Chapter 16. Architecture as a creative practice for improving living conditions and social welfare for Alzheimer's patients

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Abstract

The purpose of this paper is to present a portion of the results obtained over the course of the work carried out as part of the "Designing tailored spaces for the absence of memory", research from the Healthy Architecture & City, Research Team at the University of Seville. The objective of this research is to determine the best physical environment for allowing Alzheimer's patients to carry out their daily life with the greatest possible safety, accessibility and independence. Here we share a variety of international buildings with architectural value that have contributed to the evolution and creation of a new type of arrangement for Alzheimer's patients. The principal contribution of this report is to define the characteristics of this new architectural typology.

Keywords:architecture, Alzheimer, health, welfare, humanities.

Theoretical background

During the first half of the 20th century, the majority of Alzheimer's patients were treated at mental hospitals, 45% of these centers contained an area or health care wing focusing on people affected by Alzheimer's. The policy change that took place in the American health care system during the years 1955-1980 caused hospitals to lose 75% of dementia patients to so-called

"nursing homes" and new initiatives were undertaken in the interest of this system (Calkins, 1988).

New studies and research on planning and designing spaces for people with dementia began in 1985, producing manuals by Brawley, 1997; Calkins, 1988; Cohen and Day, 1993; Cohen and Weisman, 1991; Marshall, 2001. This resulted in the creation of architectural solutions designed to improve the physical environment of Alzheimer's patients and the recognition of their ability to directly aid people with dementia (Kristen, Carreon, and Stump, 2000). New specialized equipment has given rise to a new type of architecture as well as a series of architectural practices designed to improve the well-being and quality of life of this group.

Objective

The aim is to demonstrate how the standard hospital model for this type of patient has changed since the advent of the first specialized centre, one that used a purely residential plan, up to the appearance of a new, residential-care model. The new healthcare paradigm has had a very important influence on the form and type of building, architectural practices, as well as on the design of healthy spaces designed for these patients. The objective is to define the characteristics and unique features of this new model for taking care of the needs of people affected by Alzheimer's.

Method

The tool used to carry out this research has been the analysis of buildings designed for Alzheimer's patients. It begins with the first examples that appeared at the end of the 1980s and continues to today. The criteria for

their selection has been that these complexes have been built, contain long-term residential units, and are for exclusive use by this type of patient or contain an independent division in their formal and operational structure. By applying these criteria, we have obtained a sample of 37 complexes, distributed in the following manner: North America (35%), Europe (21%), Oceania Australia (6%) and Asia (3%).

The method used consisted in a comparative observational analysis of these structures, a standard methodology in the field of architecture. By understanding the main buildings and equipment designed for patients with memory problems, their structure and layout, we can obtain data in order to define what a building designed for this purpose must feature and contain. Identification files were created for each complex, including information on the following aspects, assessed and compared through visual representation:

- situation in the context of the site
- number of persons assisted
- surface area and dimension of rooms
- facilities and services provided
- places for social interaction
- places for contact with the outside or natural worlds
- use of materials
- use of light
- inclusion or integration of new technologies

Results

The methodology that follows determines what elements are shared, as well as the main characteristics of this new typology. The elements that make up this new type of building style are:

1. Housing as the basic unit of spatial organization

The first building, specially designed with Alzheimer's patients in mind, belongs to the Corinne Dolan Alzheimer Center, built in the year 1985 in Heather Hill (Cleveland). It is a rest home (replace with: nursing home) that emerged using a new architectural approach, combining medical care with the goal of determining what environmental and design characteristics would help to keep Alzheimer's patients relaxed, safe, independent, and active for as long as possible (Lewin, 1990). It was built using an organizational model whose main contribution was the elimination of long distances, using concentric hallways leading to the common areas and open spaces visible from the room of each resident each resident’s room.

