ARCHITECTURE FOR THE AGING
CREATING A CHALLENGING ENVIRONMENT

MICHAEL HALSTEAD
College of Architecture and Planning
Ball State University
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This book is gratefully dedicated to my loving family, for without their continued support this work could not have been accomplished.
CREDITS

The program has been reinforced through empirical testing (see appendix), allowing the elderly to create their own architecture. The visual questionnaires and interviews produced invaluable information from faculty, gerontological experts, administrators, and the elderly. The following people have provided assistance to my effort.

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INTRODUCTION

The growing population of the independent elderly has produced an architectural problem of enhancing old age. The essence of this architectural design is to establish spatial guidelines and criteria for the architectural design of an elderly vacation resort located in Portland, Oregon. The objective is to challenge and entice the elderly to become socially, mentally, and physically active. This can be accomplished by providing visual connections to social interaction, knowledge advancement, and work or recreational activity.

The real estate development proposed will be a cooperative arrangement, whereby each tenant shareholder will own one apartment, and an interest in the common elements. The facility management will be tenant shareholders elected to collect dues, pay maintenance expenses on the property, and repurchase vacant apartments. Timesharing will allow multiple owners to by undivided interests, with a right to use the facility for a fixed or variable time period. The project will include forty (40) condominiums, and various activity centers: a community greenhouse, game and exercise room, cafe, bar, arts and crafts studio, library, post office, conference room and offices, and a community meeting hall.
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NEED

The concept of environmental therapy displays the fundamental belief that the proper atmosphere is capable of positively stimulating the elderly. This basic notion in design for the aging is easily understood, and widely accepted. As Lorraine G. Hiatt has suggested in her work, *The Environment as a Participant in Health Care*, buildings and spaces directly influence the quality of life for the elderly. Therefore, one must begin to establish criteria and guidelines for design which will enhance old age. With the help of sociologists, gerontological experts, and the elderly, architects will become more sensitive to the primary issues involved.
As the aging process gradually reduces vision, hearing, physical mobility and stamina, the older citizen is forced to retreat from the daily pattern of life to which they have become attached. In the United States this social deprivation has become more apparent, as most of the elderly are removed from the extended family. Not only does this purely Twentieth Century phenomena help to disintegrate moral values and "hand-me-down" knowledge, it also begins to reduce the notion of self-esteem among the elderly. This point is extremely vital, for life is far more than basic animal subsistence: human beings need to feel loved. This concept of love, and the desire to feel attached, is a continuous need throughout ones lifespan. It has been proven time and time again that without love the human animal can not exist. One behavioral scientist at the turn of the century proved this fact by depriving new born babies of love and physical stimuli. The results were obvious, as the children began to develop mental and physical deficiencies, as well as death in some cases. Our culture has forgotten the basic idea that the elderly are people, and they need a reason to wake up in the morning, they need a challenge in life.
This problem of creating the proper environment for the elderly has intensified with the advancements in medical technology over the past century. People are living longer, healthier lives. As B.F. Skinner points out in his book *Enjoy Old Age*,

It is good that old people are living longer and suffering less from poverty and illness than they once did, but if they are not enjoying their lives, they have not gained a great deal. By giving people more years that can be enjoyed, the practices that have helped to solve one problem have made another more crucial. (p. 20)

As this concern for longevity increases, we also find that the elderly of today are a far different social group than the elderly of tomorrow. The baby boom generation is more health oriented than past generations; therefore, architects will have to anticipate the needs of future old people who will live longer and healthier lives. As is the case today, the elderly must not be removed from the mainstream of life. The psychoanalyst Alfred Adler argues that there are three basic life tasks with which a person must deal: work and occupation, society, and sex and love. His concept is based on how we deal with these issues throughout our lifespan. Adler maintains age does not offer immunity against the challenges of life.
The idea of maintaining challenge in the life of older people is intriguing. How does one create a challenging environment for the elderly? This question has been partially answered by Diane Carstens, who believes a challenging environment for the elderly must provide variety in social interaction, topography, recreation, and individuality. However, before one is able to produce a challenging environment for the elderly, certain criteria and guidelines for design must be established to address these concepts and specific issues.

