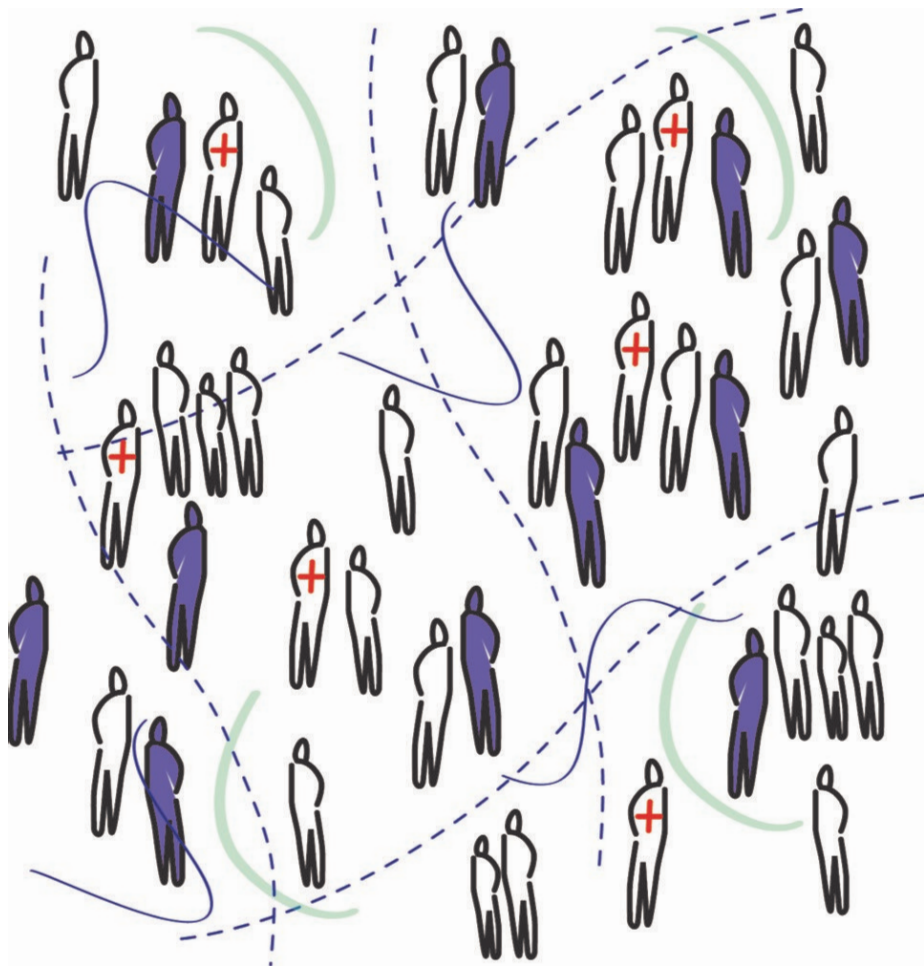


INTERIOR DESIGN AS A TOOL FOR DEMENTIA CARE

Experiences and guidelines for the Therapeutic Habitat Model

Silvia Maria Gramegna



Direction: Silvia Piardi

Scientific Board:

**Alessandro Biamonti, Alba Cappellieri, Mauro Ceconello,
Claudio Germak, Ezio Manzini, Carlo Martino, Francesca Tosi,
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INTERIOR DESIGN AS A TOOL FOR DEMENTIA CARE

Experiences and guidelines for the Therapeutic Habitat Model



Silvia Maria Gramegna

D.I. **FRANCOANGELI** OPEN  ACCESS
DESIGN INTERNATIONAL

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1. Dementia & Alzheimer's Disease

1.1. Global ageing and age-related changes

Who is old? There are a number of existing synonyms for the word “Old”. This variety of words depicts a group of people whose ages cover a range of 40 or more years, with different peculiarities and needs. As Kinsella (2005) reports:

Some gerontologists object to the terms “elderly” and “senior citizen” as inadequate generalizations that connote negative stereotypes, including social isolation, frailty, and physical and financial dependence. At the same time, a general term is useful for cross national comparisons.

Population ageing is usually defined as the percentage of a given population age 65 or older (and sometimes the percentage ages 60 and older). The number of individuals aged 65 or older was estimated to be 461 million in 2012. Projections suggest that this estimation will continue to grow exceeding 10 million during the next decade; that means more than 850,000 each month (WHO, 2015). Older population is spread all over the world. For example, in 1990, 26 nations had older populations that reached 2 million people. In the next 10 years, more than 30 nations had an older population that reached 2 million individuals. Projections to 2030 indicate that older population will continue to increase, incrementing the number of nations whose older population of 65 or more, reach 2 million. The projections expect more than 60 countries. (Kinsella, 2005; Powell, 2010; Murphy et al., 2018). Industrialized and high-income countries nowadays have the highest

percentage of older people. Hence, Europe and North America are usually associated with the idea of being the “oldest countries”. But, as well as industrialized ones, less developed nations also have large percentages of older individuals that are very quickly increasing. Nowadays, 60% of the world's older population live in low-income and less developed countries (WHO, 2015). By 2030, projections estimate that this percentage is going to reach 71%, that means 690 million people. This trend in less developed countries is caused by a progressive decrease in birth rate (Murphy et al., 2018). A phenomenon similar to the rapid birth decrease that occurred in the last decades in many developed countries. As the percentage of older people worldwide increases, this part of the population, with its needs and concerns, becomes significant for most of the countries (Kinsella, 2005). Starting from the last few decades, it was registered a trend reversal in the process of aging: not only the populations of high-income and developed countries have been aging, but this process also became common in many less developed countries.

According to WHO (2021):

in 2020, the global population aged 60 years and over is just over 1 billion people, representing 13.5% of the world's population of 7.8 billion. That number is 2.5 times greater than in 1980 (382 million) and is projected to reach nearly 2.1 billion by 2050.

In detail, by 2050, the percentage of older people in less developed countries is expected to increase more than 250% and the percentage in developed countries is projected to increase of 71% (WHO, 2021). This demographic transformation will have a profound impact on the worldwide socioeconomic development. Population ageing is the result of medical advancements, enhancement of public health services, and economic development in order to decrease diseases that had limited human life expectancy for centuries and offer better care services. This worldwide phenomenon led to an international reflection on the challenges (and duties) that aging bring along, in terms of national development, sustainability, families well-being, and the abilities of countries to provide services for aging populations. In April 2002, took place the Second UN World Assembly on Aging, in Madrid, twenty years after the first assembly. During the two decades

between these major conferences, the focus had shifted from demographic and economic issues necessary to provide assistance to aging populations, to a positive attitude of developing strategies for the inclusion of older populations, aiming at expanding roles for older people, and develop effective national policies. The central themes discussed in 2002, in the conference (Madrid International Plan of Action on Ageing 2002) explored three main priorities:

- Older people and economic development
- Advancing health and well-being for elderly
- Ensuring enabling and supportive environments (Kinsella, 2005).

Thus, policymakers increasingly recognize that worldwide populations need development strategies that are able to include the entire society, comprising elderly people, accepting and integrating the global aging process as a growing phenomenon (WHO, 2015). Since 2002, WHO is active in developing new guidelines and future strategies to improve ageing conditions and healthy ageing policies. As a result, older people are at the centre of a new action plan on ageing and health – called the United Nations (UN) Decade of Healthy Ageing 2021-2030. The Decade of Healthy Ageing (“the Decade”) commits WHO and the UN to 10 years of collaboration and action. It brings together governments, civil society, international agencies, professionals, academia, the media and the private sector to collaborate in improving the lives of older people, their families and their communities (WHO, 2021). European population is reported by statistics as the oldest one worldwide, if compared to other countries such as US that represents one of the youngest. Projections expect Europe to remain the world’s oldest region during all the 21st century. In detail, more than 19% of Italy’s population is age 65 or older, turning this nation into the world’s “oldest” major country. Therefore, the world’s 20 oldest countries are all in Europe, except for Japan, (WHO, 2015).

In Asia, Latin America and the Caribbean the older population is expected to more than double between 2030 and 2050. Ageing is a slower phenomenon in sub-Saharan Africa, where relatively high birth rates are keeping the population “young” (ONU, 2015). There are several indicators of the age structures inside a country, such as the ageing index, median age, and support ratios that compare different

portions of a given population. One effective indicator of age structure is the aging index, defined by Kinsella (2005) as

the number of people age 65 or older per 100 children under age 15.

The number of nations expected to have older population more numerous than youth between 0 and 14 years is rapidly growing. Nearly high-income countries are expected to face this situation by 2030, and moreover, the projected aging index is expected to reach 100 in the majority of them, and even reach 200 in countries like Italy or Japan. Moreover, population ageing also forewarns the onset of an enormous challenge: the increase of ageing-associated diseases. There are different health issues that confront today's older population. Some of them are chronic conditions that, even if they are expected to be diagnosed at a younger age, are typically seen with the highest frequency in older patients. Ageing-associated diseases include cancer, hypertension and cardiovascular disease, cataracts, arthritis, type 2 diabetes, osteoporosis, atherosclerosis and degenerative diseases such as dementia, and in particular Alzheimer's disease.

1.2. Understanding Alzheimer's Disease

Emil Kraepelin, at the beginning of 1900, firstly underlined the pathological basis of Alzheimer's disease. A few years later, another German psychiatrist and Kraepelin's long-time colleague, Alois Alzheimer identified its neuropathological features which is unanimously considered his most known contribution to Neuroscience. in particular, he focused his attention on Auguste Deter, a 51-year-old patient at Frankfurt Asylum – where he met and coworked with the aforementioned Emil Kraepelin: she had unusual behavioural symptoms, including a loss of memory, agitation and lately severe dementia. Five years later, after her death, in collaboration with two Italian physicians, he was able to identify two peculiar characteristics that henceforth were recognized as distinctive characteristics of the disease: amyloid plaques and neurofibrillary tangles. in 1910 a second case – a 56 years old patient – confirmed the

brain characteristics previously described and Kraepelin proposed to call this syndrome as “Alzheimer’s disease”. Curiously Alzheimer’s disease was considered a middle age disease since first patients studied were relatively young and similar neuropathological features in elderly people were merely associated to the normal process of ageing.

Alzheimer’s Disease is one of the most common forms of dementia. Dementia is the umbrella term used to describe the symptoms that occur due to Alzheimer’s disease. In particular, Alzheimer’s Disease is defined as the “four A’s disease”: significant memory loss (amnesia), inability to formulate and understand verbal messages (aphasia), inability to correctly identify stimuli, recognize people, things and places (agnosia) and inability to perform certain voluntary movements correctly even through the use of objects, for example, dressing (apraxia). In general, these pathological features include the inability to perform daily life activities, memory losses impairing the individual’s ability to perform basic activities, behavioural changes, and communication problems (Alzheimer’s Association, 2013). In many cases, the progression of dementia is slow and can last even 20 years. Basic daily activities are impaired by dementia. During the onset of the disease, people with dementia more and more require assistance to get out of bed, to get dressed, while taking a bath, in normal personal hygiene activities, to eat properly or to use cutleries. Behavioural symptoms also characterize people with dementia. Among them, the most common are wandering, crying, getting upset, repeatedly asking for something, difficulties in movements, experiencing difficulties in getting dressed. In addition, delusions, depression and hallucinations, represent psychiatric symptoms of dementia. Coexisting medical pathologies, caused by ageing process, can also occur to people with dementia, but are not caused specifically by the disease. Hence, long-term care is often required as these individuals become unable to independently perform daily life activities and take care of themselves.

1.2.1. A global epidemic

Currently, the world's older population nearly reaches 900 million people. The majority of older people live in low-income countries. Due to medical achievements, and better care methods, life expectancy is projected to increase worldwide in the next decades. The reasons behind this phenomenon have to be found in improvements towards lifestyles, behaviours and better medical assistance. This implies, in the future, an increase in chronic diseases. Today, over 46.8 million people live with dementia worldwide. This number will reach 74.7 million in 2030, and 131.5 million in 2050 (World Alzheimer Report, 2018). Consequently, dementia can potentially have a huge economic impact. As Alzheimer Report (2015) states:

the total estimated worldwide cost of dementia is US \$818 billion, and it will become a trillion-dollar disease by 2025. This means that if dementia care were a country, it would be the world's 18th largest economy, more than the market values of companies such as Apple (US\$ 742 billion), Google (US\$ 368 billion) and Exxon (US\$ 357 billion).

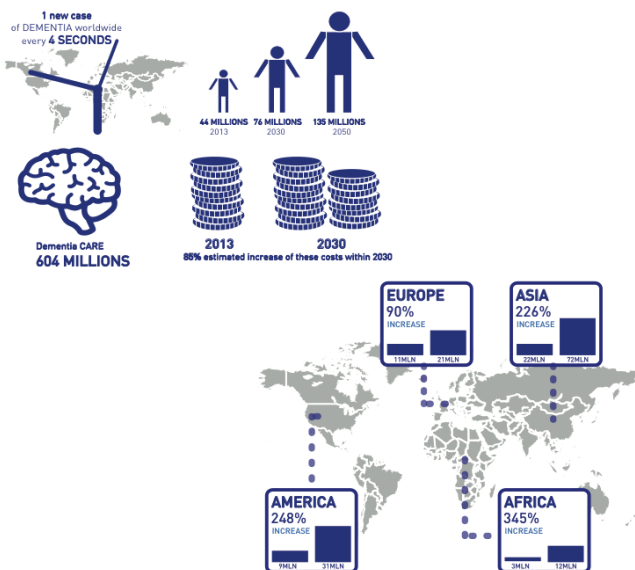


Fig. 1 - Social impact of Alzheimer's disease

These numbers are expected to strongly increase in the next decades. People with dementia are expected to increase more in low and middle-income countries worldwide. Concerning the incidence of dementia, World Alzheimer's Report (2015) estimates

over 9.9 million new cases of dementia each year worldwide, foreseeing one new case every 3.2 seconds. These new estimates are almost 30% higher than the annual number of new cases estimated for 2010 in the WHO/ADI report.

Research has shown the incidence of dementia doubles with every 6,3 year increase in age, from 3.9 per 1000 person-years at age 60-64 to 104,8 per 1000 person-years at age 90+ (World Alzheimer Report, 2015). In Europe peak incidence is among people aged 80-89 years, in Asia it is among 75-84 years, and in Africa is lower, among those aged 65-74 (World Alzheimer Report, 2015). Dementia has an impact not only on the person diagnosed, but also on his/her family, the community and even the whole society. Its greater impact is represented by the decrease of personal well-being and quality of life, not only for people with dementia, but also for their caregivers. Research has estimated that the health and social care costs for dementia almost match the investments for researching a cure for cancer, and study heart diseases and stroke. A consistent body of literature states that in the last decade the annual costs of dementia in the Scandinavian countries exceeded those of depression, stroke, alcohol abuse and osteoporosis. Moreover, recent research demonstrated that in Latin America and China the direct costs of dementia surpassed ones attributable to depression, hypertension, diabetes, ischemic heart disease and stroke (World Alzheimer Report, 2016). Dementia is mainly characterized with particularly intense needs for care and information for caregivers.

As reported by WHO (2016)

the global costs of dementia have increased from US\$ 604 billion in 2010 to US\$ 818 billion in 2015, an increase of 35.4%. The current estimate of US\$ 818 billion represents 1.09% of global GDP, an increase from our 2010 estimate of 1.01%. Excluding informal care costs, total direct costs are estimated to be 0.65% of global GDP.

Cost estimates have increased for all world regions, with the greatest relative increases occurring in the African and in East Asia regions. As country income level increases, more investments can be addressed to social care sector, decreasing the relative contribution for informal care. In December 2013, the UK government used its presidency of the G8 (now the G7) to propose and articulate a Global Action Against Dementia. The outcome of the first summit was a worldwide commitment aiming at identifying a cure or a slowing therapy for dementia by 2025. A series of initiatives linked to research were proposed during the meeting, such as an increased amount of funding, a cross-national collaboration to share data and collect information from trial research.

The Italian situation follows the trend depicted for the rest of Europe. In fact, Italians with dementia are 1,241,000, and the new cases in 2015 have been so far 269,000 (Censis, 2015). Of these, 600,000 have Alzheimer's disease and because of the ageing phenomenon they will continue to increase (Italian population has the highest life expectancy in Europe, with 13.4 million that are over-60s – 22% of the population). These are the facts highlighted in the last World Alzheimer Report prepared by Alzheimer's Disease International (2015). It is, also, estimated the achievement of 1,609,000 patients in 2030 and 2,272,000 in 2050. The direct costs of services in Italy came to more than 11 billion euro, of which 73% borne by the families. The average annual cost per patient amount to 70,587 €, inclusive of the costs for the national health service, those falling directly on households and the indirect costs (i.e. charges of assistance that weigh on the caregiver, labour income missed by the patient, etc.), as shown in the results of the third survey conducted in 2015 by Censis and Federazione Italiana Alzheimer.

As it is known, the most influencing associated risk factor to the onset of the dementia is age. The elderly population is growing worldwide, and consequently in Italy, and the life expectancy increases both for men and women, with an imbalance in favour of women, especially in the older classes. In Italy the average age of people with Alzheimer's disease is 78.8 years, in 1999 was 73.6 years. As Alzheimer's population is getting older, simultaneously also the caregiver population is aging, from an average age of 53.3 years in

1999, to 59.2 in 2015. The person assisting a dementia patient devotes four hours a day of direct care and 10.8 hours of surveillance. 40% of caregivers, even if in a working age, does not work and compared to ten years ago between them is tripled the percentage of the unemployed (10% in 2015, 3.2% in 2006). Instead, 59.1% of employed caregivers indicate changes in working life, especially concerning repeated absences (37.2%). Employed women, more often, stated that they had requested part-time (26.9%). The caregiver's commitment determines consequences on his/her health, particularly among women: 80.3% accuses fatigue, 63.2% do not get enough sleep, 45.3% say they suffer from depression, 26.1% often get sick. Another important data is the increasing number of people with dementia living in their own homes: 34.3% in 2015 against 22.6% in 2006 (Censis, 2015).

1.2.2. Ageing and Alzheimer's Disease

In normal ageing, bodies and brains slow down, though intelligence remains stable. Aging leads people to take more time to process information and learn new knowledge, and people appear to be physically and mentally less flexible. Memory changes occur as well, and elderly and older have greater difficulty remembering names and places, and complex notions. Compared to normal ageing, the first problem many people with Alzheimer's disease notice is a progressive and severe forgetfulness that more and more affects their work, daily activities, or social life. Other common symptoms include mood changes, difficulty in perform multi-tasking activities, misplacing things, asking repetitively, confusion, trouble with expressing complex notions, and becoming suddenly disoriented or lost in familiar places (Fig. 2).

Other characteristics of dementia include personality change and altered judgment. Behavioural and psychological impairments are well described in Alzheimer's disease (Cummings et al., 1994; Neary et al., 1998). More specifically, lack of awareness for self-cognitive or behavioural difficulties (anosognosia for deterioration) is frequently observed in the disease.

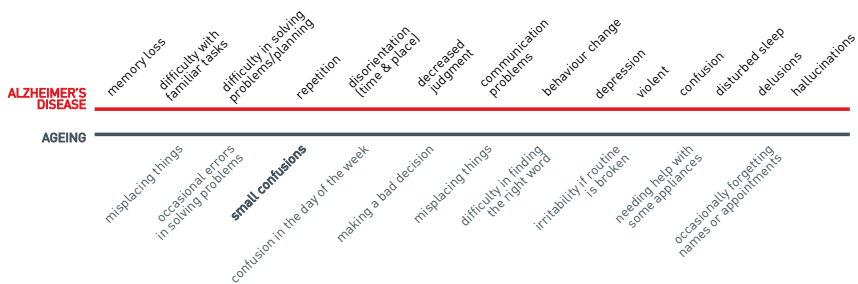


Fig. 2 - Comparison between normal ageing and Alzheimer's disease

Dementia generally occurs after the age of 65 and the prevalence of the condition rises more than 20% after the age of 80. In many cases, the progression of dementia is slow and presents different features and symptoms throughout its onset. This process has been simplified into three stages in Fig. 3, namely preclinical, mild cognitive impairment and dementia due to Alzheimer's disease.

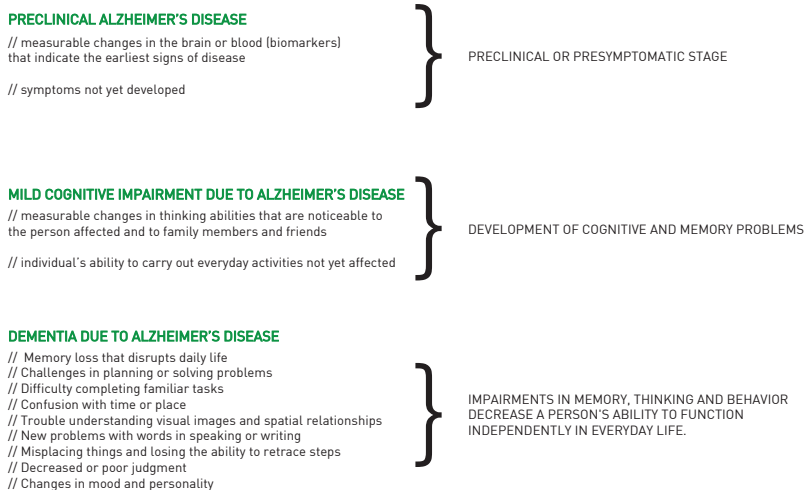


Fig. 3 - Alzheimer's disease stages

The symptoms of Alzheimer's disease worsen over time, independently from the age when the disease occurs. Usually, people with Alzheimer's disease can live from three to even twenty years after the diagnosis, depending on other factors.

Traceable changes in the brain correlated to Alzheimer's disease begin years before any signs of the disease. This asymptomatic condition, which can last for years, is referred to as preclinical Alzheimer's disease. It is a mostly asymptomatic phase, where changes in the brain begin to occur, but the person can still have an independent and “normal” life. Mild cognitive impairment comprises minor impairments concerning memory or thinking abilities. In mild cognitive impairment these difficulties are noticeable and are worsen than normal aging impairments. However, daily life can still be autonomously lived by the person.

The term mild cognitive impairment describes a set of symptoms, rather than a pathology. Thus, mild cognitive impairment can affect:

- Short term memory
- language skills
- problem solving skills
- visual depth perception
- level of attention.

These symptoms may be noticed by the individual, or mostly by his/her relatives and friends. A person experiencing mild cognitive impairment, may ask for help while performing daily tasks, such as filling forms, driving, paying taxes, or adapting to new routines. If those problems affect significantly daily life, this may suggest dementia. A gradual decline in mental abilities can be experienced by the majority of healthy people due to normal ageing. However, mild cognitive impairment, cause a greater decline of mental capabilities if compared to normal aging. For example, it takes more time to remember a route while driving or, while speaking, it takes more time to get some words. Getting lost in familiar places, or forgetting the names of relatives and friends, represent a clear sign of the initial phases of dementia.

If cognitive decline is worse than normal ageing, and it impacts significantly daily life, making impossible living independently, this suggests dementia. This means that the structure and chemistry of the brain become increasingly damaged over time. This stage is called Dementia due to Alzheimer’s disease. The person’s ability to

remember, understand, reason and communicate gradually declines. As dementia worsens, the person will need more and more support with daily living. Mood and behavioural changes also occur. Health professionals often use scales to measure these changes. At different times they may assess a person's mental ability (i.e. mini mental state examination), daily living skills (i.e. dressing, managing medication), behaviours, overall perceived well-being. Some of these scales were developed specifically for Alzheimer's disease (Alzheimer's Society, 2013). During the later stage of dementia most people become increasingly fragile and dependent on caregivers due to the progression of the disease. This later stage of the disease is articulated into three sub-stages named: mild, moderate and severe, according to the symptoms that increase with the passing of time.

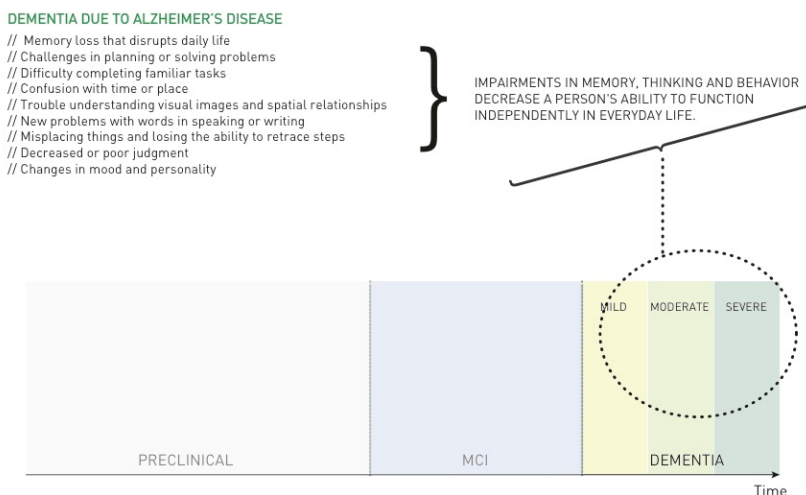


Fig. 4 - Alzheimer's disease later stage symptoms

Forgetfulness and repetitive questions increase in this phase of the disease. People with dementia may also encounter huge difficulties in recognising people or confuse them with others. At this stage, their forgetfulness may cause dangerous situations to people with dementia themselves or others; for example, forgetting to take medications or opening the gas without lighting it in the kitchen.

Some people at this stage easily become aggressive or start shouting, due to a sense of frustration or because they are unable to express emotions through words, or because they have difficulties in understanding reality. Other symptoms may include becoming lost even in familiar places, making confusion between day and night, waking up in the middle of the night and sleeping during the day, behaving in unusual ways, such as going outside in nightclothes, becoming very agitated or aggressive, behaving inappropriately in social contexts, experiencing difficulty with perception and, in some cases, having delusions or, less often, hallucinations associated with aggressive mood.

Loss of memory may become very impairing, with the person unable to recognise familiar objects, places, relatives, although there may be sudden flashes of recognition. The person may become insecure, sometimes seeming to be searching for someone or something not exactly understandable.

Angry outbursts may occur during close personal care, usually because the person does not understand why someone is doing that or helping them, feeling a sense of violation of their privacy.

Caregivers should try to understand that their cared relative is not being deliberately aggressive, he/she can maybe feel pain that is no more able to express verbally in a proper and understandable way.

The person with dementia experiences increasing problems understanding what is being said to them and what is going on around them. They find more and more difficult to communicate and express their feelings with other people. They may gradually lose their speech, or they may repeat a few words or shout loudly from time to time. However, caregivers can observe more closely the person's expressions or body language to try to understand feeling and thoughts that people with dementia are no longer able to express verbally in this stage.

Although the person may seem to have little understanding of speech, and may not recognise people around them, they may still respond to affection and understand and react if other people talk to them in a calm, soothing voice.

Unusual or improper behaviours are typical of this stage: the person looks backwards and forwards continuously while walking, use

repetitive movements or keep repeating the same sound or word. Occasionally, some people with dementia in the severe sub-stage, experience hallucinations, in which they see, hear, or feel things or people that are not really there. Others develop delusions, and in some cases depression, in which they experience distorted ideas about the reality and the behaviour of people around them. Some research shows that excessive hand activity becomes more common: wringing their hands, tap or a surface, pull at their clothes, or touching themselves inappropriately in public may occur to people with dementia in this stage.

With an increasing number of people being affected by Dementia due to Alzheimer's, almost everyone encounters someone who has dementia or whose life has been affected by it (WHO, 2012). The latest estimate of World Alzheimer Report (2015) is that today over than 35 millions of people are suffering from Alzheimer's disease and this number will double in 2030 and even triple in 2050 to 115 million. Besides, more than 40% of those cases will be in late-stage Dementia due to Alzheimer's (Prince et al., 2013). Therefore, more and more attention and care equivalent to nursing home care would be essential for those people.

The main effect of this syndrome is a slow, constant and unrelenting cognitive impairment, which severely compromises people's perception of the world and their environment. Currently, there is no cure for dementia due to Alzheimer's disease.

The criteria given in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) depict the set of symptoms and brain changes that occur in dementia. Therefore, these criteria are used as reference to make a diagnosis of dementia.

As reported by Alzheimer's Association (2011) to meet DSM-IV criteria for dementia, the following symptoms are required, including increased forgetfulness, and decline in at least one of the following cognitive abilities:

1. Ability to generate coherent speech or understand spoken or written language;
2. Ability to recognize or identify objects, assuming intact sensory function;

3. Ability to execute motor activities, assuming intact motor abilities, sensory function, and comprehension of the required task;
4. Ability to think abstractly, make sound judgments, and plan and carry out complex tasks.

1.2.3. Self-consciousness threshold

The patient's inability to recognize and report to have a deficit (anosognosia) is one of the typical symptoms in Alzheimer's disease. Research suggests that behavioural and psychological symptoms present in dementia can be caused by deficiency of awareness.

These symptoms affect caregivers that look after the people with Alzheimer's disease increasing his/her stress load. Many studies show a discrepancy between the perception of the disease by the patient or by the caregiver throughout the onset of the disease. This may increase these behavioural and psychological symptoms (Antoine, 2004).

Since the relationship with the caregiver is one of the social factors that most affect the patient, change the attitude of carer can be helpful for the treatment of behavioural and psychological symptoms.

The decline of skills and cognitive capabilities is inevitable for patients with Alzheimer's disease. An approach that forces the patient to deal with the deficits can produce adverse effects such as anxiety and lower self-esteem and motivation.

Understanding the patient's disability starting from his/her perspective is the essence of a successful intervention.

Together with therapists, it was developed the scheme presented in Fig. 5, in order to identify a time frame inside which people with dementia lose the awareness that all the symptoms occurring to them are caused by Alzheimer's disease.

This time frame is defined as Personal Consciousness threshold, and it represents a crucial point not only for the patient, but also for the caregivers.

