4. Aging and disease are not synonymous. There are processes of aging and etiologies of disease. The relationships between the two are important but not inevitable.
5. Aging is a dynamic equilibrium. The rates of aging differ for various systems in any given organism, however, it is the whole organism that ages and dies.
6. Well-documented observations and good scientific data are timeless. Also, don’t overlook studies in other scientific fields. Much of our knowledge in gerontology today is a by-product of nonaging research.

Some of these axioms reflect his view of science more generally, but all are instructive for understanding how he influenced the field and was influenced by it. Shock was undeniably a positivist who saw the importance of the cumulative development of science (Shock, 1951a). He welcomed cross-disciplinary research, especially if it was linked to the biological or medical sciences, but he also saw the need for social gerontology to grow. “Although research in the biological field, particularly on the cellular and biochemical aspects of aging, is in need of expansion, encouragement of research on the psychological and sociological aspects of aging is in even greater need of augmentation” (Shock, 1951b, p. 125). In both his intellectual and institution-building endeavors, his interest and passion was a life span perspective on normal aging, viewed as a dynamic equilibrium.

Perhaps the most paradigm-defining discovery in gerontology, especially biological gerontology, was derived from the work of Leonard Hayflick. After a two-year fellowship in infection and immunity at the
University of Texas Medical Branch at Galveston, Hayflick joined the Wistar Institute of Anatomy and Biology in 1958 (Achenbaum, 1995). The prevailing understanding of the time was that senescence occurred at the tissue and organ levels and that there was no intrinsic process to cause cell death. Hayflick and Morehead (1961) questioned this understanding through experiments on normal diploid human cells. They observed that regardless of the age of the donor, such cells could proliferate in culture only for a finite number of times; they have a limited capacity to divide and function. They described this work in a manuscript and submitted it to the prestigious *Journal of Experimental Medicine*. The manuscript was rejected, and one “reviewer commented, ‘The inference that the death of cells . . . is due to “senescence at the cellular level” seems notably rash’” (Hayflick, 1994, p. 123). Apparently Hayflick and Morehead were pricking a sacred scientific cow.

Undeterred, they submitted the manuscript to *Experimental Cell Research*, which published it in 1961. It took years for the scientific community to accept the conclusion that cells are not immortal. The axiom had always been that it was aging per se that was related to cell structure and reproduction. Hayflick and Morehead (1961) showed that aging was not the cause of cell death, but that the number of passages such cells underwent was the key. In other words, there is a limit on the number of cell doublings in vitro, implying that there is a “clock” within cells governing longevity. The article is now considered a classic, for it showed that cell reproduction is governed by a process independent of changes occurring with time (Hayflick, 1965, 1994). Indeed, there are over 3,000 citations to the 1961 article (Hayflick & Morehead, 1961) and over 2,600 to the 1965 paper (Hayflick, 1965).

While Shock and Hayflick were key to developments in the biology of aging after World War II, interest in the social and behavioral science of aging grew during this time as well. The Committee on Human Development at the University of Chicago, launched during the 1930s, played a pivotal role in its ascendancy. Ruth Shonle Cavan, a sociologist, worked with Ernest Burgess, Robert Havighurst, and Herbert Goldhamer (all of the University of Chicago) to produce *Personal Adjustment in Old Age* (1949). Just as the Macy Foundation helped spur Cowdry’s *Problems of Ageing*, the Social Science Research Council’s Committee on Social Adjustment helped birth *Personal Adjustment in Old Age*.

Cavan and colleagues developed inventories to measure activities and attitudes of older people by studying over 3,000 subjects 60 years or older. The inventories garnered some use over the years, but one of the major contributions of the research was to define personal adjustment as a global but multifaceted phenomenon. Personal adjustment involves social activity, sat-
isfaction with relationships, happiness, wish fulfillment, and “the absence of non-adjustive behavior” (Cavan et al., 1949, p. 103). (Nonadjustive behavior included psychopathology, irrational fears, and psychosomatic illness.) This was the first of several University of Chicago studies that sparked systematic interest in the social side of gerontology. It helped launch research on how social relationships change in later life, as well as the consequences of such changes for well-being. In the process, it helped build a social gerontology laboratory at the University of Chicago. A virtual who’s who of social gerontologists worked at the university in the next decade, including Bernice Neugarten and Ethel Shanas, two of the first students to earn a doctorate from the Committee on Human Development.