Enhancing Social Interaction

Enhancing social interaction, without forcing it, is a primary issue in design for the elderly. Like all age groups, the elderly need the independence of choice. Nothing is more frightening for an older person than to be forced into a group of strangers. Yet we have already seen the need for the elderly to feel like they belong, to interact, to touch, to express themselves. To solve this dichotomy we must provide the opportunity for the elderly to become socially involved, or to retreat in privacy. One possible solution is to provide visual connections to social activity. For example, in figure 1, the man is provided a glimpse of people mingling around the pool, yet he doesn't have to become actively involved. From the space he occupies social interaction is enhanced, not forced.
The same can be said for the man in figure 2. In this scenario, the man also has an unobstructed view of the activity below, yet he isn't placed in a position where he is obligated to become involved. As Sandra Howell establishes in her book on shared spaces, some people are introverted, and some people are extroverted. However, one common bond is that all people like to watch other people. Therefore, when developing architecture for the aging, creating a "window to the world" is critical.
In figure 3 we see the same design criteria established for exterior spaces. The atmosphere of the outdoor cafe is very enticing, but one should also be allowed the privilege of declining this social invitation. One is able to unobtrusively survey the action through the arcade, cultivating the capability of lifestyle alternatives. On a larger scale, travel can induce the same qualities of adventure and intrigue. A vacation resort for the elderly could excite adventure and challenge.
Integration With Nature

Integrating nature in design for the elderly develops a quality of fulfillment that is unmatched, for nature has the capacity to excite all the senses. Plants and flowers are more than beautiful, they also provide a therapeutic work environment. The challenge of maintaining a quality greenhouse or garden (figure 4) is very enriching. Plants are a symbol of life that produce a nurturing environment for the aging, while also reinforcing an abundance of self-esteem and pride.
The integration of nature can do more than specify green spaces and gardens; it can dominate the complete character and image of an architectural design. Figure 5 is an example of architecture that responds to nature and the physical climate. The interior and exterior spaces flow with the environment, inducing life and vitality into the spaces. One more interesting concept is the inclusion of architecture and the calming effect of water (figures 6 and 7).
Recreational Choice

Recreational choice allows the elderly to select their daily activity. As we have already seen, the elderly are very independent, and don't like to be forced to do anything. We as humans never like to be told what to do. Even as children, when we should probably do exactly as we are told, humans rebel against authority. In the case of the older person recreation can be closely associated with work activity. The aging individual still requires the challenge of work, and the exhilaration of self-subsistence. One form of recreational activity for the elderly could be upkeep of a community garden, or possibly private gardens (figure 8). The community garden would address many key issues in design for the elderly: inducing social interaction, providing sustained activity, and would bring the elderly close to nature.
Another aspect of work activity could be the village shop, selling goods provided by the resident elderly. The elderly could sell flowers, plants, flower planters (figure 9), arts and crafts, or newspapers written by the elderly. This notion of self-reliance could become contagious, allowing the elderly to eventually become totally self-subsistent. This atmosphere would encourage the elderly individual to join the group for the good of the whole. This concept would induce recreational work therapy, social interaction, and self-esteem. Recreational choice and individuality can also be accomplished through outdoor environments. It becomes essential to provide active as well as passive exterior space. From the scenario in figure 10, the older citizen can join in the outdoor social recreation, or retreat to enjoy seclusion. One begins to realize that the elderly only want what all other age groups desire: individuality.
figure 11

security and image of home

isaac green has stated in his housing for the elderly, that the elderly require physical and psychological security. physical security can be accomplished by providing security personnel in strategic areas. in most nursing homes a control station is located near the main entry to provide security and surveillance. however, there are more subtle ways to provide physical security and territoriality. one simple method is the arrangement of raised planters and other buffer zones around the perimeter of the site (figure 11). not only do the raised planters and buffer zones integrate nature, they also define space and territory. the psychological image of home and security can be advanced through personalized territory (figures 12 and 13). the double loaded corridor of most nursing homes is atrocious, depriving the elderly of any personalized space. with the simple inclusion of personalized space outside the private entry, the doors are pulled off the primary path, providing more security by making the entry space a new...
territorial zone. This same concept can be reinforced by outdoor personalized space as well. In this case it is far more difficult for undesirables to enter a space without first passing through a security area.
The image of home can also be accentuated through other forms of architectural expression. For example, the character of the architecture can begin to express the notion of home through basic architectural symbols. Using familiar building blocks one may begin to assemble architecture that is respondent to the idea of home. One simple example might be the inclusion of the fireplace (figure 14), which has always been closely associated with the warmth of security and home. The fireplace also begins to integrate natural materials into the space, as well as providing ample space for the display of trinkets and personal memorabilia.
Webster defines challenge as a daring activity that is stimulating. The concept of challenge is very intriguing, allowing the mind to wander in search of a memory or picture that describes its essence. One only has to recall trying to read William Shakespeare the first time for a high school English exam to remember the strain and sacrifice inherent in life. Babies at first struggle to crawl, yet one year later they are able to climb a flight of stairs. These are only two examples of the human desire to take the next step, to climb the next peak. We love a challenge, for the thrill of accomplishment is motivation to pursue another level of adversity.