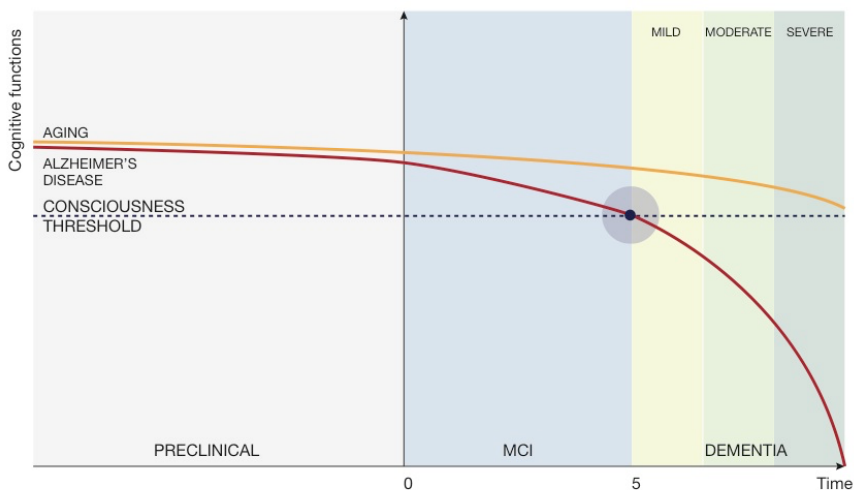


Fig. 5 - Personal self-consciousness threshold

As Alzheimer’s Society of Canada (2010) explains, at the severe stage in dementia individuals appear to lose the capacity to fulfil simple and basic everyday life activities. In severe dementia cases patients can also lose their consciousness of the disease. This means that they still don’t recognize their symptoms as a manifestation of the disease and start to perceive a reality different from the one experienced by “normally endowed people”. It is quite common among many older people, to forget someone’s name or misplace things. As aforementioned, this kind of forgetfulness may be normal. On the contrary, forgetting how to get home, getting lost in places a familiar to a person or asking repetitively questions forgetting answers can be signs of a more serious problem.

1.2.4. Loss of the sense of belonging

Connectedness can be described as “feeling connected” to other individuals, the surrounding environment, a particular moment in the past, but also present day, or the way a person experiences life events or life in general.

John Donne, a famous 17th century poet, described connectedness in an emblematic sentence: «No man is an island, entire of itself: every

man is a piece of the continent». Connectedness means more than being surrounded by other individuals. Only meaningful connections will result in a feeling of connectedness. This can be a friend, relatives, colleagues, but also a personal object, a place, a house, etc. It involves a “sense of belonging” and being part of something bigger than the individual itself. Experiencing connectedness is extremely important for people. Different studies (Baumeister & Leary, 1995; Van Bel et al., 2009; Wildevuur & Van Dick, 2011; Poey et al., 2017) show that individuals who feel connected to the people around them and the environment they are living in result healthier (both mentally and physically) and are more easily able to cope with life changes. The importance of experiencing connectedness and a sense of belonging doesn't change when a degenerative brain disease occurs to a person. In the case of dementia, leaving a domestic and familiar environment to join a care space like an assisted living facility always represents a delicate moment in the life of a patient. In the majority of the cases, a change in the living environment causes confusion, agitation and disorientation. The person hardly feels a “connection” to a totally new environment or to the people around him/her. As a result, people with dementia can experience feelings of loneliness and anxiety when they move. In the framework of person-centred care, feeling a sense of connectedness and a sense of belonging towards the environment and the people around can be considered as one of the primary needs for people with dementia (Han et al., 2016; Sun et al., 2019; Power, 2014). Person-centred dementia care is built on the understanding that a sense of belonging and opportunity for meaningful engagement are critical to the success of all human communities (Du Toit & McGrath, 2017; Low et al., 2017). Key principles for successfully implementing person-centred dementia care in care environments and assisted living facilities should include: (a) understanding the environmental context of the specific care setting and the barriers and enablers for dementia patients within this context (Brown, 2014); (b) creating a clear understanding of people with dementia as unique individuals, to promote access to meaningful engagement tailored to suit that person (Williams et al., 2012). Moreover, meaningful social interactions and a recognizable and familiar living environment enable people with dementia to develop a sense of belonging towards the care

environment they are living in. Feeling a sense of belonging to a family, a couple, a group of people, a community, etc. helps them to avoid a sense of loneliness and exclusion caused by the progressive loss of cognitive capabilities. In fact, a large number of people with dementia report that they have a growing feeling of exclusion. They feel that their condition makes them gradually lose their sense of being part of the group of people around them and of the society in general, developing the perception of being no longer “as the individuals around them, and so no longer normal”. An effective person-centred care program should involve activities based on people with dementia’s life that can be perceived as meaningful by the patient. Thus, we need to understand the real motivation that moves the person with dementia to join a certain activity and be engaged, in order to consider it meaningful. This mechanism enhances the creation of a sense of belonging and connectedness (Vernooij-Dassen, 2007; Han et al., 2016). Merely involving activities based on people with dementia's life history without considering the moment (here and now) erode connectedness and a sense of belonging (Du Toit et al., 2018; Harmer & Orrell, 2008; Roland & Chappell, 2015). Instead, it needs to be a deep understanding of the reason why activities were considered engaging. Understanding if it was due to an old habit, a past memory of pleasant event, a personal interest or a newly discovered enjoyment.

1.3. Non-Pharmacological therapies

Currently, there is no cure for dementia due to Alzheimer’s disease. Pharmacological or non-pharmacological treatments can only improve the condition of the patients or slow down the progression of the disease (Olazarán et al., 2010). Therefore, patients with Alzheimer’s disease, express serious needs in terms of treatment and care. The general view is that beside pharmacological interventions, behavioural and cognitive-stimulation strategies can have positive outcomes on people with dementia. Examples are represented by engagement in daily activities, or other forms of active participation (Ferrero-Arias et

al., 2011; Hulme, Wright, Crocker, Oluboyede, & House, 2010; Phinney, Chaudhury, & O'Connor, 2007; Vernooij-Dassen, 2007; Wood, Womack, & Hooper, 2009). Apart from medication, non-pharmacological therapies concentrate on cognitive and behavioral impairments. Physical, mental and emotional activities are the key elements of non-pharmacological therapies. The main goals of these procedures are maintaining active the remaining cognitive functions, and meanwhile compensate for the impaired ones, enhance quality of life or reduce behavioural symptoms such as apathy, delusion, depression, wandering and anxiety. Finally, physical rehabilitation therapies aim at maintaining a high level of independence helping people with dementia to rehabilitate damaged functions or maintain their current motor abilities through the use of motor activities (Gräbel et al., 2003; Olazarán et al., 2010; Tapus et al., 2009).

STANDARD THERAPIES

Behavioural therapy
Reality orientation
Validation therapy
Reminiscence therapy

ALTERNATIVE THERAPIES

Art therapy
Doll therapy
Pet therapy (animal-assisted therapy)
Music therapy
Activity therapy
Complementary therapy
Aromatherapy
Bright-light therapy
Multisensory stimulation therapy
Brief psychotherapies
Cognitive-behavioural therapy
Interpersonal therapy



maintain cognitive functions
improve the quality of life
reduce behavioural disorders

Fig. 6 - Overview of current non-pharmacological therapies

1.3.1. Standard and alternative therapies

Behavioural therapy is aimed at decrease or eliminate challenging behaviours. This therapy is based on principles of conditioning and learning theory, comprising non-aversive methods to substitute challenging behaviours with new functional ones (La Vigna & Donnellan, 1986). A behavioural analysis represents, in most of the

cases, the starting point for other Non-Pharmacological interventions. This therapeutic approach requires an assessment focused on identifying the antecedents of the challenging behaviour, a consequent definition of the behaviour and its consequences.

Reality orientation therapy is one of the most widely used dementia care approach (Holden & Woods, 1995). It aims to help people with memory loss and disorientation by reminding them past facts about their life, personality and their environment. It can be used both with individuals and with groups, orienting to their environment, people with dementia experiencing memory loss, through the use of orientation devices and memory aids.

Validation therapy was developed as a remedy to the perceived lack of efficacy of reality orientation. Validation therapy methods enable therapists to interact with people with dementia by empathizing with the feelings and meanings expressed through their confused behaviour. Consequently, the emotional content becomes more important than the person's orientation to the present.

Reminiscence therapy stimulates a person with dementia to relive past experiences, especially those that might be positive and personally significant, for example family memories, travels, familiar places or happy holidays. This therapy can be used with individuals or groups. Group sessions provide activities such as art, music and artifacts to provide cognitive stimulation and increase levels of well-being.

Furthermore, the following therapies are defined “**alternative**” by the scientific community as they represent known and used therapeutic approaches, but still lack of empirical evidence regarding their effectiveness (Marshall & Hutchinson, 2001). A short review of some of the most commonly used alternatives Non-Pharmacological therapies is described below.

Art therapy can potentially provide meaningful stimulation, improve social interaction and improve levels of self-esteem and

personal satisfaction among people with dementia. Activities such as drawing and painting are thought to provide individuals with the opportunity for free self-expression and the chance to exercise some choice in terms of the colors and themes of their creations (Killick & Allan, 1999).

Music Therapy involves engagement in singing or playing an instrument, individually or in small groups. or listening to songs or music, and it has been reported by several studies that people with dementia gained significant benefits in terms of mood and improved relaxation (Killick & Allan, 1999).

Activity therapy involves group activities such as dance, sport and drama. Research showed that physical exercise can have different health benefits for people with dementia, from for reducing the number of falls to improving mental health and sleep cycles, improving people with dementia's mood and self confidence (King et al., 1997).

Other alternative Non-Pharmacological therapies are the complementary therapies in the field of mental health such as massage, reflexology, reiki, therapeutic healing, herbal medicine and aromatherapy has been employed recently in the use of dementia declared by The Mental Health Foundation

Aromatherapy is one of the latest non-pharmacological therapies born. It appears to have several advantages over the pharmacological treatments widely used for dementia, for example the possibility to provide a sensory experience that results relaxing and stimulating for people with dementia involved (Burns & Zaudig, 2002).

Other therapies are bright-light therapy and multisensory approaches. Both of these have demonstrated positive outcomes have received some research attention in the last few years. For example, bright-light therapy has been increasingly used in an attempt to improve fluctuations in diurnal rhythms that people with dementia may encounter. This therapy showed in some cases improvements in the re establishment of circadian rhythm in people with dementia and decreased “sundown syndrome” (recurring confusion or agitation in

the late afternoon or early evening). Research also stated some evidence for improving restlessness, with particular benefit for sleep disturbances (Haffmanns et al., 2001).

Multisensory approaches (an example is the Snoezelen Room) usually are performed in a room designed to provide several types of sensory stimulation such as light (in the form of fiber optics which can be touched and manipulated), textures (surfaces, objects and vibrating pads), smell and sound. The use of these resources is tailored to each individual with dementia, and therefore not all of the available forms of stimulation may be used in one session or by the same person. The use of such rooms has to be under the guidance of a therapist. (Baillon et al., 2002).

1.4. Non-Pharmacological approaches

This chapter contains a description of three main non-pharmacological care models adopted for dementia:

- Gentle Care prosthetic life care approach
- Eden Alternative
- I'm still here Approach.

All of them are characterized by a key element: the environment, considered as a therapeutic tool for people with dementia.

1.4.1. Gentle Care

Gentle Care is a prosthetic model of dementia care developed by the occupational therapist Moyra Jones, based on the premise of accurately defining the deficits the person is experiencing and organizing the environment (people, programs and physical space) into a prosthesis to compensate for the deficits in functioning, to support existing or residual function and to maximize the quality of life. Gentle Care is based on the principle of avoiding restraints and planned activities organized by the medical staff, taking into account

patients' habits. In contrast to the "biomedical model" (which centres on pharmacological and technological treatment) and the "custodial care" approach (with rigid rules), Gentle Care method gears therapy to each Alzheimer patient's progressive mental and physical deterioration.

Instead of focusing on symptom-relief with drugs and technology, the prosthetic model emphasizes human values and connections, gearing therapy to the pace of decline, and on identifying and supporting remaining functions.

Gentle Care is specifically focused on the care of people with dementia. This care approach is applicable in acute care institutions, long-term care facilities, and day care programs; and it changes the way family caregivers see their role in a demented person's own home.

Gentle Care mainly focuses on the enhancement and modification of the physical environment, rather than focusing on the impairments caused by dementia.

At first, staff and family caregivers are acknowledged on the clinical onset and symptoms of dementia. This analysis is conducted focusing on the relationships that surround the patient, and on the consequent difficulties that caregivers and staff will encounter. Therefore, caregivers and staff are helped to identify and remove stressors in the environment of the person with dementia. They are encouraged to introduce new behaviours and gestures, and sometimes new habits, in order to positively affect the well-being of the cared person, in relation to the environment.

Gentle Care provide notions to staff and families to evaluate the functional capabilities and impairments of the person with dementia, and provides them with assessment methods, list of symptoms that imply the admission to dementia care programs, stress reduction strategies, and acknowledge them on approaches to reduce behaviour disturbances.

Consequently, caregivers and staff learn how to develop engaging activities, and daily life programs in order to maximize people's remaining abilities and enhance their well-being. Suggestions are made for communication techniques that family caregivers and professionals can use with people experiencing dementia.

The Gentle Care system advocates a therapeutic partnership among care facilities, families, and community volunteers. Suggestions are offered on how to involve families and community volunteers in assisting with dementia care, creating a modified community for the afflicted person within the health care system. Moreover, it advocates adapted “work” therapy strategies to help improve the demented person's quality of life. Such strategies can provide people with meaningful activity while showing respect for former lifestyles and roles.

Gentle Care focuses on using the macro-environment to achieve effective dementia care. Methods are outlined for developing prosthetic physical environments – both indoors and outdoors – that support rather than challenge dysfunctional persons. Suggestions are made for modifying existing environments, as well as for designing and developing purpose-built facilities.

This approach designs a prosthesis of care between people with dementia, the physical environment that surrounds them, their caregivers and other significant people and the daily activities they perform (Jones, 1999).

In the Gentle Care system, the environment is regarded as more than just the physical space in which people live. The macro-environment of people with progressive dementing illness consists of people, programs, and physical space, working in a dynamic interaction. The macro-environment forms the total context in which the person with dementing illness must live and function throughout the course of the disease.

Gentle Care introduces the concept of the “prosthesis of care”, based on the co-operation of physical environment, social relations and tailored daily programs. These elements together, as a prosthesis they compensate for the deficits created by dementia.

The replacement of physical body parts by prosthetic devices is a well-accepted procedure in health care. If someone sustains a spinal cord injury, for example, a wheelchair is prescribed to compensate for the resulting paralysis. With this prosthesis, the injured person can regain control over life; without the prosthesis, the person is dependent on others and quite helpless.

Dementia affects people's ability to manage their needs and be in control in a way that closely parallels the effects of physical paralysis, since it, too, makes them dependent on others for daily care. Just as a wheelchair can recreate mobility for a spinal injury patient, an appropriate prosthesis can give a person with dementia an improved quality of life (Jones, 1999). Gentle Care manipulates those three vital components – people, programs, and physical space – in ways that assist and support people with dementia.

The First Element of the Prosthesis of Care is people. Of the three components of the person's macro-environment, by far the most critical, is people. The person with dementia is surrounded by people, including the family caregiver (usually a spouse or a daughter or son) and other significant family members. They form a vital support system that must be maintained throughout the disease process, regardless of where the person with dementia lives. Professional care providers form an artificial support system that needs to be specifically focused. And people with dementia are forced to live with large numbers of other ill people, which can make life very challenging, such as volunteers, visitors, or administrative staff.

All these people, if behaving in negative manners, can negatively impact on people with dementia's well-being. Their language, judgements, and attitudes are important factors that affect the life of people with dementia. Consequently, in Gentlecare, social relations represent one essential therapeutic factor for dementia care.

The Second Element of the Prosthesis of Care are programs. Programs include everything the person with dementia does, in a 24-hour cycle. In place of the standard rigid activity schedule driven by artificial wake-up times, sleep times, and mealtimes, interspersed with sporadic social or recreational activities, Gentlecare uses all activity in the life of the person with dementia to enhance his experience and ensure he leads a meaningful life (Jones, 1999).

Programs designed for persons with dementia are most effective when they are an integral part of daily life, rather than "add-ons" into the daily routine. Strengthening communication, intimacy, maintenance of former life roles and social interactions, in order to reduce often has positive effects on persons with dementia (Jones, 1999). The Third Element of the Prosthesis of Care is the physical

environment. The physical environment of people with dementia needs to be simple, normalized, and therapeutic. It must be space designed to be lived in, and must resonate with familiar personal memorabilia (Jones, 1999).

Previous research has shown that areas dedicated for the use of people with dementia most effectively support their needs. Many design features can help to enhance function and quality of life, such as secure perimeters; indoor and outdoor walking paths; appropriate wayfinding cues and signage; multiple small social and dining areas; avoidance of distracting patterns; reduction of glare, noise, and confusion; and family cluster living arrangements (Del Nord, 2003). As stated by Jones (1999) The Gentle Care system foster the development of physical environments based on few main elements:

- Safety and security: people with dementia lack cognition, reason and judgement. Their environment needs to have safe perimeters and their accommodations must be reasonably free from risk.

- Access and mobility: due to confusion and disorientation, access needs to be clearly defined and lead the person into the appropriate areas. Freedom of movement is critical to good dementia care. Walkways should be inviting, clear of obstacles, and lead the person to interesting objects.

- Function and activity: the environment should provide to the person with dementia opportunity for engagement, interaction and meaningful activities, in a home-like atmosphere.

- Individual control, privacy, comfort and sociality: physical environment should be designed to invite social contact, give comfort and respect privacy.

- Flexibility in choices, participation and decision-making.

As has been said, the method is based on a sort of therapeutic alliance among the staff, the family members, volunteers and every person involved in caring for the patient. The positive effects of Gentle Care method are a reduction in troublesome behaviour, an improvement in the patient's functional abilities and an improvement in social interaction (Del Nord, 2003).

Family stress diminishes, as well, and family members find themselves involved in an intelligent and active care program that helps them rekindle energies in caregiving. The staff, as well, finds

solace in the participation of family members who feel themselves part of a care program to enhance the quality of life of people with dementia.

1.4.2. *Eden Alternative*

The treatment plan organized inside a nursing home setting, usually has limited flexibility and includes a fixed schedule of planned activities designed for groups of residents rather than being specific for each individual. As a result, the lives of nursing home residents lack variety and they subsequently develop feelings of loneliness, boredom, (Kane, Ouslander, & Abrass, 1994). Dr. William Thomas (1996) has defined the lack of flexibility and the presence of fixed planned activities in institutionalized care, as the main causes of boredom, and helplessness in people with dementia. He also suggests that these features can be caused by the medical model adopted in nursing homes; it is, therefore, focused on the treatment of behavioural and cognitive disorders, rather than on the enhancement of quality of life and well-being. Aiming at the enhancement of people with dementia daily well-being, dr. Thomas theorized the Eden Alternative care method, in 1991, and experimented it at a nursing home in the northerly part of New York. His approach was mainly focused on transforming the nursing home environment and standard of care, into an environment that properly address its residents' needs. An integral part of the "Edenizing" process (as defined by Thomas) is represented by three main elements: plants, animals, and children. These elements positive acts toward the reduction of loneliness and boredom, enhancing a spontaneous lifestyle, and companionship.

Moreover, the introduction of elements as children, or animals, into a dementia care environment, allows people with dementia to fight against a feeling of helplessness, enabling them to take care of other individuals, without only receive care.

The Eden Alternative care approach fosters companionship and encourages residents to be involved in daily life activities organized in the facility. The daily routine offers various different activities, that can freely be joined by residents. Drug prescription is completely

minimized, with a consequent enhancement of well-being. Residents are actively involved in the “edenizing” process (Thomas, 1994), encouraging them to express their needs and feelings, in order to shape ever-changing programs tailored on them.

The Eden Alternative supports a variety of ways to engage in “homemaking”, but three key components are children, companion animals, and plants. Traditionally, **children**’s attitudes are positive toward the aging population. They can enjoy the love and attention and not dwell on the mental and physical limitations that may be present. The best way to include children is to have an intergenerational facility in which children and older people connect easily and naturally, or to set up after-school care, summer camp, and young volunteer programs.

Another key element in Eden Alternative is the close contact with **animals**. Companion animals, such as dogs and cats, can create a powerful bond of unconditional love with residents to offset feelings of loneliness, helplessness, and boredom. Many residents have spent most of their lives with animals that shared their daily activities and provided companionship.

Even in nursing homes at which dogs or cats are cared for by everyone, residents see them as personal friends, a source of warmth and life in what otherwise might be a lonely experience. This part of Edenizing is not “pet therapy” but rather a long-term living arrangement.

The last key element is represented by **plants**. Biologic diversity is the role plants play in Edenizing. In addition to uplifting the spirit, plants improve the quality of air by removing carbon dioxide and other harmful organic compounds. They also improve relative humidity, which can help decrease respiratory infections (Thomas, 1994). Many elders grew up sharing meals of fresh homegrown and home-canned foods, so this activity is a comfortable trigger for reminiscing.

Nursing homes can create a backyard wildlife habitat that is just as important as the inside human habitat. Strategically placed bird feeders and houses add to the entertainment. In addition, the garden is an ideal place for spontaneous socialization, so providing pathways for accessibility and adequate, comfortable seating is vital to encourage use. A primary Edenizing goal is that residents participate

in the activities of caring for and enjoying the plants and animals and not just be passive care recipients.

Dr Thomas' philosophy is supported by previous researches; For example, garden activities has been proved to have positive outcomes on the enhancement of physical and cognitive functions, they may lower heart rate and blood pressure, and improve social interactions between residents with dementia (Deutsch, 1997; Breske, 1994).

Numerous studies have described the therapeutic effect of caring for animals for people with dementia. It is proved that they enhance mobility, foster affection and companionship, can positively affect socialization and self-esteem (Brickel, 1981; Brickel, 1986; Erickson, 1985; Gammonley, 1991; Hoffman, 1991; Perelle & Granville, 1999; Raina, Waltner-Toews, Bonnett, Woodward, & Abernathy, 1999).

Furthermore, Thomas' assessment conducted in the first years after the definition of Eden Alternative, pinpointed a decrease in the monthly drug prescriptions and a decrease in the mortality rates of people with dementia attending Eden Residences.

Staff members also reported that residents seemed more relaxed, less agitated and anxious, while enjoying the companionship of children and animals, and while taking care of plants (Thomas, 1996).

1.4.3. I'm Still Here

The I'm Still Here Approach is based on non-pharmacological treatments focused on enhancing the quality of life of people with dementia, through an approach that aims at decreasing behaviour disturbances. This approach was developed by Dott. John Zeisel and his team, at the end of 1990s, and applied as a care method inside Hearthstone Residences in Usa.

This approach mainly focuses on remaining strengths and abilities of persons with dementia, rather than focusing on their deficits.

It is based on the consciousness that the ability to express feelings and develop new skills is not impaired by dementia. Behavioural disturbances can be reduced, if people with dementia feel safe, actively involved in the community, and useful for the other members, As a consequence, their quality-of-life increases (Zeisel, 2009).

The approach is based on the principles of designing meaningful activities around the person with dementia, accommodating his/her disabilities according to the stage of dementia. The I'm Still Here Approach, aims at creating entire communities acknowledged on dementia, that are able to support them (Zeisel, 2009).

Behaviour disturbances, in people with dementia, may be significantly reduced, if basic human needs are fulfilled (Cohen-Mansfield, Libin, & Marx, 2007; Zeisel, 2001).

I'm Still Here Approach has its basis on the ability of dementia affected brains, to still perform procedural learning even in the later stages of the disease. Creativity is another characteristic that remains in dementia and is freely expressed by the individuals. Procedural learning allows individuals to remember recipes, to remember rules and movement to play tennis, or soccer, or golf, etc. and it is a learning mechanism that needs to be continually triggered.

People with dementia engaged in activities recognized as meaningful usually repeat them many times, continuously, enjoying this repetition, assimilating them exploiting their procedural learning (Zeisel, 2009).

In the I'm Still Here Approach meaningful activities play an important role in the engagement of people with dementia into daily life, according to their individual abilities.

Activities programming can range from individual activities, tailored on each resident, to group activities, or even community-based events. It can be seen as a *Continuum*, that grows from an individual sphere, until the involvement of the whole community. The aim is to offer people with dementia different opportunities to pursue individual interests, according to the residual abilities. Moreover, the community involvement, can have positive effects towards an acknowledgement of society about dementia, overcoming the stigma associated to this disease.

Individualized Skill Building is defined as the tailored development of activities around individual's abilities, and it represents the most personal stage of this *Continuum*. Community events, on the other side, represent the most public part of it. Moreover, the activities Continuum has to be flexible, in order to be focused on the enhancement of the quality of life, rather than representing only a mere

task completion. Personalized Skill Building is also used to define specific skills that can be developed or strengthened, during certain activities. This method is based on the assumption that learning is still possible even with dementia diagnose. Yet, the focus is on remaining abilities that are improved through practice, and repetition of series of movements to accomplish an activity. Its functioning is similar to procedural learning: first there's the identification of a goal, such as learn and remember a specific procedure (play tennis, play golf, etc.), then, through the application of Personalized Skill Building procedures, therapists define residual abilities connected to the goal, and help people with dementia to stimulate them, in order to acquire the missing skills necessary to fulfil the goal (Zeisel, 2009). Remaining abilities are triggered by the therapist through the provision of external cues propaedeutic to the procedural learning process. Usually, these cues are under the form of tactile or visual communication. The culmination of the activities *Continuum* is represented by a community-based event. It is an event open to the community, that involves also people with dementia. It can be, for example, a cultural event, or a sport challenge, or an historical representation. In these events, people with dementia participate alongside community members; the main aim, in John Zeisel's mind, was to foster a change in the public perception of dementia, towards the overcome of stigma.

1.5. Living with Dementia: facing the stigma

The term stigma, by definition, refers to a discrediting or disgraceful mark that sets individuals apart from others and renders them unwanted, tainted, degraded, or inferior in the eyes of other people (Bos, Kok, & Dijker, 2001).

In ancient Greece, the word *stigmata* referred to recognizable signs on the body, such as burns, into the criminals' skin, to distinguish them among the other citizens.

Over time, the word *stigma* has been associated to a discredited state, which causes individual's isolation from society.

Individual's characteristics are unique and personal and determine social roles and abilities. Approaching society, individuals expect to be judged and compared with others on the base of personal attributes and skills, and to carry out determined social roles without any prejudice.

In reality, appearances and reputation play a key role on the judgement of others and are strictly connected with stigma. In particular, stigma occurs when a specific set of characteristics or gestures represent a reason, for society, to label and discredit some individuals.

Today, stigmatisation is a complex social process. It refers to oversimplified conceptions, opinions, or images, defined stereotypes, about a person or group, negative attitudes or prejudices that reflect such stereotypes, and overt negative discriminatory behaviour towards people with a stigmatised condition (Brohan, Slade, Clement, & Thornicroft, 2010; Corrigan, 2005). Many definitions of stigma consist of two components: difference and devaluation.

Stigma associated with mental illness has its roots in the prejudice that those individuals show undesirable behaviours responsible for a decreased perception of the person (Corrigan & Watson, 2002). Stigma is undesirable and harmful.

1.5.1. Stigma on Alzheimer's Disease

As well as mental illnesses, the diagnosis of dementia is strongly associated with stigma, caused by cultural beliefs and "uncommon" behaviours due to the impairments typical of the disease.

Dementia represents a degenerative condition, which impairs memory, behaviours and judgment. For these reasons, society usually associate dementia to a sense of "fear" correlated to other mental illnesses. The most known, and earliest symptom of dementia is the impairment of short-term memory. Moreover, long-term memories are enriched with characteristics that make the individual unique, such as character, interests and beliefs. On the other hand, short-term memory is involved in daily social interactions. The impairment of these

processes affects normal social relations that surround dementia, the individual's social role, and may result in stigma.

Stigma is a significant obstacle to well-being for people with dementia, especially regarding their behaviours often considered inappropriate by “normally endowed” society (Biamonti et al., 2014). Stigma can also cause a delay in the search for a diagnosis of dementia, due to the negative effects it has on the social perception of people with dementia.

Dementia due to Alzheimer's disease is a degenerative illness which can lead to forgetfulness; emotional out-bursts; sudden shouting and unexpected agitation and aggression and unusual behaviour in public spaces (Mace & Rabins, 1981). The main cause of stigma towards dementia due to Alzheimer's disease, are the unusual behaviours and manifestations that occur to individuals with dementia, due to their impairments (Dingwall, 1976). These behaviours challenge the social norms recognized by society as “appropriate conduct” (Jorm, 1987). Accordingly, people with dementia are often isolated, or hidden, by their relatives and family caregivers, because of stigma, in order to prevent emotional out-bursts in public.

In recent years, the stigma associated with mental illness, become a social problem affecting a significant portion of society. It has been recognized as a social problem and needs to find strategies to diminish it and solve it. Hence, stigma prevents people from looking for a diagnose, and looking for available support services to maintain a high level of well-being. Stigma around Alzheimer's disease exists in part because of the lack of public awareness and acknowledgement of the condition. Stigma may add to the burden of Alzheimer's disease as it can prevent individuals and their families from taking benefits from available treatments or living life to the fullest extent possible (Batsch, 2012). In the past decades, in most industrialised countries, people with dementia were generally perceived as a burden on society and, as a consequence, they were taken away from familiar life, and moved psychiatric institutions.

In the 1990s, the first drug treatments for dementia became available. They were able to manage some symptoms, but not effective in finding a cure. Nowadays, research is trying to develop additional treatments, aiming at finding a definitive cure for dementia.

There is still a lack of acknowledgement on dementia features, its onset, and that its behavioural symptoms are caused by a physical damage occurring to the brain, even if public awareness has increased in the last years. This lack of knowledge leads to negative stereotypes and prejudices associated to people with dementia and their caregivers. There are many different aspects of stigma that have been analysed by researchers, but still there is no certain definition of the phenomenon. Stigma is defined in the Oxford English Dictionary as a

mark of disgrace associated with a particular circumstance, quality, or person.

Erving Goffman, a very well-known sociologist that inquired stigma and its associations, describes the lack of social acceptance, defined “spoiled identity”, that affects a stigmatised person. This leads to a distorted view of the person, that is seen by other individuals as “less than human” (Alzheimer’s Association, 2012). Goffman defined stigma as a characteristic, behaviour, or prejudice that results discrediting to society. Persons possessing such attribute are seen different from others, in a way that is undesired and shameful. Consequently, the stigmatised individual is devalued and his/her identity risks to be damaged. In all stages, the stigma associated with dementia arises and focuses on the various impairments that characterize the person, rather than on the remaining abilities and strengths that still enables people with dementia to interact and enjoy social contact. This leads to a deprivation of social contacts between people with dementia and their family members and friends.

Mass media has a huge impact on people’s belief systems. Mass media can suggest a certain representation of mental illnesses, such as dementia, and can influence the perception of a pathologic condition. A consistent number of films associate individuals with mental illnesses to killers or are subjected to be the protagonist of ridicule situations (Edney, 2004).

People with dementia’s isolation from social connections, and broadly, from any active involvement in the society, arise a social distance, associated to stigma, that cause a common perception that people with dementia are unable to carry out social roles.