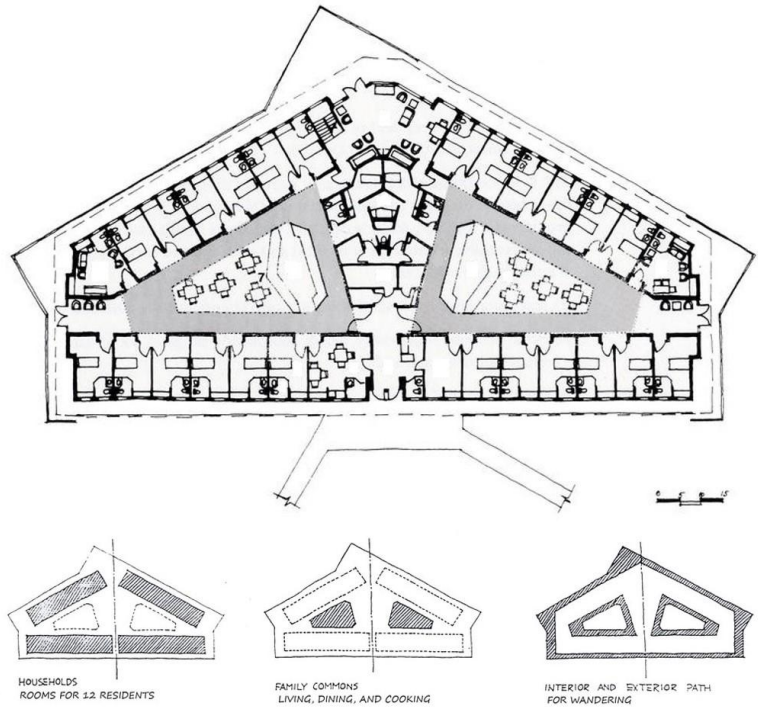

Figure 1. Floor plan and spaces and routes schemes from Corinne Dolan Alzheimer Center, Heather Hill (Cleveland), designed by Taliesin Associated Architects, 1985.

In 1991, the construction of Woodside Place in Pennsylvania led to the most significant advance in the theory of caring for the patient through architecture. The building was designed for 36 residents, using a spatial model that utilizes housing as the core unit of organization. It is a one-story building, made up of three modules, each containing twelve rooms. The floor plan is in the shape of a comb or an "E," with each arm containing one of the modules. The piece that brings everything together is the area where social interaction takes place. This plan proposes an expandable structure, allowing for an increase in the number of modules and the ability to care for any number of residents without neglecting their specific needs.

This complex also innovatively introduced the use of the environment as a therapeutic tool for the resident, proposing that space influences memory, incorporating decoration and the presence of personal furniture that allow patients to recall their homes. Another innovative element is the relationship and connection established by the outside areas, replacing isolation and control of the patient with the ability to spend time in garden areas included as part of the complex.

Many projects with a considerable formal similarity were later based on this model. These are architectural approaches based on creating pleasant spaces and designing a new habitat that counteracts the trauma created by the need to leave one's family home. This is in light of the fact that adjusting to a new location, as well as encountering strangers, may produce adverse reactions and behaviour in the elderly (Anthony, Procter, Silverman, and Murphy 1987).

2. The limited residential scale and location

The number of residents is an element that directly influences the design of buildings for people with Alzheimer's. Based on the results of research carried out at fifty-three special nursing homes or retirement homes in four states of the USA (Sloane et al., 1998), design guides proposed that units with a small number of residents reduced the over-stimulation of people with dementia, mainly due to control of noise. 73% of the total complexes analyzed in the research sample contained a residential population of less than one hundred people.

The first arrangements follow the North American tendency to live in houses located on extensive areas of land, giving rise to the so-called Green Houses, characterized by their location in rural or suburban areas and

limited number of residents. This is the solution proposed by White Oak Cottages in Colorado (2006), a building in direct contact with nature, outside of any urban areas, in which all the rooms are arranged around a central living area for social interaction.

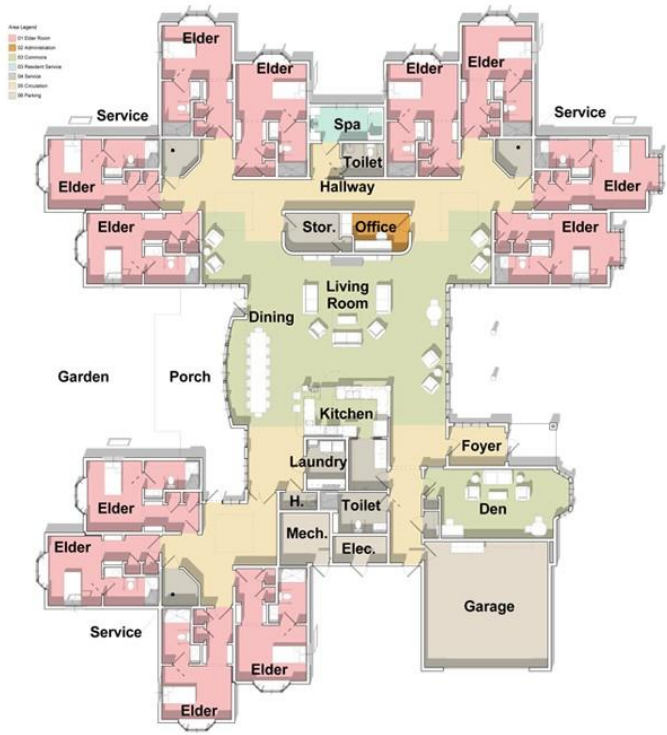

Figure 2. Floor plan of the project White Oak Cottages (Colorado), designed by EG Architects, 2006.

The models developed in North America were also adopted by the rest of the world, especially in Europe. One such example are the projects designed by Feddersen Architeckten, such as the Kompetenzzentrum Demenz in Nuremberg (2006); they are buildings that maintain an operational

organization based on housing as the core units, but which grow in height or generate green spaces within the complexes themselves, due to the fact that there is often a lack of available floor space.

