An Entrance for Healthful Living and Aging in Place

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Abstract

This paper purports to increase an awareness in universal design as it applies to aging in place and improving quality of life by providing illustrations of modified entrances for existing homes. The resulting designs are intended to improve the lifestyles of the homeowners, allow them to remain in their residences, and increase the value of their homes. All of the redesigned entrances have four common characteristics: a covered pathway without steps, effective lighting, raised gardens, and seating. Aging in place is a growing trend in home design as the number of people nearing the senior stage of life accelerates. Sixty-five appears to be the magic number. Leibrock and Terry state, "It is estimated that there will be over 65 million Americans over the age of 65 by 2030" (1999). Universal design can support successful aging in place through designs that compliment capabilities. Carr et al state that successful aging is defined to include (1) a low probability of disease and disease-related disability, (2) a high level of physical and cognitive functioning, and (3) an active engagement in life (2013).Recently, the Environmental Standards Council of the Center for Health Design added "access to nature" as a key element of physical environments (2014). Access to nature improves concentration, reduces stress, restores attentional fatigue, improves positive affect, and heightens emotional well-being (Kaplan, 2005).In the implementation stage, the entrances of seven homes of varying styles and ages are redesigned to have (1) a covered entry, (2) a no-step surface, (3) ambient and safe lighting, and (4) a raised garden for access to nature. The results provide ways of implementing a healthful environment that can positively impact one's quality of life while supporting aging in place. As Nick Buettner, keynote speaker for the Environment for Aging Conference, states, "Staying young and living long is mostly a function of your environment" (2014).

Keywords: universal design, aging in place and home values; aging in place; nature and aging

1. Introduction

If we think about the one thing every one of us has been doing every day and will continue to do until our deaths, it is *growing older*. As an astounding percent of the world population continues to age, residential needs are changing with each year. One out of every five Americans (age 15 and over) requires assistance seeing, hearing, speaking, walking, using stairs, lifting, carrying objects, getting around, or simply getting out of bed. America's seniors aged 65 and over make up one of the fastest growing segments of society. The population of seniors is expected to double, growing from 35 million in 2008 to 72 million in 2030, representing nearly 20 percent of the total U.S. population (Federal Interagency Forum on Aging-Related Statistics, EPA, 2011). As the baby boom generation (i.e., "boomers," ages 55 to 65, those born between 1946 and 1964) ages, the growth rate of the portion of the U.S. population over age 65 will accelerate significantly. Experts are quick to point out, however, that the aging of the population is not all about the baby boom. Rather, rising life expectancy coupled with a reduced birth rate is driving a long-term change in the age composition of the U.S. population (U.S. Department of Housing and Urban Development, 2013).

Boomers, who are now over 70 million strong and make up 28 percent of the U.S. population, are seeking residential options to enhance aging in place (Bawden, 2015).

Aging in place has been broadly defined throughout the literature as the ability to stay in one's own home as a person ages (Cutchin, 2003; Kunstler, 2002; Lanspery and Hyde, 1997). Leibrock and Terry report that there is more reason than ever for boomers to plan to age-in-place; over a million of them will reach the age of 100 (1999). In addition to human (e.g., psychological and physical) benefits, integrating aging in place attributes to a home may have a financial benefit. In 10 to 15 years, there will be a huge demand. Accessible houses will command higher prices, especially if the accommodations are done in a way that does not look institutional or "handicapped" (Jordan, 2014). Bawden indicates that the economics of aging in place modifications are clear, as moving to a typical assisted-living facility can easily cost $60,000 annually (2015).

Aging in place design choices are gaining a higher profile as baby boomers become a larger and larger segment of the population. According to AARP, the majority of older Americans want to stay in their homes permanently and live independently. U.S. housing data suggest that the majority of older adults are indeed achieving their goal; Houser et al report that 80 percent of older adults are living independently in their own homes (2006). The 2012 AARP housing survey indicates that, "83 percent of older Americans want to stay in their current homes for the rest of their lives," but other studies show that most homes are not designed to promote independence, prevent accidents, and accommodate the needs of people as they age. The majority of seniors live in homes that are more than 20 years old. As these buildings get older along with their residents, they may become harder to live in or maintain. A house that was perfectly suitable for a senior at age 55, for example, may have too many stairs or slippery surfaces for a person who is 70 or 80 (Administration on Aging, 2012).