The essence of challenge can be broken down into many pieces: adventure, intrigue, mystery, defiance, struggle, competition, stimulation, and arousal. However, one must begin to translate these words into three-dimensional space so that the elderly may benefit. Within this scenario, one must enhance the notion of challenge without forcing it. If the elderly were allowed to discover their own challenging environments, rather than being subjected to them, the exhilaration of achievement would be more complete.
Focal Points to Enhance Mystery and Orientation

As we raise the question of what constitutes a challenging environment, we must first consider the special needs of the elderly. Many older people won't venture outside of their neighborhood, for they fear getting lost or being assaulted. While we are young we enjoy exploring, for we are confident that eventually we will find our way home. However, the elderly are not as confident, even though they enjoy the exhilaration of walking for exercise. With the advent of medical technology and physical fitness, we have learned that staying active directly influences health and lifespan. Providing the elderly with mild exercise would be very healthy, as well as emotionally stimulating.
For example, figure one depicts a space that produces a walking environment, while it also provides security for the older person. The elderly are allowed to freely explore outside of their normal realm, yet they can still see the path home. The sense of here is increased by the screen of foliage, while the outside world is made to seem remote. This space acts as a physical and emotional stimulant, without creating stress. Another scenario that enhances mystery is illustrated in figure two. This exterior space is highlighted by the seclusion of a nature trail. In the background one can spot the clock tower, or focal point, which helps orient an aging person and allows them the freedom to roam. This freedom develops exploration and adventure, yet also assures the older inhabitant they will be able to return safely.
This idea is further accentuated in figure three, for if the elderly were capable of partially viewing space B from space A, they will be more likely to investigate both spaces. In figure 4 we realize that space B is completely separated from space A; therefore, one is less likely to probe into space B. One spatial arrangement inhibits arousal, while another environment enhances mystery.
Sequence of Space and Vistas

The sequence of spatial arrangement can also influence movement. In figure five a path is produced that intensifies anticipation. As one enters the path, they are pulled through the maze of spaces by linking vistas. The planes and layers accentuate the unknown, arousing the invitation to continue along the trail. The sense of independence is nurtured by providing seating and resting spots.
Planes and layers can restrain or elevate the dimensions of expectation. In figure six one may sit, lean, or stand in a space defined by varying heights of wall planes. Wall planes can also define space (figure 7) or enclose space (figure 8). As long as the corners are eliminated, the space remains open, and the inhabitant is pulled into the next void. Sequence also emphasizes the role of levels and screening in vision, for in figure 9 what could have been one view along the path has become four views. Giving the elderly different vantage points along the walkway increases the desire to progress farther.
Texture and Color

Textures and colors can directly influence action and function. Fast food restaurants utilize this principle to assure that consumers will eat and leave quickly. McDonalds and Pizza Hut are satiated with bright reds and greens, colors which intimidate people, and get them circulating faster. In the case of the elderly textures and colors need to be subtle to reduce tension. For instance, the colors and textures of Autumn produce a comfortable feeling (figure 10). Amber, gold, deep brown, burnt red and orange accentuate and reinforce a calm environment. These colors just happen to be the colors of stone walls and fireplaces (figure 11). The fireplace also reinforces the Autumn colors through the sparkle of fire. Fire is a very enticing element, constantly flickering, changing, and shifting. The deep reds and yellows seduce people into a panorama of memories.
Buildings, also rich in texture and color, stand on the ground plane. As we see in figure 12, the ground plane can serve to enclose space. However, one of the most unifying agents is the ground plane, which can be used to connect spaces. An excellent way to induce travel or adventure is by continuing ground textures throughout interior spaces, creating a link to exterior space. The same bond can be united through roof planes as well. If one could design interior environments which reproduce the textures and colors of exterior roof planes, interior space would be improved (figure 13). Varying layers of textures can create a space within a space. This device was routinely employed by Frank Lloyd Wright, who utilized furniture to enclose the dining area. The chairs had extremely high backs, and dinner guests could not see over or around them, visually enclosing the dining space.
Adventure and Intrigue

