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## SOCIAL AND ECONOMIC DIMENSIONS OF AN AGING POPULATION

**Are Theories of Aging Important? Models and Explanations in Gerontology at the Turn of the Century**

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**SEDAP Research Paper No. 11**

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# Are Theories of Aging Important? Models and Explanations in Gerontology at the Turn of the Century

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# Are Theories of Aging Important? Models and Explanations in Gerontology at the Turn of the Century[1]

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Abstract: Four questions are addressed: (1) What is theory – and how is it important in the development of knowledge about aging? (2) What is the state of theory in gerontology today? (3) Why has explicit theory development become devalued in gerontology during the past few decades? (4) How and why should 21st century researchers and practitioners in gerontology pay more attention to theory development?

Are theories of aging important? Or have theories become irrelevant -- perhaps archaic -- in the broad, increasingly differentiated fields of inquiry that constitute gerontology today? Many researchers in gerontology seem to have abandoned any attempt at building theory. Should we be concerned about this? What are the consequences of discounting theory for future knowledge development in gerontology?

These questions are particularly relevant at the beginning of the 21st century because of some fundamental challenges to science and the development of knowledge that have arisen recently. For example, John Horgan's (1996) *The End of Science: Facing the Limits of Knowledge in the Twilight*

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*of the Scientific Age* argues that the best and most exciting scientific discoveries are behind us, in part because of our inability or unwillingness to synthesize existing knowledge. Thomas Kuhn's (1962) *The Structure of Scientific Revolutions,* perhaps the most frequently cited book ever written about how science does (or does not) proceed, suggested that much of "normal science" has been reduced to what he called "mopping up": Filling in the empirical details, solving relatively trivial puzzles, looking for practical applications of existing knowledge. Applied to aging, Kuhn's critique may be relevant to the observation that gerontology has been "rich in data but poor in theory" (Birren & Bengtson, 1988: p. ix); this has left researchers and practitioners with "many empirical generalizations but underdeveloped explanations by which to build upon in subsequent research" (Bengtson, Burgess, & Parrott, 1997, p. S72).

Another kind of challenge to theory -- and to the scientific method itself -- has resulted from the rise of critical analyses of knowledge over the past half century. The "critical theory" perspective, most often associated with the Frankfurt School of epistemology represented by Habermas (1970), questions positivism and the search for scientific natural laws as a principal source of knowledge. The understanding of meanings (which Habermas termed "hermetic/historical knowledge") and the analysis of domination and constraint in social forces (termed "critical" knowledge) are equally important as "objective knowledge" in understanding phenomena. These themes are central to what has become known as the "postmodern" movement in intellectual discourse (Lyotard, 1984; Rorty, 1991). Postmodernists have questioned the relevance of theory -- indeed, the possibility of any useful theory -- because of the inherent relativity of observed phenomena and the inescapable subjectivity of those who attempt to study it (Brown, 1986). Applied to gerontology, this critique focuses on the remarkable diversity in phenomena of aging, and the hazards of scientific reductionism in attempting to account for them. There is also the perspective that gerontology, the study of aging, should be regarded as an art, or perhaps a practice -- but certainly not as a science, because of the inherently subjective nature of our inquiry concerning aging, dying, and death: none of which can be reduced to merely scientific or theoretical issues (see Katz, 1996).

These epistemological critiques about the development of knowledge and the role of theory are important to examine, particularly for gerontological researchers at the start of the 21st century. In this chapter we will address four questions: (1) What is theory -- and how is it important in the development of knowledge about aging? (2) What is the state of theory in gerontology today? (3) Why has explicit theory development become devalued in gerontology during the past few decades? (4) How and why should 21st century researchers and practitioners in gerontology pay more attention to theory development?