1.5.2. Self-stigma, public stigma and courtesy stigma

Stigma affects not only the person with the mental disorder but also relatives and carers that support the person, including professionals.

In the past decades, the concept of stigma has been clarified to encompass three different concepts: self-stigma, public stigma or courtesy stigma, and stigma by association (Goffman, 1963). Self-stigma occurs when stigmatised persons absorb the stigmatising beliefs from the society and come to believe them and internalise them. Public stigma identifies the reactions of society, towards a stigmatised individual or group.

Furthermore, the main effects of public stigma produce stereotypes, and prejudice about individuals affected by pathological mental disorders. Finally, prejudice can cause discriminatory behaviour, denying opportunities to people with mental illness (in this case dementia) available for the rest of the society. This can lead to employment and educational issues and decreased personal satisfaction (Corrigan & Watson, 2002).

Stigma by association or courtesy stigma was first identified and defined by Goffman (1963), as

including the emotions and beliefs of those surrounding the stigmatised person, including family members and professionals.

Stigma by association arise from negative evaluations expressed through cognitive representations of a stigmatised person, that are passively linked to an associated person, such as a family member, friend, spouse or another companion. The undesirable characteristics associated to the stigmatised person are transferred and associated to the previously non-stigmatised companion rendering him/her less valued, degraded, undesirable, as the stigmatized person (Kulik, Bainbridge, & Cregan, 2008; Phelan et al., 1998; Pryor et al., 2012). Moreover, recent studies demonstrated that stigma by association can lead to low self-esteem, a sense of helplessness, embarrassment, and increased stress and burn-out phenomenon occurring to family members (Byrne, 2001). Most studies of stigma inquired the personal experiences of individuals subjected to stigma, with attention usually

focused on the strategies they employ struggling to hide and protect their identities.

On the contrary, Courtesy stigma has been less inquired. Goffman (1963) indicates that courtesy stigma can be associated to a “tendency for stigma to spread from the stigmatized individual to his/her close connections. When an individual has a relationship with a stigmatized individual, the wider society may then treat both individuals in some respects as one”. Consistent body of literature underlines that having a one family member suffering from a stigmatised illness, leads the other family members, and close friends, to fear and experience courtesy stigma. As a reaction, they may try to hide the presence of the illness to avoid it (Conrad 1991; Gray 1993).

Insomnia, agitation, irritability, fatigue, and several other psychological pains, associated with other psychological complaints have been documented as symptoms of distress and anxiety related to stigma by association (Angermeyer et al., 2003). Even when a person with mental disorders is older, has moved out and has an independent life, his/her mental health condition is still subjected to stigmatization and consequently, his/her family members or friends may be subjected to stigma by association. In fact, mental illnesses can create tensions, stress, burden and negative emotions within families (Farina, Fischer, & Fischer, 1992; Judge, 1994).

The daily lives of family members of people with mental illness are further altered by the fact that they often provide daily care to their relatives (Sales, 2003). Thus, carers are the main responsible for people with dementia’s care needs. They face an enormous role, as they provide assistance and support from the early stages of the disease, to the later ones, aiming at maintaining the greater independence possible, and the highest quality of life.

Caregiving represents a heavy role, as it causes emotional, as well as physical effort. The definition of stigma by association highlights the fact that stigma involves and occur, also on caregivers, even if they are relatives of the individual with dementia.

Family caregivers are the primary support for people with dementia, as they represent the closest individuals who better know and understand the person with dementia. Furthermore, family members tend to isolate themselves and their relatives with dementia

to hide some symptoms occurring during dementia, such as agitation and anxiety, get dressed in inappropriate clothes, to avoid public social contacts that can arouse negative reactions, in the form of judgement or prejudice, from the community that surrounds the family.

The symptoms occurring to the person with dementia, are often hidden or neglected, to overcome the pressure of stigma by association around dementia. Social interactions are also affected by stigma: individuals often avoid them when they involve people with dementia, and consequently also caregivers may be subjected as well.

Emotional reactions are connected to stigma by association: they can be shame, embarrassment and guilt, and can lead to a decreased caregiving and to stress and burnout situations.

Older spouse carers can be more vulnerable to stigma by association, because they may have relied on their partners in social situations, where they felt more comfortable being a couple, or for social affirmation, and consequently, they may feel the weight of social isolation. Stigma by association can also represent an obstacle to a proper diagnose of dementia. Moreover, people often neglect to have dementia symptoms, in order not to encounter stigma from society. Stigma by association represents also an obstacle that prevents caregivers to look for available care and support services. Moreover, the acceptance of help, information, and home care are often felt as stigmatising by many caregivers. Reducing the impact, and hopefully, overcoming, stigma may enable caregivers to ask for help, acknowledge them on the disease, accept support, reducing their burden and stressful situations. It also enables them, and their cared, to still be part of social life, without being subjected to isolation from social interactions.

1.5.3. Approaches to reduce stigma

In order to provide support for caregivers and people with dementia, many governments have developed national policies or national strategies for dementia care. Stigma reduction is one of the points included in these national policies, highlighting this problem as

one of the main causes of a low rate of people being early diagnosed (Alzheimer's Association, 2012).

The development of stigma is a phenomenon not yet understood that, logically, needs a versatile approach that takes into consideration different aspects of stigma.

National dementia strategies and policies may support local community initiatives and community-based activities (Millen & Walker, 2002). Stigma needs to be challenged not only facing personal beliefs that cause it, but also society stereotypes and beliefs that arouse it. Another important initiative that should be supported in dementia strategies is to offer an increasing number of dementia services to support people with dementia as well as carers. In fact, the impact of stigma can be considered lower in countries that offer a wide range of dementia services and support.

Stigma is principally dealing with a distorted perception about people with dementia. The causes of this negative perception lay in the belief that people with dementia are untreatable, aggressive and dangerous, totally dependent on others, and subjected to have unsuitable behaviours in public. To reduce stigma, it is necessary to target both the causes and the consequences of this phenomenon, as they mutually enhance each other. The first step towards reducing stigma comprises the understanding of the phenomenon and its consequences, and negative influence. Medical professionals should investigate their patients about eventual perceived stigma and the relative difficulties encountered, such as episodes of discrimination or social isolation. A consequent step consists in educating the families towards the overcoming of stigma and the available support services. General education and social awareness may help to reduce stigma against dementia, but clearly, it's not enough, as stigma still remains a worldwide problem of society.

It seems likely that to reduce stigmatization of dementia, education should focus on increasing the acknowledgement that people with dementia have a wide range of capabilities not impaired by the disease, so they still can actively contribute to community life, and that personal well-being is a fundamental feature that should be granted to people with dementia as well as other patients (Livingstone et al., 2008). Well-being in dementia deals with having a solid social

network that positively support the person with dementia, avoiding him/her to feel frustrated, anxious or stressed.

Testimonials from people with dementia or related illnesses can be a key factor to improve acknowledgement and foster society's awareness and understanding of stigma and its consequences (Corrigan & Watson, 2002). The consequence of stigma towards dementia consists of a negative influence upon psychological well-being of people with dementia, added to a consequent negative impact on carers well-being. Reducing stigma should encourage people with dementia and their carers to be more confident about the illness, and to seek help when needed, looking for the many services offered for dementia care. Reducing stigma may also help people to overcome the fear of diagnosis and enhance early detection of dementia. Dementia strategies should point at enhancing the acceptability of dementia symptoms, fostering continued active participation of people with dementia in public and community activities, in order to decrease the sense of isolation and poor self-esteem, typical of stigma. A diffuse early diagnosis attitude may lead to an improvement in care services, delayed institutionalization, improved quality of life and reduced pressure on carers.

2. Design: a disciplinary reflection.

Interior design as an anthropological question

From an academic point of view, Interior Design is a young discipline which, encompassing a long and strong architectural tradition, today manifests the need to go beyond the perimeters defined by architecture, looking for more effective expression of its connotations.

In fact, Interior Design is one of the main fields able to formulate answers to the current changing social dynamics. These socio-cultural changes make evident how the expansion and the evolution of society have to deal with the limitations of the current built environment surrounding them (Biamonti, 2015). Consequently, from a disciplinary point of view, it emerges the need to address a deep reflection of its “fundamentals”, perhaps starting right from the relationship with architecture.

Nowadays, it is emerging that in the contemporary city, the formal and figurative aspects of architecture no longer have correspondence with the actual functions that take place within buildings. This loss of formal correspondence has actually “liberated” interior design projects from that ancient bond with architecture, introducing them in a much more fluid dimension, characterized by the ability to traverse different types of places that human beings “inhabit” (Branzi, 2006; Biamonti, 2015). Therefore, it is necessary to think about a new level of the project: a level (from both an academic and a professional point of view) characterized by new flexible qualities and elements. A project able to penetrate the space with a “viral” approach, ranging from a single little detail to a territorial scale, eventually becoming the

physical manifestation of an intangible service. Considering the quick and sudden transformation processes that characterize contemporary society, it becomes of extreme interest the development of an ability to “react adapting”. This leads to a concept of “living and inhabiting” that does not necessarily destroy and replace the existing elements, but that looks forward to recreate a new habitat which responds adequately to the individuals’ needs. Hence, Interior Design demands for a new approach, based on weak energies and symbiotic technologies (Branzi, 2009). These conditions emphasize the need to define a new set of parameters for Interior Design discipline. However, to fulfil this aim, it is necessary to define a new mental dimension of the project, which goes beyond the execution of a simple technical performance, in response to an equally simple functional request. It is necessary to develop an increasingly sophisticated ability to listen to the “evolution signals” and then to deal with the ever-changing human needs, which more and more for a continuous, smooth, positive, experimentation, rather than unique, permanent solutions. Specifically, the demand is for new forms of design, which are interstitial and fluid, strategic and vital, mainly able to deal and adapt to the constantly changing social dynamics and needs. In fact, we can imagine the environment as a system which goes beyond the perimeters of architecture, aiming at recreating the best environmental conditions able to fulfil contemporary society needs. Therefore, it is also necessary to focus on a new sensibility, which arises from a cultural-anthropological dimension of “living and inhabiting” (Biamonti, 2015) and leads to a new design approach. It is also crucial, to define a new “Interior Designer” which no longer refers to the categories of architecture, interior design, urban planning, etc. but whom is formed inside the sensibility of contemporary design, constantly listening to the changing needs and able to identify the parameters of the habitat and refine them. In fact, aim of Interior Design discipline it has always been the definition of an “emotional landscape” rather than the development of a functional structure (Biamonti, 2015). Issues related to happiness, to death, to love ... very deep and extremely human and anthropological concerns. With the help of increasingly efficient and available tools, it would be interesting and challenging to develop new professional sensitivities based on these profound issues. Sensitivities

that no longer deal only with the domain of technical performances, but that connote a professional dimension with broader horizons and a professional competence increasingly dependent on the ability to listen carefully to social and anthropological needs.

2.1. Perception of space and place

This topic demands an interdisciplinary focus since an adequate synthesis of the scientific information available includes at least the fields of psychology, proxemics, architecture and interior design. Analysing the concept of “space”, Yi Fu Tuan says:

Space is abstract. It lacks content; it is broad, open, and empty, inviting the imagination to fill it with substance and illusion; it is possibility and beckoning future. Place, by contrast, is the past and the present, stability and achievement.

On the contrary the concept of “Place” is associated to human beings, who created it for human purposes. This doesn’t mean that a building can be considered a place simply because it is a tangible element of the environment and it was originally designed as a place. To be identified as a place it has to be lived in (Tuan, 1979). Hence, we need to examine the meaning of “living”. Living is strictly connected to experience; human beings that live in a place, experience it. Tuan, defining the concept of experience and place refers to human awareness: a place, from small-scale objects, to big-scale elements, is a construct of experience. Built tangible elements are part of a place, as well as the quality of human awareness. Thus, space can be considered as a condition for biological survival, necessary for human beings to exist, live, and reproduce. The transformation of a space into a place, is a highly anthropological action; it involves feelings, experience, adaptation, recognition. Moreover, quoting Yi Fu Tuan:

culture and experience strongly influence the interpretation of an environment.

At a high theoretical level, places are points in a spatial system. At the opposite extreme, they are strong visceral feelings. A place is

known, and becomes familiar, not only experiencing it through the eyes, but also through other more passive modes of experience, which resist objectification. Experience establishes places at different scales. The kitchen and the entire home are both places, as well as neighbourhoods, and cities. What do the kitchen and the city have in common? They are all centers of meaning to individuals and to groups.

2.1.1. The experience and sense of places

The sense of place requires deep and active involvement, and it is strictly connected to experience. Experience encompasses various modes through which a person perceives his world. Some sensory modes are more passive and direct than others. External stimuli can be translated into sensations through senses like taste, smell and touch. Human beings use hearing and seeing to actively explore the world, getting to know it in an objective way. Moreover, seeing is also closely connected to thinking in the sense that it is a discriminating and constructive activity, as it creates patterns of reality adapted to human purposes.

Even other senses as smell, taste, and touch are associated to thought in the above sense: they can create detailed olfactory, gustatory and tactual worlds by discriminating among external stimuli. The experience of a place can be easily described through a simple example. If we take into consideration the “home”, a fireplace is a typical example of a place.

Since times, the fireplace is considered in different cultures as “the heart of the home”; that means it represents a centre of meaning. Another place is the dining table. Around it the family traditionally come together to enjoy the meal and to perform all culture rituals characteristic of mealtimes, sharing food and wine with family members and guests, preparing the meal, setting up the table. Places may also be private to the individual.

Favourite pieces of furniture (i.e. an armchair, a rocking chair, a desk, etc.) placed in certain locations within the house represents “special places” for individuals. They have a specific location, and moreover, a special meaning for the individuals. Hence, other

members of the family recognize the importance of that. Above all, the bed is the most personal place. The bed represents a centre of meaning for reasons beyond comfort, security and familiarity: every morning life journey starts from here, and every evening it represents a point of arrival. The fireplace, certain piece of furniture, and the bed become recognizable places within the home once they are entrusted with sentiment. But the sentiment does not often rise to the surface of our consciousness. These objects may not be aesthetically relevant, but their importance comes from unconscious mechanisms, as they are known intimately through the more passive modes of experience. Moreover, their visibility can be enhanced by cultural rituals performed around them.

Regarding the individuals' use of the spaces, the sociological field of proxemics studies people's use of personal space to mediate social interactions. While proxemics has many aspects (i.e. nonverbal cues, body orientation, and cultural variation), the defining characteristic is that people equate interpersonal physical distance with social distance. Furthermore, Hall introduced the term proxemics in the 1950s to entitle

the interrelated observations and theories of man's use of space as a specialized elaboration of culture.

In other words, Proxemics encompasses the study of place and space from a cultural point of view. Moreover, proxemics explores the cultural association that individuals place upon space. This discipline studies how individuals entrust with meaning an environment, at the interactive and interpretive level. According to Hall (1962), perception of the levels of intimacy of space is determined by culture. Spaces and places are perceived differently by people from different cultures. Cultural frameworks are accepted and internalised in all individuals at an unconscious level. Hence, Hall emphasized that diversified cultural frameworks for defining and organizing space, can lead to misunderstandings and serious failures of communication in cross-cultural settings. Just as an example, Germans perceive their own space as an extension of the ego. On the other side Italians perceive it as a connection of bodies and experiences.

Instead of this, Hall believes all cultures are rooted in a common biology. In many of his studies, he analyses animal behaviours to make comparisons to human behaviours. For instance, animals are territorial. Marking their territory with organic liquids represents the willing to define a private area.

Hall explains in his study, that people use furniture, and walls, to accomplish the same purpose. Individuals also define boundaries to identify their personal space. They unconsciously delimit an invisible bubble, that is accessible to whom we are intimate without causing any distress. Every individual has a zone of personal space which differs, in terms of dimension, accessibility and boundaries, from one culture to another. Personal space is categorized by different distances of interaction, defined by Hall as intimate, personal, social, or public. With intimate distance, Hall indicates a distance ranged between 15 to 45 centimetres. This distance is associated to close relationships, or to a high degree of comfort between individuals.

It is connected to movements such as hugging, whispering, or touching. Personal distance ranges from 45 to 120 centimetres. This physical distance normally occurs between close friends or family members. The closer the individuals are, the more intimate is their relationship. Social distance, from 120 to 350 centimetres, occurs between acquaintances. A closer distance may be comfortable for co-workers or neighbours; a wider one for individuals we don't know or see occasionally. Public distance is associated to public speaking situations, and ranges from 350 to 750 centimetres. Such situations can be giving a presentation in a conference or talking to a class of students.

2.2. Environment of “Care”

The term “environment” encounters all those situations and experiences which have influences on individuals and arouse reactions (Lawton, 1991). The term environment is an umbrella term, which includes personal, social and physical aspects.

Among all, Day and colleagues (2000) explored the importance of taking into consideration individual's needs and peculiarities in the design of the environment. Moreover, the concept of "environment" is influenced by the theory of person-environment fit proposed by Caplan, and later by Kahana's research which investigates the relationship between environment characteristics and individual's peculiarities and expectations.

The environment is important because it is closely linked to quality of life, defined by Lawton (1991) as:

the multidimensional evaluation, by both intrapersonal and social-normative criteria, of the person-environment system of the individual.

The focus on people with dementia's needs is extensively investigated in the literature on dementia care. This approach suggests that the development of a therapeutic milieu for people with dementia may lead to positive outcomes.

It also requires a change in dementia care philosophy, from managing impairments and behavioural disturbances, to empathically understand and meet people with dementia's needs. Furthermore, Algase et al. (1996) have suggested that disruptive behaviours can be considered as an expression of unfulfilled needs.

Moreover, in the literature the provision of a safe environment is regarded as one of the basic requirements of residential care (Taft et al., 1993), but it is also necessary to provide an active social environment, that offers opportunities of engagement and enhancement of self-esteem.

Furthermore, cognitive impairments affect people with dementia's behaviours. Furthermore, these symptoms are accentuated by physical fragilities caused by the process of aging (Calkins, 1988). Meeting all these psychological, social and physical needs can lead to the design of an environment of "care", in which people with dementia are not only passively receiving care but are actively part of it.

2.2.1. Person-Environment Fit

The nature and the psychological consequences of stress has been largely explored and theorized in literature. Specifically, the relation between the person and the environment has been recognized as the core of this phenomenon. In health and environmental psychology literature this relation is defined as environmental fit, or person-environment accordance, that equally influence each other.

The input and attributable responsibilities of the person and environment to the development of stress have been formalized in the person-environment (P-E) theory (Caplan, 1983; Caplan & Harrison, 1993; French, Rodgers, & Cobb, 1974; Harrison, 1985). This theory is based on the concept that stress is an intrinsic element of the person or of the environment separately. In certain situations, they can more or less fit, or some features of both can be modified to fit each other.

Hence, Person-environment fit (P-E fit) is defined by Dawis (2002) and French et al. (1982) as:

the degree to which individual and environmental characteristics match.

Person characteristics may include a wide range of elements, such as individual's needs, values, aims, skills, while environmental characteristics may include demand for social role, cultural beliefs and values, rewards. Environmental psychology has extendedly explored this theory due to its relevant implications in work environments. Despite this, nowadays the field has not yet completely conceptualized. In fact, its numerous subsets such as person-supervisor fit or person-job fit, make this phenomenon complex to define (Edwards & Shipp, 2007; Kristof, 1996). In the literature, there are extended analysis of the positive influences that person-environment fit can have on enhanced work performances, increased well-being and personal satisfaction (Ostroff & Schulte, 2007). Furthermore, person-environment fit theory finds in the divergence between environment and individuals' expectations, goals and cultural values the main core and essence of stress (Harrison, 1978). Due to this definition of stress, cognitive assessment is strictly part of the interpretation of stress. The match, or fit, between the person and the

environment leads to enhanced performances in workplaces and enhanced well-being (French et al., 1982). This theory, mainly related to workplaces environments, can be applied in broad situations, as it is proved that the match between individuals' characteristics, values, and cultural beliefs, and environmental characteristics can lead to enhanced well-being and quality of life.

P-E fit theory embodies two basic divergences fundamental to understand the relation between person and environment. The first is between the objective and subjective person, and the environment. The objective person deals with existing peculiarities, on the contrary the subjective person deals with individual's perception of his/her own characteristics and peculiarities. The objective environment stands for events or physical and social situations as they occur, without any influence from person's perception, on the other hand the subjective environment is related to person's perception of social situations or events.

The subjective correlates are influenced by objective person and environment. This produces effects in the spheres of perceptual inclinations, cultural influences, affecting their objective assessment (Harrison, 1978). The second distinction is between two visions of P-E fit. One version encompasses the fit between the values of the person and the available supports necessary to fulfil values in the environment (S-V fit; Dawis, 2002; Edwards, 1992; French et al., 1982; Locke, 1976). Values refer to the individual's needs, creating interests, goals, and preferences. Supports refer to environmental features that contribute to the fulfilment of personal values (French et al., 1982). Rewards, such as recognition, pay, and commendations are included in the supports.

The second version of P-E fit involves the fit between the requests of the environment and the individual's capabilities (D-A fit; French et al., 1982; McGrath, 1976; Shirom, 1982). Environmental requests can include objective ones, such as commute time, length of workweek, working daily hours, physical strength required for a certain job; or can include socially accepted norms, and recognized roles. Individual's capabilities comprise skills, energy and time.

2.2.2. Environmental-Behaviour Model

In the literature there's a consistent debate on the influences that the environment can have on Alzheimer's disease symptoms. This discussion often involves not only doctors, health professionals and caregivers, but also architects and healthcare managers, as they all contribute to the care of Alzheimer's disease. In 1994, John Zeisel, together with Joan Hyde and Sue Levkoff, both geriatricians, published an article in which they describe a model for the organization of premises designed to house Alzheimer's disease patients. This model was called Environmental-Behaviour Model. The E-B Model described in the article was based on the collaboration between geriatricians and experts in the field of caregiving of people with Alzheimer's disease, aiming at understanding the special needs of these patients regarding their built environment, to offset the functional losses they encounter due to the disease. Their research started with a questionnaire sent to a group of experts in caregiving people with dementia, in order to assess that special interaction between the built environment and the behaviour patterns of Alzheimer's patients. On the basis of the responses to the questionnaire, they were able to refine existing knowledge and to point new references and a new perspective on this issue. It was possible, for them, to ensure a better and more complete fit between physical environment and the needs of people with dementia. With their research, they were able to establish what they called "critical performance criteria" (Zeisel et al., 1994): the special and undeniable requirements absolutely essential in any interior especially designed for people with Alzheimer's disease in order to be in line with the behaviour model of the users. Depending upon the degree to which special needs are met, it was possible to establish specific guidelines for changing the environment in useful ways to lay down those conditions. The E-B Model (environmental-behaviour model) mainly consists of eight environmental features, each of which contains two specific parameters establishing a qualitative definition.

The eight features are:

- Exit control
- Wandering paths

- Away places
- Common places
- Outdoor freedom
- Residential scale
- Autonomy support
- Sensory comprehension.

Exit Control. The brain of people with Alzheimer's is not able to develop new cognitive maps. This leads to the necessity to navigate outdoor environment (out of their home) with the guidance of others. Facilities exits, that connect indoor environment with the urban areas, need to be surveyed or controlled to avoid incidental escaping. Doors are perceived by people with Alzheimer's as attractions, because they seem to invite them to go out. On the other hand, they become agitated because they are locked, and they are not allowed to open them. Exit doors can reduce agitation if they are less visible and more camouflaged than usual, with no attracting hardware. A suggestion recommended by Zeisel (2000) is to increase the visibility of "safe doors", the ones that allow residents to reach indoor protected areas of the facility, or healing gardens, to distract them from exit doors not suitable. Alarmed exit doors should be discreet: signals should not disturb residents with loud sounds or strong lights, to avoid agitation. All the precautions should be taken in order to maintain a quiet ambiance and the greater independence for residents.

Walking Paths. Commonly, people with Alzheimer's experience the inexplicable urgency to walk, sometimes without a certain destination. In a facility with no place that accommodates this activity, this behaviour can represent a problem for the staff. Zeisel (2000) suggests providing a well-designed pathway, without dead end, that turns aimless wandering into walking. A pathway that goes through common areas, connects corridors, and allows residents to walk freely in the facility. Interesting elements are important stimuli for residents along the path: a plant, work of art, or even a landmark at the end of the path as a fireplace or a garden gives a purpose and a destination to the residents.

Personal Places. Residents do not only need common areas, but also private places to be alone and relax from social contact. These individual places may include private bedrooms, out-of-the-way sitting in the garden or more isolated corners in a living room. These private places can also be used when family members are visiting residents, to create a soothing mood.

Social Space. Residents who live in Alzheimer's assisted-living facilities spend almost all their time together. To reduce boredom, inactivity and fulfil residents' needs, Zeisel and his colleagues (2000) suggest having more than one common area (at least two) such as a kitchen, a dining room, and a living room. The settings of these rooms should be differentiated to foster residents' curiosity, and made them look interesting and stimulating, allowing the staff to manage small groups activities.

Healing Gardens. Not every facility is able to provide its residents a safe, accessible and secure outdoor area. It is important to provide this kind of space because Alzheimer's residents enjoy being outdoors, in the nature, relaxing and calming down in the plants. A healing garden can also have therapeutic effects on residents, with its activities organized as surveyed by the staff. If such place cannot be provided, for example, if the residential area is on an upper floor without external accessible areas, it is suitable to find alternative solutions. One alternative can be to design an outdoor patio that residents can use regularly accompanied by staff. The path to reach it must be thought in order to prevent anxiety and a sense of getting lost.

Residentiality. Domestic furniture, fireplace, living room with armchairs, etc. are elements that create a residential ambiance and a positive mood in a long-term care facility. The familiarity of residential furniture, spaces, decoration, and lighting relaxes residents, and consequently also their families, caregivers and staff. Zeisel and colleagues (2000) suggest avoiding big purposeless spaces and never ending corridors that cause agitation and anxiety in the residents. Residential scale spaces allow to create familiar situations, such as a small group chatting in front of a fireplace.

Independence. Handrails, no slippery floors, anti-glare surfaces are safety features that enhance residents' independence and autonomy and encourage them to move around. On the contrary, any non-prosthetic or unsafe design element has the effect of limiting autonomy. A certain degree of safety has to be guaranteed in the environment, so that on one side it is easier for staff members to care for residents, and on the other side they are encouraged to live the facility independently, without feeling frustrated for not being able to move or sit and stand up.

Sensory Comprehensibility. People with Alzheimer's cope very well with familiar sounds, sights, and smells, but are disturbed by loud sounds, flashy colours, confusing signals. Using too many bland colours led people with dementia to feel anxiety, because they hardly distinguish them. Sensory stimulation is important for residents, to keep them interested and reactive towards the environment, but needs to be not aggressive and comprehensible for them. Colours are fine, and traditional patterns for wallpaper are more comprehensible and stimulating for them. A television should be present and turned on only at a certain time to allow residents to watch a film or a certain program. Programs with many advertisements or rapid changes in the view should be avoided not to foster agitation and lack of comprehensibility.

Hereby the complete model, including each two specific parameters (or secondary characteristics) necessary to evaluate each parameter of the facility.

EXIT CONTROL immediacy of control unobtrusiveness	COMMON SPACE STRUCTURE quantity variability	AUTONOMY SUPPORT safe prosthetic
WANDERING PATHS continuousness wayfinding	OUTDOOR FREEDOM availability supportiveness	SENSORY COMPREHENSION noise management meaningfulness to residents
INDIVIDUAL AWAY PLACES privacy personalization	RESIDENTIAL SCALE size familiarity	

Fig. 7 - Environmental-Behaviour Model

The two parameters which both describe these eight environmental features defined by Zeisel and colleagues (2000) shall in turn determine that mix of combinations which create the varying degrees of quality of the environment. Hence, two parameters are an expression of the need for sensory comprehension, noise management and meaningfulness, and the degree of these two (strong or weak) and the mix is a description of the environment satisfaction score, with four possibilities. To assess if the intervention strategies implemented when designing an environment are perceived as therapeutic by the residents and useful for the staff, researchers can look at the satisfaction score of the critical performance criteria, (included in E-B Model) that represents a reference point for the quality assessment of an interior.

Zeisel's research demonstrates that certain features of the physical environment can foster and improve well-being among residents. Reduced aggressiveness and agitated behaviours are connected to a certain degree of privacy guaranteed to the residents, to the possibility to personalize their own bedrooms avoiding a sense of hostility towards the environment, to a residential character that allows the residents to feel a sense of control over the space. Providing a varying ambiance in common areas and camouflaging exit doors improves the reduction of depression and misidentification. Environments designed for the cognitively able appear to enhance stress on the cognitive abilities of people with Alzheimer's. A reason can be the feeling of incomprehensibility and the sensory overstimulation that can lead this kind of environments.

The characteristics discussed by Zeisel and colleagues (2000) relieve resident's stress and anxiety, if properly designed, reducing also aggressive behaviours and enhancing people's well-being. Furthermore, providing residents with greater control over daily life and environment may reduce their depression and foster them to actively participate in daily activities.

Zeisel's approach to design research is significant in a number of different ways. First, his research gained consensus from colleagues through an expert rating methodology he had successfully pursued in all his past research. After collecting series of data, he was able to identify 8 environmental characteristics, associated to specific patterns

of use. Each of these characteristics taps a significant dimension of the designed environment. And, as Regnier said (1998)

Collectively, they provide a clear philosophy for design development...his identification of these characteristics not only qualifies their application but creates clear design directives that are easy to apply or to identify in existing environments.

Secondly, the eight characteristics outlined by Zeisel, are both specific and universal; they include variables that govern important design and functional attributes of the setting (Reigner, 1998). His ability to relate research findings to design decisions makes the work particularly valuable.

2.3. An anthropological approach

Even as a professional designer who has the great knowledge and skill to produce remarkably good designs, failure may come when we forget that we are designing for individuals, real people. People with Alzheimer's disease might be our mother, grandparents or anyone who we are very close with. However, even if a designer carefully tries to first, understand people with dementia's needs, and then imagine the experiential consequences of his/her design, the gap between his/her life experiences and those of people with dementia are profoundly different. The risk of misleading design intuitions is high, due to this discrepancy between the two life experiences. Therefore, this highlights the needs to bridge this gulf in experiences.

2.3.1. *The role of empathy*

Every one of us understands empathy as a widespread attitude, that represents the ability to reach outside of ourselves and walk in someone else's shoes, to understand what others feel, and the reasons why they feel that (Miyashiro, 2011). Moreover, an empathic design approach enables designer to focus on the needs and the problems of

end-users, sometimes highlighting unconscious needs, that users themselves are not consciously aware (Miyashiro, 2011).