This demographic change translates into a growing demand for residential designs that anticipate changes in health, vision, and mobility, and ensure that residents stay safe, comfortable and aesthetically pleased (Jordan, 2014). Design components may be as simple as additional lighting, lever-style door handles, well-located storage, and slip-resistant flooring,or as extensive as an open floor plan with plenty of circulation space in single-level dwelling with a no-step floor surface. The cost for these changes may turn into an investment in the home's value.

Specifically, this paper examines three questions. First, how can principles of universal design be applied to the exterior entrances of existing homes to enhance the lives of homeowners aging in place with designs that compliment capabilities? Second, how can access to nature be added as a component to the home of aging adults? Third, what are examples of home entrances redesigned or retrofitted to improve the owner's lifestyle and increase home values while the owner remains in his or her home? In summary, this paper purports to increase awareness of universal design and to provide ideas for retrofitting the entrances of existing homes for the purpose of successfully aging in place.

The paper is organized in five sections, beginning with this, Section 1, Introduction. Section 2 is a review of selected literature related to senior socialization and their homes, universal design as it applies to home entries and aging in place, and the value of nature during the aging process. Section 3 presents the methodologies employed in the paper. Section 4 is a discussion of the results, and Section 5 presents conclusions.

2. A Selected Review of Literature

Senior Socialization at Home

The National Aging in Place Council (2015) reports that the entry to a person's home is his or her connection to the rest of the world. It should be safe and convenient no matter what the weather, day or night, nor age and physical condition of the homeowner. It is important for receiving guests, for bringing in the groceries, for getting to appointments, and for getting out to social events. To encourage socialization, the Center for Inclusive Design and Environmental Access—the IDEA Center(2008) recommends increasing home access by designing for "visitability."Visitability is defined by the IDEA Center as a characteristic that differs from both full accessibility and universal design. The goal of visitability is to provide a few basic accessibility features, such as a zero-step entrance and doorways with adequate clear passage, that accommodate a person with mobility limitations, as described by the IDEA Center:

"Many houses have steps at all entrances, narrow doorways, and long and narrow hallways. Though a majority of older Americans prefer to stay in their homes, these barriers can make it difficult for older adults to remain in their homes throughout their aging years."

Universal Design, Aging in Place, and Home Entry Needs

People can live rewarding lives well through their elder years. Nick Buettner, keynote speaker for the Environment for Aging Conference, states, "Staying young and living long is mostly a function of your environment" (2014). We have control over our environments. "Universal design" is a term developed by Ron Mace, a nationally and internationally recognized architect, product designer, and educator whose design philosophy challenged convention and provided a design foundation for a more usable world. Rogers (2015) states that Mace created the term "universal design" to describe the concept of designing all products and the built environment to be aesthetic and usable to the greatest extent possible by everyone, regardless of their age, status in life, and abilities versus disabilities.

Since disability rates increase with age, population aging will bring substantial increases in the number of disabled persons and have a significant impact on housing needs. Using disability measures of physical and self-care limitations, Maisel et al project that 21 percent of households will have at least one disabled resident in 2050 and estimate that there is a 60 percent probability that a newly built single-family detached unit will house at least one disabled resident (2008). Given the desire of most people to live independently for as long as possible, these numbers reflect a large and growing need for housing units with features that make them accessible to people with physical disabilities. Housing accessibility is a critical issue for planners and policymakers as well. Both housing builders and home residents will need to broaden their visions of the built environment to include the accessibility of housing.

The National Association of Home Builders has constructed an "Aging in Place Remodeling Checklist" with a segment on the home entry that includes the following suggestions (2015):

- Accessible path of travel to the home
- At least one no-step entry with a cover
- Sensor light at exterior no-step entry focusing on the front-door lock
- 32-inches of clear width, which requires a 36-inch door
- Non-slip flooring
- Entry door sidelight or high/low peep hole viewer; sidelight should provide both privacy and safety
- Doorbell in accessible location
- Surface on which to place packages when opening door

In a study on increasing visitability through home design, Maisel et al (2008) provide the following list of three "core architectural features" for a home that accommodates socialization:

- One zero-step entrance at the front, back, or side of the house, depending on site conditions
- Doorways that provide 32-inches of clearance
- At least a half bath on the main floor

When specifically assessing outdoor entry space, a path that allows for increased mobility and safety of movement is significant. Often, paths need a hard, yet water-permeable surface that wheels can roll over easily. Some sites have had success with fine gravel surfaces or wood mulches on pathways. On sloped sites, foundation grading, ramps, and handrails may be needed. In addition to lighting, as examined in the checklist, the use of shade, organic or built, in an outdoor entrance can provide aesthetic benefits and increase accessibility. Shade trees can provide a respite from heat and ultraviolet radiation. Trellises planted with flowering vines or edible vegetables add shade and aesthetics. Shaded areas also provide an ideal place for seating, which can increase accessibility and comfort, making the outdoor entry more appealing and, subsequently, used more often.

