

Environmental Gerontology at the Beginning of the New Millennium: Reflections on Its Historical, Empirical, and Theoretical Development

Hans-Werner Wahl, PhD,¹ and Gerald D. Weisman, PhD²

Over the past four decades the environmental context of aging has come to play an important role in gerontological theory, research, and practice. Environmental gerontology (EG)—focused on the description, explanation, and modification or optimization of the relation between elderly persons and their socio-spatial surroundings—has emerged as a subfield in its own right. The aim of this article is to reflect on the historical, empirical, and theoretical development of recent EG, following Parmelee and Lawton's diagnosis from 1990 that there is a need to move the field beyond its current languishing state. From a historical perspective, EG has clearly played an important and successful role within the gerontology enterprise in terms of explicit consideration of the sociophysical environment in theory and research. A literature analysis of empirical studies supports the view that research has continued on a substantial quantitative level during the 1990s. Findings of these research studies address the whole diversity of classic EG research questions, but mostly in the sense of replication and extension. In terms of theoretical discussion, our analysis leads to the insight that EG may be described as a field high in conceptual aspiration ("world views"), but low with regard to making research and application-productive use of its theoretical achievements.

Environmental gerontology (EG) has, for the past 40 years, addressed the description, explanation, and

modification or optimization of the relation between the elderly person and his or her environment (Lawton, 1977, 1999; Scheidt & Windley, 1985; Wahl, 2001a, 2001b). The recent and tragic loss of M. Powell Lawton—clearly the central figure in EG, and a world-wide acknowledged leader in gerontology more generally—has prompted this reflection on the current status of the field that he did so much to bring into being. We begin with two general observations: On the one hand, it is generally acknowledged that EG has contributed much to the discipline of gerontology as well as to the improvement of the lives of older people. These contributions include achievements in terms of theoretical substance and research findings that have found broad recognition not only in social and behavioral gerontology but also in other areas such as geriatrics, geropsychiatry, and nursing sciences. EG theories and findings have also been applied at multiple scales, ranging from evidence-based housing design to institutional living, from the microlevel of home modifications to the macrolevel of recommendations for "age-friendly" communities or even countries. On the other hand, there is also reason for concern when more recent developments within EG are compared with the situation in the 1970s and 1980s; during those decades EG was in a rather strong position as a scientific subfield within gerontology, perhaps best symbolized by Powell Lawton's receipt of the Kleemeier Award of the Gerontological Society of America in 1982 (Lawton, 1983). Indeed, the theoretical and empirical argumentation that Lawton developed in 1983 as a synopsis of his (and others) research that was supportive of the substantial role that the environment—in concert with other factors—plays in creating the "good life" in old age remains current, readable, and persuasive.

By the end of the 1980s, however, Lawton himself became somewhat critical about the development of EG. These concerns culminate in his 1990 *Handbook of the Psychology of Aging* chapter

Address correspondence to Hans-Werner Wahl, PhD, German Center for Research on Aging at the University of Heidelberg, Bergheimer Strasse 20, D-69115 Heidelberg, Germany. E-mail: wahl@dzfa.uni-heidelberg.de

¹German Center for Research on Aging at the University of Heidelberg, Germany.

²School of Architecture & Urban Planning, Institute on Aging & Environment, University of Wisconsin, Milwaukee.

coauthored with Parmelee; in this chapter they speak of the need “to move the field beyond its current languishing state” (Parmelee & Lawton, p. 483). Thus, it is essential to know what has gone right and what, in recent years, may have gone wrong with EG. Our efforts to address this broad topic are shaped by three more specific objectives: (a) to provide a general characterization of the challenges and historical contexts of EG, so we might better understand what has been achieved and what remains contentious and the focus of argumentation; (b) to draw a rough picture of the relationship between empirical achievements of EG over the past two decades and theoretically defined functions of the environment; and (c) to similarly review theoretical achievements within EG over this period of time. Such theoretical and empirical achievements may be seen as the two fundamental pillars that support EG.

Challenges of Environmental Gerontology and Some Historical Considerations

At the outset, the question of what has been meant by the “environment” in EG requires attention. The role of the physical environment for aging processes and outcomes has always been emphasized within EG, certainly by contrast with its relative neglect in the more traditional behavioral sciences. At the same time, it has also been widely—and perhaps increasingly—acknowledged that the physical, social, organizational, and cultural environment are deeply interwoven in reality (e.g., Lawton, 1977, 1982). The term “sociophysical” environment has been suggested by environmental psychologists Canter and Craik (1981) to consider this complexity. The heterogeneity of issues involved in the consideration of such sociophysical environments is immense; the effort to draw a sharp boundary around EG is at best a challenging enterprise. Among the diverse topics explored within EG are the following.

EG is concerned with the varieties of private housing arrangements of older people in terms of household composition, ownership, housing standards, time of residency, and residential satisfaction (e.g., Kendig & Pynoos, 1996). It is concerned with the nature and impact of home modifications, including both theoretical models and planning guidelines necessary for the refitting of homes (e.g., Gitlin, 1998), and with the scope of institutional aging from relocation to the design of dementia units and other specialized care settings (e.g., Cohen & Weisman, 1991; Day, Carreon, & Stump, 2000). It is concerned with studying the role of neighborhoods as they present both opportunities and constraints to their residents (e.g., Scheidt & Windley, 1985), and with the community setting as the locus of aging within a broader, social policy perspective (e.g., Lawton, 1977; Schaie, Wahl, Mollenkopf, & Oswald, 2003). It is also concerned with exploring the role of socio-

physical contexts at the macroscale, of which the rural–urban boundary is among the most prominent (e.g., Coward & Krout, 1998). As heterogeneous as it might sound, the preceding list captures only a portion of the work conducted under the rubric of EG.