Developing an empathic relationship with participants in design, it is necessary to take into consideration three main aspects:

- a quality relationship between the designer and the user that allows the designer to better focus his/her needs;
- a responsive disposition towards the user;
- a strong consideration of the emotional quality of his/her experience (Wright & McCarthy, 2008).

According to Wang et al. (2010), the imperative of an empathic design is to get in touch with real end-users with empathy, identifying ourselves with them, in order to acknowledge their needs and their experiences, and satisfy them at best. Approaches to empathy and effective emphatical understanding can be association, inner imitation or projection.

As designers, in order to be able to understand real needs of people with dementia, it's important to foster a meaningful collaboration involving caregivers, with first-hand experience of the condition, and therapists, the medical figures able to delineate the therapeutic needs.

The result is a personally tailored design artefact, that, through the process of creating tailor-made prototypes, foster the development of a strong relationship between users, therapists, and carers.

The built relationship should improve designers' understanding of people with dementia's needs and living experience. The inclusion of family caregivers and therapists, alongside with people with dementia, help the development of a useful discussion as they could articulate problems their cared ones have encountered. The focus on people with dementia's needs is extensively investigated in the literature on dementia care. This approach suggests that the development of a therapeutic milieu for people with dementia may lead to positive outcomes. It also requires a change in dementia care philosophy, from managing impairments and behavioural disturbances, to empathically understand and meet people with dementia's needs.

Furthermore, Algase et al. (1996) have suggested that disruptive behaviours can be considered as an expression of unfulfilled needs. Moreover, in the literature, the provision of a safe environment is regarded as one of the basic requirements of residential care (Taft et

al., 1993), but it is also necessary to provide an active social environment, that offers opportunities of engagement and enhancement of self-esteem. Furthermore, cognitive impairments affect people with dementia's behaviours; these symptoms are accentuated by physical fragilities caused by the process of aging (Calkins, 1988).

2.3.2. From “cure” to “take care”

Regarding Alzheimer's Disease and dementias in general, the great change in the therapeutic actions of the last decades has been considering the person with dementia not as a sick person “to cure” but rather as a person with his/her own vision of the world, that we needs to “take care of”, to safeguard frailties, often relying on its residual capacities, to ensure a pleasant and not frustrating life experience.

People with dementia, due to their disease, are characterized by a different view of reality, often expressed with behaviours and reactions considered “abnormal” by society. If those behaviours are accepted just as one of the possible visions of life, we don't have to “cure” it, in order to solve the problem, but the focal point moves on “taking care” and accept the reality and personal truth of another's experience. This is an important statement from a designer point of view, because it completely shifts the focus towards considering not only ergonomic aspects, but also anthropological, emotional and relational. Thus, following Andrea Branzi (2009):

Design should inquiry a New Dramaturgy which comprises emotional levels and the relationship that design can finally establish with those certain anthropological themes typical of contemporary human existence.

Concerning dementia care, most of the times this “feeling of being safe” is connected to ergonomic and technical aspects: for example, rounded corners to avoid hurts, proper flooring materials to avoid falls, a minimum number of square meters per person in each room, hygienic surfaces, and so on.

Moreover, the Non-Pharmacological approach proposes the transition from the concept of “Cure” to the wider context of “Take Care”. This dimension has completely changed the point of view, introducing new dynamics in the therapist-patient-family relationship. “Taking care” can be associated with the approach widely discussed in the literature of favouring behaviours, which means not trying to correct those recognized as “abnormal” by the majority of society, but trying to indulge them, reassuring people with dementia, enabling them to feel comfortable, fostering their memories and enhance the personal well-being. We can consider this approach close to a person-centred one, focused on the “user” needs and habits, and able to provide meaningful in the care plan a set of meaningful activities.

Meaningful activities are coordinated, or spontaneous, actions typical of a normal daily life. It is important to offer a wide variety of daily activities that people with dementia can freely decide to join in order to respect individuals’ personal interests and habits, encouraging them in expressing their feelings and concerns (Hunter, 2013). As designers, in order to be able to understand real needs of people with dementia, it becomes crucial to foster a fruitful interdisciplinary cooperation involving caregivers, with first-hand experience of the condition, and therapists, the medical figures able to delineate the therapeutic needs. Thus, a person-centred approach can moderate the effects of “objectification”, which occurs when a person with dementia is treated as if they had no opinions or feelings, and help identity and self-esteem to persist, during the onset of the disease. Taking care of the residents’ needs can have positive effects of cognitive and functional deterioration, decreasing their process. Personhood and identity are constantly encouraged and enhanced in the social relationship that surround people with dementia. These two characteristics can be diminished if the person is provided with a depersonalized care.

3. Towards a therapeutic environment

3.1. Environment as Non-Pharmacological intervention

In 1979, Canter published the “Designing for Therapeutic Environments: A review of Research” by including various contributions from researchers who shed light on the therapeutic values of different settings like hospitals and nursing homes, on different users (such as the children and elderly). In early research samples presented in this book, the benefits of a therapeutic environment were justified by maintained or enhanced satisfaction and social interaction (Canter & Canter, 1979).

Another group of studies focused on the therapeutic benefits of natural environments. The main argument is that exposure to certain environmental conditions, such as natural and aesthetic amenities, can alleviate stress and promote physical and emotional well-being (Kaplan & Kaplan, 1989; Hartig, Mang, & Evans, 1991).

In those studies, the most explicit and earliest link between the environment and the possibility to enhance the patients’ well-being through its characteristics – namely salutogenic approach – first appeared in the definition and evaluation of healthcare environments. Generally, the design of hospitals is based on a medical model where each sick body part is associated with a set of spaces in which the illness will be treated. Antonovsky (1996) noted that every society has developed a social institution, based on its understanding of illness, to deal with the problem. In modern western industrialized societies,

what is called the biomedical model provides this paradigm. It is embodied in the complex of medical care institutions we have created. Yet, as stated in the literature, environment has a lot of potential to contribute to well-being of its occupants. Given this backdrop, the crux of the matter for a designer is to try to pinpoint the ways and means to understand which appropriate design is needed to create the be-fitting environmental conditions in order to restore wellness when it has been damaged.

Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity (WHO, 1946).

Among the literature, there has been a long-standing debate over the effects of the built environment on patients; especially on the well-being during the healing process and about the importance of healthcare services and support, necessary in this recovery phase. This discussion extends back to 400 BC with Hippocrates, until Florence Nightingale in the 19th century. The construction of healthcare facilities has been strongly influenced by these known effects, in order to achieve the maximum level of comfort and well-being of patients, aiming at a shorter healing process (Codinhoto, 2009).

As aforementioned, Alzheimer's disease affects mostly the frontal lobes. Those are responsible for encoding new information and behaviours, recall knowledge, judge, and plan daily life. Specifically, since the early stages, Alzheimer's disease deeply damages the function of the hippocampal complex in the inner or medial parts of the temporal lobes. The hippocampal complex is the site of short-term memory as well as what Hobson (1998) calls the "map room of the brain". This part of the brain is responsible for the spatial location of ourselves, and also to remember spatial relations. People with Alzheimer's disease get lost more often than other people due to this damage. Consequently, they wander in search of something they can neither clearly visualize nor easily find, and their behaviour is often characterized with agitation and aggression.

The physical environment, if properly designed, can reduce such dysfunctional symptoms and behaviours if the information needed to understand the environment is embedded in the environment itself. As Zeisel (2003) reports, Donald Norman has coined a term for

environments and objects designed this way: "naturally mapped" (Norman, 1988; Zeisel, 2001). These environments are characterized with clear pathways, place markers, distinctive features and destinations.

After decades of research, the design of long-term care facilities is nowadays regarded as a therapeutic aid, able to enhance well-being among people with dementia, not only as a decorative matter.

As Campion (1996) argued in the *New England Journal of Medicine*, therapeutic physical environments can positively affect the lives of residents with dementia.

Faced with a patient with progressive Alzheimer's disease, physicians may feel they can do nothing to help. This is wrong...Care in a supportive environment can protect function for years.

Inside this perspective, the environment can reduce dysfunctional symptoms and behaviours, and it can be considered as one important non-pharmacological treatment modality (Zeisel & Raia, 2000). Therefore, the peculiarities of an environment take on relevant importance, qualifying as one of the tools that allow the correct activation of non-pharmacological therapies, in order to ensure effective results. Therefore, the physical environment assumes a "prosthetic" value, as it is able to compensate for some cognitive deficits (Zeisel, 2000). Moreover, it is widely recognized its therapeutic value in the enhancement of well-being among people with dementia (Day, Carreon & Stump, 2000) and in the reduction of behavioural symptoms (Zeisel, 2000; Cody, Beck & Svarstad, 2002).

Since the early 1980s, a number of "design guides", and in general scientific publications dealing with interior design architecture, have reported several recommendations for the enhancement of the physical environment of care facilities, in order to ensure certain levels of security, home-likeness and other related features.

In general, design recommendations for dementia environments are usually described following this classification: (a) planning principles – regarding the main physical organization of the care facility, aiming at ensuring a total care service; (b) general features (i.e., non-institutional character, natural light control, clear paths); (c) building

organization – physical arrangements of spaces within the facility; and (d) specific therapeutic rooms or rooms for activities – to provide common rooms for residents’ daily activities, or special rooms for specific therapies (Lyman, 1989; Sloane, 1991; Brawley, 1992; Cohen & Day, 1993; Brawley 1997; Day, 2000; Teresi, 2000; Brawley, 2008; Davis et al., 2009; Fleming & Purandare, 2010). Furthermore, they all agree on few general features, that are:

Non-institutional Character. The use of non-institutional design features is frequently recommended, such as home-like furnishings, in order to allow room personalization to promote recognition of the spaces by people with dementia. In addition to environmental design, is often stated how staff training and activity programming support these features. Non-institutional environments are often described as home-like. Patients’ rooms are personalized through the use of domestic furnishings and personal belongings. These features are proved to increase subjective well-being, enhance social interaction among residents and with the staff (Day, 2000) and improve functionality of people with dementia and other mental illnesses. It is also noted that agitation among residents is often reduced, as well as exit seeking (Annerstedt, 1994; Sloane et al., 1998).

Sensory Stimulation. Overstimulation is often a difficulty for people with dementia. It may increase agitation, stress and confusion. Sensory overstimulation is connected to the normal hearing loss typical of aging: this characteristic is tightened by dementia, and can lead to confusion, frustration and reduce social interaction and self-esteem (Brawley, 1997). In fact, People with dementia are particularly sensitive towards acoustic stimulations. At the same time, the deliberate reduction or removal of sensory stimulation has reported negative results (Cohen & Weisman, 1991). Design guides claim for appropriate levels of sensory stimulation, balancing between environmental overstimulation and total deprivation of sensory stimuli. Recommendations and guidelines include providing continuous tactile stimulation on surfaces, furnishings and handrails, removing background overstimulation from alarms, radio, televisions (Evans, 1989).

Lighting and Visual Contrast. Lighting and visual environment may lead people with dementia to confusion and overstimulation. In fact, visual impairments are accentuated, and comprise decreased depth perception, need for colour contrast between different surfaces, and other visual deficits (Cronin-Golomb, 1995). These losses and impairments increase the normal visual deficits caused by aging, such as a changed perception of colours and tones, and irritation from glare (Brawley, 1997). Design guidelines and recommendations for dementia include a reduction, and the relative control, over the glare of surfaces, and the use of contrasting colours between surfaces (i.e. walls and floors) avoiding the use of dark colours, that are perceived as barriers by people with dementia. Natural bright exposure is widely recommended to stimulate the circadian rhythm affected by dementia (Brawley, 1997).

Safety. Exit seeking, wandering and attempts to leave facilities are typical features of dementia. Consequently, they lead staff and family caregivers to a major safety concern. Design guides often suggest strategies to prevent exit seeking behaviours often by exploiting residents' cognitive deficits. A diffuse design solution is the creation of optical illusions that hide, or camouflage exits. In particular it is important to mask the doorknobs, that represent the main recognizable feature of an exit door (Dickinson et al., 1995; Namazi et al., 1989).

Orientation. A general sense of confusion regarding time and places, personal age and social relations is typical among people with dementia (Cohen & Weisman, 1991). Design recommendations suggest several interventions to improve orientation, in time and place, including improvements for wayfinding (i.e. visual signage, labels). They also suggest providing views of outdoor environments (also accessible) in order to distinguish between day and night and increase residents' perception of time. As demonstrated in literature, the physical environment can influence residents' orientation (Day, 2000) through the provision of place markers, simplified paths and other signals.

Provision of Outdoor Areas. Access to outdoor areas is recommended by design guides. This feature enhances a home-like ambiance in the facility, it accommodates activities, and increases the benefits of an exposure to light and sun. Limited research findings state that outdoor spaces may reduce violent behaviours among people with dementia (Day, 2000). Therapeutic gardens are among the strategies suggested in design guides. They can host residents' activities and sensory stimulation. Many researchers noted that facilities providing a therapeutic garden, encouraged residents to walk outdoor more often. Moreover, residents enjoyed the therapeutic gardens, expressing more positive and relaxed moods (Mooney & Nicell, 1992).

Social environment. In the case of people with dementia, the problem of an interdependent relationship between social/medical environment, expressed through the development of care approaches, trained and skilled staff, an effective care management, and the physical environment becomes evident in the assessment of the impact coming from the provision of a home-like environment. However, research has shown that this specific kind of ambiance and environmental features may reduce aggression and agitation (Zeisel et al., 2003). A specific research (Cohen-Mansfield & Werner, 1998) showed how introducing basic elements of a home-like environment into a very institutional nursing home had a positive impact on residents. Most of them chose to spend most of their time on the comfortable chairs provided in one corridor, surrounded by books, coffee tables, pictures, etc. All elements coming from a domestic environment. They also showed reduced aggressive behaviours, more relaxed attitude, less agitation and decreased exit seeking, compared to the behaviour in a normal corridor without these features. This positive trend was even stronger when researchers introduced natural elements into the indoor environment. The differences between the two enhanced settings were small. Social activities and social relationships involving people with dementia can be enhanced through the environment. In fact, the provision of opportunities to engage with daily-living activities is often associated with a home-like ambiance (Verbeek et al., 2009). Research has shown strong evidences of

positive effects on people with dementia regarding the provision of an environment that gives them this opportunity (Melin & Gotestam, 1981; Reimer et al., 2004).

Furthermore, in the 1990s, the term Evidence-Based Design, defined a set of design solutions tailored on users' needs and reactions towards a specific condition and environment (Huisman et al., 2012). Evidence-based design can be considered as the theoretical process, and the evaluation model, for the so-called healing environments. Based on the definitions of several studies (Jonas & Chez, 2004; Ulrich, 2004; Devlin, 2003) a healing environment can be defined as the physical environment where positive health outcomes are produced by the interaction between patient and staff.

Healing environments are proved to increase staff efficiency and satisfaction, reduce hospital stay in favour of a shorter rehabilitation and an increased well-being, and to reduce the overall patient's stress during hospitalization.

Evidence -based design sets its origins in Ulrich's studies towards the positive effects of natural scenery views on the recovery process of hospitalized patients. He made a comparison with hospitalized patients that couldn't access natural views and he noticed that the previous group showed shorter recovery processes, showing a more positive mood, needed fewer strong medications, and, in few cases, experienced a reduced number of minor postsurgical complications. Since then, physical environment started to be regarded as an aid that can positively affect patients' well-being and health. Consequently, this resulted in the creation of spaces considered to be healing environments.

3.1.1. Environmental adaptation

Cognitive losses and impairments, as well as behavioural disturbances, can negatively affect independent life of people with dementia. Many daily activities are impaired by dementia, such as climbing the stair, taking medications, or housekeeping.

Environmental adaptations, performed in people with dementia's own homes, can help in the early stages to maintain a certain level of autonomy and independence, delaying hospitalization. This method can also represent a reassurance for family members and carers that the individual with dementia is safely living at home. Home adaptations comprise improvements to enhance security, independence, orientation in time and space, and comfort enhancements. Examples are adding handrails or grab-rails, wide floors for wheelchairs, installation of special showers or toilets designed for elderly with physical difficulties, improving the heating system, or adding ramps.

The experience of dementia is subjective as symptoms and disturbances vary from one person to the other, consequently home adaptations have to be tailored on each individual. Moreover, needs change as dementia progresses.

As Alzheimer's Society (2015) states in its fact's sheets about dementia and its management, home adaptations for people with dementia require modifications not only to the physical space, but also to the activities and how family caregivers interact with the person. To create the right balance between safety and comfort, it is necessary to take into account any behavioural problem that person with dementia might experience, as well as his/her habits and wishes.

Perceiving depths, different colours and seeing contrast are additional difficulties that people with dementia encounter. Thus, useful home adaptations may include:

- avoiding furniture that hamper easy movements
- increasing lighting levels in certain areas of the home, such as stairways, tables, toilet
- reducing glare on surfaces (including walls as well as floors)
- colour-coding rooms.

Common symptoms of dementia are agitation, confusion and a progressive loss of independence and control over daily life activities and physical environment.

As suggested by Alzheimer's Society (2015) different home adaptation strategies can help individuals with dementia to enhance their independence and maintain control over daily life activities and the environment.

These include:

- the use of labels or pictures to indicate drawer's content
- the use of signs or pictures on doors to identify room function
- the creation a "memory box" filled with personal belongings that can trigger old memories, and help to start a meaningful conversation
- the use of display clocks and calendars throughout the house
- avoid the modification of the daily schedule familiar to the person with dementia, to provide a sense of control over daily activities
- fill in a list of favourite television or radio programs specifying times and channels to help remembering and avoid repetitive questions and feeling of forgetting.

Taking medications can also represent a difficult task as dementia progresses, and consequently memory loss. In fact, people with dementia can forget to take them or encounter difficulties in remembering taken medications. Equipment such as dosette boxes – equipped with a pill compartment for each day of the week – can help decreasing this problem, especially in the early stages of the disease, when they are more effective. For people with dementia with worsen advanced memory difficulties, automatic pill dispensers are available, which are electronic and pre-programmable.

Behavioural problems, such as aggression, agitation, repetitive movements and questions, purposeless wandering cause stress in people with dementia and their caregivers. They also strongly affect the ability to perform independently daily life and cause the need to be cared in long-term care facilities. Moreover, they also generate in the person with dementia feelings of frustration, confusion and insecurity (Alzheimer's Society, 2015).

These behaviours can be initially decreased through the use of environmental adaptations. Research demonstrated that with proper adaptations screaming, cursing, or using obscene words can be decreased.

In fact, such behaviours can be the attempt of people with dementia to express frustration due to their difficulties in communicating or understanding the external reality, feeling overwhelmed by excessive

noise, trying to do a task that are no more able to perform or due to a lack of control over the environment.

Environmental adaptations and strategies that can help to decrease these problems include:

- the use of pictures as easy tools to express needs by pointing them
- simplifying instructions and tasks, often dividing them into short easy sub-tasks
- reducing noise or other overstimulation
- designating a room for relaxing, sometimes privately
- avoid loud music
- providing cues to help identifying daily activities (i.e., smell of cooking helps to remember mealtimes, bringing out a blanket can signal rest time).

People with dementia are likely subjected to have some typical agitated or aggressive behaviours connected to a sense of lack of control over reality. Here after is reported a literature analysis on those behaviours and the related strategies and design solutions in terms of environmental adaptation.

Verbally Agitated and Non-Aggressive Behaviour. These behaviours are a major source of stress for caregivers. They include repeating words or questions, making strange repetitive noises with voice of other body parts, complaining or having a negative attitude towards any activity. These behaviours often reflect a need for reassurance. Useful strategies to help people with dementia to feel reassured and to have a sense of control on daily life can be:

- provision of verbal reassurance to enhance a sense of trust
- play soft and relaxing music in the background
- suggest performing a familiar activity well managed by the person with dementia
- fill in a daily schedule, hang it in a visible place in the house, and point to it starting a conversation with the person with dementia (Alzheimer's Society, 2013).

Physically Agitated and Non-Aggressive Behaviour. These behaviours include purposeless wandering, inappropriately looking and following people, hyperactivity, repetitive movements and

gestures, and restlessness. They are caused by silent boredom, inappropriate sensory stimulation, or a need to feel useful for the social context surrounding the person with dementia. To decrease these behaviours, Alzheimer's Society (2013) suggests to:

- provide new or more meaningful activities to include different sensory stimulation
- provide opportunities for a greater involvement in everyday activities (i.e., meal preparation or housekeeping, always under a discreet surveillance);
- provide social opportunities for conversation of meeting neighbours.

Personal preferences and habits. Environmental stimulation and support have to be balanced in the right way, in order to reach positive results in the enhancement of well-being and reduce behavioural symptoms and problems.

For example, under-stimulation may cause a sense of boredom and restlessness in people with dementia. On the other hand, over-stimulation doesn't lead to positive outcomes as it can cause confusion and agitation in people with dementia (Canadian Psychological Association, 2013).

To properly adapt the environment to the changes and impairments typical of dementia condition, it is necessary to respect interests and habits of the person, preserve old memories and respect his/her past life (Canadian Psychological Association, 2013).

For example, bathing present some difficulties: get into a bath tube can require unsafe movements. At the same time, this activity represents an important past habit for the person, often connected with old memories. Preserve as long as possible the ability to perform old gestures and habits, enhances personal well-being and the sense of control over daily life. In particular, grab rails can help people with dementia in these situations, or if bathroom adaptation and enhancement is not enough, it can be suitable to install a walk-in bath. Bath seats can help people with dementia to be able to wash themselves independently, as long as possible, enhancing self-esteem and dignity. Cooking is another activity with an intrinsic reminiscent value, that due to movements difficulties and memory impairments may result difficult or unsafe for people with dementia. Nowadays

many cooking equipment, specifically designed for those kinds of impairments, can help older people to still prepare meals. They include, for example, grip extensions for controls on ovens and other appliances, height-adjustable cupboards and tables, domotic devices to detect loss of gas or uncontrolled fire.

3.1.2. Favourable surrounding

Research in the neurosciences indicates that in the process of dementia, people's ability to remain independent and plan their daily life diminishes as the cognitive loss increases. In the end only the emotional brain remains. This means that the limbic system is considered to be the emotional brain, as the component structures have been shown to display high levels of neural activity during emotional experiences. The ability of the human brain to generate, regulate and be guided by emotions represents a fundamental process governing not only our personal lives, but our mental health as well as our societal structure (Labar & Cabeza, 2006; Phelps, 2006).

Another important loss regards the individuality: as the disease progresses, people with dementia's behaviour becomes generic, more and more determined by the environmental stimuli. As their behaviour becomes more predictable it opens up the possibility to manipulate the environment in such a way that it leads to improved perception by people with dementia. Hence, analysing every situation, the environment can be either favourable or unfavourable. In unfavourable situations, agitation and wandering are increased, decreasing the overall well-being of the individuals.

It is known that through the environment it is possible to evoke deliberate behaviours. This aspect becomes crucial in the design of care facilities, especially if they will host people with dementia. Clear pathways and an unambiguous distinction between the spaces enhance orientation abilities and spatial recognition in individual with cognitive impairments (De Koning, 2012). Care in familiar and favourable surroundings is important to allow people with dementia to feel comfortable and to reduce the risk of anxiety and depression. Through decorations, lighting, furniture, etc. the environment can be

adapted to the needs of people with dementia, and it can be turned into a comprehensible one. Those elements have a key role in the recognition of an environment: their style, finishing, or materials can resemble a home ambiance, with positive effects on well-being and comfort. Thus, a familiar care setting can orient and engage people with dementia, and perhaps evoke long-term memories (Verbeek, 2009), enabling the person to feel part of the environment, without perceiving it as hostile or “other” than the one they are used to live in.

Moreover, a favourable environment for dementia includes not only the caring approach and the physical elements of the interiors, in terms of spatial organization, furnishing and finishing, but also the social relationships around the person and the habits. Those, if still performed in a care environment, help the person to maintain a certain level on independence and self-satisfaction. Thus an “enriched environment” provides peace and brings unity of purpose in behaviour (Nolan et al., 2006).

3.2. Dementia-friendly environment

Everyone has a strong relationship with his/her environment. Everyone in his/her life builds social relations with other persons and has objects and places of meaning. As a consequence, some parts of our personality are reflected in the environment we are living in.

The same happens for people with dementia. Even if the disease changes their perception of time and space, relationships, objects, observable rituals and everyday gestures still represent important stimulations, even if they encounter some difficulties in expressing their feelings and concerns or in reproducing correctly an entire sequence of different actions without someone’s help. In the last two decades, physical and social environment gained importance and recognition in having a supportive role in the life of a person with dementia (Verbeek, 2009).

Despite efforts to move elderly care away from a medical model based on the hospitalization, to a more balanced social model, in the last decades the focus and the aim of most of the care providers was

still centred on decreasing the symptoms of the disease, and only a small percentage was focused on providing experiences and meaningful engagement to people with dementia.

In recent years, research has shown that new models of long-term dementia care have been developed. Their common aim is to recreate “enriched environment” (Nolan et al., 2006) essential to enhance well-being and quality of care for people with dementia. This change of perspective was made possible by an increasing understanding and acknowledgement of the “experience” of dementia.

Emphasizing the experience of living with dementia rather than focusing on symptoms and impairments, represents an important change in the vision that enables the creation of environments that allow the person with dementia to actively participate in everyday life rather than just passively receive care.

Usually, environments are continuously being manipulated and modified to reach the maximum possible comfort, to enhance professional productivity and/or personal satisfaction. For people with dementia the physical environment can have a key role in supplying impaired capabilities and avoid causing any unnecessary disability (Marshall, Brown, Stewart, & Hoskins, 1999). Sense of self, self-esteem and social interactions can be encouraged and strengthened through the design of the physical environment (Zeisel & Raia, 2000), and through the preservation and the enhancement of the social environment around the person with dementia.

It is important to balance the benefits coming from both physical and social environment, otherwise if the influences coming from one of them are prevalent on the other, or unbalanced, the benefits on people with dementia can be undermined (Calkins, 2002; Calkins, 2017). In order to have long lasting positive effects on residents, it is necessary to take into consideration many elements in order to achieve the appropriate fit of the physical and social environment (Teresi, Holmes, & Ory, 2000). Until a cure for Alzheimer’s disease is not found, one of the main aims, at an equal pace with the search for a cure, is to focus on the development of interventions to improve quality of life and patients’ well-being. As aforementioned, regarding

this issue the environment, in its broader sense, plays an important role (Brawley, 1997).

Moreover, during the last 20 years research has shown that quality of life and well-being can be improved by the design of “dementia-friendly environments” (Marshall, 2001; Fleming & Purandare, 2010; Kennan, 2014).

For people with dementia their physical environment becomes harder to be interpreted due to the changes in cognitive capability. Dementia affects deeply how people interpret external stimuli such as images, colours, lights, sounds, tactile stimulations and odours.

A dementia-friendly environment should act as a “prosthesis” supplying lost or impaired capabilities, enhancing well-being, dignity and independence (Calkins, 2017). The result is the enhancement of the quality of life for people with dementia, and also for their families and care staff.

Therefore, dementia friendly environments comprise not only physical elements, but also social and cultural ones, that are strongly related to a personal sense of belonging.

Considering the physical environment, it is important to take into consideration some critical elements: ambiance, safety and security of the patients, accessibility, comfort and appropriate sensory stimulation (Jones, 1998). Social environment is intended as the “relatives and significant others” dimension of the environment, including family members, caregivers, other residents, friends, etc. The cultural aspect of the environment refers to the system of beliefs, ideals, customs and values recognized as own by each patient (Jones, 1998).

Hence, a dementia-friendly environment can be defined as “a cohesive system of support that recognises the experiences of the person with dementia and best provides assistance for the person to remain engaged in everyday life in a meaningful way” (Davis et al., 2009).

Such definition highlights two main important elements: meaningful experiences, necessary to involve people with dementia actively in daily life, and the need to consider the organisational, social and physical environmental features which impact on those experiences (Davis et al., 2009, Calkins, 2017; Miller, 2018).

The majority of the design guides for dementia and Alzheimer's disease typically begin with a detailed dissertation on dementia, the physical, behavioural, and cognitive impairments caused by the illness, and the needs of people with dementia. This is generally followed by a further inquiry of the typologies of residential care available and a presentation of specific design strategies and solutions ranging from orientation, size and internal organization of the building to furnishings' details. Those guides written more than 15 years ago concentrate mainly on the design of the physical environment, although only a few stresses the point that also social and experiential context, care management, and care approaches should be addressed holistically (Davis, 2009). On the contrary, in the last decades a large number of studies focused on the development of therapeutic and supportive environments, designed according to the residents' remaining abilities, able to engage them in spontaneous activities, to fulfil their physical and psychological needs, in order to enhance residents' quality of life and not only provide a certain level of security. This body of literature focuses on the remaining abilities and on methods to valorise and stimulate them in order to preserve independence as long as possible, rather than seeing dementia as a disability characterized by impairments and behavioural symptoms and manifestations. It is also highlighted the need for residents to be an active part of the community that surrounds them, with active roles, according to their skills and abilities (Fazio et al., 2018). Chalfont & Rodiek (2005) argue that it is time to move beyond designing only for safety control and decrease of behavioural symptoms and take into consideration:

how environments actively encourage pleasurable and satisfying behaviour, for everyone who lives or works within or near them.

A design approach that encourages curiosity and action, rather than focusing on decreasing symptoms. Furthermore, recent literature focused on the acknowledgement of the significance of "everyday experience" of living with dementia in order to design suitable stimulating environments (Davis et al., 2008).

3.2.1. Physical, social and cultural factors

The living environment is a critical factor in the ability of a person at whatever level of function to live with comfort and to perform at maximum capability. The living environment is characterized not only by a physical component, but also by a social and a cultural component, as summarized in Fig. 8.