Natureand Seniors: The Green and Gray

Studies show that access to nature, even visually, improves concentration. In addition, nature experiences have been associated with reduced stress and improved positive affect, as well as stress control and emotional well-being. In fact, studies have validated those feelings of well-being, showing that older adults who spend time in sunlight and nature can reduce illness and improve overall health (Sitko, 2014). Loder and Smith, environmental psychologists, suggest that nature allows for a soft fascination that can restore attentional fatigue and concentration (2013).

Beuttner supports the premise of spending time in nature with his statement, "One of the most powerful things we can do is set up a garden; creating a good, low-impact exercise that gives one a sense of purpose and something meaningful to do" (2014).

The Environmental Standards Council (ESC) of the Center for Health Design recently submitted a successful proposal to the Facility Guidelines Institute to include "access to nature" as one of the key elements of the physical environments (2014).

Fifteen years ago, the concept of "gray and green" was first introduced by Wright and Lund as representing new awareness and call for additional scholarship at the intersection of environmental issues and the aging process (2000). An important result of research exploring "the gray and the green" (Anderson and Hussey, 2000)is increased attention to the role of the natural environment as it relates to the "built environment" and successful aging (Wright and Wadsworth, 2014).Having access to nature and the outdoors has long been considered therapeutic for seniors. Research has shown that spending time outdoors can improve sleeping patterns, reduce pain, speed up recovery from disability, and even increase longevity (Connell, Sanford, and Lewis, 2007) **(**Fujita, Fujiwara, Chaves, Motohashi, and Shinkai, 2006) (Jacobs, Cohen, Hammerman-Rozenberg, Azoulay, Maaravi, and Stessman, 2008) (Takano, Nakamura, and Watanabe, 2002).

In 2010, the Center for Health Systems and Design at Texas A&M University published a study of 1,128 residents and 432 staff members at 68 randomly selected assisted living facilities in three distinct climate zones chosen from the 10 primary emerging megapolitan regions across the U.S. designated by Connell et al and Takano et al (2002 and 2007). The average age of residents was about 84 years, with 79 percent women and 21 percent men. The average staff age was about 44, with 89 percent women and 11 percent men. The survey results compared the objectively rated qualities of facility outdoor space with the outdoor usage levels of residents, to see if they spent more time outdoors in places with better-rated environments. The study found that the amount of time residents spent outdoors was substantially influenced by several landscape features evaluated by the core design concepts. There was also strong correlation between outdoor usage, levels of walking and physical activity, environmental satisfaction, and the self-reported health of residents.

The main findings of this study indicated that many of the key features long considered important by researchers and design practitioners, such as safe paving, good seating, and strong indoor-outdoor connections, are actually measurably related to outdoor usage by elderly residents, when all other factors are controlled. Collectively, these findings show that the quality of the outdoor environment is strongly linked to important health-related measures and behaviors. Even the feature with lowest impact ("the outdoors can be reached entirely by paved walkways") increases the amount of time spent outdoors substantially—by an additional 51 minutes per week. The environmental feature with the highest impact ("the outdoor area has good views of birds and wildlife") is associated with a nearly 10-fold increase in outdoor usage—from 118 minutes per week to 1,032 minutes per week. This is the equivalent of going from about 27 minutes per day to nearly two and a half hours per day, a radical change. These results suggest that the qualities of the outdoor space are likely to have a significant and powerful impact on outdoor usage by seniors.

