part 1

Introduction

INTRODUCTION AND PROJECT GOALS

Programming and Design for Dementia is the continuation of a significant area of study within the School of Architecture and Urban Planning at the University of Wisconsin–Milwaukee. Four faculty members and a substantial number of Master's and doctoral students have, for the past three years, been actively involved in the investigation of environments for people with dementia.

Previous projects have resulted in six publications exploring diverse aspects of this broad topic, including review of the research literature (Rand, Steiner, Toyne, Cohen, & Weisman, 1987), identification of relevant codes and standards (Cohen, Weisman, Day, & Ray, 1990), analysis of a sample of case study sites (Cohen, Weisman, Ray, Rand, & Toyne, 1988), and the generation of both a set of guidelines for planning and design (Cohen & Weisman, 1991) and a number of illustrative designs (Cohen, Weisman, Day, Robison, Dicker, & Meyer, 1990).

This seventh publication on dementia and design is shaped by three related goals:

[1] To extend our understanding of optimal micro–environmental design for people with dementia.

[2] To present a systematic process for the planning, programming, and design of environments for people with dementia.

[3] To illustrate this process by the planning, programming, and design of a model 50 person residential facility.

Optimal micro–environmental design. While some data are now available to guide basic architectural planning and programming decisions, much less information is available regarding the design of smaller scale aspects of the environment, including appropriate colors and surfaces, lighting levels and sources, furnishings, equipment and technical devices for security and/or assistance.

More generally, there is a great deal of controversy in this existing literature. Some authors suggest that environments for people with dementia should be highly stimulating, employing bold and saturated colors and contrasts to effectively gain the attention of people with dementia and to compensate for deficiences in vision associated with aging. Others maintain that colors and patterns ought to be subdued and subtle to provide a relaxing environment less likely to provoke agitated behavior.

Part 2 of this publication endeavors to extend our understanding of disease-related deficits—functional/behavioral, cognitive, social, and emotional—and their relationship to environmental design strategies and solutions.

Systematic planning, programming and design process. A previous publication (Cohen & Weisman, 1991) presented an overview of a process, as well as a set of generalizable prin-

ciples, for use in the planning, programming, and design of a broad range of environments for people with dementia.

Programming and Design for Dementia extends and illustrates this model. Specific principles to guide the planning and design of an innovative facility for 50 residents are presented in Parts 3 and 4.

Model residential facility. The final goal of this publication focuses on the planning, programming, and design of this residential facility for 50 people. It represents a new and as yet underdeveloped point along the continuum of care—from residence in the community to institutional settings. The rationale for the planning and design of this facility are presented in Parts 3 and 4, and the resultant building is presented in Part 5.

As a note of caution, it must be recognized from the outset that very little of the research into Alzheimer's disease explores linkages to the physical environment. Research activities are directed toward either medical and biological issues, such as possible causes of the disease, or social/organizational concerns such as caregiver burden. Of the limited research that directly explores the role of the environment as a therapeutic tool, much is experiential or anecdotal in nature. Therefore, most of the recommendations advanced in this volume are, of necessity, extrapolations from existing research and experience. In the strong tradition of action research, they are presented as hypotheses deserving and indeed requiring further investigation.

LINKING ALZHEIMER'S DISEASE AND ENVIRONMENTAL DESIGN

Alzheimer's disease and environmental design seem, at the outset, to be two very disparate topics; the relationship they bear to one another may initially be quite unclear. This introduction can provide only a brief explanation of such an important subject. Understanding the relationship between architecture and Alzheimer's disease depends upon an understanding of three fundamental premises. First, it is essential to recognize that the role of the architectural environment need and should not be limited to the mere provision of physical shelter. Thoughtfully designed architectural environments represent potentially valuable, albeit typically underutilized, therapeutic resources in the care of people with dementia. Indeed it has been argued (Coons, 1985, p.13) that many of the behaviors attributed to Alzheimer's disease are, in part, a consequence of counter-therapeutic settings. Both theoretical and empirical support for the therapeutic potential of the physical setting will be briefly reviewed.

Secondly, it must be recognized that the physical settings occupied by people with dementia do not exist in isolation; rather, they are integral parts of a larger, complex system and must operate in concert with the social and organizational dimensions of this larger system. Thus, a conceptual model will be presented that reflects the interaction of architectural, social, behavioral, and organizational variables.

Finally, there is great value in recognizing the residential qualities of environments for people with dementia. Many such facilities, while well-intentioned, do not, as a consequence of their medical or institutional characteristics, serve the best interests of people with dementia. To the extent possible, all therapeutic settings should retain the positive attributes of home.

Therapeutic Potential of the Physical Setting

The role of the architectural environment in therapeutic interventions for people with dementia has traditionally been quite limited. Interventions are defined and implemented in social and organizational terms, physical factors being limited to concerns of hygiene and/or aesthetics. However, the study of the reciprocal relationships between people and their total environment over the past several decades demonstrates that the architectural environment is more than a background variable; it may exert significant influence on the behavior of both individuals and groups.