## WHAT IS THEORY? AND WHY IS IT IMPORTANT?

We feel the term *theory* is too often used ambiguously today. Its definitions run the range from *a guess or conjecture* to *a coherent group of general propositions used as principles of explanations for a class of phenomena* (Webster, 1998, p. 1471). We can excuse the lay public or the popular press for its imprecise usage of the term. However, within the scholarly community of gerontology it is important to recognize what theory is; how it is different from other epistemological terms (such as empirical generalizations, empirical models, simulations, or paradigms) that are sometimes used synonymously with it; and how theory can be useful in developing knowledge about aging.

### The Focus of Theory

We define theory as *the construction of explicit explanations in accounting for empirical findings.* The key process -- and this should be emphasized again and again -- is *explanation.* There may be other ways to describe this, such as “telling a story” about empirical findings, or "developing a narrative accounting" about observations (see the chapters by Kenyon, Gubrium and Holstein, and Marshall in this volume). Nevertheless, the principal focus of theory is to provide a set of lenses through which we can view and make sense of what we observe in research. And the principal use of theory is *to build knowledge and understanding,* in a systematic and cumulative way, so that our empirical efforts will lead to integration with what is already known as well as a guide to what is yet to be learned (Bengtson, Parrott, & Burgess, 1996).

#### *Facts, Models, and Paradigms*

Theory should not be confused with other terms that reflect the process of knowledge development. First are what we define as *empirical generalizations: statements describing regularities observed over and over again in the course of systematic observation* (see Turner, 1988). Research involves observations, findings, "facts" that are generated through investigative methods intended to identify or reduce sources of "bias" in investigation. For example, the "scientific method" stresses reliability and validity of measurement as a means to reduce potential bias in observation by those collecting data.

*Models* represent another process in knowledge development, particularly in science: these are *descriptions or prototypes of how empirical generalizations may be related to each other.* Models describe the natural world and attempt to depict relations among variables that describe it. The

development of "models" and "model-fitting" is a relatively recent contribution of 20th century statistical and engineering applications of basic science. Some of the chapters in this volume use the term "model" as a means to integrate empirical generalizations about age differences or processes of aging. Some scientific disciplines (for example, economics, demography, epidemiology, molecular biology) focus on models as a means of summarizing complex observations and describing their empirical interrelationships. But models are not theories; models do not engage the intellectual process of explanation. And what establishes the cumulative development of knowledge in science is explanation: the *why* behind the *what* that is observed.

A third term is *paradigm.* Kuhn (1962) introduced this in his analysis of the intellectual history of natural science, and because of his figurative and sometimes contradictory usage, it may be more useful as a metaphor than a definition. We characterize *paradigm* as *a movement in science brought about by a dramatic shift in efforts, reflecting the cumulation of empirical generalizations, models, and theories.* This in turn leads to a new epistemology of methods, research questions, interpretations, and explanations -- what Kuhn ( 1962) has described as a "scientific revolution." The acceptance of a new paradigm can probably be recognized only from a broader historical perspective, often many years after its emergence as a mode of scientific inquiry. We note that there are alternative usages of the term "paradigm" within the field of gerontology. Some biologists use the term to describe what other biologists mean by "models;" Riley, Foner, and Riley (in this volume) use it to characterize a revolution in efforts within the sociology of age and aging during the past three decades.

These epistemological distinctions are not merely stylistic: they get to the heart of what theory is, and what the ultimate goal of inquiry should be. In the remainder of this chapter we will argue that gerontology has lost this focus on explanation -- theory -- in the latter decades of the 20th century; and that if gerontology is to prosper as a science or as a body of knowledge in the 21st century, it must rekindle its concern for theory development.

**Why is theory important?**

In the history of knowledge, from Aristotelian epistemology through modern sciences' applications in artificial intelligence, theory -- the attempt to develop explanations -- has proven to be extremely useful. In addition to the depth of understanding that theoretically based research provides, the breadth of pragmatic justifications for theory can be seen in four ways:

*Integration of knowledge: A* good theory summarizes the many discrete findings from empirical studies and incorporates them into a brief statement that describes linkages among the crucial observations, variables, or theoretical constructs.