As a consequence of this diversity, theoretical approaches and empirical research strategies within EG are challenged to address very different levels of analysis regarding both place type and scale of social aggregation (from home to neighborhood, to city, and to rural region as well as individual, to group, to organization) and very different processes (such as perceptual, cognitive, and affective). Empirical work is challenged to build on very different research designs (from descriptive and open field studies to experimental controls). Research-application issues are framed within very different means–ends structures (from providing basic data for social policy decisions to planning and design guidance for continuing care retirement communities). Value orientations frequently reflect very different ethical backgrounds (from providing stimulating environments for very competent sun-belt migrants to dealing with the environmental component of dying with dignity in a nursing home). One may thus conclude that *pluralism*—in terms of theory, empirical research, the application of findings, and value issues—is among the most essential characteristics of EG. Although this probably is also true for other gerontological subdisciplines, it seems to us particularly pronounced in EG; such pluralism is also a hallmark of the cognate field of environmental psychology, essential to understanding its presently “paradoxical” state (Stokols, 1995).

Our understanding of the pluralistic nature of EG is further enhanced by consideration of its historical roots. Aging has long been regarded as a process strongly determined by a biological program inherent in the organism; the *explicit* consideration of environmental variables having an impact on the course and outcome of human aging was an important step in the historical development of gerontology. The growing role of a social science perspective within gerontology beginning at the end of the forties—which set the stage for the then new field of social gerontology—as well as the prominent role of learning theories in psychology in the fifties and sixties—which attributed a major role to the environment in all periods of human development—supported such a perspective. EG channeled these trends within gerontology, placing particular emphasis on the sociophysical component of social and cultural influences on aging. Other contextual influences included the Chicago school of urban sociology in the twenties (e.g., Park, Burgess, & McKenzie, 1925), the writings of Lewin in the thirties and forties (e.g., Lewin, 1935), and the emergence of environmental psychology in the sixties and seventies (e.g., Barker, 1968; see also Pastalan & Carson, 1970); each has provided additional and substantial

roots for the development of EG. Emerging from these diverse origins, EG's struggle for acknowledgment in terms of theory and empirical research was framed from the beginning within now-classic fields of tensions of social and behavioral gerontology. These tensions include linking microlevels with macrolevels of analysis, linking psychological with sociological and social policy perspectives (as well as with perspectives such as architecture and design), and the linking of descriptive "field" methodological approaches with experimental variation strategies. This struggle in its clearest form is likely represented by institutional settings for older people as a setting for research. By way of example, institutional aging has been analyzed during EG's history in terms of multiple perspectives: as a system of microecologies such as self-care situations (e.g., Baltes & Wahl, 1992); from a system organizational point of view (e.g., Lemke & Moos, 1980); in terms of psychosocial analyses targeting the role of environmental factors for subjective well-being (e.g., Kahana, Liang, & Felton, 1980), paralleled by architectural and design analyses (e.g., Cohen & Weisman, 1991); and through descriptive research approaches on the qualitative level (such as the in-depth understanding of the experience of aging within an institution; Gubrium, 1975/1997), complemented by (quasi-) experimental research, prototypically exerted within the paradigm of control-induced interventions, beginning with the classic studies of Langer and Rodin (1976) and Schulz (1976).

In terms of landmark work driving the evolution of EG within gerontology, the chapter by Kleemeier (1959; but see also Kleemeier, 1956) in the *Handbook of Aging and the Individual* edited by James E. Birren (1959) can be seen, in a sense, as the "birth" of a rigorous environmental gerontology. In the sixties, the first large environmental gerontology data sets (such as Carp, 1966) were generated and this level of intense activity continued during the seventies, with the need for better understanding of a large and rapidly growing body of data gaining high priority. Without question, the 1973 chapter of Lawton and Nahemow, presenting their Press-Competence Model and the famous "Figure 1" (undoubtedly among the mostly reproduced in gerontology textbooks, chapters, and articles in general) is a landmark. This level of theoretical activity culminated during the eighties in a book edited by Lawton, Windley, and Byerts (1982) entitled *Aging and the Environment: Theoretical Approaches*, and was also strongly reflected in chapters such as those by Carp (1987) in the influential *Handbook of Environmental Psychology* (edited by Stokols & Altman, 1987), Lawton (1977) in the first edition of the *Handbook of the Psychology of Aging* (edited by Birren & Schaie, 1977), and Scheidt and Windley (1985) in the second edition of the *Handbook of the Psychology of Aging* (edited by Birren & Schaie, 1985). In addition,

a now classic "translation" of major EG findings for planning and design application was provided by Lawton (1980). Since the seventies of the past century, EG has found clear acceptance as a major subfield of gerontology and is well represented in major gerontology textbooks internationally.