Elder-accessible gardens create opportunities for seniors to contribute their time and expertise to grow nutritious foods, socialize with one another, and pass on cross-generational knowledge to younger people (EPA, 2011). In a study by Wang and Glicksmanon the benefits of gardening for older adults, the nine main themes of why seniors choose to participate in gardening were mental health benefits, the end product (fruits and vegetables), continuation of a past life, something to do/responsibility, beauty and connection to growth, connecting with others, physical health, learning something new, and helping each other out (2013). Wright and Wadsworth's (2014) extensive literature review and examination of various multidisciplinary perspectives proposes that gardens and gardening represent multidimensional phenomena in the lives of many older adults, and it is much more than a physical activity exerted for cultivating fruits and vegetables. Done correctly, the benefits of gardening are twofold: increasing quality time and providing non-strenuous exercise.

3. Methodology

In this study, the review of literature was conducted to improve professional practice in home design. A growing problem encountered in professions related to home design is adapting existing homes to fulfill the changing needs of homeowners choosing to age in place.

Once the review of literature was completed, variables were identified to effectively design home entryways that accommodate the population segment of home owners aged 55 and over who desire to remain in their homes as they age. Once these variables were defined and validated, the methodology is to apply these findings to a select sample of existing home styles.

In this paper, seven existing homes of varying styles are used to examine how the entrances can be redesigned and/or structurally changed to accommodate universal design principles and aging in place needs. The redesigns of these home entrances are planned to create opportunities for low-impact exercise through gardening in order to provide both a meaningful life purpose and a healthful environment. All of the redesigned entrances have the following four common characteristics, as determined from the review of literature: (1) a covered pathway with no steps, (2) effective lighting, (3) raised gardens, and (4) seating.

4. Discussion of Results

The seven selected homes are all located in southwest Missouri. All of the residents are at or nearing retirement age, and all are healthy and lead active lives. The homeowners share the common interest of improving their existing living spaces to help accommodate aging in place at a cost that would be less than one to two years in a residential or assisted care facility. They also share a great deal of appreciation for nature.

With all seven homes, the berms designed to create pathways to and away from their homes are all planned so that they do not butt up against home foundations or block light into basement windows. This should also keep water runoff from eroding plants away from the homes. In addition, in all seven homes, the entrances are designed with no steps to provide a welcome, functional, and safe pathway. The changes are also enhancements that do not look like a "tack-on" or a "wart."

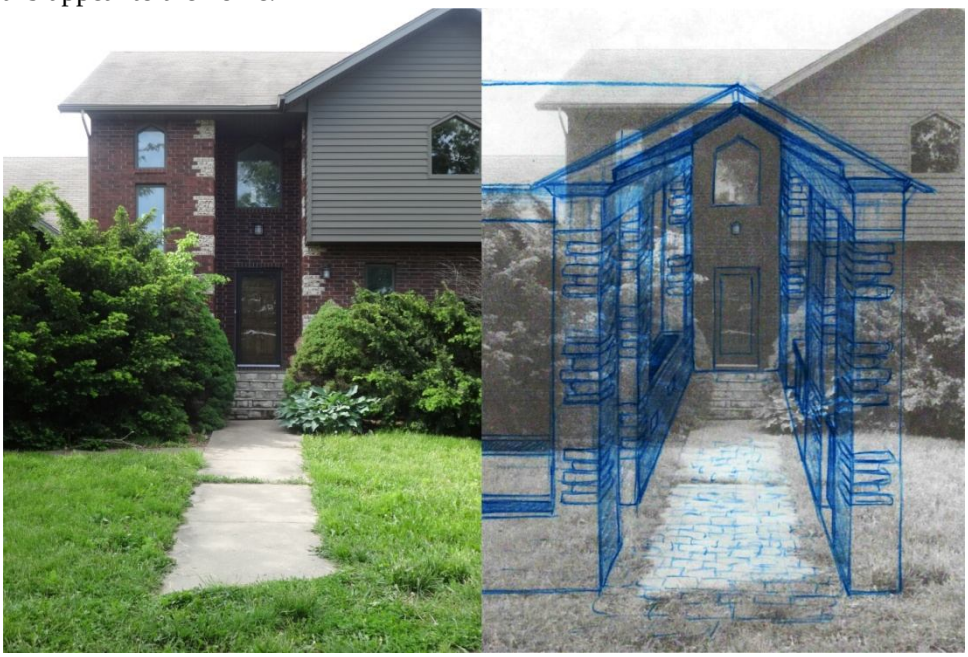
The Asay residence is a beautiful multi-level home situated on private wooded land. The first step in creating an entrance for healthful living at the Asay residence is to install a graded berm, providing a graded pathway to access the front door and the new circle drive. Shade plants, along with vegetables and herbs, are scattered among the raised planters and seating areas. PlyGem stone in French Country Fieldstone is applied around the planters to match the existing floor of concrete paver stones set closely with sand for an even surface. The Ply Gem product is specifically selected as it is designed for this application; it has a drip cap that keeps water away from the house and does not require footings. Effective lighting is constructed through three techniques: low voltage elite post lights on planters and posts with the lights radiating in four directions, lantern sconces on the tops of posts facing the pathway, and skylights to enhance the structure transition and allow more daylight for plants. A bench is built into the walkway, facing the driveway. The existing treated lumber covering remains as it prevents a wet and slippery surface; however, a walking surface is applied to the planks for additional safety.