*Explanation of knowledge: A* useful theory provides not only description of the ways empirically observed phenomena are related (this is what "models" reflect) but also *how* and especially *why* they are related, in a logically sound account incorporating antecedents and consequences of empirical results.

*Predictions about what is not yet known or observed:* Research based on theory can lead to subsequent discoveries based on principles proposed by earlier theory. Examples from the history of science include Darwin's theory of natural selection in biology; Mendeleev's theory leading to the periodic table of elements in chemistry; and Einstein's theory of relativity in physics.

*Interventions to improve human conditions:* Theory is valuable when we attempt to apply and advance existing knowledge in order to solve problems or alleviate undesirable conditions. The practical utility of scientific theory is evident in the advancement of instant communications from the telegraph to the world-wide Internet, and the near eradication of communicable diseases during the past century. Another kind of intervention is social: governments intervene through public policy, attempting to ameliorate problems of poverty in old age, delaying institutionalization of older persons through home assistance provisions like Meals-on-Wheels, and providing enriched educational opportunities to disadvantaged children through "Head Start" programs. These are indeed interventions; they are often experiments. How effective they are is open to further evaluation -- and it must be noted that very little funding is available to provide evaluation research for public policy interventions. What is clear is that these social interventions often do not reflect well-digested theory -- prompting the question: "If you don't understand the problem, how can you fix it?"

Alternative perspectives on theory have emerged from interpretive critiques of science (Featherstone, 1989; Giddens, 1996; Lynott & Lynott, 1996). In contrast to the procedures of positivistic science, interpretive and critical models of theorizing focus on process and understanding. Rather than emphasizing prediction and control, interpretive researchers collect data and make observations with the goal of identifying *themes of meaning* that emerge from the process of research (Glaser & Strauss, 1967). Critical theorists seek to question the underlying assumptions of scientific "knowledge"; to expose what they feel are political perspectives on that knowledge; and to give credence to the meanings and experiences of the underrepresented, less powerful groups in society. In social

gerontology, for example, recent applications of chaos theory to problems of aging (Hendricks, 1997) have shifted the focus away from central tendencies and linear patterns toward an appreciation of diversity and complex, nonlinear progressions (see Hendricks and Achenbaum in this volume).

## THE STATE OF THEORY IN GERONTOLOGY TODAY

Many researchers and practitioners in gerontology appear relatively unconcerned about theories of aging. In the biology of aging, for example, many researchers seem focused on empirical models of aging at the cellular or molecular levels, leaving integrative theories of aging to other investigators (for exceptions see Cristofalo et al., Chapter 6 in this volume and Finch, 1990, 1997). In the psychology of aging, the pursuit of experimental models of age differences has not been accompanied by similar efforts at integration of findings with theory (Birren & Birren, 1990; Salthouse, 1991). In the sociology of aging there has also been an increase in empirical analyses but a decrease in efforts at theoretical explanation concerning such critical phenomena as the consequences of population aging, the changing status of aging individuals in society, the social processes of aging in complex and changing societies, and the interdependency of age groups in the generational compact (Johnson 1995; Bengtson, Burgess, & Parrott, 1997).

### The Problem of Theory Development in Gerontology

There may be some who feel that the problem of theory in gerontology today is that a few misguided gerontologists are still squandering their resources trying to construct theories of aging. Perhaps theory is the domain of armchair academics with too much time on their hands. Such an opinion is understandable given the many ways theory is miscast in gerontology and in the broader domain of science today. For example, theory is often held in opposition to "fact" and seen as no more than lofty speculation. Further, the desire for specific solutions to pressing problems facing elderly individuals can frame theory as a superfluous abstraction from practical concerns. The most radical critique comes from postmodernists, who claim there is no objective truth or reality to move toward, so theorizing amounts to grasping at thin air.

Within the relatively short history of gerontology as the scientific study of aging -- which spans only a half century of sustained empirical research – skepticism about the importance of theory has led some researchers to substitute empirical models for theory and has led others to wash their hands of theory entirely. The effect of these reactions has been to substitute empirical monologues for

theoretical dialogues about age and aging.