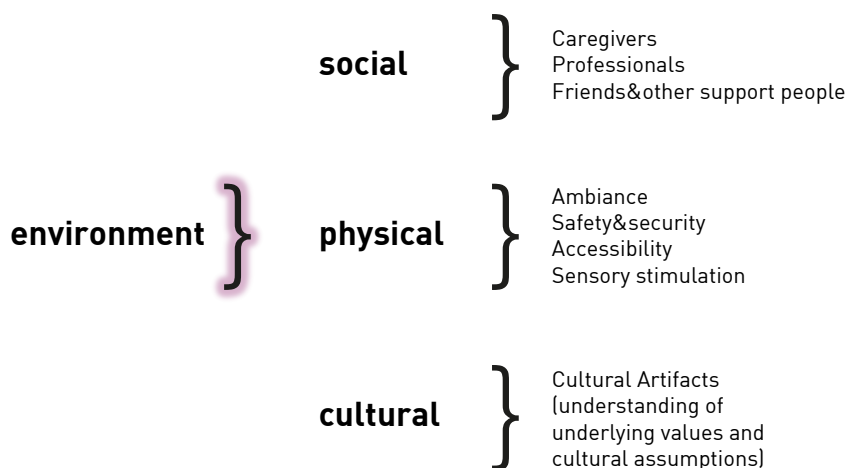


Fig. 8 - Components of a living environment for dementia

Physical elements. Physical aspects of the environment have been intensively analysed in the previous chapters of this book. They include different aspects: the style and ambiance of the architectural and furnishing elements characterizing and interior; and overall level of security that has to be granted in a care environment in order to avoid accidental falls, dangerous surfaces and angles, uncontrolled glaze effects, proper seating elements, and so on; accessibility to all spaces without barriers, handrails to avoid falls, proper dimensions of the interiors.

Social aspects. Social aspects of an environment include the meaningful social relationships that surround people with dementia, including family caregivers, friends, carers, relatives, other persons

with dementia living in the same care environment, etc. Those social relations represent an important stimulus for people with dementia: they can foster social cohesion and self-confidence, increase self-esteem and enhance well-being.

Research has shown that people who are regularly engaged in social interactions and activities are also better able to maintain healthy cognitive functions. The Alzheimer's Society (2015) explained that when people don't have the opportunity to express their feelings and emotions to others, this results in frustration that may cause further alienation from friends and family. Being surrounded by friends and individuals they can trust increases self-confidence and sense of purpose.

Culture. The discourse on cultural environment is broad and articulated. In fact, culture and cultural aspects can be analysed at different levels, considering the degree to which the cultural phenomenon manifests itself to an observer. Its definition and analysis have received increasing attention in recent years both from practitioners and academics.

Culture manifests itself at different levels, from very tangible and visible aspects, to multiple different beliefs, norms, values, behaviours, that members of a specific culture use to identify their culture and themselves, to deep unconscious ones that define the culture essence and basis. As Schein suggests (2010) the analysis of the culture of a particular group should differentiate three main levels at which culture manifests itself: artifacts, espoused beliefs and values, and basic underlying assumptions.

This distinction constitutes Schein's model of organizational culture, peculiar of certain groups of people or organizations. These three levels are mainly represented as an onion shaped model, in which artifacts are the outer layer, easy to adapt and change; beliefs and values are the mid-layer; basic underlying assumptions are the core of the onion model. The deeper the layer, the harder it becomes to adapt and alter it.

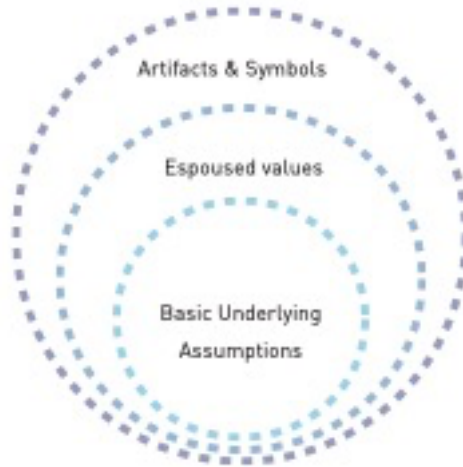


Fig. 9 - Schein's onion model

The surface level is represented by artefacts, which include all the phenomenon that can be seen, heard, felt, encountering a group with a shared culture. They include the visible products of a group, ranging from the architecture of the physical environment, spatial layouts, objects, ornaments, technology, artistic creations and styles, embodied in clothing, language and emotional displays, observable rituals etc. All these elements represent tangible manifestations of a culture shared by all its members. An interesting artefact is also the so-called “observed behaviour” intended as the organizational processes by which such behaviour becomes a daily routine.

Espoused values, beliefs, norms and ideologies can be analysed and studied through interviews and questionnaires.

Basic underlying assumptions can be traced through intensive observation. These assumptions are usually unconscious, and they determine perceptions, thought processes, feelings, and behaviours. Understanding and defining such underlying assumptions makes easier to decipher the implicit meanings intrinsic of the cultural artefacts and behaviours observed (Schein, 2010).

Basic underlying assumptions are likely non-confrontable and non-debatable; they are hard to change as they are taken for granted by a whole social unit.

As stated by Schein:

Culture as a set of basic assumptions defines for us what to pay attention to, what things mean, how to react emotionally to what is going on, and what actions to take in various kinds of situations.

Understanding and defining basic cultural assumptions is important, in order to understand and interpret artefacts and espoused values. Citing Schein's (2010) words:

The essence of a culture lies in the pattern of basic underlying assumptions, and after you understand those, you can easily understand the other more surface levels and deal appropriately with them.

Cultural artefacts, the system of beliefs and the underlying assumptions, represent for people with dementia a key point to evoke long-term memories or certain behaviours.

Those elements remain intact in the memory even after the onset of the disease. Different studies agree on their role of enablers of opportunities of engagement, enhancement of self-esteem, identity, and sense of belonging (Day, 2000; Brooke et al., 2017). But moreover, culture is important also in relation to cultural perceptions of dementia, and attitudes regarding dementia care and dementia services. Cultural differences can create challenges with communication when caring for people with dementia, if the caregiver comes from a foreign country. Cultural knowledge help caregivers to understand people's behaviours and routine and to interpret a relevant number of spontaneous gestures of people with dementia. Their understanding helps to build a person-centred care approach, based on personal needs (Brooke et al., 2017).

3.2.2. People needs

As from the literature, there are five major needs that people with dementia encounter when they may leave their home and move to a care environment (in the late stages of the disease) (Alzheimer's

Association USA, 2007; Alzheimer's Society, 2013; UK Health Government, 2013).

Attachment. When they leave their own house people with dementia lack a sense of belonging towards the reality around them. They need environmental interventions to evoke a “sense of home” and avoid the sense of being like a stranger in a hostile context.

Comfort. People living with dementia may encounter decreased confidence in their capabilities, causing anxiety and insecurity. Hence, they feel the need to be reassured by the environment, and self-empowered.

Inclusion. The inclusion of people with dementia in community activities, that take into account their impairments, without making them feel inappropriate, is important to enhance their quality of life.

Occupation. To maintain an active role in everyday life, people with dementia need to be involved in meaningful activities. These activities should be based and focused on people's experiences, strengths and abilities.

Identity. Each individual personal life-story is unique. Lifestyles, habits, interests and values should be integrated into the interactions taking place in the care setting (Kitwood, 1997).

Dementia care model should be focused on the acknowledgement of the experience of living with dementia, aiming at the enhancement of person's quality of life and well-being, rather than focusing on the control and decrease of symptoms. Person's abilities should be amplified and supported, enhancing self-empowerment and esteem. All these conditions can lead researchers and designers to create dementia-friendly environments for the active inclusion of people with dementia.

Dementia-friendly environments are created through the adoption of a flexible approach that understands the experience of living with dementia, encouraging the involvement of people with dementia in the

society, and enhancing well-being and quality of life (Nagy, 2002). As previously mentioned, it is widely recognised that the physical environment, in terms of interiors, can have positive outcomes on an individual with dementia. Consequently, approaches to care, social relations between patients, caregivers and society, and care management can have the same influence. Design for people with dementia should take into consideration people's social and cultural habits and values, their skills, their needs, and organisational policies (Alzheimer's Association USA, 2007). People with dementia experience themselves through their physical and social environments strictly connected. Hence, these two elements should be designed in order to encourage social interactions among people with dementia, caregivers and staff, and to guarantee a certain level of comfort and safety supporting independence and give personal satisfaction (Nagy, 2002). A consistent body of literature highlight general principles and concepts related to the design of dementia-friendly environments. Hereby is presented an overview of these general principles. Familiar environments that people with dementia recognize and understand. To be addressed as dementia-friendly, facilities need to offer home-like features (Alzheimer's Society, 2013). A "home-like" language profoundly differs from the language of "healthcare": it distances itself from a structure made of corridors, multipurpose activity rooms, etc. and results closer to a structure made of halls or hallways, music room, library, laundry room, or bedrooms in order to achieve a real home-like environment... Different origins and cultures may designate household rooms with different features, but what they have in common is the fact that the typical healthcare language – sterile, not personalized, anonymous and standardized – is not peculiar of a domestic environment (Brawley, 1997). A home-like environment evokes old memories about familiar life. It offers occasions to strengthen familiar and social relations recreating a comfortable ambiance (Brawley, 2006). As Calkins (2005) says

it involves personal control and decision making, individualised care, meaningful relationships, smaller scale living arrangements, greater environmental texture, personalisation of care, discrete medical support.

Legible environments are structured following a distinct hierarchy from private, to semi-private, until public spaces. This intelligible distinction helps people with dementia not only to orient, but also respects their privacy, and recreates a sense of home. Moreover, to amplify the “sense of home” dementia-friendly environments should allow the personalization of the environment, filling its spaces with residents’ personal belongings or meaningful objects to support the recognition of the spaces: for example, familiar furniture, finishing and personal objects (Alzheimer’s Association, 2014). The provision of natural light, ventilation and views of the exterior are proved to enhance people with dementia well-being (Kinsella, 2005). Avoiding long corridors and dead ends help people with dementia orientation and wayfinding.

Distinctive environments that catch residents’ attention, and support wayfinding, through the use of specific features. For example, if the layout is organized with separate living room, kitchen with dining table, and one or more activity room rather than having one big generic open space, it helps people with dementia’s wayfinding. (Colombo, 2011). Inside these rooms cues to help people with dementia understanding the destination of the room are helpful. These distinctive elements can be a fireplace, comfortable armchairs in the living area, a little sideboard in the kitchen, or a dining table with a tablecloth, or comfortable chairs around a coffee table. Evident wayfinding elements in the spaces, such as art works, plants, photographs, decorations on the wall, placed at strategic spots represent interesting and positive stimuli throughout the environment (Nagy, 2002). Visual access throughout all the facility, enhance personal orientation and independence. Walls painted in colours contrasting with the floors, help people with dementia to clearly distinct surfaces; moreover, handrails provide physical support and increase a sense of confidence while encouraging residents’ movement; rooms characterized with furniture and tapestry help recognizing different functions in the space, and also shapes and use of the objects (Mitchell et al., 2012).

Accessible environments that enable people with dementia, experiencing different cognitive or physical impairment, to freely and safely navigate throughout the facility, from one room to the other, enabling the access to outdoor areas. Providing access to the outdoors, especially if it is a therapeutic garden or just a natural pleasant environment, according to the onset of dementia, is proved to have positive effects on health, improving relaxation, and decreasing agitated behaviours and stress. Sunlight also stimulates the production of serotonin, the hormone responsible for the regulation of circadian rhythm. This biological process is impaired by dementia, so exposure to sunlight can reduce sleep disorders and “sundowning”; it also can positively affect mood and behaviour (Alzheimer’s society, 2012). Curtains and blinds are important interior elements to avoid glare, shadows and frightening reflections. Flat and non-reflective floors improve residents’ safe walking across the facility. Non-slip floors also avoid hurts and instable movements (Calkins, 2005).

Visual access can encourage people with dementia to move around the environment and foster social engagement. It also enables staff to unobtrusively observe residents during the day.

Safe environments that allow people to independently use, enjoy and move around interiors without fear or risk to fall and hurt themselves. It is important not to let safety concerns become prevalent impairing person independence. For example, camouflaged doors are one of the most used solutions that can prevent residents from entering unsafe areas without representing an unpleasant barrier for the residents (Colombo, 2011).

People with dementia should be able to freely move around the facility, and actively join activities in a safe environment. To prevent hurts poor lighting and slip floors should be avoided, in favour of the use of anti-glare surfaces, flat plain floors, and proper lighting.

Comfortable environments allow people with dementia to feel cozy and serene in their living environment, apart from any kind of physical or cognitive impairment. This specifically means to provide quiet and calm surroundings; soft furnishings to absorb noise; large windows that allow natural light to enter, provided with comfortable seating and

nice views of the exterior, can have a therapeutic effect enhancing good mood, relaxation, and consequently a decrease in stress and agitation (Kidd, 1997).

Furthermore, from a daily life point of view, it is important to focus on different aspects:

Support continuation of social roles and lifestyles. People with dementia's past life represent an important element in dementia care. Interests, habits, cultural values and past social roles should be taken into account in the development of tailored care and engaging daily activities. This approach leads to individual's satisfaction, reducing boredom and purposeless behaviours. It also adds variety and interest, and it is stimulating for people with dementia encouraging them to actively join activities developed according to their interests.

Promote social engagement with friends, carers and staff. Meaningful social interactions, that foster familiar relationships consolidated since before dementia diagnoses, help people with dementia to maintain their sense of identity (Cohen-Mansfield et al., 2010). It is important to constantly recall these relationships, in order to avoid the sense of being lonely in a new environment. To support this approach, the importance of the involvement of family members in the development of tailored care, has been theorized and demonstrated with the definition of the "triangle of care". Dementia-friendly care facilities should provide different opportunities of social interaction, characterized by different levels of social engagement. For example, private spaces to enable people with dementia to spend some time alone, and common spaces for interactions between residents, or between residents and their relatives.

Support abilities through meaningful daily living. Meaningful activities are commonly defined as coordinated or spontaneous actions, typical of a normal daily life. It is important to offer a wide variety of daily activities that people with dementia can freely decide to join in order to respect individuals' personal interests and habits, encouraging them in expressing their feelings and concerns (Colombo,

2011). In fact, people with dementia, even after the onset of Alzheimer's disease, still have a strong feeling of their past habits and lifestyle, that needs to be preserved in long-term care environments (Cohen-Mansfield et al., 2010). Personal interests may vary during the onset of dementia, according to the changing physical and cognitive abilities (Nagy, 2002). Thus, the environment should provide a wide range of active and passive involvement, offering various indoor, as well as outdoor, experiences and activities.

Respect privacy, dignity and personal possessions. The concept of privacy and dignity for people with dementia deals with the possibility of being able to spend time in their own room alone, without any strict surveillance, or being on their own rather than being involved in activities with others. Personal spaces are very important for people with dementia. They are not only private rooms, but the environment should also provide occasions to sit in a quieter and more separate corner, just to relax, not being involved in any activity. For example, dressing and bathing are activities that require a certain level of privacy. As long as it is safely possible, carers should support people with dementia to independently perform those actions, in a private, protected and familiar environment.

Personal belongings help to recreate a familiar ambiance and bring up past happy memories and good feelings. They are strictly connected to the person's character and personality and can represent an opportunity of conversation between people with dementia and their relatives and friends.

Provide balanced and controlled stimulation. Environmental and sensory stimulation has to be balanced in dementia care settings. In fact, excessive levels of sensory stimulation can produce disorientation and agitation in people with dementia, as the disease impairs the ability to filter environmental stimuli and concentrate only on meaningful ones (Strøm et al., 2016). On the contrary, sensory deprivation or lack of stimuli can negatively impact people with dementia. Dementia-friendly environments should be designed allowing different controlled stimuli that trigger all the senses in a meaningful way. Helpless stimuli should be minimised, such as

crowded noisy environments, excessive textures on walls or, in general, on surfaces, loud alarms, noise from televisions, uncontrolled reflections on walls and floors. Instead, controlled sensorial stimuli should be included in the environment (i.e. sensory rooms or corners).

3.2.3. *Living experiences*

Recent studies focused on the significance of understanding how people with dementia experience everyday life in order to design appropriate environments (Davis et al., 2008). Having accurate understanding and knowledge of how people experience reality when living with dementia is important for developing active care for people with dementia and their carers. The so-called “living experiences” are strictly connected to cultural and social factors. They involve the system of beliefs and habits that are proper and intrinsic of a human being. This system remains untouched even when Alzheimer’s disease occurs. The principal “living experiences” include:

The self-identity experience. Dementia, and in particular Alzheimer’s disease, impairs the sense of self, due to its brain deteriorations. Hence, different care professionals noted the progressive lack of recognition of self-identity and lack of self-empowerment in people with dementia. This phenomenon has a negative impact on the process of care and quality of life (Cohen-Mansfield & Bester, 2006). Furthermore, Surr (2006) described the positive effects that the maintenance of the sense of self has in supporting meaningful social interactions and relationships between people with dementia and their relatives, caregivers or staff; moreover, interactions between residents can positively affect self-recognition, as well as the recognition of social roles. A dementia-friendly environment should propose to its residents’ daily activities focused on the different interests, needs and habits. Moreover, in a care facility many of the major life roles no longer exist. Most people have several different roles in life. For example, a woman might be somebody’s sister, mother or wife, a charity worker, a driver and a chemistry teacher. The roles that people occupy contribute towards their sense of

personal identity. Having dementia can make it difficult or eventually impossible for a person to maintain certain roles.

Giving the opportunity to build new meaningful social roles, through specific activities, has a key role in the enhancement of well-being and enables people with dementia to maintain self-identity.

Furthermore, Surr (2006) suggests that:

self in people with dementia should be considered as a complex interplay between a number of social and biographical factors, including interpersonal relationships, the social context, and opportunities for and abilities to tell stories.

The physical environment can offer various opportunities to support the recognition of self-identity. For example, providing kitchen areas can enable residents to join different daily activities that trigger past memories, in order to generate shared experiences between patients, staff, families and other relatives. Individuals with dementia still understand that helping out, being busy, lending a helping hand, giving to other people, being listened to, and feeling that they belong are important indicators of quality of life.

The eating experience. Eating and drinking are not only related to nutritional intake, but are also connected with social interactions, physical pleasure and cultural expression (Barratt, 2004; Brush, Meehan, & Calkins, 2002). Nevertheless, within a care facility, the eating experience is often distant from the cultural habits shared by residents (Manthorpe & Watson, 2003). Food can represent a source of satisfaction, relief and relaxation for a person, and more over an element for sensory stimulation. There are many possible arrangements to enhance the quality of eating experience, fitting any kind of budget, space size, staff management and schedule fitting (Barratt, 2004). Providing a familiar small size tables eating experience increases social interactions and communication among residents, and decrease improper eating behaviours (Altus, Engelman, & Matthews, 2001). Decorating the dining room walls with warm colours encourages interaction and communication. Furthermore, soft yellow and peach tones seem to encourage eating and positive mood (Brawley, 1997). The eating experience should be understood as a ritual, that doesn't relate with the food served in the plates, but that

involves social and physical interactions that begin before sitting at the table for mealtime (Zgola & Bourdillon, 2001). Harvesting vegetables in the garden, discussing together the menu, helping in the preparation of the meal, sitting together and chatting, eating together and cleaning up the table, are all actions that creates this ritual, and represent opportunities for the person with dementia to actively participate and enjoy totally this experience (Zgola & Bourdillon, 2001). Kitchens located near or in proximity of dining areas and public living spaces can recreate a home-like familiar ambiance and arouse a sense of comfort and confidence in people with dementia (Nagy, 2002). They also can represent a successful replacement for a nursing staff station, familiar and less obtrusive (Calkins, 2005; Davis, 2006). In fact, a kitchen can be seen as the domestic core of a care facility, because it creates a familiar ambiance and it provides food, and it also represents a very well-known element for people with dementia (Calkins, 2005). Individual eating difficulties can also be supported in order to provide a pleasant eating experience, enhancing residents' well-being and personal satisfaction. For example, finger foods can represent a useful solution for those who have difficulties in using cutlery (Zgola & Bordillon, 2001).

Personal satisfaction. As Yamamoto & Shiotani (2005) and Velde, Cipriani, & Fisher (2005) suggest, therapeutic activities involving little groups or only one individual can facilitate short-term positive benefits, in terms of personal enjoyment. Meaningful activities should be developed and contextualized according to residents' lifestyles, including a variety of different experiences, from reminiscence, to artistic or domestic ones (Greal, McMullen, & Greal, 2008). The physical environment represents an important element that can foster and encourage personal enjoyment; for example providing a desk with blank sheets of paper, stationery, a chair, pens and pencils can represent potential opportunities for meaningful experiences for residents. Furthermore, a table with flowers, unbreakable vases, ribbons, coloured paper or fabrics, can represent the opportunity for an artistic activity. Plants and natural elements placed throughout the environment, pathways with clear views of the outside garden, easy access to outdoor areas, moveable

pots, are all features that can foster spontaneous interactions between residents and natural environment. Furthermore, as Davis (2009) suggests:

being able to get around independently in the environment is often an issue for people with dementia that impacts on personal enjoyment. The physical environment can actually help the person with dementia to get around the residential care setting while maintaining safety.

The bedroom experience. Meaningful personal experiences can be lost when people with dementia live their life in dementia care facilities. Activities such as when to get up, the possibility to personalise their room and to arrange the furniture bringing some pieces from home or managing personal private time are out of residents' control in such care settings. Bedroom activities should be left under residents' total control as long as possible, according to the onset of behavioural disorders, in order to support self-identity and dignity (Davis, 2009). Personalising the bedroom through the use of home furnishings and personal belongings is extremely relevant for people with dementia: it represents an opportunity to involve family members, along with their relatives with dementia, in the creation of a "homey" ambiance that best suit them and make the room feel more familiar (Marsden et al., 2001). This practice also arouses residents' sense of control over the space and it helps its recognition. It is also an approach to enable staff to understand residents' characters and foster engagement in spontaneous conversations (Davis, 2009). Furniture coming from residents' homes, family pictures, and personal belongings, describe the person's character, social relations, tastes, cultural habits, and are useful hints for staff to better understand the people they are caring for, and also represent a stimulating opportunity for self-expression.

3.2.4. Reminiscence and nostalgia

People with dementia are able to remember distant past memories more easily than short-term ones. Reminiscence adaptations and

reminiscence activities trigger the memories of past habits, events and experiences.

Reminiscence is a brain-activating intervention largely used in the care of both men and women with dementia. Reminiscence process can be defined as ‘the recalling of personally relevant memories from the past’ (Cappeliez, Guindon, & Robitaille, 2008, p. 266), or more specifically ‘a selective process in which memories are evoked and reconstructed’ (Cohen & Taylor, 1998, p. 601). The first studies on Reminiscence Therapy were carried out starting from 1980s, and showed improvements in cognitive capabilities, enhancement of the quality of life, mood and well-being of people with dementia (Dempsey et al., 2014). Woods et al. (2018, p. 1) clearly define in details the various procedures encompassed in reminiscence activities:

Reminiscence therapy involves the discussion of past activities, events and experiences with another person or group of people, usually with the aid of prompts such as photographs, household and other familiar items from the past, music and archive sound recordings.

Accordingly, in reminiscence processes, instead of focusing on symptoms and impairments, results more effective to enhance and value the preserved abilities of people with dementia (Schweitzer & Bruce, 2008; Gibson, 2011). Reminiscence interventions can summarily be characterized by three main features: (a) Reminiscence it’s a process articulated in consequent phases: it begins with the recollection of a certain memory that leads to an immersion into it and, in the end, it’s followed by a gradual withdrawal from the experience. (b) Reminiscence process is an interaction which implies the recollection of early events, memories or experiences which may occur without a specific purpose. (c) Different triggers can be used to stimulate the recollection of a memory. In particular, with people with dementia, familiar images and photographs, multisensory tools, sounds and smells are useful triggers as they are often associated with past memories of schooldays, childhood, work-life, etc. The creation of links between past memories and the present enables the person with dementia to feel a sense of continuity enhancing his/her sense of personal identity. Thus, reminiscence may improve personal well-being and communication skills in the form of verbal and non-verbal

communication. In the case of dementia, Reminiscence activities can take place between the person with dementia and the caregiver or the nurse, or between individuals with dementia within a reminiscing session. Past memories recalled in those sessions represent meaningful experiences to the person and they may have an emotional value or implication. Activities focusing on reminiscence are proved to promote social interactions and inclusion, improve mood and wellbeing, and foster people with dementia to remember unique pleasing life experiences (Woods et al., 2009). Reminiscence objects such as music, photographs, archive recordings and personal belongings are used to evoke memories, while memory boxes are to be found in care homes adjacent to residents' bedrooms to improve orientation and enable personally relevant conversation. Recently reminiscence has been employed by many caregivers as a form of engaging activity, to offer an opportunity of conversation and interaction. Without doubt the practice of reminiscence is found in most care settings also in the form of “nostalgic elements” or “nostalgic interior ambiance” (Hughes, 2010). Nostalgia encompass all those memories correlated to the idea of “good old days”, “warm old times” and is associated with a yearning for the past, its positive persons and life events. People remembering nostalgic past memories often perceive a sense of joy and relieve connected with a pleasant sense of willing for long-gone moments. Those memories are connected to significant life events (birth of a child, marriage, graduations, etc.) extremely pleasant situations and places and desirable situations. Recollecting a nostalgic memory implies a strong relationship with emotions and cognition. Nostalgia can help to alleviate some symptoms of dementia and, eventually, it may enhance the ability to recollect part of the cognition that some individuals with dementia thought may be gone or lost. Researchers and practitioners have used different methods to evoke nostalgic memories in people suffering from memory loss. Those studies highlighted that in most of the cases visual and auditory stimuli were the most successful ones able to trigger nostalgic recollection (Wildschut et al., 2006).

Another more recent aspect connected to reminiscence is the use of electronics and ICT devices in the built environment to provide reminiscence occasions. Monitors, computers, tablets, projectors and

radios can become tools used to display reminiscence contents (through the use of reminiscence softwares), and trigger people with dementia's old memories. The stimulation is provided by the use of images and sounds but it may result unsuitable for specific dementia stages. Staff and caregivers should manage these devices, introducing them to people with dementia, allowing their use in shared activities. Reminiscence devices can be embedded in the built environment and used to trigger sensory perceptions and past memories. The aim is to recall positive memories connected to past events, personal experiences, rewards and achievements, that enhance personal wellbeing and enable person-centred care delivery. ICT devices involved in reminiscence activities can present interactive functions. This feature helps in promoting an active stimulation of memories by the use of photographs, videos or music. Interactive little screens can be placed in common activity spaces, such as living rooms, to display a selection of natural views, landscapes, historical scenes, and life events and allow a direct interaction with them (UK Health Department, 2015). Fixed projectors or TV screens can be included in common areas in dementia care facilities and be used to display old movies, films, or clips from a wide range of eras. Small areas in common spaces, or single rooms, can be camouflaged as cinemas, to allow people with dementia to enjoy the experience of seeing an old film in a cinema environment triggering old memories. Recent studies suggest that shared computers may be provided in certain areas of the environment, freely accessible to those who are already familiar with the use of computers. Colour-changing lights and multimedia equipment featuring fibre optic strings can provide visual and auditory stimulation (UK Health Department, 2015).

3.2.5. Archetypes

Archetypes are commonly intended as shared symbols able to connect the conscious mind with subconscious significances. This signifies that archetypes can be perceived also on an empathic level, with strong affective implications. Jung characterizes them as ideas, in the Platonic sense, able to influence unconsciously our actions and

thoughts (Bär, 1976). In analytical psychology it could be defined as a “universal form of thought” endowed with a certain “affective content” for the subject, therefore a symbol, and which could in turn self-define itself as a sort of ethical-social value in which the subject believes, supports or is conditioned, consciously or unconsciously, throughout his existence or part of it, in the realization of his life projects or simply in his way of being or behaving. Architecture is one of the many ways in which archetypes can be made manifest on a big scale. If by “topical” we mean in architecture the repertoire of formal elements, compositional inventions and structural arrangements that, by virtue of their success, become part of a cultural tradition to the point of completely freeing themselves from their original functions, we can instead define “archetypes” the individual building elements whose form derives from a precise architectural function, a function that remains unequivocal and visible regardless of its actual existence. Archetypes are commonly referred to as: the original model or a perfect example of something. Often, when we find ourselves operating in an architectural context that has already been transformed, we come across a series of recurring images and forms that are repeated over and over again around us, the meaning of which we always seem to know (Barbara, 2011). Those represent archetype elements, which act as a guide to change the sense of places and to modify and enhance their meaning (Nuttal, 2002). In architecture we have elements that at different scales can be traced back to the concept of the archetype. Primitive forms such as the cube, the pyramid or the sphere are primordial elements of which we recognize their size, volume and iconographic references. Archetypes encompass form and function: the column is an archetype, as is the lintel, the keystone and the cantonal stone. Elements that we find different and coded according to the historical period in which they were created (Venturi, 2002). Paradoxically, it is therefore in the use of the archetype that the true nature of the creator is identified. Even when we observe the most complex and self-referential structures, we tend to break down their elements to bring what we observe back to something reassuring that is already part of our historical memory. These are therefore objects and situations that can make us understand the sense of place and from which we can start to give a theme to our actions.

Moving from Architecture to Interior Design discipline, many previous studies are focused on the creation of typologies of contemporary interior design artefacts that are, following Jennings (2007)

derived from reiterative historical designs that span time and style and cross-cultural boundaries.

To better understand this concept and apply it to Design discipline, it is useful to know that many studies have been carried out, which have shown that subjects belonging to the same culture had similar reactions to the same archetypes. On the other hand, subjects from different cultural backgrounds or from different parts of the world have different reactions to the same archetype. Etymologically, the definition of a typology deals with those aspects of human production which possess common recognizable features that make them classifiable due to their similarity. Within interiors, the two most common classifications have been by use and by morphology. Thus, an interior archetype “represents an ideal example of a historical and culturally determined practice of design or artefact from which similar models are derived or reiterated” (Jennings, 2007). For example, the sofa, the armchair, the carpet, the sideboard, the table and the chandelier, have been considered as the basic and characteristic archetypes of domestic comfort. Accordingly, it is possible to define archetypal elements as objects or pieces of furniture that characterize and identify certain domestic spaces, or in general, certain spaces or interiors. For example, we can recall the idea of a church, through the use of benches, aligned one after the other, all directed to a central focal point, arranged in such a way as to create a nave. Archetypes in interiors can act as triggers for people with dementia to recall past memories, experiences, and life events. The archetypal nostalgic elements of an interior can act as triggers for reminiscence activities, enabling elderly with dementia to recall past memories connected to a specific ambiance or style, or linked to specific objects found in the interior environment. In fact, archetypal elements can act as enablers of positive memories and enhance good mood among people with dementia.

4. New Scenarios. A collection of case studies

This chapter presents an overview of case studies of care environments for dementia. People with dementia, during the onset of the disease, can live in different environments, according to the therapeutic support they may need. Van Hoof (2007) calls this succession of living situations “The housing continuum for persons with dementia”: it starts with independent life at home, or with the provision of health services, and can be followed by long-term dementia care, if the symptoms of the disease worsen. The transfer from one’s home to a care facility or day care regime, depends on the public care services provided and the availability of family care. The identification of dementia therapeutic settings, according to the onset of the disease, it is a necessary preliminary phase, in order to define the three main typologies under which the case studies are divided: small-scale groups living, nursing home and special nursing care units. Those three settings are associated with the late stage of dementia (as represented in Fig. 10), where the environment can play an effective therapeutic role (Day, 2000; Zeisel, 2006).