To place these substantial accomplishments within their broader historical context, it is important to recognize that EG's "golden days" of the 1970s and early 1980s, with their flurry of empirical and theoretical activity, did not simply happen. Two projects, extending over 7 years, funded by the Administration on Aging of the U.S. Department of Health, Education and Welfare and conducted by the Gerontological Society of America, did much to "prime the pump" for this high level of research and theoretical activity. The explicit purpose of these projects was to "mobilize interest in both research on and the design of the environments primarily inhabited by older people." Targeting "broad interdisciplinary constituencies," the projects endeavored to identify and disseminate relevant research knowledge, encourage its use in design practice, and stimulate further research (Lawton, Windley, & Byerts, 1982, p. vii). Finally, it may also be useful to remember that this period of time represented the heyday of "environmental consciousness" more broadly, reflected not only in the ecology movement and in the natural sciences but also in the emergence of the environmental social sciences, including environmental psychology, previously noted as one of the roots of EG. Not only did environmental psychology come of age at the same time as EG, but there was also much interchange and overlap between these two subfields. A number of the contributors to the first conference on environmental aging theory in 1974, included in the expanded 1982 conference proceedings (Lawton et al., 1982), were among the earliest and most visible researchers in environmental psychology. Other participants, including Lawton, Windley, and Pastalan, moved effortlessly and productively between EG, gerontology proper, and environmental psychology. Indeed, Powell Lawton was the recipient not only of the G.S.A. Kleemeier Award in 1982 but also of the Career Achievement Award of the Environmental Design Research Association (EDRA) in 1987. With these historical considerations as background, attention is now turned to one of the pillars of EG in terms of its empirical achievements over the past decade.

Environmental Gerontology: Recent Empirical Research

It is not our purpose in this section to provide a comprehensive review of the existing research; this is simply not possible within the space available, and there are several recent and complementary reviews in the literature (see Day et al., 2000; Gitlin, 1998;

Wahl, 2001b). Instead, by starting with the “lan- guishing state” of EG perceived by Parmelee and Lawton (1990, p. 483), we aim to identify trends in the literature that are based on a quantitative analysis and to highlight some key findings of EG during the subsequent decade; this treatment of the empirical literature is organized in terms of the more theoretical and qualitative functions of environments for aging suggested by Lawton (1989).

Trends in the Recent Empirical EG Literature: A Quantitative View

Our quantitative analysis of the empirical EG literature published between 1989 and 2000 is organized into 2-year intervals from 1989–1990 to 1999–2000. Reflecting the fact that EG has been strongly (although not exclusively) driven by a psychology-based perspective (Powell Lawton was a psychologist as well), in which the relation between the behavior of aging persons and their sociophysical environments was the major target of analysis, our search focused on studies addressing the link between behavioral processes and sociophysical environments in persons aged 65 and older. We used for this purpose the literature documentation system PsycInfo, the major documentation system of psychology-oriented scholarly literature. Although such a search strategy is obviously not a comprehensive documentation of the empirical EG literature, it is seen as providing substantial information with respect to trends in the psychology–aging–environment triad. In a two-step procedure, we first identified by means of a computer-based search all environment-related aging literature. This search proved to be insufficiently fine grained, yielding a body of research containing a variety of studies—focused on social environments, genetic–environment interactions, and so on—not of direct relevance to EG. Thus, the computer-based search was followed by a hit-by-hit inspection in order to ensure the empirical and EG nature of each study. The major criterion for this decision was that links between the sociophysical environment and the behavior of older people were explicitly addressed by empirical means in each study. Furthermore, we differentiated among three classic research themes of EG in their broadest understanding (e.g., Wahl, 2001b), namely addressing the role of the private (traditional) home environment (including issues such as neighborhood and outdoor mobility), the role of planned environments (including institutional environments, but also relatively new housing options such as assisted living facilities; e.g., Regnier, 2002), and residential decisions (including residential decisions from home to home, from home to institution, intrainstitutional, or from institution to home).

With respect to the results of this search strategy, it should first be noted that the absolute numbers of

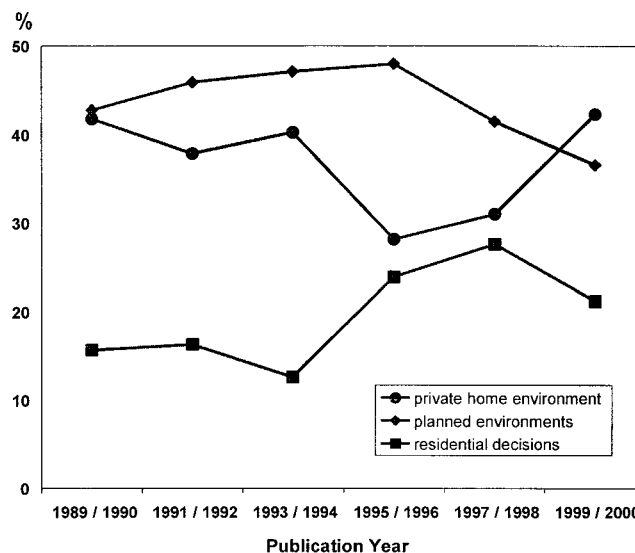


Figure 1. Quantitative analysis of empirical studies from 1989 to 2000 that address aging, environment, and behavior (based on PsycInfo).