Thus, while we have developed many empirical generalizations *describing* aging, relatively few of these have been employed in the more fundamental tasks of *understanding and explaining aging*. We submit that this "disinheritance of theory" in gerontological research recently has retarded the process of connecting findings to explanations, and thereby undermined the enrichment of knowledge about phenomena of aging.

For example, a recent study reviewed articles published between 1990 and 1994 in eight major journals relevant to the sociology of aging (Bengtson et al., 1997). By far the majority -- 72% of all publications reviewed -- made no mention of any theoretical tradition in the literature as relevant to the empirical "findings" reported. The authors conclude that "the *ad hoc,* descriptive, model-based (rather than explanatory or theory-based) approach to research is ineffectual, over time" and that "if authors, journal reviewers, and editors ignore the need for explicit explanation in data analyses, it is not likely that we will achieve much cumulative knowledge development in social gerontology" (Bengtson et al., 1997, p. S75).

An unfortunate consequence is that current gerontological research may be accumulating a vast collection of empirical generalizations without the parallel development of integrated knowledge. But the development of explanations -- theories -- is central to the variety of issues that gerontologists will be seeking to understand in the next few decades.

**What Gerontologists Are Trying to Explain**

Gerontologists -- whether as scientists, practitioners, or policymakers -- must deal with three general sets of problems as they attempt to analyze and understand phenomena of aging. The first set of issues concerns *the aged:* populations of those who can be categorized as elderly in terms of their length of life or expected lifespan, whether they be mice in the laboratory or humans as members of a society. The vast majority of gerontological studies in recent decades have concentrated on the functional problems of aged populations, seen in human terms as medical disability or barriers to independent living.

A second set of problems involve *aging as a developmental process* occurring over time. Here the focus is on how individuals of a species grow up and grow old -- the processes of development, growth, and senescence over time -- and the biological, psychological, and social aspects of that

process, including its variable rates and consequences. Longitudinal research is necessary in order to address questions of processes of aging; unfortunately most studies of aging continue to be cross-sectional. But problems of the aged are inextricably related to issues of aging as a process, particularly in human populations.

Yet a third problem involves *the study of age* as a dimension of structure and behavior within species. This is of obvious interest to sociologists and other social scientists examining human populations, and the social organization they create and modify, in response to the age-related patterns of birth, socialization, accession to adult status, and retirement or death within the human group. The phenomena to be explained here concern how age is taken into account by social institutions; examples include the labor market, retirement, pension systems, and health care organizations. But it is also a concern of zoologists, primate anthropologists, and evolutionary biologists, who note the importance of age as an organizing principle in many species' behaviors -- and their survival (Wachter & Finch, 1997).

These three concerns are quite different in focus and inquiry; yet they are inextricably interrelated in gerontological research and practice. The process of theorizing serves, in part, to disentangle these problems of aging and to address each as distinct but mutually dependent phenomena.

## WHY HAS THEORY BECOME DEVALUED IN GERONTOLOGY?

Science, in common with all long-term human endeavors, is a social enterprise, and as such is reflective of the concerns, careers, and competitiveness of a collective group of practitioners. This is what Kuhn (1962) emphasized in his analysis of scientific discoveries in physics and chemistry. There are trends in what is considered as relevant inquiry, and there are trends going against this current.

Why has the concern for theory development become devalued in gerontology recently? We suggest that this trend, reflecting an impatience with theorizing in gerontology (and in scholarship more generally), stems from four other trends: (a) the failed quest for "grand theory;" (b) the drive for applications and solutions in gerontology; (c) postmodernist epistemological critiques; and (d) the resistance to cross-disciplinary and interdisciplinary investigations in gerontology. Ultimately, we argue that these challenges do not call for the devaluation or elimination of theories of aging; rather, they underline their utility for researchers and practitioners in the 21st century.