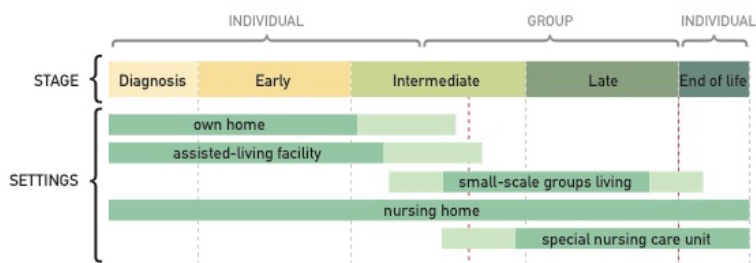


Fig. 10 - Care settings for late-stage dementia

4.1. Nursing home

Care for people with dementia in acute hospital settings is not always satisfactory, especially because usually they don't provide tailored dementia care. Generally, people with dementia perceive the experience of being in hospital as a negative experience that causes stress and anxiety. Ever since, as Kane, Ouslander, & Abrass (1994, p. 446) report the goals of nursing homes are to

provide safe and supportive environments for chronically ill people; restore and maintain the highest possible level of functional independence; . . . maximize the quality of life; stabilize and delay progression, whenever possible, of chronic medical conditions; [and] prevent acute medical illnesses and identify and treat them rapidly when they do occur.

Nursing homes are important providers of care for people with dementia. Initially, caregivers take care of their relatives at home, but when behavioural symptoms worsen, they may no longer be able to provide appropriate care. In a large number of cases, this makes necessary the transition to a nursing home or in general to a care facility (Yaffe et al., 2002). Recent studies have highlighted the need to improve the quality of life granted in long-term care in nursing home setting. In fact, for the majority of dementia caregivers, nursing homes represent a setting of last resort because, despite many improvements occurred in dementia care methods and approaches, their environments remain strictly linked to a standardized and impersonal ambiance, typical of a hospital (Zimmermann et al., 2010). In fact, nursing home care traditionally resembled hospital care. Nursing homes layouts are structured over elements such as large wards and bedrooms for more than one resident. However, in the last decades research highlighted the importance of providing a physical environment designed according to the patients' needs, even more in nursing homes (Hammer, 1999). Recently, an increasing number of nursing homes started to provide therapeutic services (inside the framework of non-pharmacological therapies) and to modify their interiors towards a less institutional character, in order to enhance the well-being of their patients diagnosed with dementia.

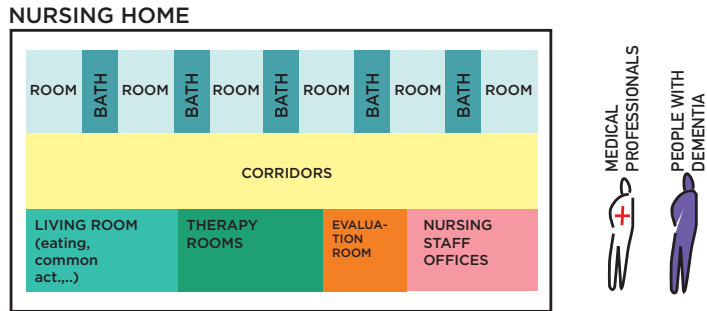


Fig. 11 - Theoretical model of a nursing home layout

4.2. Special-care unit

Generally, Special Care Units provide specific care to individuals with cognitive impairments, such as dementia. The distinguish features of Special Care Units are mainly represented by the provision of tailored-dementia care, accommodation of small groups, trained tailored staff, and activities of daily life that encourage the involvement of family members along with people with dementia. Inside Special Care Units nursing homes residents who doesn't suffer from dementia are separated from people with dementia allowing the development and provision of specialized care. Moreover, spatial organization, layout and physical environment features, differentiate Special Care Units from nursing homes. The floor layout of special care units tends to have no hallways, in order to enhance staff visual access throughout all the space, thanks to the open plan. The open plan layout encourages also residents to navigate across the environment, as it enables residents to easily orientate themselves. Environmental enhancement and adaptation are typical elements of special care units. Colour schemes are used to identify different areas in the facility, in order to support residents' orientation. Pictures or objects are usually placed near residents' rooms, to help them locate themselves. Continuous pathways allow safe wandering of people with dementia across the spaces.

Most of them also provide access to a protected, outdoor courtyard or a therapeutic garden. Most of special care units tend to eliminate sensorial overstimulation caused by telephones, loud alarms, radios, televisions, and high-glare floors, that can disturb the residents, enhancing confusion and agitated behaviours. The staff, more numerous compared to a nursing home, can provide tailored care for the residents, as it is also better acknowledged on dementia. The “specialized” approach, typical of these units, led to a decrease in the use of psychotropic medications compared to non-specialized units. The main cause of this phenomenon is probably a more effective knowledge of the disease and an approach focused on understanding patients’ needs. Finally, the introduction of daily activities that aim at stimulating residents’ abilities also encourage the involvement of family members, fostering important social interactions that surround people with dementia. Family caregivers are also involved in the development of tailored care.

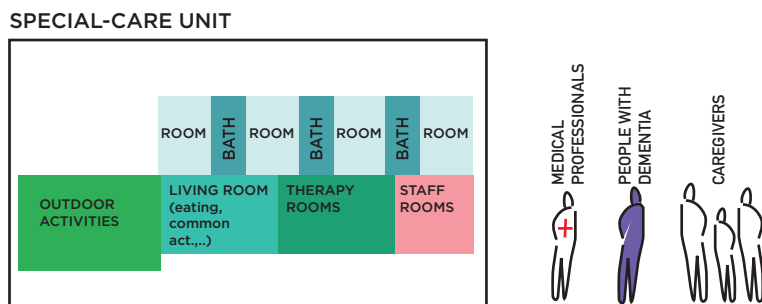


Fig. 12 - Theoretical model of a special-care unit layout

4.3. Small scale living group

In recent years, research has shown the increased awareness that an institutional therapeutic setting results unable to fulfil needs and necessities of people with dementia (Hammer, 1999). Different approaches and new settings for dementia care were developed to overcome this phenomenon. One such development is small-scale

groups living care, that include different experiences analysed in this research, such as: Group living, small living, green houses, group homes, CADE units, green care farms and Hearthstone residences. Various studies suggest that facilities that accommodate and provide care to small groups of residents may reduce overstimulation among them, allowing a better control of noise and useless stimuli. Moreover, research shows that large size facilities can cause behavioural disturbances in the residents and increase agitation and confusion (Annerstedt, 1994; Sloane et al., 1998). Furthermore, residents living in larger facilities can face more often aggressiveness and agitation towards other residents, caused by close and too frequent social interactions (Morgan & Stewart, 1998). On the contrary, people with dementia living in smaller facilities encounter less agitation and anxiety, less stressful situations, and more opportunities of mobility (Annerstedt, 1997; Skea & Lindsay, 1996). Small groups of residents can also be more easily supervised, can have more satisfactory interactions with the staff and can create even friendship relations with other residents (McCracken & Fitzwater, 1989; McAllister & Silverman, 1999; Moore, 1999; Netten, 1993). Concerning the location, Small scale living groups are usually independent facilities or incorporated into an existing nursing home. Moreover, there are different models: for example, Swedish Group Living, Dutch Small-Scale Living groups and Australian CADE-Units are mainly located in ordinary houses inside the community, to preserve residents' social relationships. These Stand-alone facilities may avoid the presence of institutional characteristics within the interiors, favouring the presence of home-like features that represent archetype symbols, such as the fireplace, the kitchen, and a big familiar living room. The kitchen, often, can be considered as the core of the facility, resembling what happens in ordinary houses. Almost all models provide each resident a private room with bathroom (Verbeek, 2010). ICT technologies or domotic systems, such as interactive devices for reminiscence, are integrated in some Small scale living groups facilities. The number of residents living in each different model can vary from 5-9 in Swedish Group Living, Japanese Group Homes and Dutch Small Living, to a medium average of 12-15 in CADE-Units, to a maximum of 30 in Hearthstone Residences (Atkinson, 1995; te Boekhorst et al., 2007).

The main aim of small scale living groups facilities is to stimulate residents' social relations and provide meaningful daily activities. Due to their limited size, small group facilities allow staff, residents and their families to get to know each other closely, enhancing communication and trust (Leichsenring et al., 1998). Research has shown that social dynamics and scale of a small group has positive effects on residents' quality of life and overall well-being (Annerstedt, 1993). To create a home-like ambiance, most of these units enables residents to bring their own furniture; dead-end corridors are avoided in Green Houses, as well as nursing staff wearing uniforms (Rabig et al., 2006); in Green Care Farms, residents interact with animals; or in Hearthstone Residences, great importance is given to fireplace and kitchen focused activities. The creation of an effective home-like environment involves not only physical features but also social aspects. In all small scale living groups facilities residents are actively involved in daily life activities, planned and developed respecting previous residents' habits, preferences and past lifestyle. In all models care staff is involved in daily life activities and, in some cases, literally takes care of the "house" living with residents to enhance a mutual sense of trust and acceptance. Residents are supported in their daily activities, trying to enhance their autonomy and personal dignity. Daily life is organized around normal daily life activities, such as cooking, gardening or other activities, fostering social interactions between residents.

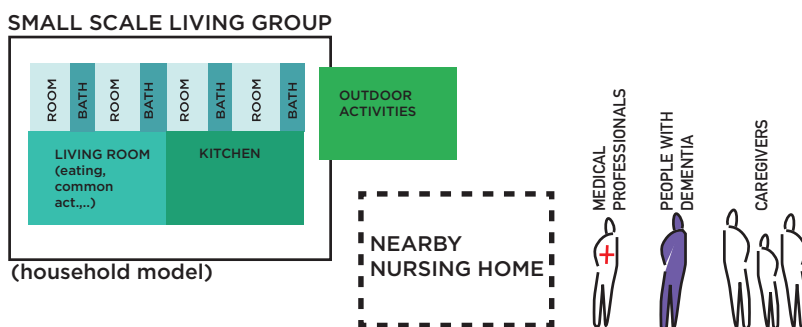


Fig. 13 - Theoretical model of a small living group layout

4.3.1. Group Living, Sweden

Group Living for people with dementia is a Swedish phenomenon. Some decades ago, Swedish medical professionals tried to develop an alternative model of care according to their knowledge and understanding of dementia and related diseases. This alternative model was called Group Living. The first unit was established during the 1960s as an experimental care facility for dementia. The real expansion began in the 1980s at different places throughout Sweden (such as Karlstad, Malmö, Sundsvall, Motala etc.). A first pilot project of three Group Living units was built in 1983, and consequently evaluated few years later with positive results. Based on the positive results of this pilot projects, in 1989, 16 units were built and open in Malmö for caring about 120 patients. Consequently, more cities started to build their own Group Living facilities, and then, collecting positive results from all of them, Group Living care became an officially recognized model of care for dementia by the Board of Health Care in Sweden. The early group living facilities were mainly built-in small blocks of houses, but in the late 1990s group living units became a part of other assisted living facilities, in order to provide medical assistance, if necessary. Nowadays, about 14000 elderly with dementia are living in these facilities. Group Living model has changed over time, according to the residents' characteristics and needs, physical design features, and best care services. Originally, this model was developed to meet and fulfil the needs of people with mild to moderate dementia, with a certain degree of independence, living in ordinary houses or flats. It was meant, initially, as a form of intermediate care, not a long-term one. (Annerstedt, 1993; 1994). Later, Group living demonstrated to be a successful housing arrangement for people with dementia and the government have supported the expansion of this kind of housing in recent years. Nowadays, group living facilities are usually part of larger assisted-living facilities and allow also residents with low degree of independence to live there, because staff is better trained to fulfil also their needs and necessities, and because they are now more recognized as “homes for life”, as a new model of living than as a last resort for people with dementia.

Physical structure. Group living has no defined physical features, but it usually houses a small-group home for 6-8 people, in which the residents have their own private room and share common areas. They are cared and assisted by trained staff 24 hours a day. Special importance is given to staff training and support.

Activities and staff. Sometimes the small units are arranged in flats or houses, sometimes in one part of a home for the aged or in a nursing home, with staff providing assistance and care 24 hours a day. They organize daily activities following the hints given by residents, they take care of housekeeping duties, together with residents, according to their capabilities. The main purpose is to create a sense of community, supervision and a natural situation without institutional characteristics.

4.3.2. Small Living, Netherlands

Historically, in the Netherlands people with dementia were mostly cared at home. Nursing homes, in the last decades, became the care solution chosen once dementia symptoms worsen and family caregivers are no longer able to give the best assistance. An increasing number of small living group facilities were built throughout the Netherlands, in order to offer better quality of life, compared to traditional nursing homes, and fulfil specific needs and necessities of people with dementia. Small living group homes can host a maximum of 6 residents with dementia and the environment is characterized by a home-like ambiance. To strengthen this feature, everyday routine is organized around normal daily life activities, that integrates required personal care (te Boekhorst, 2008). Moreover, the concept of small living group care encourages residents to live a normal daily life, without fixed tasks or activities. Daily life is managed and surveyed by one or maximum two nurses per group. In the Netherlands, the first Small Living group houses were built and opened during the 1980's. During the last decade, there was a strong increase, and a large number of small living group facilities were built. Estimations indicate that in

2010 approximately 25% of all institutional dementia care it was organized in small living homes (Verbeek, 2012).

Physical structure. A Small Living group facility simulates an archetypical house, in the structure and in the internal layout. Private rooms, living and dining room, private courtyard and a kitchen are physical features of these units.

Activities and staff. Nursing staff is always present in the house. They are not only responsible for personal and medical care, but also carry out some household activities like cleaning the rooms and the common areas (living room and kitchen), prepare meals and cook with the help of residents, according to their capabilities, they organize common activities like singing, watching old movies, walking, painting, exercises (Verbeek et al., 2009). In special cases, if necessary, a specialized medical team, such as a psychologist, a physiotherapist and an occupational therapist can join some individual or group activities.

4.3.3. Green Care Farms, Netherlands

In the Netherlands day care services are available in all provinces and are generally supported by the government. Since the early 2000s Green care farms mainly provide day care service. Green care farms are typical Dutch farms where individuals with dementia, or other cognitive illnesses, can receive day care, while actively participate in farming and agricultural production. Initially, green care farms offered day care mainly to cognitive impaired people, whom still had a degree of independence. Later on, green care farms have changed their standards, providing day care to new target groups, including autistic children, individuals with psychiatric disturbances and people with dementia. Individuals with dementia attending green care farms, along with animators and volunteers, mainly take care of animals, feeding them, or they clean and take care of the yard. Obviously, they are not actively involved in harvesting or heavy agricultural works. They are also involved in some domestic activities such as gardening, preparing

the meals, baking, cleaning the house. Green care farms usually are supported by a nearby assisted living facility, so that specific medical care can be provided, if necessary. Green care farms can host 6 to 15 people every day. Recently, some green care farms started to provide 24-hour care and are seen as an alternative to other institutional long-term care settings (de Bruin, 2008). Currently, more than 1000 green care farms are actively providing day care across the Netherlands.

Physical structure. Green house farms are meant to resemble homes familiar to elderly, because they look like the one they used to live in. In some small Dutch cities, they look like apartments or duplexes, while in rural areas they look like independent single-family homes (Zimmerman, 2010). A large number of these units are part of a Nursing Home and/or are connected to other green house farms. In this way, ideally, they can be seen as small units, which are part of a larger group of care facilities. Inside the “group” each facility is independent from the others and can host 6-15 residents. Care is provided by a trained staff, who manage the organization of daily activities, such as cooking, cleaning, patients’ surveillance and social involvement. Green care farms are characterized by a home-like ambiance, which include indoor spaces, as well as outdoor areas, which encompass a cultivated garden, a yard and a farmland. Outdoor areas are freely accessible; residents are encouraged to go outside and enjoy natural light and close contact with animals. In some Green Care Farms, residents can spend few nights in the facility. These units offer private rooms with bathrooms directly open onto a central living room area (Zimmerman, 2010).

Activities and staff. Green care farms daily-life activities are meant to be integrated in the environment and not structured as a medical intervention. They should resemble normal daily life. They include domestic indoor activities (preparing meals, cooking), as well as outdoor activities (feeding animals, cleaning the yard), opportunities of normal social interaction (tea breaks, relaxing moments among the fireplace) and reminiscence activities (sewing, painting, singing together). Activities can be both individual and performed by groups. The main concept behind green care farms is

that the environment itself encourages individuals to be physically active, even those who encounter some physical difficulties in making movements or walking. In fact, physical activity is required in most of the activities offered. For older people with physical issues these activities are often tailored, in order to avoid a feeling of being incapable to perform them compared to other residents. A nurse is available in each green care farm 24h a day. If necessary, a medical care team, coming from the nearby nursing facility, can join the farm.

4.3.4. CADE Units, Australia

In the past decades, Australia moved towards a deinstitutionalization of psychiatric hospital patients which created a need for alternative accommodation for the residents of these hospitals who suffered from dementia. At first, CADE units were established to provide long-term residential accommodation and care for people with dementia with behaviours disturbances of sufficient severity, who had previously been housed in psychiatric hospitals and couldn't be managed in nursing homes or existing specialized facilities. They were designed to accommodate small groups of people with dementia in a home-like atmosphere. The first unit was opened in 1987, starting from an initiative from the New South Wales Government (Australia). Specifically, it was designed to accommodate 16 residents, with a staffing level equivalent to that used for similar patients with significant behaviour disturbances. The national plan provided 27 CADE units, distributed throughout the southern territories of Australia. They not only provided a safe environment and long-term accommodation for very confused people with dementia, but also allowed the unit to develop a community support role for carers of people with dementia, and a consultative and educational role for professional and non-professional carers.

Physical setting. CADE units are small home-like environments built to provide accommodation, in every unit, up to 8 residents (16 in total, because each unit is doubled). CADE units are built resembling an archetypical house. Internal layout mainly includes a kitchen, a

living room, a courtyard, and single rooms for residents. CADE units are part of urban communities; this collocation allows residents to still feel a sense of inclusion into the community they are coming from. Interiors are designed not to overstimulate residents, avoiding loud noises, alarms, strong and dazzling lights. Furthermore, to avoid misunderstandings, doors to the staff areas are painted in “regressive” colours, so that they merge with the background colour. On the other hand, important stimuli are enhanced, such as the use of one distinctive colour for every room to assist recognition (Fleming & Bennett, 2014). Residents can visually access all the areas, including the kitchen, the living room and the door to the garden. Visual access is provided to encourage residents to walk freely across spaces. Two important areas are the lounge and the living room. They are divided by a waist high unit which acts as sideboard and entertainment centre (Fleming & Bowles, 1987). The kitchen counter allows residents to see the activities taking place in the kitchen and enjoy the smell of food. Each unit provides two access doors to the garden. The furniture is arranged in order to create a safe, legible loop shaped pathway that connects indoor areas with the two garden doors, allowing the management of wondering behaviours, and simply enables residents to freely walk in the unit (Fleming & Bowles, 1987). Furniture, finishing and colour schemes resemble the décor of 40s and 50s, in order to trigger residents’ old memories, and enhance a sense of recognition towards the environment.

Activities and staff. Environmental stimuli are managed by the nursing staff, so that confusing or disturbing ones, such as noises coming from excessive use of tv or loud music, are avoided. Daily activities, performed with the assistance of the staff, are based on completing tasks which are familiar to all residents, such as dressing, bathing, housekeeping and gardening, and aim at involving all residents in the daily routine. The staff adopt a 24-hour reality orientation approach (Fleming & Bowles, 1987), that supports the residents through the use of specific information about the activities carried out, breaking down of tasks into small, simple steps understandable by all the residents, providing stimuli for desired behaviours (Bowles, 1986).

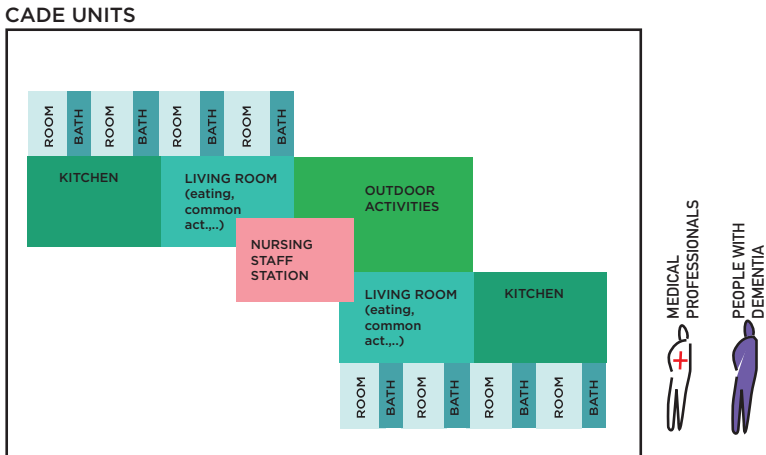


Fig. 14 - Theoretical model of CADE units layout

4.3.5. Green Houses, Usa

The Green House model grew up in USA following the Eden Alternative philosophy as small-house nursing homes for people with chronic diseases, like dementia, that need constant long-term care. The Eden Alternative philosophy was founded by Dr. William Thomas and is an approach to aged care that emphasises deinstitutionalization and culture change in nursing homes and day care centres. In 2012, there were more than 200 Green Houses operative across USA. All of them are characterized by a non-institutional character. In the Green House model small houses host 6-12 residents. A self-directed team provide the necessary care services and organize daily domestic activities, such as preparing meals, cleaning the house, social communication activities that involve in different ways the residents. Residents have private rooms and bathrooms that open onto a central living area, where the kitchen and a living room are located. A nurse is available 24h a day, and a team made of a geriatrician, therapists, and physiotherapists can reach the house if specific medical care is needed. The concept behind this model is that residents should experience the sensation of living in an ordinary house, receiving care in a domestic

setting. Furthermore, Green Houses exploit smart technologies and ICTs, such as communication devices (Rabig et al., 2006). This may include, for example, an interactive television to maintain contacts with distant families.

Physical structure. The Green House homes are meant to resemble traditional houses in which elderly people has lived in the past. In urban communities, they are inside apartments, while in rural areas they are built to resemble single-family homes. Green House homes, mainly, are part of a larger health campus provided with a nursing home and/or other Green Houses, so that each facility can interact with the other nearby. From a physical point of view, essential elements are private rooms with bathroom for every resident, small-size and access to an outdoor area.

Food and dining. In Green House model food has an important role. The kitchen and, specifically, the dining table are essential sources of enjoyment. The concept behind is to create a sort of “convivium” around them. The activities proposed to the residents, such as the preparation of all meals in the common kitchen, are based on a series of principles as the preparation of menus based on residents’ preferences and cooked using local ingredients, the willing to preserve communities traditions to enhance the creation of a “group” that includes all the residents, the presence of a residential-style kitchen, in the centre of the house, accessible to all residents at any time, that represents the core of the house. Other collateral practises that involve residents may be the development of house cookbooks with recipes coming from residents and their family members; the use of music, decorations, flowers, photographs, paintings coming from residents, to make more familiar the environment, residents’ involvement in meals preparation, cooking, baking and house cleaning, lunch and dining times where all residents and all staff members are seated at the same table together.

Staff. The Green House model reorganizes staff flattening the traditional nursing home hierarchy. Staff members in Green houses are divided into four different roles: the Shahbaz, the Guide, the Sage and

the Clinical Support Team. The Shahbaz is a trained certified nurse who provides personal care, takes care of the preparation of the meals and does the housekeeping sometimes involving the residents (the name comes from the Persian word for the sultan's hunting falcon). A consistent team of Shahbazim represent the staff living in each home. The Guide is the supervisor of the Shahbaz and is responsible for all the activities in the home. The Sage is a local elder who voluntarily accepts to be a mentor for the house. The Clinical Support Team made up of nurses, therapists, medical doctors and dietary professionals, work with the Shahbaz to set up the care services tailored for each resident. The Green House model was developed following the principles of The Eden Alternative, providing a person-centred care to people with dementia. The natural daily rhythms of each resident are preserved and became the driving principle for the organization of activities and relationships, leaving people with dementia free to choose waking up time, when to sleep, when to prepare meals and the shahbazim are trained to respect the choices of each resident. The Green House model supports the concept of encouraging meaningful engagement of residents into all activities, that range from social communications and relations building, to leisure, to physical and intellectual opportunities, and even spiritual occasions.

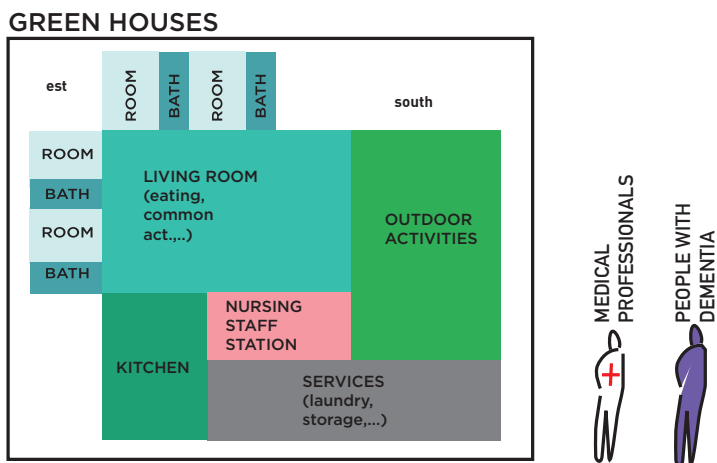


Fig. 15 - Theoretical model of a green house layout

4.3.6. Group Homes, Japan

A Group Home represents a therapeutic approach, which provides the residents with small-scale and homelike environments opposed to institutionalization, within a traditional Japanese house. In Japan, after the first pilot Group Homes built between 1995 and 1996, the number of group homes has rapidly increased. In 2000, there were 675 Group Homes, and in 2004, 5449 Group Homes were reported by the Japanese Ministry of Health, Labour and Welfare. Nowadays, Group Homes are considered as an effective alternative for long-term care of people with dementia. This model is adequate for older people who value and seek for interdependence and community networks, rather than individualism. Group Homes are facilities that are connected to the community and provide “family” care for the residents affected by dementia. Peculiar characteristics are: small-scale like environment, facilitation of self-autonomy and self-control, provision of 24h professionalized care for the residents. Basically, a Group Home accommodates 6-7 people with dementia who share a house with two caregivers. Furthermore, a Group Home might be a place where a resident can make familiar relationships with other residents and the staff members.

Physical structure. From a physical point of view, a Group Home is a traditional Japanese house with which the residents are familiar. It is built attached to a larger facility, in order to provide specific medical assistance whereas is needed. It is characterized by 4 main zones: private zone, semi-private zone, semi-public zone and a public one (Tanaka, 2001). The creation of these four zones aims at making comfortable the residents. In the public area a series of “community” activities are performed, to foster interaction between residents and has stable staff assignments. It is mainly composed by a large living room and a large dining place with a kitchen. The semi-public zone is a calm and relaxed area for family meetings, where people with dementia can enjoy the visit of their relatives and friends. The private zone is related to the private rooms of each resident. Bathrooms are in common for all the residents like in a typical Japanese house or Ryokan. Each residential unit provides a common area, such as a

dining room, for interaction among residents. The staff area usually provides an office for individual talks with residents' relatives and a changing room.

Staff. Care staff is responsible not only for care assistance, but also perform housekeeping activities and organize meaningful activities for the residents. They live together with the residents and engage them in cooking and cleaning activities. Residents are stimulated and supported in freely join the household activities, always emphasizing their autonomy and dignity.

4.3.7. Hearthstone Residences, Usa

Hearthstone Alzheimer's Care Residences were born under the guidance and the care philosophy developed by John Zeisel, PhD in Neurosciences, after a decennial experience in environment-behaviour research on Alzheimer's Disease and therapeutic environments for Alzheimer's care. Hearthstone Residences, mainly located in Massachusetts - Usa, are managed by Hearthstone Alzheimer Care, Ltd., a Massachusetts-based healthcare company. Residents are mostly over 80, and there are about 30 people in each residence. In all the residences, whether new construction or renovation of existing buildings, the Environment-Behavior (E-B) Design Model concepts and dimensions are employed in the design program and the design itself (Zeisel, 1997; Zeisel et al., 1994). Each Residence can host up to 30 dementia residents. At the moment, there are two Hearthstone Residences: New Horizons Retirement Community in Woburn, Massachusetts; and New Horizons Retirement Community in Marlborough, Massachusetts. New Horizons Massachusetts retirement community offers a total of 120 apartments housing about 125 elderly, located nearby Choate Medical Center Woburn, available for residents at any time. This Hearthstone residence includes, first, 94 suites for elderly people. 35 of them are reserved to residents who may need assisted living services from a hospital. The others are meant to host independent living elderly. Furthermore, there are 26 apartments reserved for people with dementia. The second residence, the New

Horizons retirement community, was built on a 40-acre country campus and it accommodates up to 500 elderly. 130 independent apartments are reserved for people with Alzheimer's Disease, inside the retirement community.

Physical structure. Each of the Hearthstone Residences is located inside a bigger retirement community provided with medical assistance and other healthcare services. The “Hearth” of the Hearthstone Residence is the common family kitchen, located in the centre of the residence, used by the residents with the help of the staff to cook meals, bake cookies, etc. evoking profound and orienting memories. Its central location enables visitors to easily reach the kitchen and makes this room the core of the residence. A direct pathway, decorated with residents' selected photos, connects the kitchen to the rest of the residence. A fireplace is positioned at the end of one hallway in order to provide to the residents a visually self-evident destination. Near the fireplace there's the residential living room, where the residents can just seat or participate into organized activities. Rooms are private, with the possibility to have also a private bathroom (or shared with another resident). Emergency exit doors are camouflaged, in order to become less visible to residents, reducing their frustration and their attempts to leave by these doors. The activity room provides a common space for residents. It hosts also the life-quality coordinator desk. Outdoor space, that provides also a therapeutic garden, is another essential physical element. Several benches are surrounded by bushes and trees in order to offer more private areas. A clearly delineated garden path enables residents to walk freely. The Residence is provided also with few staff offices for private talks with families.

Staff. Experienced trained Resident Assistants assist residents throughout the day, managing the meals, the medications, involving residents into activities and housekeeping the whole house. Every other week, Resident Assistants organize a staff meeting where they discuss and review residents' care issues and attend trainings. They also discuss new approaches to dementia treatment in order to be up to date.