empirical studies identified varied substantially, from 71 (1995–1996) to 104 (1999–2000), without any clear trend across the pairs of years. Second, Figure 1 depicts the relative numbers of studies organized according to the three categories just described above: (a) private home environment; (b) planned environments; and (c) residential decisions. Although one should be careful regarding the absolute numbers behind these graphs, it seems as if the interest in residential decisions has grown since 1993–1994. One interpretation of this trend is that besides relocation from home to institution and intrainstitutional relocation, home-to-home relocation has found growing attention in recent years as a psychological challenge and as a means to improve one’s person–environment fit, while aging (e.g., Kling, Seltzer, & Ryff, 1997; Oswald, Schilling, Wahl, & Gäng, 2002; Serow, Friedrich, & Haas, 1996). In addition, a slight decrease regarding psychology-oriented studies concerned with planned environments is apparent as well, whereas the interest in the private home environment seems to have “recovered” after some decrease between 1995 and 1998. Such regained interest in private home environments in recent time is also reflected in books and chapters such as those by Gitlin (1998); Schaie and colleagues (2003); Scheidt and Windley (1998, 2003); Wahl, Scheidt, and Windley (in press); and Slangen-de Kort (1999).

Lawton’s Three Functions of the Environment Approach: Framework for Analysis of Recent Empirical Work in EG

What kinds of research questions and findings lie behind this body of empirical literature? For this question to be approached in a theory-driven

manner, Lawton's (1989) differentiation between three basic functions of the environment in terms of (a) maintenance, (b) stimulation, and (c) support is used to consider the empirical research in each of these domains. The environmental function of *maintenance* highlights the important role of constancy and predictability of the environment. The environmental function of *stimulation* typically means the departure from the usual in the environment, the appearance of a novel array of stimuli and their effects on behavior. The environmental function of *support* can typically be seen in the environment's potential to compensate for reduced or lost competencies. Examples of the maintenance function of the environment in terms of private home environments and planned environments would be cognitive-affective feelings related to these places "maintaining" the self and continuity in later life. The stimulation function of these environments may be seen, for instance, in their role in eliciting new social or other leisure behaviors. The support function of the home environment or planned environments typically is reflected in issues such as barrier-freeness and accessibility. This conceptualization may also be transferred to residential decisions, the third research domain, in the sense that such decisions are also related to the maintenance function of the environment. In particular, residential decisions question the maintenance capacity of existing environments and the search for other settings better suited to the meeting of these needs. In addition, residential decisions and the outcome of relocation may be driven more by seeking of new stimulation (e.g., new landscapes) or new support (e.g., barrier-freeness of an assisted living facility). Obviously, these three functions of the environment are interrelated and can be separated only on the analytical level. Nevertheless, Lawton's conceptualization is helpful in providing a meta-level perspective for person-environment relations in old age, and it assists in the organization and evaluation of the variety of empirical findings in EG.

Drawing on the research analysis provided by Wahl (2001b), Table 1 uses this conceptual tool to systematize empirical research in EG during the 1990s of the last century. The table, organized as a 3 × 3 matrix, highlights typical examples for key research questions, key research pathways, and key research findings in accordance with the three functions of the environments as well as the three major research domains (private home environment, planned environments, and residential decisions).

This analysis illustrates the wide panorama of research questions, research pathways, and findings of EG during the nineties. The information given in Table 1 is illustrated with some empirical examples: First, in terms of the *maintenance* function of the environment, research on the meaning of home in old age published during the nineties provides a relatively facet-rich picture of what it means to "feel at home" after decades of aging in the same place. For instance,

Rubinstein (e.g., Rubinstein, Kilbridge, & Nagy, 1992) has identified three classes of psychosocial processes that give meaning to the home environment, namely social-centered (ordering of the home environment based on a person's version of sociocultural rules for domestic order), person-centered (expression of one's life course in features of the home), and body-centered processes (the ongoing relationship of the body to the environmental features that surround it). In addition, it seems as if place attachment gets stronger as people age (Zingmark, Norberg, & Sandman, 1995; Wahl, 2001b). Interesting enough and, in a sense, hopeful is the finding that "feeling at home" can also emerge in the institutional setting (e.g., Groger, 1995). Consideration of the maintenance function of planned environments may be even more important, when the issue of the "therapeutic" potential of institutional environments (and special care units, in particular) for demented elders is addressed. Although practical work has been very much facilitated by implementation of specifically designed institutional settings in order to better serve demented elderly persons (e.g., Weisman, 1997), the claim that these "new" environments produce better outcomes is still not as clear as one wishes in terms of empirical findings (see also Day et al., 2000). Because the maintenance function of the environment is crucial for older people, making a decision to move is a relatively rare event (Serow et al., 1996). There is, however, reason to assume that there now exists an ongoing cohort dynamic such that elders of today are more ready to move than their counterparts from the sixties or seventies (Oswald et al., 2002); that is, one might assume that the maintenance function of the environment has undergone considerable change across recent decades.