Challenging environments are alluring spaces, integrating adventure and intrigue. In many cases a potential for stimulation can be produced through spaces which are visually connected (figure 14). The house and bushes create a vista which captures the beauty of a coastline. From this vantage point, the beach becomes a desired objective. After further investigation, one moves closer to the beach, and discovers a hidden space (figure 15). One vista has created a new excitement, a new inclination to explore.
Another example of adventure is the social invitation (figure 16). All people enjoy a night out on the town, a chance to unwind. One can't dismiss the fact people still enjoy life at an older age. The elderly still enjoy the things they did at a younger age, only now their endurance has diminished. Fantasy and romance remain a prominent fascination for the aging.
Spatial Advantage

Another characteristic of challenging environments is that of spatial advantage (figure 17). In this portrait of space, the person in space A feels superior to the person in space B, there is an advantage being in space A. This type of image can be extremely important in the creation of challenging environments for the elderly. Doctors and medical specialists know it it best for a person to stay active. However, many elderly people are placed in stale, unimaginative spaces which induce boredom and inactivity. This contradiction in design for the aging is reducing the quality of life for older people.
Spatial advantage creates an excellent opportunity for architects and designers to provide future environments that will enhance old age. As each generation lives longer, healthier lives the need grows to positively stimulate the older person. Figure 18 portrays the feeling of dominance which can be reinforced through extensions of space towering over the water. A person can be pulled out onto the cantilevered balconies which perch over the lake, or they can retreat to interior spaces that are visually connected to the outside decks.
Figures nineteen and twenty incorporate the feeling of interior advantage. The dominant spaces introduce the power of unobtrusive observation: the elderly are able to watch other people without being noticed. It is no great secret that people love to watch other people. We observe the actions of other people all the time: at the beach, sporting events, bars and cafes. For the elderly, observation and spatial advantage would directly influence the desire to climb a flight of stairs, thereby increasing activity and challenge. This form of adventure is also rewarded with the opportunity to sit down after the challenge has been met. By simply creating spatial advantage, the environment plays a formidable role in motivating and challenging the aging.
Spatial advantage can also dominate the complete character of an architectural design (figure 21). The design has evolved through the use of natural textures, colors, shapes, and planes. However, the image is dominated by the observation tower, a challenging space created to provide stimulation and mystery.
Empirical Testing

Architecture for the aging must develop from a sensitivity for the needs and desires of the elderly. This sensitivity is reliant on actual contact with the elderly. One can begin to understand far more through observation and conversation, actually experiencing existing environments for the elderly. This careful analysis should include a cross-section of gerontological experts, architectural faculty, sociologists, nursing home management, and the elderly. The desired ambition is to eventually produce architecture that is designed and crafted by the aging. An analogy is that of the indigenous architecture of Africa. Although it is considered primitive architecture, it is actually a complex architecture that has developed over centuries, molded and crafted through tradition to meet the socio-cultural, physical, and climactic needs of the African people. Through empirical testing and interim response, the elderly will create their own architecture.
Initial Summary of Concepts and Criteria

Challenge for some people is landing on the moon, while for others it is making it down the hallway that seems to grow longer every year. The concepts which have been established as criteria for creating a challenging environment include: enhancing social interaction, integrating nature, recreational choice, focal orientation, psychological security, spatial sequence, layering, and spatial advantage. These initial criteria for design are very complex issues, and they will continue to open new approaches in architecture for the aging. The older person still maintains the need to learn, to progress, to be productive. These concerns are essential to all age groups; yet in the case of the elderly, the need is further intensified. Architecture must respond to these issues and concepts, enabling the elderly to enjoy their longer lives.
The site chosen is located in Milwaukee, Oregon, ten miles south of Portland, along the Willamette River. The Willamette-Columbia River basin is the largest west of the Mississippi River, and is one of the most fertile regions of the world. Milwaukee is 44 degrees North Latitude, yet its climate is relatively mild due to the Pacific Ocean air current. The average winter temperature is 48 degrees F, and the average summer temperature is 70 degrees F. The solar angles are 70 degrees June 21, 45 degrees September and March 21, and 25 degrees December 21. The site is surrounded by primary views of the scenic Willamette River, and Mt. Hood can be seen on the eastern horizon. The region is dense with recreational and natural beauty within a fifty mile range: the Pacific Ocean, Mt. Hood and the Mt. Hood National Forest, campgrounds, and sporting events in Portland. The site encompasses approximately 800,000 square feet, and is relatively flat over its 1600' length. Deciduous and evergreen trees almost completely border the site, providing visual and climatic seclusion. The site
offers a wide range of opportunities; however, the high levels of precipitation in the area will have to be controlled architecturally for resident security. There is only one vehicular entry, and approximately sixty (60) parking spaces will need to be located on the site. The foliage will be utilized to buffer winter winds for interior space (while also allowing maximum solar exposure), and to shade exterior activity.
Region