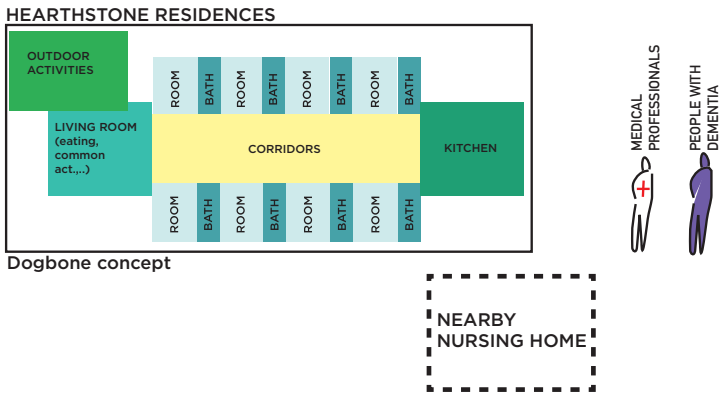


Fig. 16 - Theoretical model of hearthstone residences layout

4.4. Village

A variety of studies published over the past ten years have documented positive outcomes in people with dementia living in home-like settings that provide innovative layouts meant to encourage physical activities and involvement in meaningful daily activities. In the last years, in the Netherlands, a new model of care was developed: the village for people with dementia, located within a community. Neighbourhood dementia care group homes represent a novel model within dementia care services. The model focuses on the enhancement of the well-being, providing a physical and social environment that actively stimulates people with dementia according to their lifestyle and tries to minimise disabilities and cognitive impairments. Residents live in the same house or apartment with other people with dementia who have shared similar lifestyles and cultural values and actively take part in all aspects of daily life, reflecting their interests (Jenkins & Smythe, 2013). In the last decades, some countries recognized this residential model within the available long-term care alternatives for people with dementia – and demonstrated its therapeutic positive effects (Malmberg & Zarit, 1993). The first neighbourhood dementia care village model was built in the Netherlands, in 2008, and is called

De Hogeweyk: a perimetered “village” consisting of different small houses, where people with dementia live together in small house groups completely safe. Basically, the village is managed by healthcare professionals and trained volunteers and staff, who foster and encourage personal satisfaction and social involvement, resembling normal family life. People with dementia, assisted by trained staff, have total control over the home activities, organizing the cleanings, time for meals, menus, going out for grocery in the supermarket inside the village, or spending time at the theatre or at the cinema in the village. Security is one of the main concerns for nursing staff in people with dementia’ facilities. In De Hogeweyk, the security perimeter is not each house, but the entire enclosed neighbourhood – which means that people with dementia can move freely throughout the perimeter without being in danger. Here it reflects, as Regnier (2013) says:

the specific Dutch strength-based philosophy that often views the over-provision of care as more damaging than the under-provision. They believe older people should be challenged to do as much as they can for themselves.

Furthermore, this model of care was built upon the belief that older people, and even people with dementia, wish to remain both independent as long as possible and involved in the community (Regnier, 2013).

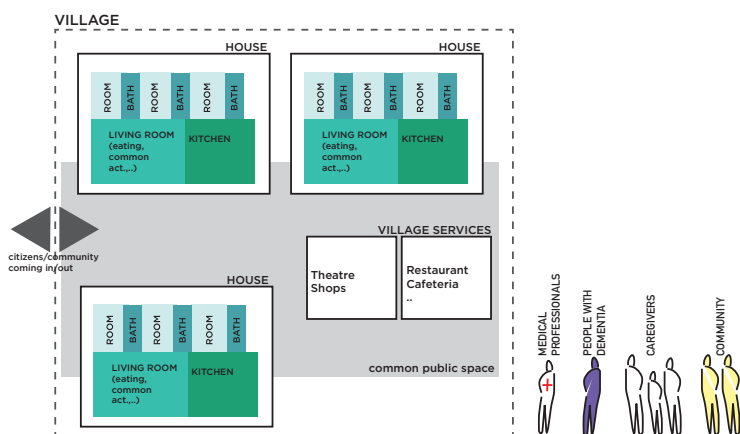


Fig. 17 - Theoretical model of a dementia village layout

5. Therapeutic Habitat Model. Interior design as an environmental system

Interior Design has historically moved through the creation of scenographic equipments, often filtered by a cultural interpretation, in order to provide environments with a certain degree of quality and specific connotations (Biamonti et al., 2014). During the last years, we are facing a radical change of the relationship between design and architecture. The latter is historically linked to a sphere connected to a built environment understood as a stable and long-lasting presence, that radically transforms the context. The first, otherwise, in the last years is looking for its own independent dimension.

Analysing the literature, the concept of Shearing Layers (Brand, 1995), introduced by Frank Duffy, and later elaborated by Stewart Brand, represents an interesting point of view in architecture.

Shearing Layers concept encompasses the idea that a building, although conceived as a long-lasting presence, once built and inhabited is not only a unary thing with a single lifecycle, but a composition of several layers comprising elements with different components characterized by different evolving timescales.

Duffy, analysing buildings and building components in terms of overlapping layers of different longevity, firstly identified "Shell, Services, Scenery and Sets". Aim of his study was to facilitate the accommodation of technological and organisational change, within office buildings. Later, Stewart Brand extended and deepened Duffy's study, identifying six main layers: site, structure, skin, services, space plan, and stuff, related not only to office buildings, but to buildings in general (Fig.18).



Fig. 18 - Shearing layers

Shearing Layers concept is based on the work of the ecologist (O'Neill et al., 1985) and systems theorists (Salthe, 1993). The concept rises from the idea that there are processes in nature which operate in different timescales. As a result, there is little or no exchange of energy/mass/information between them. Brand transfer this intuition to buildings and noticed that traditional buildings were able to adapt because they allowed “slippage” of layers: for example, faster layers (services and stuff) were not obstructed by slower ones (structure or skin).

As aforementioned, this approach encompass different layers: structural elements and the skin, which may last for decades or centuries, exterior elements, defined as the “skin”, which may last for a decade or two; services (wiring, electrical system, plumbing) for at least fifteen years; the space plan could change every two or three decades, as walls may be moved or removed according to new needs; at last, the stuff layer, includes things like furniture and objects (i.e. computers, decorative objects) that get moved around monthly, weekly, or daily. As seen, contemporary architecture still attributes its basis to the activity of “building”. In fact, the layer-longevity approach adopted by Duffy and Brand points out a different temporality characterizing each layer, which tries to outdistance architecture activity from a merely static vision of buildings as immutable elements of the environment. Nevertheless, the architectural activity of “building” still looks linked to temporalities (i.e. months, years and

decades) very distant from Interior Design logics, more linked to anthropological needs which require fast and multiple changes in the environment. The last layer, defined by Brand as “Stuff”, encompasses a temporality closer to Design Discipline, as it encloses elements such as furniture and objects, which constitute the main tools for interior designers. Hence, the reflection proposed in this chapter is to place ourselves outside the architectural tradition of “building” that, in relation with major contemporary issues, limits its function only to figurative and symbolic codes, moving towards a new approach, closer to the temporary logics of interior design. This frees Interior Design from some of the typical needs and timing of architecture, shifting instead to the possibility of shaping and modifying interiors with temporary, mobile and reversible modalities, which result close to the precise needs of the human beings inhabiting it. Quoting Branzi (2006):

Architecture is not able to imagine itself as an abstract and immaterial reality, that does not have a direct relationship with the shape of the structures, but with the contemporary human condition.

Furthermore, interior design and architecture follow autonomous logics, which hardly can be reassembled: they belong to independent layers, each one demanding its own centrality (Branzi, 2006). Starting from each of these categories it is possible, in fact, to develop several projects different from each other, not because they are based on different instruments, but because they aim to assert absolute priorities, different and irreconcilable. Consequently, it is determined a discontinuity between architecture and the system of objects. They do not define anymore a structural continuity, and they no longer belong to the unit of the project (Branzi, 2009). Inside this perspective, the activity of “building” results static, and fixed, not very reconcilable with an ever-changing contemporaneity. Much more interesting and stimulating are all those changes that can be made inside the skin of a building, the possibility of changing its layout, destination, layout, decoration, the furniture system that fractionates and modifies the interior spaces, up to smells and sounds that change the perception of the interior. If we read the built environment as a juxtaposition of layers, structure and skin result as a stable substrate on which we can

shape environments able to be reinvented and modified, according to the needs of its inhabitants. Interiors tailored on specific needs, even more needed in the case of fragile inhabitants.

5.1. From “Building” to “Habitat”

The historical and anthropological roots of Design Discipline, in particular Interior Design, are strongly linked to the idea of making a protection from the outside. The idea of creating a physical shell that human beings don't have. A comfortable niche, in which we can feel protected and towards which we feel a sense of belonging. Along with the idea that human beings evolve during their life, accordingly, the interiors we design, should change, evolve, answering to the demands coming from their inhabitants. We no longer need “eternal” environments. Instead, we seek comfort and quality of life. To act effectively within the new territories explored by the discipline, in the research presented in this chapter, we adopted a different approach, moving from the concept of “building” to the one of “habitat” (Biamonti, 2015; Gramegna & Biamonti, 2017).

The term *habitat* is mainly used in biology, in fact it indicates the specific set of environmental conditions that guarantee a species, animal or plant, to take root, spread, reproduce. More specifically it was defined as " the environmental conditions that surround a species" (Clements and Shelford, 1939). This definition is extremely relevant for the discipline, as it turns over the order of the factors. In fact, at the center of all there's the subject, the user, in this specific case the species, that doesn't build a habitat, but that surround themselves with it. Hence, the passage proposed, from the concept of interior (closely related to the concept of building), to the one of Habitat, can definitely be perceived and understood intuitively, but the substantial profound difference between the two approaches can also be highlighted by comparing some features:

- While the interiors are necessarily connected to the perimeters of an architecture, as well as its technologies, systems, etc., a habitat is released from this bond

- Interiors mainly consist of a physical location. Habitats are made up of environmental conditions
- Interiors are characterized by a physical nature, which is expressed through the logic of spatial distribution, a habitat, on the contrary, is related rather with the search for high level of comfort.

In an initial analysis, the concept of Habitat, from a physical perspective, may be described as a multi-layer system: the architectural one, with a permanent life span. Its temporality ranges from a long one, concerning the structure of the building, and an adaptive one, which encompasses the space plan, adaptable through a strong intervention; the furniture, characterized by movability and possibility to re shape and adapt quickly, and in multiple times; the one of objects, which can suddenly change, introducing a fluid layer. Its ability to change and enter into the space is even quicker than the furniture layer. This leads to consider its closeness to specific needs or interventions, which can be activated in specific moments.

The architecture layer works as a substratum on which furniture and object layers graft the change, a feasible condition able to evolve the physical environment throughout time.

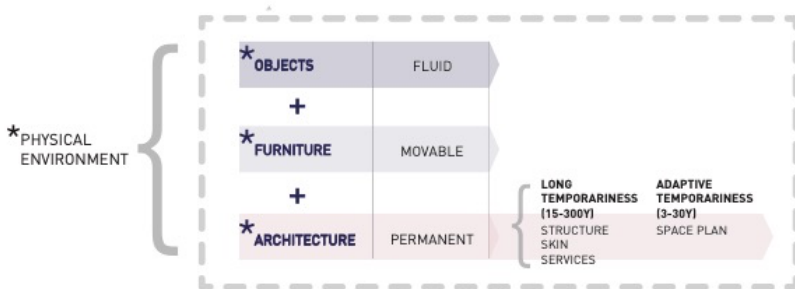


Fig. 19 - Physical environment as a Multi-layer system

Design discipline works within a dynamic and flexible dimension, well suited to the changes constantly in place among human beings. Therefore, this kind of approach can give the necessary answers to the changing anthropological needs and to the quick and sudden changes typical of the contemporary society. Consequently, the multi-layer

system abovementioned, introduces new parameters that differs him from an outdated approach: it is fluid, movable, disconnected from the architectural container, based on objects and furniture, technical equipment, instruments, services; all interconnected. A large organism made of small pulsing interventions that function as activators, enhancing well-being, and comfort. Starting from this point we can think about interior design as an environmental system design, composed by different levels – from tangible aspects, to more intangible ones – able to go beyond the architectural container, adapting itself to the changes in order to satisfy human needs. Nowadays “urban condition”, is made of services, computer networks, product systems, environmental components, micro-climates, ... and above all perceptual structures, that, as Branzi (2006) said, produce

a sensory system of tunnels, that are contained in the architecture, but not presented with the representational codes of architecture.

The architecture cannot imagine itself as an abstract, immaterial reality, which has no direct connection with the shape of the structures, but with the contemporary human condition. Contemporary architecture, in fact, still attributes its foundation to the activity of building, to the representation of visible, tangible spaces. Times are ready to imagine an architecture not committed to achieving final projects, but able to produce under-imperfect systems, widespread and variable, typical of the new modernity (Biamonti, 2015).

Hence, regarding the specific case of design guidelines for therapeutic environments for people with dementia, usually they take into consideration parameters such as building organization, overall security, provision of outdoor areas, orientation within the building, etc. These are parameters associated to an architectural point of view, strictly connected to the building characteristics. On the contrary, the quality of life is even more strongly related to the quality of the complex socio-environmental system in which Alzheimer’s patients live. Consequently, the multi-layer approach aforementioned, needs a further development, in order to take into consideration parameters coming not only from the physical environment, but also from intangible features, defined as “intangible environmental qualities”,

which are concurrent in the process of creating a comfortable care environment, able to modulate part of its characteristics to fulfil extemporary needs. So, the multi-layer approach, characteristic of a “therapeutic habitat” for dementia, consists of environmental intangible factors, as well as objects and furniture, all concurring in stimulating human interactions and enhancing comfort and quality of life. A multi-layer system, in which we have to manage the emotional fragility, as well as the extremely sensitive nature of people being affected by dementia due to Alzheimer’s Disease. Inside this perspective, the concept of “creating a habitat” around people with dementia becomes crucial. The Habitat, defined as a multi-layer approach to the design of care environments, allows to create a flexible environment, able to change its features in a short time, in order to change the physical environment of care according to the needs of people with dementia living in it. Hence, this theoretical model further develops as it follows, considering the environment as an overlap of four layers: architecture, furniture, objects and environmental qualities.

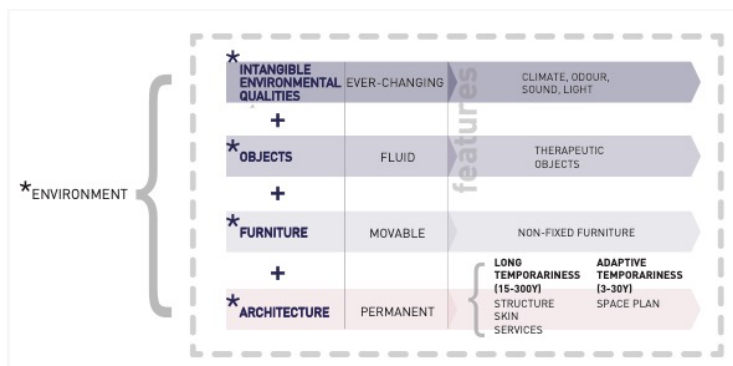


Fig. 20 - Habitat Model: organization of layers

Each layer corresponds to a specific stimulation, dedicated to a specific user, calibrated or tailor-made. Moreover, each layer is characterized by a different temporality: in this vision, architecture (intended as the architectural shell, the building) is a permanent layer, which is articulated into different elements such as the building structure, the external skin and the technical services and implants and

the main architectural layout, and moreover, it can change in a long span of time. Its change is connected to a change in the main functions of the building, or to a deep renovation in its elements. Furniture, objects and, moreover, intangible environmental layers, are closer to the satisfaction of human anthropological needs, as they can be re-arranged, calibrated or activated almost instantly (intangible qualities and objects) or in a very short time, and repeatedly (furniture) in order to activate new scenarios within the same interior environment. This means to consider interior design for dementia not only linked to architectural design or adaptation, but moreover, connected to the design of “activators of well-being” independent from the building, focused on enhancing the patients’ wellness, strictly related to the idea of surrounding the patient with a habitat, specifically designed around its needs. The totality of these “activators of well-being” constitutes a “Habitat of Elements”, including environmental tools, furniture and a system of objects, designed for the enhancement of the well-being. Introducing this new flexible approach means shifting the point of view, assuming that, in the specific case of dementia, for the well-being of the patients, it is necessary to validate some peculiarities of the disease (such as wandering, vocalisms, repetitions in movements, need to focus on material details, etc.) rather than sedate them. Furthermore, those peculiarities evolve and change with the passing of time; accordingly, the care environment should be able to evolve, and mutate its features, in order to better fit the changing needs. For example, the need for safety and security varies from person to person, depending on their stage of dementia and their behavioural symptoms. Although independent movement and the ability to wander have been shown to benefit people with dementia, it needs to be managed safely and the environment has a significant role to play in that process, allowing people with dementia to release their stress not preventing their movements, but providing them a comfortable and safe environment.

5.2. Therapeutic Habitat Model

As designers, in collaboration with doctors and therapists, it is necessary to reflect on the qualities of an environment that responds adequately to the needs of a space specifically designed for Alzheimer's patients requires and, at the same time, the ability to transfer these qualities in an experimental space that also satisfies the needs of contemporary man. Interior Design, in particular, investigates new forms of living and inhabit, both temporary and permanent, in order to define contemporary habitat(s). With “habitat”, in scientific jargon, in fact, it is intended the place whose physical or environmental characteristics allow a species to live and develop. Human beings, then, need to create around themselves environments which enable him/her to live according to his/her needs and capabilities: pleasant places, whose fruition make people feel welcomed, housed and has a positive effect on people’s well-being. If in the scientific sense, the term habitat refers to a permanent fixed situation in time (just think about animal species, that identify their habitats and live in it for their entire lives), in the contemporary society is more likely alluded to tailored, temporary habitats, able to adapt and act according to the needs of individuals.

A **Habitat**, a “man-made environment”, with a high degree of comfort and protection, able to act as a filter with the outside world, an environment that meets the needs of information and communication that are the basis of our contemporary society, an intangible place that can be freely customized, but at the same time present with well-defined characteristics. Furthermore, the term “*Habitat*” is strongly connected with the concept of *inhabiting*, which, as previously said, represents the cornerstone of the discipline of interior design in the contemporary world. Indeed, the expression *Inhabit the Planet* refers to a man-made complex system, which goes beyond the limits of the metropolis and the built. But it is also connected with biology, in fact the term habitat indicates that certain set of conditions that guarantee a species, animal or plant, to take root, spread, reproduce, in a given environment. Hence, in the framework of dementia care, the research supports the definition of “**Therapeutic Habitat**”, analysing its characteristics strictly related to Alzheimer’s

disease and Non-Pharmacological therapies. It emerges the vision of a fluid system, based on tangible and intangible aspects, products and furniture, technical equipment, instruments, objects, services. A system of environmental devices/tools, that can enhance the comfort perceived by the patients, solve temporary problematic situations, support activities related to Non-Pharmacological therapies. In this environment, the highly recognizable and distinguishable peculiarities are calibrated to stimulate a feeling of familiarity, trust and intimacy.

People with dementia, and more specifically Alzheimer's disease, are fragile individuals that need a tailored environment to guarantee a certain level of well-being, comfort and dignity. Moreover, dementia is characterized by the manifestation of certain symptoms such as wandering, apathy, agitation, repetitive gestures. These symptoms, as emerges from the analysis of the existing literature, can find an outlet valve in the interior, in the environment, if properly designed. As previously said, even if the disease changes their perception of time and space, people with dementia live in a world where relationships, objects and situations matter, even if they encounter some difficulties in expressing their feelings and concerns. Therefore, the peculiarities of an environment take on relevant importance, as they can reduce dysfunctional symptoms and behaviours, enhance well-being, offer the opportunity to engage voluntarily in meaningful activities maintaining control over daily life, and can support social interaction, enhancing a sense of self. New concepts in the built environment, person-focused philosophies of care and an increasing understanding of the "experience" of dementia has led to viable alternatives in long-term care provision. Shifting the emphasis from "condition to experience" encourages the disciplinary change needed to create environments that allow the person with dementia to be an active participant in everyday life rather than a passive recipient of care. Moreover, this approach turns the order of the factors involved in the design process: the design of care environments for dementia should not focus only on safety issues and ergonomic aspects, but also on generating pleasurable experiences, engagement, meaningful activities and tools to enable their activation. Hence, in the specific context of dementia Care, the term **Therapeutic Habitat** is associated

to a wide context of care, that place the person in the centre, involving physical, cultural, social and anthropological aspects of human life.

A **Therapeutic Habitat** is conceived to be tailored on dementia needs, and involves physical features, such as objects, furniture, environmental devices, climate and sound control, outdoor elements, as well as social interactions, fostered by the environment, and cultural features and rituals enabled in in.

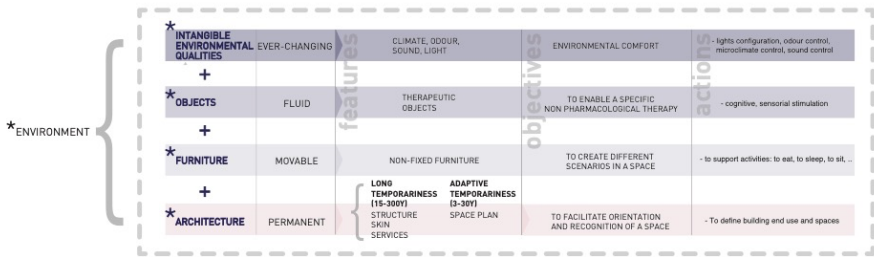


Fig. 21 - Therapeutic Habitat: objectives and actions for dementia care environments

Hence, in this model, the physical space is considered as an overlap of four layers: architecture, furniture, objects and intangible environmental qualities.

Architecture, in this model, is seen as a permanent layer, which comprises elements such as the building external components, walls, floors, internal layout, which define spaces and paths, facilitate orientation and differentiate spaces.

Furniture and objects, in this model, act as activators of opportunities for social relationships, conversations, performing of daily rituals, aggregators. They also allow the creation of new scenarios within the same space, suggesting different uses and activities. As aforementioned in the previous chapters of this book, in their setting it is necessary to analyse and encompass concepts such as Hall's studies on proxemics, and specifically on the different levels of intimacy perceived by individuals, in order to understand psychological implications and manage correlated behaviours. Moreover, in the definition of new scenarios created through furniture, an analysis of socio-spatial configurations (following Kendon's studies on F-Formations) may help designers to understand and

encompass individual's behaviours, and consequently to enhance or suggest specific ones.

Objects represent the activators and the tools for certain therapies, enabling tactile or visual stimulation, triggering old memories (i.e. reminiscence), or allowing cognitive stimulation. Yet, they foster the enhancement of the fundamental social and cultural environment, important for people with dementia to continue to live their daily life with total engagement.

Environmental intangible qualities encounter odour, sound, climate and lights control. They can be modulated according to individual's needs and allow the activation of certain levels of comfort. They can also support specific therapies, allowing the activation of different environmental conditions which stimulate individual's senses.

Indeed, it is possible to visualize Therapeutic Habitat concept more in details, as in Fig. 22, highlighting some design goals correlated to each layer. Starting from the base of this scheme, architecture remains a permanent layer, which identifies functions, areas, and spatial layout of the interiors. In terms of design goals for the project, modification on this layer aims at facilitating orientation, provide a sufficient and logical differentiation between the spaces; all those modifications fit all the users, from people with dementia, to caregivers. Furniture layer defines the system of elements characterizing each space, or portion of space. These elements can create, or define, a micro environment within an architecture, adapting big portion of spaces to host different scenarios and different activities, without losing a spatial characterization. Through these elements, the environment can host visual and tactile stimuli to clearly communicate purpose and use, rituals taking place, cultural references and movable settings for different activities. Thus, the space can be rearranged in order to host larger or smaller groups, individual activities, or environmental stimuli. Objects are strictly connected to specific therapies, and act as enablers of well-being. They fill the environment, acting as tools independent from the space, but strictly connected to their meaning. They enhance the activation of a therapy, or enable people with dementia to release stress through a certain activity. On certain times they can be stowed, and activated only in case of need, according to

the persons' interests inhabiting the space during the day. Not all objects are suitable for everyone, but therapists can choose which ones most suit a person, according to preferences, habits, past social roles, cognitive capabilities and symptoms. In some cases they represent medium to establish a non-verbal communication between people with dementia and caregivers, and consequently releasing a sense of stress related to inability to communicate. Lastly, intangible environmental qualities work on the achievement of a general level of comfort, and the enhancement of certain stimuli coming from tangible objects. They are strictly correlated to senses and perceptions, which can be boosted up or softened through the use of smells, sounds and lights. They can soften certain symptoms, such as sundowning ones, attenuating some external stimuli that cause the discomfort related to this condition. The changes generated in the environment are intangible, and hardly visible, but they have a strong impact on the sensorial perception, and some reminiscence value. As designers, it is possible to modulate modifications and interventions on each layer of the system, in order to enhance certain effects, and diminish other. All the interventions should work according to the humans inhabiting the care spaces, to the current needs, cultural habits and experiences. The driven should be the person with dementia, in order to create a feasible and flexible habitat around him/her, to enhance quality of life and well-being.

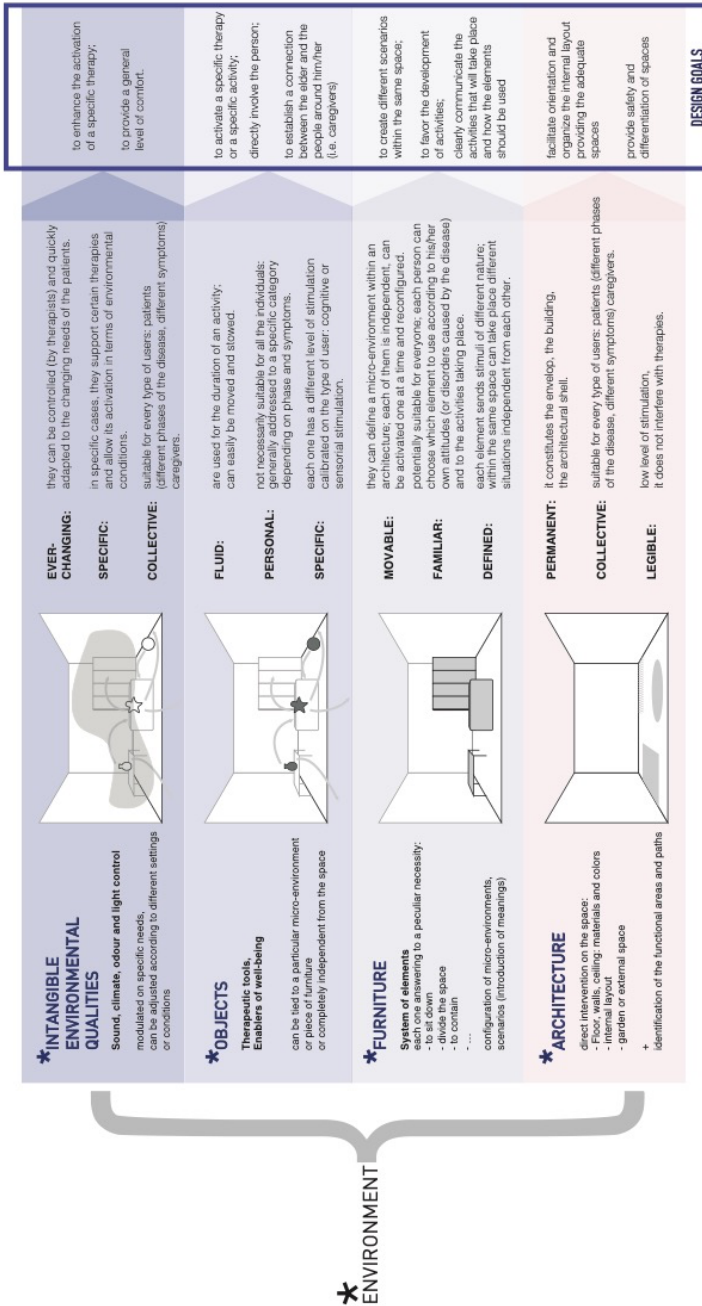


Fig. 22 - Therapeutic Habitat Model for dementia care

5.3. Therapeutic Habitat – General recommendations

This chapter contains a collection of general recommendations which represent crucial concepts in the design of therapeutic environments for people with dementia. Essential points that delineate the theoretical background necessary to understand the condition of living with dementia. As designers, it is crucial to empathically figure out the experience of living with dementia, and the basic and essential needs of people with dementia, in order to design an interesting, stimulating, comfortable and aesthetically pleasant environment for these fragile individuals and their caregivers. This awareness pass through the recognition of essential needs such as maintaining a high quality of life in the care environments, not scarifying beauty for ergonomic parameters. Both are essential, and they need a balance to reach high results. Moreover, to fortify independence and spontaneous interactions, as they enhance personal satisfaction. Engaging people with dementia in meaningful activities and in a rich social environment which stimulate the person, maintain him/her active, present, involved in the environment they are living in. All these concepts should work together in order to create the necessary premises to design and develop successful therapeutic care environments.

5.3.1. Quality of life as the main goal

Mainly, quality of life represents the sum of different subjective qualities. Moreover, without any doubt, quality of life represents a significant aspect of our life. Even more, when diagnosed of dementia, quality of life represents a fundamental issue, that requires high standards in terms of comfort, legibility, safety and beauty. Thus, mainly because there is yet no cure for dementia, a considerable attention has been paid by researchers, caregivers and medical professionals, to the achievement of quality of life for people with dementia. Quality of life issues doesn't involve only people with dementia, but also caregivers, as they represent the closest and bigger support for their health.

Concerning long-term care, quality of life could be taken for granted. Unluckily, in many cases the main purpose for certain interventions is not the achievement of a high standard in terms of quality of life. Sometimes, it also happens to such a sensitive area as the care of sick people, when it is given priority to a "technical" or "economical" purpose. Despite being a progressive condition that severely impairs a person's mental functioning, dementia doesn't affect emotions, feelings and mental well-being perception. Even when diagnosed of dementia, maintaining a good quality of life is possible. Health services should provide support to people with dementia, since the early stages of the disease, due to the fact that they can make big improvements on quality of life and address a wider range of quality of life issues. People with dementia clearly express a need for regular and continuative social interaction and this represents a significant benefit to their quality of life and social inclusion. A person's quality of life is influenced and mediated by a complex range of factors: gender, ethnicity and social class can be relevant factors. In the specific case of people with dementia, additional factors, such as stigma, stigma by association, and changes in the brain functioning may also play an important role. Still, there is no clear definition of quality of life. For example, it can be seen as an objective factor, and only related to the health status and health problems. If only these characteristics and their observation is taken into account, quality of life is likely to deteriorate as the condition progresses. On the contrary, if subjective aspects are taken into account in quality of life measurement, other factors, known as domains, are considered, and then it is likely to change significantly as the condition progresses but may not deteriorate in all domains. Active participation may change in time, and also may worsen, but care-receiving and acceptance may improve. The perception of beauty represents a significant subjective factor, difficult to define. But certainly, people with dementia do understand beauty, do feel it, and moreover, feel a sense of happiness and comfort when they are surrounded by beauty in the form of environments, nice landscape views, interesting palette of colours, and, for sure, pieces of art.