The Feerhome is an older two-story house with a columned front porch featuring original built-in planter boxes. The remodel consists of converting an existing garage into an art studio and creating an accessible garden in the path from the home to the studio. Large glass doors are added to the former garage to provide an entrance to the studio and views of the patio and pathway. The driveway is relocated to the west using brushed concrete. In its place, a zig-zag path with planters for gardening and post lights for ambiance and safety are added to guide the home owners and guests to the studio. A covered patio with seating is attached to the front of the studio; a fireplace is erected near the patio. To personalize the new art studio with its garden path, customart glass is used for lighting and the side door to the studio.

The Leitle home is a bungalow in the country. Adding berms to raise sloped entrances at both the side and front doors provides aesthetics and an outdoor sanctuary for relaxing and gardening. The entry addition provides a place for needed landscaping. The entry extension is slanted to replace the front steps with a ramp-like covered and lighted walkway (9 to10 feet wide) to the garage with a drive-through midway. Seating and raised gardens are constructed in the walkway.

A ranch style home, the Newbold place has a large front yard that easily accommodates a new entry for healthful living. An enclosed, screened porch with very slight grade is added to meet circle driveway.The front porch area is lit with both overhead and low area lights. To provide needed additional lighting, short posts topped with colored glass caplights are placed along the driveway. Landscaping of Emerald Gaiety, Firepower Nandian, and Boxwood shrubs is mixed with sun perennials for year-round color between the porch and garage area.

The brick home of the Stanley family originally featured a small set-back front porch with steps. The refitting of the home began with enlarging and covering the entrance with a roof extension that creates an interesting line and provides significantly more entry space for socializing and gardening. Raised planters and seating are installed on each side of the new porch and in the area under the home's front window, space that was previously dark and unused. A drop-down shade is provided to minimize the morning sun. Finally, the new circle drive allows ease of entry and adds curb appeal to the home.



The three-story White home had an entry that was little more than steps and a door opening. A long covered, lighted walkway is added from the front door to a new circle drive. The walkway is divided space with seating and raised planters, allowing in light while providing shelter. The design uses very tall columns of stone and brick that match the existing entrance. A second smaller, covered and lighted walkway intersects near a new "sweeping" driveway directed to the east of the property. A water feature is incorporated into the landscaping of this entry space.

As the starting place to a healthful entry, the aggregate drive of the Woodcock home was replaced with large concrete squares tinted to match the house. The front step is graded and concrete is incorporated from the front door to the drive. Stone walls on each side of the walkway are changed to raised planters of varying heights. The new walkway cover is supported by illuminated vertical wood columns that match the house and provide lighting.

5. Concluding Remarks

The concept of successful aging has become increasingly important as seniors begin to dominate the population demographics. Maintaining an active engagement in life through participation in social and productive pursuits is one component of successful aging (Rowe and Kahn, 1987). Since the built environment directly impacts the engagement profiles of seniors, it is necessary to provide environments designed to suit the needs of older adults (Demirkan, 2007). Loder and Smith (2013) conclude:

"Evidence-based design in exterior spaces that supports health and well-being will further improve our understanding of the relationship between the natural and the built environments, as well as nature's influence on human health. The human connection with other living systems innately binds us through our familiarity with similar life cycles and natural rhythms, and meditates our sense of understanding in times of stress. Positive distractions and elements of surprise and wonder, which nature so vividly provides, offer a respite from anxieties…"

Gardens and gardening can also represent an intimate connection with life itself through caring and being a steward for living organisms that also reciprocate with nourishment, aesthetics, and existential meaning in aging. As an unknown author (while clearly of age) states, "Gardening adds years to your life and life to your years."

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