Located in the spectacular Pacific Northwest of the continental United States, Oregon has become a leading tourist attraction. Over one half of the territory of Oregon is consumed by natural forest preserves, state parks, or lakes. The western border is located along the Pacific Ocean, and the coastline is dominated by rocky cliffs and panoramic views across the water. Oregon provides the primary source for American lumber, due to the abundance of deciduous and evergreen trees. Portland is located in the northwestern section of Oregon, and has become a cultural and economic center of the Pacific Northwest. Portland is easily accessible by boat, plane, or automobile. The combination of scenic beauty and simple access establishes Portland as a principal environment for an elderly resort community.
Natural Context

Portland is naturally surrounded by the Columbia River to the north, Mt. Hood National Forest to the east, the Willamette River to the south, and the Cascade Mountains and Pacific Ocean to the west. The ski resorts, lakes, parks, nature trails, and forests are all within a twenty-five mile radius. The Pacific Ocean and Mt. Hood are both within a fifty mile radius. There are three major hospitals in or around Portland, and the city of Milwaukie has two smaller hospitals. This natural context has made Portland an obvious attraction to campers and hikers.
Climate

Although Portland is located in the northern portion of the United States, the climate remains steady and comfortable throughout the year. The Japanese air current sweeps across the Pacific coastline, transporting stable temperatures and moisture off of the water's surface. The temperature range consistently fluctuates between 45 degrees F and 70 degrees F, and rarely does the temperature hit high or low extremes. There is a relatively small amount of snowfall due to the median temperatures; however, the quantity of rainfall is increased. The mild weather will furnish an exemplary atmosphere for the aging residents.
Site Analysis

The remaining sections of this chapter are focused on analyzing the specific site chosen for the elderly resort community. The breakdown of major site factors include an analysis of the site section, topography, land features, foliage, prevailing winds, solar orientation, views, neighborhood context, noise, and walking distances. The site analysis will provide a thorough understanding of the site peculiarities, and will define the architectural zoning and building form.
Site Section

The building site is situated along the eastern border of the Willamette River. The site is approximately 1600' long, and 500' wide, covering over 800,000 square feet. The relatively large site should provide ample space for forty (40) condominiums, various activity areas, and exterior nature trails. The rectilinear shape of the property will decrease the flexibility of a centralized planning scheme.
Topography

The site elevation drops 120' over the 1600' length of the property. The contours produce an 8% slope, allowing moisture to adequately drain into the Willamette River. The various contours naturally produce terraces, which will allow primary views of the river basin. The topography will enhance the sequence of spatial vistas as one moves across the site.
Major Land Features

The Willamette River flows along the southwestern border of the site, moving at an average speed of two miles per hour. The river coastline is defined by rock formations, and a 20' wide strip of sand and pebbles. The area is relatively flat, yet at two places the site slope increases from 8% to 20%. This will force the resort architecture to be located between the two steep slopes of 20%.
Foliage

The perimeter and middle portion of the site is covered with deciduous and evergreen trees. Many of the trees are over 60' in height, and over 30' in radius. The dense foliage produces privacy and seclusion, psychological security, wind control, shade, and enclose the scenic views across the river. The western foliage will define entry, the northern foliage will buffer winter winds for the interior spaces, and the southern foliage will shade the exterior spaces.
Prevailing Winds

The major wind source is the Pacific Ocean air current, which crosses the site from the west. The winter winds will be controlled by the existing evergreen trees on the site perimeter. The summer breeze enters the site from the east, and will help cool the interior spaces of the living units and activity areas. The prevailing winds will reduce humidity, and will insure comfort for the vacationers.
PREVAILING WINDS

WINTER WIND

1800'

1400'

SUMMER BREEZE

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