In addition to community studies in the Chicago area, a collaborative undertaking in Kansas City proved to be quite consequential. The Kansas City Study of Adult Life was a team effort involving Burgess, Havighurst, Neugarten, and Shanas, as well as Everett Hughes, W. Lloyd Warner, and William E. Henry. While Havighurst and Neugarten emphasized the importance of activity to well-being, William Henry and Elaine Cumming focused on the process of disengagement. What emerged was the great debate in social gerontology, initially begun between University of Chicago investigators.

Cumming and Henry’s (1961) controversial, almost inflammatory, theory of disengagement in Growing Old set the stage for the debate. They argued that disengagement was a normal and inevitable part of growing older. Social withdrawal was a natural response to the expectation of death and decreased ego energy. Havighurst, Neugarten, and Tobin (1968) countered that while it may be normal for some, it was clearly not inevitable. Disengagement was seen as an ageist theory because social withdrawal was viewed as satisfying and universal. Many chapters, articles, and books were oriented to discrediting disengagement theory during the 1960s and 1970s (e.g., Hochschild, 1975; Maddox, 1964). To call it a revolution in the structure of scientific thought on aging seems to inflate the scope of the tension, but social gerontology’s fundamental image of study underwent serious change.

The year 1961 was an intellectual turning point for gerontology. During that year, Hayflick and Morehead published their classic work on cell reproduction and death, and Cumming and Henry published their book on disengagement. Both were greeted with concern, and some staunch skepticism, but each shaped the fledgling field of gerontology. Hayflick and Morehead’s work was eventually accepted, while Cumming and Henry’s was refuted. The concept of normal aging became the reigning view in the ensuing decade, creating a distinction between disease and simply growing older.
NORMALIZING AGING IN A MULTIDISCIPLINARY FRAME

Two universities played major roles in shaping the emerging paradigm in a normal aging perspective and assuring that gerontology would span more than one or two disciplines. Ewald Busse led the charge at Duke University. Busse, a physician, studied central nervous system functioning in normal elderly patients at the University of Colorado until he moved to Duke in 1953 (Achenbaum, 1995). He established a University Council on Aging at Duke in 1955 and launched the Duke Longitudinal Studies of Normal Aging in the same year. Duke was also designated by NIH in 1957 as one of five regional centers for the study of aging.

Busse continued his investigation of the brain waves of elderly subjects in the Duke Longitudinal Studies and invited scientists from other fields to collaborate (Busse & Maddox, 1985). George Maddox and Erman Palmore investigated social aspects of aging, while Ilene Siegler, Gail Marsh, and Robert Nebes investigated cognitive aspects of aging. Good science and the multidisciplinary approach meant that the studies attracted a distinguished array of graduate students and postdoctoral fellows to help anchor gerontology in the normal aging paradigm. What resulted was a reorientation to the study of aging as a normal process that entailed so much more than inexorable losses of function (Maddox, 1987). It became axiomatic that human aging poses problems and challenges, but that it also offers certain advantages to the individual and society (Palmore, 1979). Also with this shift came an emphasis on studying the process of aging, not just the characteristics of older people.

Besides the Duke influence, the University of Southern California played an important role in shaping the field of gerontology. James Birren worked under Nathan Shock at the Gerontology Research Center from 1947 to 1950 and later served as the chief of the division on aging at the National Institute of Mental Health. He moved to the University of Southern California in 1965 to build a center on aging. What began with a contract from the Rossmoor Corporation eventually turned into the Ethel Percy Andrus Gerontology Center with a major gift from the American Association of Retired Persons (Achenbaum, 1995). Birren maintained his research on the aging of the nervous system, but masterfully built the Andrus Center with solid links to the primary disciplines. As a result, USC’s Andrus Gerontology Center was able to attract outstanding scholars at varying ranks and fashion a truly multidisciplinary program. Unlike Duke, USC created a distinctive model for gerontology education. The Leonard Davis School of Gerontology was one of the first universities to offer degrees in gerontology, rather than minors or options, and it emerged as the leading professional school for gerontology. The fact that
students had to gain some mastery of biological, psychological, and sociological aspects of aging was significant in establishing those disciplines as pillars of the new field of gerontology.