Second, a broad variety of research addressing the *stimulating* function of the environment can also be found in the available literature from the nineties to the present. A basic and repeatedly proven insight to consider here is that most of the older person's day is clearly spent within the home, a pattern which is particularly pronounced in the oldest old (Baltes, Maas, Wilms, Borchelt, & Little, 1999; Baltes, Wahl, & Schmid-Furstoss, 1990). As a consequence, person-environment interchange processes at the symbolic or overt level have a major impact on the behavioral and emotional functioning of older people, affecting their ability to maintain a level of competence, live a fulfilled life, and rearrange their environment in order to serve changing needs and goals. With respect to institutional settings, features of the physical environment (e.g., room structure) as well as the social environment (e.g., staff behavior) promote social contacts and the maintenance of leisure activities, as well as inhibit "negative" behaviors such as agitation and verbal disruptions (e.g., Baltes & Wahl, 1992; Cohen-Mansfield, Werner, & Marx, 1990; Day et al., 2000). Empirical research during the nineties on relocation has gradually begun to confirm

the notion that moving from one place to another in later life may provide a developmental opportunity and not only a traumatic experience for the normally aging adult (e.g., Haas & Serrow, 1993; Kling et al., 1997; Oswald et al., 2002).

Third, consideration of the *support* function of the environment has been closely associated with EG ever since Lindsley's (1964) well-known introduction of the term "prosthetic environment." A surprise is that this body of empirical research is not as broad as one might assume, given the centrality of this topic in theoretical terms, especially in relation to the Press-Competence Model of Lawton and Nahemow (1973) as well as for purposes of application (Gitlin, 1998; Regnier & Pynoos, 1992). Most clearly, physical and spatial characteristics have been shown to be associated with different levels of independence in the behavioral competence of older people in private home environments as well as institutions (e.g., Day et al., 2000; Gitlin, 1998; Slangen-de Kort, 1999; Wahl, Oswald, & Zimprich, 1999); causal relations, however, remain relatively unclear. Finally, the support function of relocation becomes most clear in terms of moving to an institution. Additional empirical research on this classic topic of EG has been provided during the nineties, underscoring, among other issues, that such support functions becomes particularly critical in the oldest old (Serow et al., 1996).

In sum, one may conclude that recent empirical research has addressed the basic domains of EG (private home environment, planned environments, and residential decisions) as well as the basic functions that the environment provides for older persons (maintenance, stimulation, and support) in a quite substantial manner. In addition, as we can see in Table 1, a diversity of research questions, pathways, and findings can be detected from the literature. It seems, however, that most of these topics represent a continuation of EG research that was already begun in the seventies and eighties of the past century (e.g., Lawton, 1977; Parmelee & Lawton, 1990; Scheidt & Windley, 1985). In other words, it is not easy to identify much innovation in recent EG research. This should not, however, be automatically equalized with a stagnation and an ongoing "languishing state" (Parmelee & Lawton, 1990, p. 483) of EG. Replication and extension while following "old" research questions is a worthy enterprise. However, it might mean that recent theoretical developments from both within and outside gerontology, a sample of which are outlined in the following section, have not had much input into recent empirical EG in a way that would lead to new questions and new approaches.

Theory in Environment Gerontology: Patterns and Possibilities

As emphasized in our initial characterization of the field and its roots, EG is marked by a high degree

of pluralism. This is surely as much the case in the realm of theory development as it is in empirical research and research application, and no one theoretical approach has held sway. It is likewise the case that EG is not immune from those contextual factors that shape the field of gerontology as a whole. Thus Birren's (1999) observation that the study of aging is "data rich but theory poor" applies to EG no less than other subfields of gerontology, particularly so over the past decade.

In responding to Birren's observation regarding the "theory poor" nature of aging research, Bengtson and Schaie (1999) characterized the end of the 20th century as "an intellectual and scientific context that seems . . . increasingly dismissive of the importance of theory" (p. ix), suggesting that this diminution of interest in theory and theory development is the result of broader intellectual currents in the social sciences. In similar terms, Bengtson, Rice, and Johnson (1999) pointed to the postpositivist critique of the entire theory-building process central to traditional social science research, with its goal of formulating and substantiating universally generalizable principles. "Some contemporary scholars," they suggested, "including many gerontologists—would probably agree with the principle of epistemic relativism, rejecting scientific claims to absolute truth and reason" (p. 14).

Although the most extreme of postpositivist critiques do indeed call into question the entire enterprise of theory building, many more moderate perspectives (e.g., Fishman, 1999; Polkinghorne, 1992) usefully question the hegemony of positivism and offer what Altman and Rogoff (1987) have characterized as alternative "world views" for the behavioral sciences in general and environmental psychology in particular. Do such alternatives have utility for EG as well?

Multiple World Views: Interactionalism, Transactionalism, and Alternatives

This question of world views has engaged the interest of leading theorists in EG for more than two decades. In response to such questions, we consider some key authors, who have actively struggled with these issues in recent times. Altman and Rogoff (1987) present four "world views" in psychology—trait, interactional, organismic, and systemic—predicated on varying philosophies of science and their goals. Each is likewise associated with a different definition of psychology, and its appropriate unit(s) of study, as well as assumptions about the nature of person–environment relations and methods and strategies of research. Although Altman and Rogoff focus on the utility of these world views for environmental psychology, we believe there are also useful insights and perspectives for research and theory building in EG. Of the four world views they

Table 1. Panorama of Empirical Research in Environmental Gerontology During the 1990s Until Today