**The Decline of "General Theory" in Scientific Inquiry**

The profusion of scientific discoveries in the late 19th and early 20th centuries created an enthusiasm for theories of broad scope. There seemed no end to what science could explain and demystify. Scientific and technological advances rapidly transformed people's everyday lives. Applications of germ theory, for instance, led to the virtual elimination of childhood infectious diseases, so that for the first time in human history parents could take for granted that most of their children would survive infancy and grow up into adulthood. The automobile expanded the frontier "down the open road" in the early decades of the 20th century and astrophysicists extended it into outer space just 50 years later. If the social and cultural landscape could be so profoundly transformed by science, could not the scientific theory and method be applied to society itself?

Twentieth century social theorists began to abstract the fundamental ordering of the social world from empirical observations in the same way natural scientists abstracted laws of the physical world (Seidman & Wagner, 1992). As biological pathogens were identified and attacked by modern medicine, so modern social scientists envisioned their battle as exposing toxic societal ignorance and superstition to a healthy dose of the true social order. An overarching goal of this period was to provide a unified framework that would guide future research and analysis. Social theorists such as Parsons (1951) and Homans (1950) proposed that if we could articulate the laws and general principles of social action, then the specific problems of human society and their possible solutions would become more clear.

The current state of social theorizing is, by contrast, marked by doubt (Turner, 1992). Few scholars today would argue that we are converging on a teleological utopia of efficient society governed by science and free of conflict, or what Habermas (1972) called the "unfinished project of modernity." To the contrary, it can be argued that the attempt to filter complex social phenomena into universal principles can only lead to unwarranted reductionism and perhaps the perpetuation of inequalities. The history of Social Darwinism provides an example. When Darwin's *The Origin of Species by Means of Natural Selection* was published in 1859, it achieved recognition from most biological scientists within several decades. By the end of the 19th century, Darwin's "grand theory" of natural selection was modified and filtered into the formulation of Social Darwinism, which claimed that people and societies compete for survival and only the most "fit" survive. Before falling into disrepute in the 20th century, Social Darwinism was used to justify imperialism, colonialism, unbridled capitalism, and the superiority of the White race -- all in the name of science.

Gerontology also has seen the rise and fall of "general theories" of aging (Achenbaum, 1995): for example Walter Cannon's (1942) theory of diminishing homeostatic capacity with aging, and the social science theories of disengagement, activity, and modernization. A case in point is disengagement theory (Cumming & Henry, 1961) which attempted to explain human aging as an inevitable process of individuals and social structures mutually and adaptively withdrawing from each other in anticipation of the person's inevitable death. This general theory of aging was elegant, multidisciplinary, parsimonious, and intuitively provocative. However, its ambitious magnitude was quickly challenged in widespread debate and ultimately denounced (Achenbaum & Bengtson, 1994).

Theories proposing universal mechanisms of social aging raise the issue of whether "old age" is a viable concept to apply equally to all people (Johnson, 1918). The many ways people will experience later life depend on how their life course trajectories are shaped by structural and personal factors (see O'Rand and Campbell; and Riley, Foner, and Riley in this volume). Increasingly, age-appropriate behaviors and roles are becoming more fluid. This complexity may be overlooked to the extent that theories focus on "the aged" as a unified category. Hence, theories that attempt to explain human aging as a general process are often oversimplified, and thus subsequently disregarded. At the same time, theories of aging can foster an appreciation of *aged heterogeneity* (Dannefer & Sell, 1988; Dannefer and Uhlenberg, this volume; Maddox & Clark, 1992) by addressing the ways in which diverse aging experiences converge in patterns and themes.

**The Drive for Applications and Solutions in Gerontology**

In contrast to grand theorists are the practical reformers who tend to ignore theory altogether as they pursue solutions to problems of aging. Maggie Kuhn, the fiery advocate for America's elderly and a founder of the Grey Panthers' movement, told an audience of the Gerontological Society of America that "We have enough research! We have enough theories! What we need are more programs to help senior citizens in need!" (M. Kuhn, 1983).