Sociological analyses of aging were shaped in important ways by Matilda White Riley and colleagues, especially Anne Foner, at Rutgers University. A three-volume work, *Aging and Society*, published between 1968 and 1972, provided an inventory of research findings related to age and society (Riley, & Foner, 1968), identified links between aging and the professions (Riley, Riley, & Johnson, 1969), and sketched out the age stratification perspective (Riley, Johnson, & Foner, 1972). Riley argued forcefully for viewing aging as growing older—not growing old—and articulated that age is a property of social structures (Dannefer, Uhlenberg, Foner, & Abeles, 2005; Riley, 1987). In doing so, Riley et al. (1972) also linked aging to history: “Age also serves as an important link, on the one hand, between the individual and his biological life cycle and, on the other hand, between society and its history” (p. 4).

Matilda White Riley not only made important intellectual contributions to the study of aging, but also became NIA’s first associate director for behavioral and social research (BSR) in 1979. For more than a decade, she directed the development of BSR, attracting many scholars to the scientific study of aging, especially the links between aging and society (Behavioral and Social Sciences Research Coordinating Committee, 2006).

**INTELLECTUAL CAPITAL IN GERONTOLOGY?**

By many standards, gerontology is a young field. Metchnikoff coined the name *gerontology* for this field of inquiry in 1903. Gerontology attracted attention from scholars around the globe and resulted in some important publications in the next four decades, especially Nascher’s *Geriatrics* (1914), Hall’s *Senescence* (1922), and Cowdry’s *Problems of Aging* (1939). Gerontology also developed an institutional structure of support from private foundations and the federal government. Gerontology as a field, however, experienced its most rapid growth after World War II. The Gerontological Society of America (GSA) was created in 1946, and major initiatives to scientifically study aging were launched at the Gerontology Research Center of NIH and the Committee on Human Development at the University of Chicago. Further definition of the emerging paradigm during the 1950s and 1960s was evident by the work of Shock, Hayflick, Busse, Maddox, Birren, Riley, and Neugarten, to name a few.

The youth of the field and its vitality can be seen in a survey of its intellectual capital. GSA has grown to more than 5,000 members, and gerontology has established itself on college and university campuses
around the world. The Association for Gerontology in Higher Education indicates that there are now over 1,000 educational programs identified with studies of aging, housed in over 500 institutions of higher education (Stepp, 2000). There are over 150 graduate gerontology education programs in the United States alone.

While GSA and other organizations have advanced gerontology during the past fifty years, the study of aging has also been merged into the institutional fabric of many disciplines as a recognized specialty. Sections of major professional societies are devoted to the study of aging (e.g., Division 20 of the American Psychological Association).

The creation of the NIA in 1975 was a watershed for the development of both gerontology and geriatrics. Given the obvious links between health and aging, NIA has supported a wide range of research projects and laboratories related to aging. Some of these initiatives have aging as a central focus, while others are more directly linked to specific diseases (e.g., Alzheimer’s). Regardless, gerontology and geriatrics have prospered under NIH support, especially from the NIA.

Intellectual capital ultimately rests on a community of scholars: Achenbaum and Albert (1995) identified some of the leaders in the field of gerontology in a biographical inventory, providing brief profiles on about 300 key researchers, teachers, and practitioners on aging. A review of these profiles reveals the breadth of intellectual interests, ranging from molecular biology to social work. Notably, most of the gerontologists profiled, especially those who received their degree prior to 1980, received their training in a single discipline, often integrating what they could from related fields. Tomorrow’s leaders may well have more experience in integrating information across the disciplines studying aging.

Publications are a major product of intellectual communities, and published reports on the science of aging have mushroomed since the 1970s. The Handbook of Aging series (originally published by Van Nostrand Reinhold) helped diagram the architecture of the field during the 1970s (Binstock & Shanas, 1976; Birren & Schaie, 1977; Finch & Hayflick, 1977). While the number of published monographs and anthologies on aging continues to grow, so have journals. Using recent issues of *Magazines for Libraries*, Table 2.1 displays over 60 journals related to gerontology and geriatrics created since 1946. The Gerontological Society of America (GSA) launched the *Journal of Gerontology* at the society’s inception, which has evolved into four highly respected journals.