3. Incorporation of care services along with residential ones

Over the last few decades, the spatial model for the care of dementia patients has undergone diverse structural changes, mainly conditioned by the need to provide spaces that are not only residential, but also include the specific care required by dementia. In this manner, there has been a transition from a purely residential model to a mixed one that includes care services in residential areas equipped to fit a domestic context. This change has been reflected in open architectural structures that contain areas or added modules with services such as areas for medical attention, special care, or sanitary needs. Some complexes also appear in which the architectural structure is a closed space with control over all the patient's daily activities, integrating all the services into daily life.

An example of the former structure is the Reina Sofia Foundation's Alzheimer center in Madrid (2007). It is a complex for 156 residents divided into six modules, each containing areas for care according to the different stages in the evolution of the disease. It also contains research areas, a day center, and a common area. It is located in an urban area, meaning that views to the outside are through interior patios located in each one of the rectangular modules. These elements allow for a space that helps to orientate the residents, incorporating natural light into all of the center's rooms.

The latter structure mentioned is a residential complex that creates a fictitious interior reality with the purpose of offering a living model that

appears normal, incorporating complimentary care and safety services for inhabitants. This is the case of Dementia Village in Hogeweyk (2009) in the Netherlands, a center for 150 residents with 23 housing units, each for six to eight inhabitants. It is an enclosed complex measuring one hectare (2.47 acres), containing an urban environment with supermarkets, pharmacies, shops, etc., with the goal of making the residents feel like they live in a recognizable environment, one that is similar to their original city or neighborhood.

Figure 3. Exterior spaces at Dementia Village complex in Hogeweyk, Wees (Holland), by Molenaar & Bol & VanDillen, 2009.

4. Integration of new technologies

The spatial disorientation of these patients is created by the presence of an unrecognizable space, a confusion in regards to the time in which they live, aggravated by the loss of personal identity (Cohen and Weisman, 1991). A simple, clear organizational plan, with environmental information made explicit, helps the resident to properly orient themselves (Passini et al, 1998).

Some of the creative practices employed by architecture allow the patient to recognize spaces, and guide them around the facilities. At Woodside Place Pennsylvania or the Alzheimer's Respite Centre (2011) in Dublin, they use keepsakes, photographs of the rooms, or color coded doors 81% of the projects analyzed include home decoration with the goal of including recognizable elements and providing the patient with the memory of their

residence. Some buildings, such as Abe´s Garden (2015) in Nashville, transcend the barrier of housing in order to create an outside space that allows for a landscape reading of the environment in which they have lived, making it possible to maintain a direct link with an environment that is familiar to them.

The most recent building proposals are also examples of contemporary architectural language. This is the case of Établissement d'hébergement pour les personnesâgées dépendantes (2012) in Paris, which includes prefabricated panels on the walls that allow for a dimming of the light according to the time of day or the needs of residents, or the Alzheimer Residence for the "Froyer la Grange" (2014) in Nantes, which innovatively employs exposed concrete and reinterprets the first models of this type, maintaining the same formal design but using a new approach to home decoration.

Figure 4. Interior spaces images from the Alzheimer Residence for the "Froyer la Grange" Center, Nantes (Francia), designed by Mabire Reich, 2014

The integration of new, emerging technologies is another of the most-used architectural practices in these complexes with the purpose of designing an environment that proactively interacts with the Alzheimer's patient. They use automatic mirrors that can turn opaque, or that include tasks, temperatures, times, activities, location sensors or sensors connected to light circuits, and bio-climatic facilities that provide warmth and comfort to the domestic environment. These techniques used in these new care spaces, have an important influence on elements such as the management of stress and anxiety.

Discussion

The evolution of specialized architecture for Alzheimer's patients reflects the change in the model for collective residences. It has gone from one centered around hospital assistance in which the patient is a resident within the organizational structure of the complex to the development of new types of buildings and services, where the care and attention focuses exclusively on this type of patients. This new type of care arrangement is based on a reduced amount of residential space that is appropriately scaled, with a simple and organized layout tailored to the needs, symptoms and requirements of the patients. It incorporates spaces for direct interaction with the physical setting as a key element serving as reference points in time and space.

The basic unit of the layout is the residence, considered the optimal habitat for someone with Alzheimer's, considering that the scale and type of residence serve as a link between the patient and their environment, in addition to maintaining a constant and recognizable number of inhabitants

living together in the same space. The residential space requires personalization that is adapted and adaptable to the particular characteristics of each patient. Different architectural elements are used to achieve this objective: the use of natural light, the organization of space, the use of crossed visuals or warm-coloured materials. The main technique, however, is the integration of new, emerging technologies that can be used to gradually adapt the residence to the progress of the condition.

All the above are creative elements generated and organized by the discipline of architecture in order to provide a solution to the symptomatology and evolution of Alzheimer's disease, improving their quality of life.

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