There are both empirical and theoretical reasons for efforts to utilize the therapeutic potential of the physical setting in the provision of care for people with dementia. Several studies assessing the impact of changes in the physical setting on people with dementia carried out by Lawton and associates are reviewed in Lawton (1981). A small scale remodeling effort undertaken in a long term care facility resulted in the creation of six single bedrooms plus adjacent

semi-public spaces. Residents both took advantage of this new-found opportunity for privacy and increased the number of occasions on which they were observed outside of their bedrooms (Lawton, Liebowitz, & Charon, 1970). In two pilot studies of the effect of environmental modifications on a psychiatric geriatric population (Fraser, 1978), rearrangement of furnishings and introduction of materials for recreation and reading resulted in some social gains and a decrease in pathological behavior. In a pioneering demonstration and research project, Lawton, Fulcomer, and Kleban (1984) compared the behavior of severely impaired, elderly residents of a nursing home before and after transfer to new facility designed in response to their environmental needs. Results indicate that, despite expected decline in measures of basic competence, there was not a corresponding decline in more pliable behavioral variables.

> *Even more remarkably, in five instances improvement occurred, and in only one instance was there a significant decline. This pattern of findings . . . confirms the presence of a clear prosthetic effect, to the point where the direction of a decline was reversed in some instances to become improvement (p. 751).*

More recently, a longitudinal study of a special care unit conducted by Benson, Cameron, Humbach, Servino, and Gambert (1987) indicated improvements in mental and emotional status and in basic functions of daily living 12 months after admission to the unit.

A major research/demonstration project undertaken by the Institute of Gerontology at the University of Michigan created Wesley Hall, a special living unit for eleven people with severe memory loss (Coons, 1985). Along with intensive training of staff, a number of modifications were made in the physical setting; these included introduction of softer and more domestic finishes and lighting, provision of private rooms, a den, living room, dining room, and kitchen as part of the Wesley Hall unit. Staff observations indicated positive resident response to therapeutic interventions designed to reduce problem behaviors such as night wandering, incontinence, and combativeness.

Theoretical support may be seen as coming from several sources. The environmental docility hypothesis promulgated by Lawton and Nahemow (Lawton, 1970; Lawton & Nahemow, 1973) posits that "limitations in health, cognitive skills, ego strength, status, social role performance, or degree of cultural evolution will tend to heighten the docility of the person in the face of environmental constraints and influences" (Lawton, 1970, p.40). Thus, people with dementia, who often experience impairments of the kinds described by Lawton, may be particularly vulnerable to environmental impacts. Conversely, even modest modifications in the environment, which serve to reduce what Lawton and Nahemow characterized as the "press" or demand characteristics of the environment, may yield significant improvements in both adaptive behavior and affect. At least some clinically based dementia research (c.f., Hall & Buckwalter, 1986) emphasizes the importance of conscious regulation of the demand characteristics of the environment, particularly in terms of sensory and social stimulation.

In summary, there is both empirical and theoretical support for the role of the physical setting in caring for people with dementia. Data suggest that modification of traditional room and unit layouts, along with complimentary modifications in the organizational environment, can slow or in some cases even reverse the declines expected over time in the behavior of people with dementia. Such findings appear to be consistent with Lawton's "environmental docility hypothesis," which suggests that even modest changes in the environments of people of re-

duced competence may have significant positive consequences. This publication has pursued this relationship one step further, presenting programming "hypotheses" that suggest how problems that result from specific deficits (behavioral/functional, cognitive, social, and emotional) associated with Alzheimer's disease might be resolved by a range of policy, planning, and design solutions. Particular emphasis is placed on microscale furnishings, surfaces, and equipment that may help to compensate for these deficits.

THE FACILITY DEVELOPMENT PROCESS

PREPARATION	PLANNING
Things to know and do before starting	Defining the facility in organizational terms
The unique environmental needs of people with dementia and their caregivers	Position of the facility along the continuum of care
The relationship between organizational goals, individual needs, and the physical environment	Organizational goals for the facility as a whole
The continuum of environments currently available to people with dementia	Number of clients/residents to be served
	Staffing needs and patterns
	Criteria for site selection

This book concerns itself with the planning and design of environments for people with dementia, as exemplified in the development of a 50 person residential facility. The design or renovation of facilities for people with dementia—beginning with initial planning and culminating in construction and occupancy—is a complex process. To insure that every facility realizes its therapeutic potential, it is essential to carefully define those psychological, social, and organizational problems that the resultant building is meant to solve. Fortunately, decisions to be made in this process occur in an orderly and somewhat predictable pattern. This sequence of decision–making activities can be characterized as the facility development process. For organizational and conceptual purposes, the information in this book is organized according to the steps in this process, with decisions applying to the development of this 50 person residential facility discussed as examples in each chapter.