Scholarly interest in gerontology and geriatrics mushroomed during the mid-1970s. Indeed, 11 journals were created in the 1970s, and 31 journals were launched in the 1980s. (These numbers would be much higher if magazines and newsletters related to aging were also included.) The pace of growth is remarkable, and the breadth of disciplinary interests
<table>
<thead>
<tr>
<th>Year</th>
<th>Journal Title</th>
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</table>
| 1946 | *Journal(s) of Gerontology*  
       | *Geriatrics* |
| 1951 | *Aging* |
| 1953 | *Journal of the American Geriatrics Society* |
| 1957 | *Gerontologia/Gerontology* |
| 1958 | *Gerontology and Geriatrics* |
| 1960 | *Gerontologist* |
| 1961 | *Experimental Gerontology* |
| 1962 | *Journal of Geriatric Psychiatry* |
| 1963 | *Industrial Gerontology* |
| 1964 | *Aged Care and Services Review/Clinical Gerontologist* |
| 1965 | *Mechanisms of Ageing and Development*  
       | *Age and Ageing* |
| 1973 | *International Journal of Aging and Human Development* |
| 1974 | *Ageing International* |
| 1975 | *Experimental Aging Research*  
       | *Journal of Gerontological Nursing* |
| 1976 | *Educational Gerontology*  
       | *Generations* |
| 1977 | *Clinical Gerontologist* |
| 1978 | *Journal of Gerontological Social Work*  
       | *Aging and Work* |
| 1979 | *Research on Aging*  
       | *Journal of Clinical and Experimental Gerontology* |
| 1980 | *Journal of Nutrition for the Elderly*  
       | *Geriatric Nursing*  
       | *Aging*  
       | *Activities, Adaptation and Aging*  
       | *Gerontology and Geriatrics Education*  
       | *Neurobiology of Aging*  
       | *Physical and Occupational Therapy in Geriatrics* |
| 1981 | *Gerontology and Geriatrics Education*  
       | *Journal of Applied Gerontology*  
       | *Ageing and Society* |
| 1982 | *Archives of Gerontology and Geriatrics*  
       | *Geriatric Consultant*  
       | *Canadian Journal on Aging* |
| 1983 | *Journal of Housing for the Elderly*  
       | *(continued)* |
### TABLE 2.1  Inception of Gerontology/Geriatric Journals (Continued)

<table>
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<tr>
<th>Year</th>
<th>Journal Title</th>
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</table>
| 1984 | *Journal of Religion and Aging*  
      | *Journal of Religious Gerontology* |
| 1985 | *Clinics in Geriatric Medicine*  
      | *Death Studies*  
      | *Gerodontics*  
      | *Topics in Geriatric Rehabilitation* |
| 1986 | *Journal of Geriatric Drug Therapy*  
      | *Loss, Grief, and Care*  
      | *Psychology and Aging* |
| 1987 | *Journal of Aging Studies* |
| 1988 | *Journal of Geriatric Psychiatry and Neurology*  
      | *Journal of Elder Abuse and Neglect*  
      | *Journal of Aging and Health*  
      | *Journal of Aging and Social Policy*  
      | *Journal of Aging Studies*  
      | *Journal of Women and Aging*  
      | *Behavior, Health, and Aging* |
| 1993 | *American Journal of Geriatric Psychiatry*  
      | *Assisted Living Today*  
      | *Contemporary Gerontology*  
      | *Journal of Aging and Physical Activity* |
| 1995 | *Journal of Mental Health and Aging*  
      | *Today’s Caregiver* |
| 1996 | *Journal of Aging and Ethnicity* |
| 2005 | *Journal of Religion, Spirituality, and Aging* |

Notes: Compiled from *Magazines for Libraries* (1992, 1995, 2004). Excluded are magazines, newsletters, electronic-only periodicals, or publications not indexed in one or more of the following: *Abstracts in Social Gerontology*, AGELINE, *Index Medicus*, *Physical Education Index*, *Psychological Abstracts*, or *Sociological Abstracts*.

As one surveys publications on the science of aging, funding sources for gerontological research, and gerontology programs in higher education, some conclusions are worth articulating here. First, there is bull-
market orientation to the field of gerontology. With the demographic destiny facing modern nations, interest in this field is high. Gerontology has attracted scores of promising young and midlevel scientists, but is also attracting interest from more senior investigators. Although some of the more senior investigators may be lured by the appeal of funding for their research, many may also be experiencing the same phenomenon as Metchnikoff, Hall, and Dewey: a growing interest synchronized with their own sense of senescence. Whatever the case, the study of aging is valued, and it is attracting career investments from scientists of various fields.