Research Domains	Maintenance Function of the Environment	Stimulation Function of the Environment	Support Function of the Environment
Private Home Environments	What kind of place-related feelings and cognitive representations are evoked as people age?	What role does the home environment play in terms of evoking activity and social interactions?	What potential does the home environment have in terms of compensating for lost competencies?
	What functions do these cognitive-affective associations have for aging individuals?	How does such stimulation affect life quality and well-being of older individuals?	What kind of factors are invoked to fully use this potential of the home environment as people age?
	Identifying meanings of home in later life Exploring processes and outcomes of place attachment as people age Exploring the antecedents and consequences of residential satisfaction	Key Research Questions (Examples) Identifying activity patterns of aging individuals inside and outside of their homes Role of neighborhood as an opportunity structure for aging Antecedents and consequences of outdoor mobility and activities of aging individuals Key Research Findings (Examples) Home is the major physical location where aging takes place The use of outdoor environments reflects a major opportunity structure for older individuals There is a pronounced variability of use of this opportunity structure as a result of personal, ecological, and societal variables	Identifying how elders cope with “environmental press,” Exploring the role of psychological processes in dealing with the home environment Identifying the potential of home modifications Elders tend on average to “proactively” adapt their homes Person factors such as coping and control as well as the competence status of the aging person (e.g., somatic vs. psychiatric illness) are important mediating forces in this regard There is some empirical evidence that improving home environments supports the autonomy of older people
Planned Environments	Older persons’ meaning of home is multifaceted and reflects personal, social, and cultural dimensions There are differences in meaning of home, depending on the competence status of aging individuals Cognitive-affective ties to the home are an important psychological resource for coping with age-related losses	Key Research Questions (Examples) How to relate social interactions and activity patterns to physical and spatial structures of planned environments? How can (in more general terms) planned environments add to an older person’s personal development and positive well-being? Key Research Pathways (Examples) Identifying behavioral patterns caused by different physical-spatial and social structures and changes in these structures (e.g., after occupation of a new building)	What potential do planned environments have in short- and long-term perspectives to compensate for competence loss? Is there a special potential of institutional settings to support elders suffering from severe loss in the domain of cognitive function?
	Are planned environments able to provide a “home” for older people? What kind of feelings are related with aging in planned environments? What potential do planned environments have to maintain continuity and a “good life” in the situation of severe competence loss?	Key Research Questions (Examples) How to relate social interactions and activity patterns to physical and spatial structures of planned environments? How can (in more general terms) planned environments add to an older person’s personal development and positive well-being? Key Research Pathways (Examples) Identifying behavioral patterns caused by different physical-spatial and social structures and changes in these structures (e.g., after occupation of a new building)	What potential do planned environments have in short- and long-term perspectives to compensate for competence loss? Is there a special potential of institutional settings to support elders suffering from severe loss in the domain of cognitive function?
	Identifying place-related meanings in institutional settings	Key Research Pathways (Examples) Identifying behavioral patterns caused by different physical-spatial and social structures and changes in these structures (e.g., after occupation of a new building)	Comparison of different physical-spatial arrangements and their effect on basic functioning

(Table continues on next page)

Table 1. (Continued)

Research Domains	Maintenance Function of the Environment	Stimulation Function of the Environment	Support Function of the Environment
	Identifying person–environment processes in planned environments in their relation to well-being	Role of the environment to stimulate autonomy and reduce “problem behaviors,”	Testing the different potential of compensation with respect to a variety of competence losses (e.g., cognitive or sensory)
	Exploring the therapeutic potential of planned environments	and reduce “problem behaviors,”	
		Key Research Findings (Examples)	
	The development of positive attachment to planned environments is possible, but influenced by person as well as institutional factors	Physical–spatial structure is able to strongly influence social interaction	Planned environments still vary in a pronounced manner regarding their physical–spatial and organizational potential to unfold their supportive potential
	Person–environment fit outcomes are able to add to the understanding of well-being of residents of planned environments	Physical and social environmental factors are a critical component in stimulating independent behaviors of residents	The optimization of the physical–spatial environments adds significantly to basic functions of frail individuals in terms of orientation and way-finding
	There is some evidence that environmental optimization (such as special care units) are able to add to positive outcomes of demented elders	Physical–spatial arrangements can significantly contribute to elicit “productive” behaviors and reduce “problem” behaviors of residents	
Residential Decisions	What kind of motives underlie relocation in old and very old age?	Key Research Questions (Examples)	What potential in terms of compensation can relocation to an institutional setting unfold?
	What kind of variables are important in questioning the “maintaining” role of one’s current environments?	What kind of developmental potential can, relocation unfold in old and very old age?	What kind of adaptational processes and resources are challenged in such relocation situations?
	Exploring the conditions under which attachment to the private home environment is threatened	Key Research Pathways (Examples)	Research on home-to-institutions relocation processes
	Exploring what kind of stress is linked to such threats of “aging in place”	Home-to-home relocation processes	Research in intrainstitutional relocation processes
	Motivations to leave one’s home in late life are multifaceted and more complex than the frequently found push–pull dichotomy	Key Research Findings (Examples)	Relocation to an institution is a process, in which person, social environment, and physical organizational environment characteristics interact in a complex manner.
	Psychological coping processes are important in order to predict the consequences of residential decisions	Change of home in order to find new stimulation seems to be related to chronological age (more prevailing in the “young old”)	The outcome of this process depends not the least on environmental variables, which reveal broad variability in terms of unfolding their support potential for aging individuals with severe competence loss

Notes: Table information is based on Wahl (2001b). See text for definitions of the maintenance, stimulation, and support function of environments.

present, it is the “interactional” perspective, with people and environment treated as discrete entities, that continues to underlie most EG research and theory building. Golant (1998), for example, explicitly assumed such an interactional perspective. The construction and operation of his conceptual model, as well as its underlying assumptions, are interactional in their orientation. For Golant, “a set of distinct antecedents, which include personal qualities and behaviors, subjectively interpreted environmental attributes, and psychological processes, both independently and in interaction with each other, are construed as causal influences of a set of individually experienced outcomes” (Golant, 1998, p. 36).