It is useful to conceptualize the facility development process as a five stage model, involving: (1) preparation; (2) planning; (3) programming; (4) design, construction, and occupancy; and (5) evaluation. This process parallels that proposed by the American Institute of Architects (1971), but is less heavily weighted toward the "production" aspects of new facilities (i.e., preparation of architectural drawings, bidding, and construction). The reader is referred to the authors' earlier publication *Holding on to Home* (Cohen & Weisman, 1991) for a more thorough examination of the initial phases of problem formulation and design guidance, as well as of the final phase of systematic evaluation.

1. Preparation

It is essential to understand the needs of people with dementia and the ways in which the environment may serve these needs.

This first phase of the facility development process provides the foundation for the phases that follow. Anyone who anticipates involvement in the planning and design of a facility for people with dementia should begin with a clear understanding of the particular

PROGRAMMING	DESIGN, CONSTRUCTION AND OCCUPANCY	EVALUATION
Defining facility requirements in architectural terms	Translation of plan and program into architectural form	Addressing "performance" of the operating facility
Desired experiential qualities of the environment Required activity areas and their sizes and adjacencies Required sensory conditions (acoustics, lighting, temperature)	Preliminary schematic design Detailed design development Contract documents Construction bids and negotiation Construction and occupancy	Adequacy of sensory and spatial conditions Emergence of desired patterns of behavior and environmental experience Realization of individual and organizational goals

Figure 1. The facility development process.

environmental needs of this user group, as well as of those who serve as caregivers. This book provides a summary of much of this information (*People with Dementia*), along with a detailed matrix to allow the reader to begin to link deficits that result from the disease with specific environmental solutions (*Deficits of Alzheimer's Disease and Their Relation to Environmental Design Solutions*). Finally, it is essential to appreciate the place of the physical setting within the complex system linking goals, human behavior, and buildings (*Conceptual Framework for Environments for People with Dementia*), and the therapeutic potential of environments for people with dementia (*Therapeutic Goals*).

2. Planning

Typically, it is in the planning stage that basic decisions regarding the functioning of the facility are made. One must be aware of the range of environments currently available to people with dementia, as well as the "gaps" in this continuum of choices that define the need for new and innovative facility types (*Continuum of Care*). Other necessary decisions include formulation of basic organizational goals, structure, and policies, as well as decisions regarding in–house services to be provided and community services to be utilized, staffing, and number and population of people to be accommodated (*Organizational Goals and Local Resources* and *Small Groups of Residents* begin to address some of these issues). Procedural matters, such as formation of building committees or advisory groups, are also considered at this point.

3. Programming

A program defines the set of requirements that the architectural design is to satisfy.

The goal of the programming phase is the definition of the requirements that the facility to be designed is meant to satisfy. Such requirements may be defined in terms of: (a) patterns of behavior to be accommodated in the facility; (b) desired experiential attributes of the environment, such as accessibility or familiarity; and (c) required sensory properties

(e.g., light levels) and spatial properties (e.g., square footage) of individual spaces within the building. Programmatic information on specific spaces within the facility, including consideration of attributes of the environment, relationships between spaces, and requirements for individual activity areas (*General Attributes of the Environment, Building Organization,* and *Activity Areas*) is presented in Part 4. In addition, examples are provided of specific products and materials that meet many of the programmatic requirements outlined here. A more detailed discussion of these programmatic requirements is published in *Holding on to Home* (Cohen & Weisman, 1991).

4. Design

The design phase results in a complete architectural design for a new or renovated facility, typically represented in a combination of drawings and verbal descriptions. Building upon the programmatic requirements outlined in Part 4, a specific design "prototype" for innovative facilities serving people with dementia—in this case, a 50 person, free–standing residential facility—has been developed (*Design*). The nature of this facility is defined in programmatic terms, including goals, organizational structure and staffing, and population to be served. Drawings of the facility are accompanied by verbal descriptions or "annotations" that describe the designs in greater detail and indicate how key planning and design principles are implemented.

5. Evaluation

Environments for people with dementia may be evaluated in terms of technical, behavioral, and therapeutic concerns.

To complete a cycle of the facility delivery process, the occupied building should be evaluated to assess how well it satisfies the goals specified in the preparation, planning, and programming phases. Such evaluation can include technical issues (are lighting levels in the dining room high enough?), patterns of behavior (is the lounge being used for family visiting?), and experiential and therapeutic concerns (does the activity area provide sufficient stimuli to encourage conversation?).

In addition, during the evaluation stage, one can "test" many of the hypotheses implied by proposals in the programming section. For example, based upon the programming for resident rooms, questions can be developed to assess 1) which methods were employed to create a soothing and sleep–conducive environment, as well as 2) whether these modifications have an actual effect on the reduction of nocturnal wandering. A set of such questions is included as an example of the type of questions that may be used in the evaluation of either existing or proposed environments for people with dementia (*Evaluation*); additional questions should be tailored for the assessment of specific characteristics of the reader's own setting.