Unfortunately, the search for solutions without regard to theory can lead to several problems, including unchecked assumptions, a lack of evaluative criteria, and the inability to build upon previous efforts. Students and new professionals in gerontology are often motivated to identify the problems of aging and help devise appropriate ways of dealing with them. This assumes that aging is inherently problematic. Are gerontologists who define aging as senescence and decline actually helping older adults, or are they patronizing elders with "benign ageism" (Palmore, 1990)? Without theory, how can gerontologists decide which problems are caused by aging itself, which are age-related

phenomena, and which are not due to age at all? Implicit theories and assumptions are left buried, where they can neither be evaluated for possible bias nor for further utility.

In an era when programs of intervention are held increasingly accountable for outcomes and results, what criteria are used to determine the utility of gerontological interventions? Without theoretical underpinnings, we cannot explain why some programs flourish and others flounder. The relationship between social support and well-being among older adults is a telling example of the crucial link between theory and application in gerontology. For years, the guiding assumption among practitioners was that more support to elders brought more psychological well-being. Explicit testing of this implicit theory reveals that there is "too much of a good thing," such that excessive amounts of intergenerational support can undermine autonomy and cause distress (Silverstein & Chen, 1996). Social breakdown theory provides one explanation of why this might be the case (Bengtson & Kuypers, 1986). It proposes a cycle of increasing dependency among vulnerable older people whose self-sufficiency erodes with high amounts of support. The curvilinear relationship between social support and well-being has significant bearing on family caregiving strategies and policy decisions.

Not only do theories allow us to predict the effects and evaluate the implementation of applied gerontology, but they also enhance our learning from the success and failure of these applications. By theorizing that social support may be harmful in excessive amounts, for example, we can shift time and resources toward identifying and facilitating other factors that may be beneficial. Interventions that are not integrated into broader efforts at cumulative theory-building risk not only coming short of their goals but undermining their very purpose.

If some theories of aging are more useful than others in generating meaningful explanations and effective interventions, we must develop systematic methods of evaluating theories. Achenbaum and Bengtson propose four criteria in evaluating the adequacy of theories in aging. These include (a) logical adequacy, a measure of clarity, internal consistency, parsimony, and explanatory content; (b) operational adequacy, or the ability of the theory to be empirically tested; (c) empirical adequacy, or the extent of credible and replicated evidence for the theory; and (d) pragmatic adequacy, the usefulness of theory in prediction and intervention as well as its feasibility and practical relevance (Achenbaum & Bengtson, 1994, p. 760). Theories of aging that meet criteria such as these will move gerontologists forward in generating answers and inciting further questions.

**Postmodernism and the Uprooting of Theory**

Postmodernists critique the theory-building process from its very foundations. Scientific theory -- positivistic theory -- is based on a hierarchical structure of observations and concepts. At its base are constructs, unobserved entities that stand for a repeated number of empirical observations that are linked in some sort of relationship. The term construct itself introduces the slippery differentiation (for postmodernists) between what is socially constructed and what is empirically "true." Is empirical reality itself a social construction, subject to the influence of moral, political, linguistic, and even observational biases? If so, what value does scientific theory have?

In gerontology, postmodernist scholars would hold that categories such as "old" do not equally represent their members, and that no person embodies such an abstraction (Katz, 1996). Beyond this seemingly semantic distinction, they call attention to the interests and values that are presupposed by such categories. On an epistemological level, postmodernists critique the privileging of "scientific" knowledge as purported truth. This challenge to positivistic theorizing stretches far beyond an interpretivist rejection of the inclination to overgeneralize from available data to an assault on the notion of data itself.

Postmodern critiques of scientific theory challenge not only what theoretical discourse includes but what it excludes, drawing attention to what is left out of the discussion. Postmodernists question the "metanarratives" that provide a context for theorizing. These "foundational discourses" are attacked for trying and failing to justify the legitimacy of Enlightenment traditions (Lyotard, 1984). The modernist idealization of reason as the key to enlightened society is rejected by postmodernist scholars, who tend to view science and social control, or knowledge and power, as inexorably linked (Foucault, 1972, 1973). Their "deconstructionist" critique of western philosophy cuts through the sterilized image of science. It calls for a dissolution of the binary oppositions or "black and white" dualities that hold science in contrast to politics, myth, and rhetoric (Derrida, 1978). These dualities are identified as leading to the intellectual positioning of science as truthful and nonscience as speculative "non-sense."