In recent years, however, and likely influenced by broader intellectual forces and the postpositivist ethos described in the preceding section, there has been increasing oscillation between interactionalist and transactionalist perspectives, resulting in what we might characterize as a “philosophical tension” within EG. This tension may be observed quite clearly in the various theoretical formulations of Lawton and colleagues over a period of two decades. In 1980, Lawton elegantly adapted Lewin’s ecological equation to reflect an interactional perspective. Lewin (1951), building on his concept of the “life space,” had argued that behavior (B) is a function of person (P) and environment (E), that is, $B = f(P, E)$; to the extent “person” and “environment” represent an indivisible whole, this might well be viewed as a transactional perspective (Parmelee, 1998). Lawton, however, amended Lewin’s equation to include a $P \times E$ function, $B = f(P, E, P \times E)$, with $P \times E$ being defined as “the interface between the two elements ... this interface is similar to what the statistician calls an ‘interaction’” (Lawton, 1980, p. 17). Although acknowledging the intellectual justification for and satisfactions of a transactional perspective, Lawton felt the need to opt for interactionalism: “many theorists believe that the interchanges between person and environment are so intricate, so continuously shifting and mutually causal, that it is difficult to view them as separate entities. There is much to be said for this point of view ... however ... when one must operationalize, measure, and treat variables statistically, the problems become hopeless unless distinctions are made ...” (Lawton, 1980, p. 11).

Lawton’s interactional position was substantially reconsidered, however, in his chapter in the 1990 *Handbook of the Psychology of Aging* (Birren & Schaie, 1990) coauthored with Parmelee, in which they advanced the position that interactional perspectives were not able to deal with “the complexity of the total system” of person, social environment, and physical setting. Expressing concern for the “lull” in EG research and theory building during the 1980s (Parmelee & Lawton, 1990, p. 464), they pinpointed transactional models of person–environment

($P-E$) relations, along with the methodologies that complement such models, as especially promising approaches (Parmelee, 1998, p. 161). Yet, by the end of the decade, Lawton seemed in large part to have returned to his interactional position of 1980: “although person and environment form a unified system where what is inside is philosophically inseparable from what is outside, for heuristic purposes, it is necessary to speak of, and attempt to measure, them separately” (Lawton, 1998, p. 1).

This “tension between holistic ... and separatist ... views” (Lawton, 1998, p. 1) is clearly reflected in Lawton’s own writing and thinking, as well as in EG more broadly. One might reasonably worry that EG has reached an epistemological and theoretical impasse. However, if we return to Altman and Rogoff’s analysis of world views in psychology (as referenced by both Parmelee & Lawton, 1990, and Golant, 1998), we find that interactionalism and transactionalism are but two of four proposed world views. Furthermore, examination of several less typical areas of EG research and theory building suggest that Altman and Rogoff’s other two proposed world views—trait and organismic (or systemic)—both hold promise for theoretical development within EG. Gitlin’s (2000) work on home modification assumes what might be characterized as a trait-based world view. Beginning with the observation that some older persons are more effective than others in making home modifications that can moderate the consequences of chronic illness, Gitlin posed a question of theoretical and practical significance, asking “why some older people are better environmental problem solvers than others” and noting that the reasons, at present, are “poorly understood” (Gitlin, 2000, p. 44). Similarly, the work of Moos and Lemke (e.g., 1994) on “sheltered care” environments illustrates the potential benefits of an organismic perspective in synthesizing essential elements of interactionalism and transactionalism. Moos’s work is also systemic in its approach, exploring the relationships among organizational, social, psychological, and architectural dimensions; it continues a long-standing, albeit modest, tradition of systemic work within environmental psychology, reflected in the “ecological psychology” of Barker (1968) and associates (cf. Norris-Baker, 1998) and, more recently, in Canter’s (1991) “theory of place.”

These few examples suggest that there are opportunities for EG to explore, or create, alternatives to the interactional and transactional world views that have guided theory development within the field over the past two decades (cf. Weisman, Chaudhury, & Diaz Moore, 2000). In doing so it is imperative to keep in mind Altman and Rogoff’s caution that there is never a simple one-to-one correspondence between world view and individual projects or researchers: “no research example, theory, or theorist can be exclusively pigeonholed into one or another world view” (Altman & Rogoff,

1987, p. 11; also see Gitlin, 2003, and Golant, 2003, both this issue).