Second, no one discipline owns gerontology. The field emerged from the biological and medical sciences, and three sections were identified in the GSA by-laws: medical research, biological research, and general (Achenbaum, 1995). There has always been strong interest in clinical medicine among the members, but the growth in the behavioral and social sciences has been dramatic, now accounting for about half of the membership of GSA (L. K. Harootyan to the author, January 2006). Although one should not put too much stock in membership numbers, it is clear that gerontology spans a number of disciplines. At the outset of the field, the disciplines coexisted in a multidisciplinary orientation, but there are ample manifestations of moving to a more interdisciplinary, or new discipline approach within the field.

Third, while a paradigm for gerontology is in the making, it has not yet been widely recognized. Nathan Shock’s axioms for the study of aging showed that a paradigm was within reach. In previous editions of this book, I articulated what is meant by gerontological imagination (Ferraro, 1990, 1997). The elements of the emerging paradigm continue to be discussed and debated, most recently at the 2006 annual meeting of the GSA where the theme was “education and the gerontological imagination.”

The tenets of what I refer to as the gerontological imagination reflect many of the themes and questions raised by Metchnikoff, Nascher, Shock, Busse, Riley, and others who pioneered the development of scientific research on aging. They are also manifest throughout this book. Indeed, the chapter authors were asked to emphasize how gerontologists think as they address the basic questions of aging research such as: Why do we age? How does aging affect the mind and the body? Can age-related changes be mitigated? What are the needs and interests of an older population? Answering these questions often requires expertise from more than one discipline, but how much expertise is enough to meaningfully reach beyond one’s primary disciplinary training? The gerontological imagination is designed to identify the core of a paradigm for aging research and thereby set reasonable standards for interdisciplinary breadth (Bass & Ferraro, 2000).
GERONTOLOGICAL IMAGINATION

The gerontological imagination is an awareness of the process of aging that enables one to understand the scientific contributions of a variety of researchers studying aging. This awareness allows scholars in any field to comprehend the links among biological, behavioral, and social structural factors that influence aging. As such, it is consistent with the biopsychosocial model of human development and aging (Engel, 1996). Placing the information from the various disciplines in a larger context illuminates findings in a revealing way (Boyer, 1990). It also helps one to see the “disciplinary intersection” for the study of aging.

What intellectual ground is shared by gerontologists of varied disciplinary backgrounds? Do biologists and sociologist agree on anything besides the importance of studying aging? Do psychologists and economists share any intellectual capital as they study aging? I think there is common intellectual ground shared by scholars from such diverse fields of study, but it may not be readily apparent, especially for scholars new to the study of aging. I will mention the tenets that capture the interests of gerontologists briefly here and more systematically in the final chapter of this book. I ask readers to ponder these tenets throughout the book; then the final chapter can serve as a capstone for the emerging paradigm.

The gerontological imagination entails a multidisciplinary sensitivity to aging that incorporates the common stock of knowledge from the core disciplines engaged in research on aging. The basic elements of the gerontological imagination can be viewed as representative of a culture of scientific thinking on aging. There are seven key tenets:

1. **Causality.** Aging is not a cause of all age-related phenomena. Gerontology leads to a healthy skepticism for what are attributed to be “age” effects.
2. **Multifaceted Change.** Aging involves biological, psychological, and social changes in individuals at varying rates. The aging process is complex because it entails a host of biopsychosocial processes, including the expression of genes, the influence of social structures, and the functional capacity of the individual.
3. **Genetic Influences on Aging.** The imprint of genetics on aging is substantial. Genetics influences not only longevity but biological and behavioral processes across the life course.
4. **Heterogeneity.** Age is positively associated with heterogeneity in a population. Gerontologists understand the diversity of the older adult population, and this understanding is closely related to their skepticism about age effects.
5. **Cumulative Disadvantage.** Advantage can accumulate over the life course, thereby differentiating a cohort over time.

6. **Ageism.** There is a propensity toward ageism in modern societies whereby beliefs about aging tend to be disproportionately negative; ageism may also exist among older people or those who work with or for older people.

7. **Life Course Analysis.** Aging is a life-long process, and using a life course perspective helps advance the scientific study of aging.

These seven tenets of the gerontological imagination surface repeatedly throughout this book. Empirical evidence continues to illuminate and refine the tenets, showing that aging is much more than the “great fatigue.” Gerontology has accomplished much in the past century, and the empirical evidence reveals that it can do much more. Contemporary gerontology sees aging as normal—distinct from pathology—and opens the door to optimizing the experience of growing older.

**REFERENCES**