The pure relativism demanded by extreme versions of postmodernist critique suggests a kind of posttheoretical anarchy in which communication and thought itself are suspect. This position can be viewed as a hypothesis in its own right, whose soundness will be determined by the test of future scholarship. Before we prematurely accept the futility of theory, however, we must remember that the goal of science is to explain. Are all explanations equal? Bhaskar ( 1986) attributes the hasty rejection of theory to the common confusion in failing to distinguish between:

> ... (a) the principle of epistemic relativity, *vis* that all beliefs are socially produced, so that knowledge is transient and neither truth-values nor criteria of rationality exist outside historical time and (b) the doctrine of judgmental relativisrn, which maintains that all beliefs are equally valid in the sense that there are no rational grounds for preferring one to another. (Bhaskar, 1986, p.54)

Some contemporary scholars -- including many gerontologists -- would probably agree with the principle of epistemic relativism, rejecting scientific claims to absolute truth and reason. Theories are sociotemporally situated and produced by humans with particular interests and values. Judgmental relativism, on the other hand, is more difficult to accept because it is not easy to intuitively judge whether a given argument is good or bad. The social and motivational context of theories may not be grounds to negate them, but rather require critical awareness and reflective evaluation. There is little to be gained in shifting allegiance from abstract universality to an equally abstract postmodern rejection of the universal. Rationality need not collapse into universal truth claims, nor scientific inquiry into scientism. At the same time, there is much to be gained by recognizing the value of theory in generating more adequate and useful explanations.

Moreover, scientific theories have the capacity to effect practical changes in matters of great concern. Unprecedented population aging is one such matter that renders theory indispensable. Theoretical gerontology is relevant to both individual aging and the changing age structures of population, potentially helping both age "successfully."

## The Resistance to Cross-Disciplinary and Interdisciplinary Investigations in Gerontology

If theory is pivotal to the continued growth of gerontology as a science, a practice, and an academic field of study, what will future theories of aging address? The study of individual and population aging and their societal consequences does not fall comfortably within one discipline. Levels of analysis and variables examined differ considerably between biologists, psychologists, sociologists, economists, and policy analysts. Each of these fields have contributed important insights to the study of aging, but it is no longer sufficient for researchers to analyze only the variables and empirical models specific to their respective disciplines. A comprehensive account rests on the ability of researchers to traverse disciplinary lines and develop a more common language of inquiry.

The advancement of pluralistic and contextualized social inquiry can be furthered by a commitment

to cross-disciplinary and interdisciplinary investigations in aging (Rowe & Kahn, 1997). The scattered examples of this process signify the cross-fertilization of ideas and methods among scholars from widely divergent fields of study. They mark the possible emergence of a new era of inquiry in which researchers do not simply examine age differences and aging disorders from their various disciplinary empires but converge to explore the underlying mechanisms of aging and their multifaceted consequences. As of yet, however, such collaboration may be more rhetoric than reality. The enduring impact of gerontology depends on overcoming the resistance of some researchers to a broadened domain.

The knowledge that arises from "postmodernist" studies "...contests disciplinary boundaries, the separation of science, literature, and ideology, and the division between knowledge and power" (Seidman, 1994, p. 2). Such complexity does not imply the futility of theory; rather it suggests the demand for new approaches and truly interdisciplinary research. Theorists must conceive of ideas and knowledge as practical and purposive, examining the interests and goals reflected by their work.

If gerontology is currently assuming a unique multidisciplinary form at the start of the 21st century, the authors in this volume offer a contemporary snapshot of the metamorphosis (see particularly the chapters by Dannefer and Uhlenberg; Finch and Seeman; Fry; Hendricks and Achenbaum; and O'Rand and Campbell, in this volume). These suggest we are on the cusp of what promises to be a lively and creative dialogue about theories of aging in the coming decade. A commitment to the advancement of theory by the gerontological community will ensure that discussions continue to move forward.