Rethinking the Theory–Research–Application Triad Within EG: Some Open Questions

World views in EG must deal not just with different models of the person–environment relationship but also with fundamental decisions of emphasis and “units of study” (Altman & Rogoff, 1987, p. 7). Indeed, there has been discussion, going back to the first collection of essays on theory in EG (Lawton et al., 1982), regarding what substantive focus (or foci) most effectively advances theoretical development. Lawton and colleagues (1982, p. 2) suggested three possible approaches to EG research (following citations, see Lawton et al., 1982, pp. 2–3). They characterized the first of these approaches as focusing on evaluation of the designed “product” (i.e., environment) with this information guiding subsequent cycles of design. Their second approach is characterized as an orientation to “place,” “where psychological and behavioral processes are incidentally studied as they may relate to the outcomes of, behavior in, or adjustment to places such as cities, neighborhoods, hospitals, homes.” The third of their approaches presents a contrasting focus on basic research and environmental “processes” such as environmental cognition, territorial behavior, crowding, and the like. “Understanding of the general effects of these processes, independent of the places where they occur, is sought.” Likely reflective of then-current positivist notions of science, Lawton and colleagues (1982, p. 3) established a clear hierarchy with respect to the relevance of these three approaches to the development of EG theory. The “product” approach was judged least relevant, with “place” in an interim position, and environmental “processes” deemed most relevant. The preeminent position assigned to “process” is reflected in the contents of their volume, which includes chapters on environmental perception and cognition, environmental dispositions (traits), and environmental stress as well as four chapters with a strong emphasis on person–environment fit, competence, and adaptation. Relatively little attention is paid by contributors to either product or place.

This strong focus on process issues has clearly served the field of gerontology admirably over the past half century. One might ask, however, whether, in the next millennium, it will represent the most effective path to the building of an EG. Is Lawton, Windley, and Byert’s privileging of process appropriate? Is it possible—if we so choose—to study “psychological and behavioral processes . . . as they may relate to the outcomes of, behavior in, or adjustment to places such as cities, neighborhoods, hospitals, homes . . .” in a *purposeful* fashion rather than just “incidentally” (Lawton et al., 1982, p. 2)?

There appears to be increasing interest, within EG (Rowles & Watkins, 2003; Weisman et al., 2000) as well as in environmental psychology, in viewing “place” as the key integrative construct in conceptualizing both the environments occupied by older persons and older persons’ interactions with these environments. Other theoretical challenges await EG as well. Is it possible, in the study of a single nursing home, to effectively link sociological and organizational theories appropriate to the understanding of residents, staff, and administration? How can research, following Lawton’s (1983) conceptualization of the “good life” effectively relate environment in “objective” and “perceived” terms? And, not least important, is it possible to respond to the classic challenge of meaningfully linking theory, research, and application (cf. Stokols, 1995)?

Parmelee and Lawton (1990, pp. 464–465) suggested that theoretical work in EG “lagged” *because* much of the more recent work emerged from more “applied” fields such as architecture and interior design, planning, and other service professions: “Although much useful knowledge has been produced, such research neither utilized nor generated much theory.” They argued that limited demand for theory-based research was insufficient “to reinforce development of theory, which became less and less available to generate more productive research” (p. 465). Here again, more contemporary philosophies of the social sciences are beginning to rethink this traditional research-application dichotomy. By way of example, the work of Kurt Lewin holds great potential for EG, not only for his transactional focus on life space, as highlighted by Parmelee (1998), but equally for his “action research” perspective. In addition to Lewin’s classic work, more recent theoretical approaches to the nature of practice and the problem-solving process (e.g., Polkinghorne, 1992; Schön, 1983) may aid in the resolution, or at least the moderation, of these familiar tensions within environmental gerontology. Within the domain of specialized environments for dementia care, there has been, over the past 30 years, a succession of “model” facilities—designed as test beds for experimentation and evaluation—and clearly in the spirit of Lewin’s model of action research (Weisman, 2003). Additionally, these model facilities—beginning with Lawton’s pioneering efforts in creating the Weiss Institute—are clearly reflective of a systemic–organismic world view; organizational factors (mission, policies, and procedures), staff issues (titles, training, responsibilities, and even dress), and physical environment were all conceptualized as interrelated subsystems.

Conclusions

Whereas the historical development of EG as a major gerontological subfield has been critical for gerontology as a whole because of the explicit

emphasis placed on sociophysical surroundings and their influence on aging processes and outcomes, the diversity of its roots has led to a pronounced heterogeneity of EG in terms of level of analysis, range of research approaches, research themes, and research concepts. After a period of dynamic development in terms of theory production and the provision of a wide range of person–environment related empirical findings during the sixties, seventies, and eighties, concerns have been raised since the 1990s in terms of the need “to move the field beyond its current languishing state” (Parmelee & Lawton, 1990, p. 483). Our analysis of the empirical and theoretical achievements of EG over the past decade lends support to the notion that the “diagnosis” of EG provided by Parmelee and Lawton has yet to lead to a substantial “cure.” A considerable body of empirical research, in both quantitative and qualitative terms, has been generated in the nineties. However, although it addresses all three theoretical functions of the environment suggested by Lawton (1989) as critical components of aging, this body of work remains quite diverse in nature and in large part represents an extension of the research tracks of earlier empirical EG. This absence of innovativeness might be due to a lack of new theoretical developments in recent years or perhaps a too strong emphasis on some lines of theoretical development that might prove to be not very productive in the longer run. Instead of ongoing and exclusive discussion of “transactional” versus “interactional” research in EG (Lawton, 1998; Parmelee & Lawton, 1990), it is from our perspective better to acknowledge that the multiple world views reflected in such research paradigms are all equally worth considering in different research or application contexts of EG (cf. Stokols, 1987). To move beyond a “languishing state,” EG is in need of new theoretical and empirical impulses of the kind to be found in the following *Forum* contributions of Gitlin and Golant (this issue).

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