## WHY AND HOW SHOULD GERONTOLOGISTS FOCUS ON THEORY DEVELOPMENT IN THE NEXT DECADE?

We began this chapter by asking whether theory is important, relevant, or even possible within the broad and increasingly differentiated fields of inquiry that constitute gerontology at the end of the 20th century. We noted Kuhn's critique of "normal science" as an indictment of inadequate theoretical paradigms; the critical theory emphasis on the relativity of knowledge and the subjectivity of scientific research; and the postmodern dismissal of theory in the context of the relativity in discourse and claims to knowledge.

We then examined claims of these critiques as they relate to gerontology today. It appears that our field is rich in data but poor in theoretical integration. We argued that the focus of theory is on *explanation,* as distinguished from empirical generalizations, models of relationships or simulations.

We noted that many researchers in gerontology today, along with many journal editors and reviewers, seem to have little concern for theory or its development. The disenchantment with "general theories" of aging, and the push for practical solutions to problems of the aged, have led to a devaluation of theory, particularly among gerontological practitioners and policy makers. We emphasized that applications of knowledge in gerontology -- whether in medicine, practice, or policy -- demand good theory, since it is on the basis of *explanations* about problems that interventions should be made; if not, they seem doomed to failure.

Without theory, the contributions of individual studies in aging are likely to have little impact. Even if we accept empirical generalizations at face value, these "facts" do not speak for themselves. They are but discrete building blocks in the development of knowledge. We suggest that researchers have a responsibility to act also as theorists, to interpret and explain their findings within a broader context of inquiry.

## SUGGESTIONS FOR FUTURE RESEARCHERS IN GERONTOLOGY

We want to end this chapter with some suggestions for today's graduate students in gerontology -- who will be the leading researchers and practitioners of aging during the first decades of the 21st Century -- about how they can use theory to develop more cumulative knowledge involving processes of aging, or more successful interventions about involving problems of aging. We have noted that there are three basic areas of inquiry that gerontologists have been pursuing during the past half-century, and will be seeking to understand in future decades: concerns about *the aged* as members of increasingly aged populations in human societies; concerns about *basic processes and mechanisms of aging* in cells, organisms, and individuals within aging populations; and concerns about *age as a dimension* of social organization and public policy in industrialized societies. We have emphasized that cross-disciplinary and inter-disciplinary approaches to these three issues will be required in order to provide adequate understanding of these problems of aging, as well as the development of effective programs and interventions to alleviate them.

Thus, for the next generation of gerontologists, we offer five suggestions:

1. Remember that theory is crucial to the cumulative development of knowledge, whether in science or in any investigation. Don't attempt to publish results of your experiments, surveys, or observations without an explicit attempt to address the *why* behind the results.

2. Don't confuse empirical generalizations or models with theories. Theory involves explanation, and explanations develop knowledge.

3. Read the literature for previous attempts to "explain" the phenomena you are investigating. Science does not proceed in a vacuum, we stand on the shoulders of giants in terms of previous theory and attempts at explanation.

4. Scientific reductionism is not always the most important goal. Postmodernists challenge -- rightly -- the reductionist perspective by pointing to the understanding of diversity and complexity as equally important goals.

5. A single grand theory to explain aging -- as has been proposed several times during the development of gerontology in the past century -- may be impossible; but we have many useful minitheories (what can be termed “local knowledge”) in the gerontological literature today. You will find these helpful as you frame your research questions, decide on appropriate methods to investigate them, and interpret the findings of your study.

## CONCLUSION

Theory is important because it represents a sustained effort by a collective group of researchers to summarize what is already known, add to existing knowledge, and provide guidance for what is yet to be understood. Theory is the compass with which to navigate through vast seas of data. It is the means by which data are transformed into meaningful explanations, or stories, about the processes and consequences of aging.

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