Accordingly, some main features are recognized as elements able to improve quality of life among people with dementia. Firstly, maintaining a certain level of **independence** can positively affect people with dementia's quality of life. Being able to go out, walk around, go shopping and cultivating personal hobbies can have a positive influence on people with dementia. It reinforces and enhances self-awareness in individuals with dementia, control over daily life, and enables them to feel more comfortable and confident on themselves. Allowing people with dementia living in long-term care facilities to freely choose daily schedule and activities to participate in, decreases in them the sense of being "hospitalized" in a hostile environment. Indeed, it is necessary to guarantee safety-conditions in order to enable people with dementia to maintain their independence. But, at the same time, it is important not to let safety concerns become prevalent, impairing person's independence. In fact, safety should not only be connected to the use of curved surfaces to avoid hurts, or to the use of handrails and cans. Safety should be understood as a "tool to enhance people with dementia's independence" in term of re-creating environmental conditions (camouflaged doors to avoid exit seeking, anti-glare surfaces, flat floors, etc.) that allow people with dementia to move around, freely behave as they want, and enjoy the environment around them.

Lastly, but maybe it is the most important aspect affecting quality of life, **understanding of dementia, towards overcoming the stigma**. The diagnosis of dementia represents not only the detection of a disease, but is also associated with a consistent stigma, partly caused by cultural beliefs but also due to the inappropriate behaviours that may occur to people with dementia. Stigma also leads to behaviours that negatively affect quality of life, such as avoiding asking for help and assistance or lack of acknowledgement about dementia, consequently decreasing life standards. One main problem encountered by caregivers, is the stigma not only associated to dementia, but also the stigma by association that causes prejudice and stereotypes also addressed to them. This attitude of society prevents caregivers from looking for available services and care support.

The first step towards reducing stigma comprises the understanding of the phenomenon, its consequences and negative influences. A further step consists in educating the families towards the overcoming of stigma and the available support services. In fact, general education and social awareness may help to reduce stigma against dementia. People with dementia, and their caregivers, should feel part of a society that understands the fragility of this condition, and tries to support it, offering services and help. Reducing stigma should encourage people with dementia and their carers to be more confident about the illness, and to seek help when needed, looking for the many services offered for dementia care.

5.3.2. *Dignity, over all*

It is important to remind that people with dementia should be treated with respect and that their dignity has to be maintained, in every moment, during the onset of their disease. Despite his/her illness, a person with dementia is still a unique and valuable human being. Preserving and enhancing the dignity of people with dementia is required also for caregivers, so that they can live a positive and normal life. For example, dignity issues involve caregivers actively caring for people with dementia. Supporting them in basic daily life activities, can lead caregivers to take a parental tone. This can come across as condescending or make the person with dementia feel like a child, diminishing his/her self-esteem. Using a proper tone, not getting angry when repeatedly asked for something helps people with dementia to maintain their dignity, without treating them as children, or less valued people. Not only caregivers are responsible for dignity, also professionals and nursing staff should take care of their patients' dignity. Staff should be trained to respectfully approach people with dementia, sometimes validating their behaviours, managing those ones recognized "improper" in a gentle way, without stigmatizing. Moreover, personal experiences, family relationships, hobbies, and beliefs make every individual the unique one he/she is. Knowing about some of these personal details can help staff understand better people with dementia they are caring for and provide person-centred care

which recognises their personal needs and ensures their preferences and aspirations are valued. Moreover, dignity also involves also a broader part of society, connected to dementia care and its management. An example can be found in the furniture catalogues for nursing homes, or in general, in the healthcare furniture market. A fast-growing market sector, that, in many cases, leans on aesthetic principles defined disarming, offering a “vision of the world” that would be hardly accepted in a domestic environment. This could be explained by the prevalence of other parameters, as economical ones and strict regulations that take into account only safety. Aiming at preserving the dignity and quality of life, those parameters should not have such a predominant role. Dignity is not one of the predominant features in a project/design that aims only at protecting people from bumps, without even looking after such exhausting processes an environment without quality can bring. Sensitive, fragile and often unprotected people, such as people with dementia should be able to live in pleasant, comfortable and non-sterile, inhospitable environments, even if hosted in a nursing home or other related facilities. A pleasant environment enhances self-satisfaction, and recognition of the living context.

5.3.3. Meaningful daily living activities

Meaningful activities are coordinated, or spontaneous, actions typical of a normal daily life. It is important to offer a wide variety of daily activities that people with dementia can freely decide to join in order to respect individuals’ personal interests and habits, encouraging them in expressing their feelings and concerns. In fact, people with dementia, even if affected by a disease, still have a strong feeling of their past habits and lifestyle, that should be preserved in long-term care environments. Daily activities can range from helping in housekeeping (supported by the staff), commonly deciding the menu for the meals, lay the table, prepare the dishes, suggest and discuss receipts, discussion of newspapers news, knitting, teatime with other residents, watching old films, helping on farming or harvesting, or do the grocery along with staff members.

Activities should occur, as much as possible, in a “setting” that looks like the right kind of place for that activity. Multi-purpose rooms enhance disorientation in people with dementia, due to the fact that multiple activities take place in the same space. Which setting is selected should be based on residents’ history, culture, lifestyles and should provide the right work surface. Daily activities enhance trust among residents and staff, and also represent an opportunity of conversation and involvement of family members. Daily living activities should be part of a routine, done at the same time and in the same order each day. The aim is to allow people with dementia to continue to live a normal life, filled of activities that were familiar for them and mean something, and to be seen by others as a productive and vital member of one’s community. Designing daily life around habits and past lifestyles gives people pleasure and foster the use of people with dementia’s skills and abilities. It also adds variety and interest, and is stimulating for people with dementia, reducing boredom, anxiety, stress and frustration.

Roles and lifestyles, typical of past lives of people with dementia, should be investigated by staff members, in order to provide activities that resembles them. It allows staff members to really get to know the residents they are caring for and help them to better understand their behaviours. To maintain identity and foster self-esteem, it’s important for people with dementia to have engaging social relations with relatives, friends, residents and staff. A variety of spaces, from individual and personal, to spaces for small-groups conversation, to larger community spaces, should be provided in a care facility, to allow people with dementia to choose between different living situations, throughout the day. **Engagement with friends, family members and staff** represent an important opportunity to maintain and foster relationships, create a sense of trust and intimacy, and feel part of a community.

5.3.4. Support the creation of a community

The **social environment**, intended as the meaningful social relationships that surround people with dementia, including family

members, caregivers, other residents, relatives, friends, etc. These **relationships** are proved to have a positive influence on quality of life, creating a therapeutic milieu around the person with dementia, that supports him/her, avoiding the sensation of being useless for the rest of society, and devaluated. As people with dementia, and moreover their caregivers, are subjected to be stigmatized, these social relationships can be damaged. Stigma can lead caregivers to avoid social connections, due to the negative image associated to dementia by a consistent part of society. Hence, it is important to preserve them, in order to maintain a certain level of involvement of people with dementia into society, self-affirmation, and stress-relieve of caregivers. In fact, meaningful social interactions, that foster familiar relationships consolidated since before dementia diagnoses, help people with dementia to maintain their sense of identity.

Therefore, these relationships are the main support for people with dementia to be able to express their concerns, feelings, etc. as caregivers and family members represent the best interpreter of their gestures, when the disease impair the ability to correctly use words. Yet, they represent an important source of information for medical professionals and nursing staff, providing long-term care for dementia, as patients' family members can help them in understanding the individual's habits, interests, cultural values, fundamental elements to be understood in order to provide a tailored care. The main purpose of maintaining strong familiar and social relationships is to avoid a sense of being lonely and useless, that in many cases, is felt by people with dementia living in long-term facilities. Yet, a decreased quality of life is associated to a poor self-esteem. People with dementia often feel useless, due to their impairments, for their families, and moreover, for the community in which they used to live. Social relationships support people with dementia to valorise their abilities and qualities, to feel part of a small community, such as their family, as well as a bigger one, represented by the society. In fact, make people with dementia feel part of the neighbourhood they are living in, of course positively affects them, enhancing their self-esteem. Moreover, it helps to maintain as normal as possible their daily routine.

5.4. Therapeutic Habitat projects

Within our research team Lab.I.R.Int. (Laboratory of Innovation and Research about Interiors) we are pursuing a reflection on Interior Design discipline, through the definition of its tool and its skill, its intrinsic competencies and the ones acquired in a multidisciplinary exchange. This process of re-reading the discipline gave birth to a centripetal vision of the Interior Design System: in the main core there is the culture of "living" to be understood in a broad sense. Starting from this perspective, since 2005, we are actively researching on the influence of interiors on the well-being and perception of people with dementia. At the beginning of 2018, our research group Lab.I.R.Int, together with Genera Onlus – an organization active in the care of elderly with dementia, founded an experimental living laboratory for the development of environmental solutions for dementia care, named GRACE_Lab. GRACE_Lab is located in Figino, a peripheral neighbourhood of Milan, inside the spaces of GRACE, a day care centre for dementia. GRACE hosts and takes care of 30 elderly with dementia, providing them daily care assistance 6 days a week. GRACE_Lab is an experimental laboratory involving designers/researchers, therapists, medical professionals and caregivers. Its aim is to design and develop environmental solutions, objects and services to enhance the effectiveness of non-pharmacological therapies for dementia, dementia care and quality of life within day care centres and domestic spaces.

In the day care center therapists work together with designers in order to develop environmental solutions to enhance the efficacy of care methods and improve the well-being of the patients. Designers can observe and interact with the patients, helped by therapists and caregivers; therapists can indicate to the designers the daily life needs of the patients. The result is a set of design artefacts, designed and tested through the creation (*conditio sine qua non*) of a strong relationship between designers, therapists, and carers in order to develop more effective environmental solutions and services.

Since 2018 GRACE_Lab developed several projects, mostly focused on the enhancement of specific non-pharmacological therapies within the day care centre GRACE, in Milan. In

GRACE_Lab, prototypes of products, environmental solutions and services are developed and created. In addition, the team follows and supervises the work of several undergraduate students who develop degree thesis, the result of which has been realized and applied within GRACE day care center. In 2020 GRACE_Lab has been awarded with Compasso d'Oro, Menzione d'Onore, for its value in design research.

The approach followed goes along with the Therapeutic Habitat model previously described in this book. We can consider those projects, as the natural and applied outcome of a theoretical model developed during years of research.

Hereby, I present as an applied case study, one of the designs developed within GRACE_Lab.

5.4.1. Grace Living Room

During 2019, within the context of GRACE_Lab, together with my research group colleagues and some therapists, I had the chance to design and develop an environmental device that contains three different domestic scenarios. The outcomes of this study are the result of a synergic collaboration between carers at all levels; from family caregivers to medical professionals, and designers/researchers.

Firstly, we conducted a series of interviews and focus groups focused on the identification of “stress release behaviours”, according to the patients’ symptoms and past habits. Therapists and medical professionals of GRACE daily care centre agreed that most of the patients would benefit from activities like rummaging and performing very simple gestures resembling house duties (i.e. folding tissues or reordering clothes). Moreover, therapists and medical professionals agreed on the importance of social rituals as opportunities of engagement for all residents, enhancement of self-esteem, identity, and sense of belonging. Starting from the analysis of the abovementioned “stress release behaviours” and common habits, the aim of the design intervention has been to define a system of environmental devices in the form of “sensorial corners” and environmental features, that could offer to people with dementia opportunities to release stress through reassuring gestures.

GRACE_Lab team agreed on the creation of a “house duties room”, later named Grace Living Room, following the principles of occupational therapy. The room will contain an environmental system made up of pieces of furniture resembling a kitchen closet, living room libraries and bedroom drawers, which can be activated on at a time by therapists. Those three corners will allow the patients to perform activities resembling house duties, in small groups or with a single elderly, in order to release stress, anxiety and agitation, through performing well known simple gestures.

Each scenario can be activated by therapists at a time and contains a set of objects used to trigger nostalgic memories associated with wooden illustrated panels on the walls. Sliding panels unveil one scenario, objects are contained inside it or disposed on the central table and the corresponding panels are placed on the walls. The three scenarios resemble a kitchen, a living room and a bedroom.



Fig. 23 - Functional representation of the three scenarios contained in Grace Living Room

The activities, managed by the therapists, that take place into this environment, are considered Occupational Therapy interventions based on daily life activities. Those activities take into account the self-perception of the patients with respect to their needs, interests, beliefs, habits, social roles and skills. Daily activities enhance trust among residents and staff, and also represent an opportunity of conversation and involvement of family members. Daily activities can range from resembling housekeeping actions, lay the table, prepare some simple dishes, suggest and discuss receipts, discussion of newspapers news, watching old albums and photos, re-order clothing, knitting, re-order objects, fold tissues, etc. Daily activities enhance trust among residents and staff, and also represent an opportunity of conversation and involvement of family members. The objects

contained in every scenario add a wide variety of external stimuli (such as sounds, music, images) tailored on the patients' past experiences. Thus, they can trigger nostalgic recollection due to their affective intrinsic qualities, widening the horizon to different innovative ways of engaging with people with dementia. Those three scenarios allow the patients to perform activities resembling house duties, in small groups or with a single elderly, in order to release stress, anxiety and agitation, through performing well-known simple gestures.



Fig. 24 - Photographs of Grace Living Room

The environmental system named Grace Living Room is not intended to be a replacement of a real living room. This system acts as a therapeutic environmental system enabled by the therapists, with specific groups of patients. Patients experiencing wandering or agitation episodes are conducted in the room where one of the scenarios has been activated, according to the specific group or patient. During the various evaluations the elderly spontaneously started to interact with the furniture and the objects. To maintain identity and foster self-esteem, it's important for people with dementia to have engaging social relations with relatives, friends, residents and staff. Most of the times they started to reminisce together, talking about past pleasant experiences, telling each other stories and anecdotes, playing together resembling past experiences. Sometimes they became emotionally affected by some objects that were able to trigger past pleasant memories. During the design process we could discern three purposes for Grace Living Room. These include

increasing the elderly's social interaction, calm down agitation or wandering episodes enabling people with dementia to perform daily life activities, engaging elderly through reminiscence interventions and the use of nostalgic elements as triggers for pleasant memories and emotional affection.

Conclusions

In the advanced stages of Alzheimer's Disease, when the person is no longer able to manage autonomously his/her life, it becomes necessary a transition from "home" to a facility with health and daily care services. In this new living situation, to guarantee the well-being of the person, it is necessary to preserve personal spaces, to allow the customization of the rooms, and the common areas should take into account residents' memories and living habits

If we think of a space that can "take care of the person" perhaps we need to think about a space focused on the people who inhabit it. It becomes crucial to analyze what can bring together people who share and inhabit the same place. First of all, the traditions typical of the area, which foster social interactions into social rituals, the collective sharing of memories of the territory, the passage of time, the cyclical nature of day and night, the seasons, each one with different peculiarities and shared rituals. But what definitely brings people together is the **sensorial dimension**, are the senses, and then the place to bring together people must become a place where the senses live. Create a place where people gather fragments of life, where people can stop, think and be emotional. Where they can look, listen, smell, and touch the senses that live within them, the emotions. In dementia care, environmental stimuli affect different sensory areas and all common areas used by patients. It is fundamental to start from the concept of temporality linked to the concept living in a space that favours the daily rituals. Designing therapeutic spaces means creating moments of stimulation and relaxation, pauses and movement in patients' everyday life. It means creating a space where furniture and objects

stimulates the memories, the traces of the past, a space that becomes a habitat, that activates patients' senses and, at the same time, facilitate relaxation, in order to decrease patients' agitation.

A "therapeutic habitat" could strike the right balance between memory spaces and therapeutic areas. Sensory environments allow us to care, to listen, to accompany, to be there, without being invasive with proper respect for the patients' present and the past life. In the process of care the balance is important. The alternation between full and empty spaces is an integral part of our personal and social relationships. If we don't provide alternation, filling or, conversely, emptying all from actions, gestures and words, the activation of meaningful communications and relationships is extremely difficult. Listening exists in the alternation between pause and actions. In pauses and silences, a breath can take on meaning, both as positive and/or negative. The Therapeutic Habitat model draws on the natural flow of life, where everything is marked by the alternation between full and empty moments, between pause and action. It is the metaphor of the meeting, where the break (empty) fills with sense and meaning the waiting (full). In the physical space, in social relations, in the therapeutic relationship, the alternation between pause and action gives harmony and balance. Similarly, filling the environments of a health facility with an excessive number of visual, tactile, and auditory stimuli, can create in people with Alzheimer's disease disorientation and confusion. For example, a light and a chair in a hallway of a long-term care facility, arranged between two empty spaces, are full of meanings and may favor the patient who wanders the opportunity of a break. These years of work in continuous contact with the patients and their family members, and often with a sense of helplessness felt by the operators, have underlined something fundamental: take care of the patients means taking care, at the same time, of the family, and take care of the operators, respecting their professionalism but also understanding and taking into account their relational and psychological daily difficulties. A proper balanced synergy between non-pharmacological therapies and environmental therapies promotes the improvement of the patients' overall quality of life. It is important to allow the right therapeutic intervention needed to address the acute phase of the disorder, through non-pharmacological therapies, through

therapeutic environments and sensory areas, so that it becomes possible to give a positive response for the management of behavioural disorders in patients with dementia. The environment can compensate or otherwise accentuate cognitive deficits and therefore affect functional status and behaviour. The fragile balance of the person with cognitive deficits can easily be broken. Sensory deprivation or excess of stimuli, the difficulty to orientate in an unfamiliar environment, and the lack of recognition of their needs are factors that affect the degree of attention or confusion of the patient. The environment that accommodates the patient with dementia, and its organization, should help the patient to orientate in space and time. In the theoretical model described in this book, the therapeutic environment is characterized by flexibility (adaptability to different situations), customization of space and time (adaptability to different patients' needs and over time changes of needs in the same patient), proposed activities according to the subject's capabilities (observation of the residual capabilities), sensory stimulation that can be activated on purpose, and active presence of family members. These features can be found in all the care process, from the welcome, to the approach, the therapeutic relationship, and in the selected environmental stimuli. Specifically, the environment becomes characterized by the introduction of sensory corners, proper use of colours, lights, intangible elements, sensory stimuli and therapeutic tools for non-pharmacological therapies. All these features are already present in some care pathways of patients with dementia, the novelty is a methodological and therapeutic organization of the different paths, in a system of overlapping layers, with different ranges of intervention and temporalities. All these spaces and stimuli are certainly interactive, but this does not mean that the interaction should be sought at all costs, "the interaction is an opportunity" facilitated by people working in the field and by the dedicated spaces, in order to provide a high level of comfort, dignity, enjoyment and satisfaction, for the persons inhabiting them.

Bibliography

- Algase, D. L., Beck, C., Kolanowski, A., Whall, A., Berent, S., Richards, K., & Beattie, E. (1996), "Need-driven dementia-compromised behavior: An alternative view of disruptive behavior", *American Journal of Alzheimer's Disease and Other Dementias*, 11,6: 10-19.
- Alzheimer's Association (2011), "2011 Alzheimer's disease facts and figures", *Alzheimer's & dementia: the journal of the Alzheimer's Association*, 7, 2: 208.
- Alzheimer's Disease International (2009), *World Alzheimer Report*, Alzheimer's Disease International, London.
- Alzheimer's Disease International (2015), *World Alzheimer Report*, Alzheimer's Disease International, London.
- Angermeyer, M. C., Schulze, B., & Dietrich, S. (2003), "Courtesy stigma: A focus group study of relatives of schizophrenia patients", *Social Psychiatry Psychiatric Epidemiology*, 38: 593-602.
- Annerstedt, L. (1994), "An attempt to determine the impact of group living care in comparison to traditional long-term care on demented elderly patients", *Aging Clinical and Experimental Research*, 6, 5: 372-380.
- Annerstedt, L. (1993), "Development and consequences of group living in Sweden: a new model of care for the demented elderly", *Soc. Sci. Med.*, 37, 12: 1529-1538.
- Antonovsky, A. (1996), "The salutogenic model as a theory to guide health promotion", *Health promotion international*, 11,1: 11-18.
- Batcho, K. I. (1998), "Personal nostalgia, world view, memory, and emotionality", *Perceptual and Motor Skills*, 87,2: 411-432.
- Biamonti, A. (2018), *Design & Alzheimer: dalle esperienze degli Habitat Terapeutici al modello GRACE*, FrancoAngeli, Milano.
- Biamonti, A. (2015), *Design e Interni: riflessioni su una disciplina in evoluzione tra formazione e professione*, FrancoAngeli, Milano.
- Biamonti, A., Gramegna, S.M., & Imamogullari, B. (2014), "A design experience for the enhancement of the quality of life in people with alzheimer's disease", *Cumulus Spring Conference Proceedings 2014*, Aveiro.
- Branzi, A. (2009), *Gli strumenti non esistono. La dimensione antropologica del design*, Johan&Levi Editore, Milano.

- Branzi, A. (2006), *Weak and Diffuse Modernity: The World of Projects at the beginning of the 21st Century*, Skira, Milano.
- Brawley, E. C. (2008), *Design innovations for aging and Alzheimer's: Creating caring environments*, John Wiley & Sons, NJ.
- Brawley, E. C. (1997), *Designing for Alzheimer's disease: Strategies for creating better care environments*, Vol. 1, John Wiley & Sons, NJ.
- Brawley, E. (1992), "Alzheimer's disease: Designing the physical environment", *American Journal of Alzheimer's Disease and Other Dementias*, 7,1: 3-8.
- Brohan, E., Slade, M., Clement, S., & Thornicroft, G. (2010), "Experiences of mental illness stigma, prejudice and discrimination: a review of measures", *BMC Health Services Research*, 10:80.
- Bowles, J. R. (1986), "The Introduction of a Behavioural Approach into the Management of the Confused and Disturbed Elderly in a Nursing Home", *Australian Journal on Ageing*, 5,1: 25-28.
- Burns, A., & Zaudig, M. (2002), "Mild cognitive impairment in older people", *The Lancet*, 360,9349: 1963-1965.
- Campion, E. W. (1996), "When a mind dies", *New England Journal of Medicine*, 334,12: 791-792.
- Canter, D. V., & Canter, S. (1979), *Designing for therapeutic environments: A review of research*, John Wiley & Sons, NJ.
- Caplan, R. D. (1983), "Person-environment fit: Past, present, and future", *Stress research*, 35: 78.
- Caplan, R. D., & Harrison, R. V. (1993), "Person-Environment Fit Theory: Some History, Recent Developments, and Future Directions", *Journal of Social Issues*, 49,4: 253-275.
- Cappeliez, P., Guindon, M., & Robitaille, A. (2008), "Functions of reminiscence and emotional regulation among older adults", *Journal of Aging Studies*, 22(3), 266-272.
- Carpenter, S.M., Peters, E., Västfjäll, D., & Isen, A.M. (2013), "Positive feelings facilitate working memory and complex decision making among older adults", *Cognition & Emotion*, 27,1: 184-92.
- Chalfont, G. E., & Rodiek, S. (2005), "Building edge: An ecological approach to research and design of environments for people with dementia", *Alzheimer's Care Today*, 6,4: 341-348.
- Chaudhury H, Mahmood A, Valente M. (2005), "Advantages and disadvantages of single-versus multiple-occupancy rooms in acute care environments: a review and analysis of the literature", *Environmental Behaviour*, 37,6: 760-786.
- Codinhoto, R., Tzortzopoulos, P., Kagioglou, M., Aouad, G., & Cooper, R. (2009), "The impacts of the built environment on health outcomes", *Facilities*, 27, 3/4: 138-151.
- Cody, M., Beck, C., & Svarstad, B. L. (2002), "Mental health services in nursing homes: Challenges to the use of nonpharmacologic interventions in nursing homes", *Psychiatric Services*, 53,11: 1402-1406.
- Cohen, U., & Day, K. (1993), *Contemporary environments for people with dementia*, Johns Hopkins University Press, Baltimore.

- Cohen-Mansfield, J., & Bester, A. (2006), "Flexibility as a management principle in dementia care: The Adards example", *The Gerontologist*, 46,4: 540-544.
- Cohen-Mansfield, J., Libin, A., & Marx, M. S. (2007), "Nonpharmacological treatment of agitation: a controlled trial of systematic individualized intervention", *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 62,8: 908-916.
- Cohen-Mansfield, J., & Werner, P. (1998), "The effects of an enhanced environment on nursing home residents who pace", *The Gerontologist*, 38,2: 199-208.
- Colombo, M. (2011), "Envisions and pitfalls in suitable environments for people with dementia", *Gerontechnology*, 10,2: 121-122.
- Corrigan, P. W. (2005), *On the Stigma of Mental Illness: Practical Strategies for Research and Social Change*, APA Books, Washington, D.C.
- Corrigan, P.W., & Watson, A.C. (2002), "Understanding the impact of stigma on people with mental illness", *World Psychology*, 1,1: 16-20.
- Crocker, J., Major, B., & Steele, C. (1998), "Social stigma", In Gilbert, D., Fiske, S.T., & Lindzey, G. (Eds.), *The Handbook of Social Psychology*, McGraw-Hill, New York.
- Cummings, J. L., Mega, M., Gray, K., Rosenberg-Thompson, S., Carusi, D. A., & Gornbein, J. (1994), "The Neuropsychiatric Inventory comprehensive assessment of psychopathology in dementia", *Neurology*, 44,12: 2308-2308.
- Davis, S., Byers, S., Nay, R., & Koch, S. (2009), "Guiding design of dementia friendly environments in residential care settings: Considering the living experiences", *Dementia*, 8, 2: 185-203.
- Dawis, R. V. (2002), "Person-environment-correspondence theory", *Career choice and development*, 4: 427-464.
- Day, K., Carreon, D., & Stump, C. (2000), "The therapeutic design of environments for people with dementia a review of the empirical research", *The Gerontologist*, 40,4: 397-416.
- Del Nord, R. (2003), *Architecture for Alzheimer disease*, Alinea Editrice, Firenze.
- Denscombe, M. (2002), The good research guide: For small-scale social research projects, *Idea*, 35,4: 55-68.
- Devlin, A. S., & Arneill, A. B. (2003), "Health care environments and patient outcomes a review of the literature", *Environment and behavior*, 35,5: 665-694.
- Dickinson, J. I., McLain-Kark, J., & Marshall-Baker, A. (1995), "The effects of visual barriers on exiting behavior in a dementia care unit", *The Gerontologist*, 35,1: 127-131.
- Farina, A., Fischer, J. D., & Fischer, E. H. (1992), "Societal Factors in the Problems Faced by Deinstitutionalized Psychiatric Patients", In Fink, P. J., & Tasman, A. (Eds.), *Stigma and mental illness*, American Psychiatric Press, Washington, DC, 167-184.
- Ferrero-Arias, J., Goñi-Imízcoz, M., Gonzalez-Bernal, J., Lara-Ortega, F., da Silva-González, Á., & Díez-Lopez, M. (2011), "The efficacy of nonpharmacological treatment for dementia-related apathy", *Alzheimer Disease & Associated Disorders*, 25, 3: 213-219.

- Fleming, R., & Bennett, K. (2014), *Environments that enhance dementia care: issues and challenges*, Elsevier, Australia.
- Fleming, R., & Bowless, J. (1987), "Units for the confused and disturbed elderly: Development, design, programming and evaluation", *Australian Journal on Ageing*, 6,4: 25-28.
- Fleming, R., & Purandare, N. (2010), "Long-term care for people with dementia: environmental design guidelines", *International Psychogeriatrics*, 22,7: 1084-1096.
- French, J. R., Caplan, R. D., & Van Harrison, R. (1982), *The mechanisms of job stress and strain*, John Wiley, New York.
- French, J. R., Rodgers, W., & Cobb, S. (1974), "Adjustment as person-environment fit", *Coping and adaptation*, 1: 316-333.
- Gammonley, J., & Yates, J. (1991), "Pet projects: animal assisted therapy in nursing homes", *Journal of gerontological nursing*, 17,1: 12-15.
- Gibson, F. (2006), *Reminiscence and recall: A practical guide to reminiscence work*, Age UK, London.
- Goffman, E. (1963), *Stigma: Notes on a spoiled identity*, Touchstone, New York.
- Goffman, E. (1961), *Encounters: Two studies in the sociology of interaction*, Touchstone, New York.
- Gräbel, E., Wiltfang, J., & Kornhuber, J. (2003), "Non-drug therapies for dementia: an overview of the current situation with regard to proof of effectiveness", *Dementia and Geriatric Cognitive Disorders*, 15, 3: 115-125.
- Grealy, J., & McMullen, H. (2008), *Dementia care: a practical photographic guide*, John Wiley, New York.
- Hammer, R. M. (1999), "The lived experience of being at home. A phenomenological investigation", *Journal of Gerontological Nursing*, 25, 10-18.
- Han, A., Radel, J., McDowd, J. M., & Sabata, D. (2016), "Perspectives of people with dementia about meaningful activities: a synthesis", *American Journal of Alzheimer's Disease & Other Dementias*, 31, 2: 115-123.
- Harmer, B. J., & Orrell, M. (2008), "What is meaningful activity for people with dementia living in care homes? A comparison of the views of older people with dementia, staff and family carers", *Aging and Mental health*, 12,5: 548-558.
- Harrison, R. V. (1978). "Person-environment fit and job stress", *Stress at work*, 8,6: 175-205.
- Hartig, T., Mang, M., & Evans, G. W. (1991), "Restorative effects of natural environment experiences", *Environment and behavior*, 23, 1: 3-26.
- Hearthstone Alzheimer Care (2010), *Living the "I'm Still Here" lifestyle*, Hearthstone Alzheimer Care, Woburn.
- Hobson, J. A. (1998), *Consciousness*, Scientific American Library, New York.
- Huisman, E. R. C. M., Morales, E., Van Hoof, J., & Kort, H. S. M. (2012), "Healing environment: A review of the impact of physical environmental factors on users", *Building and Environment*, 58: 70-80.
- Hulme, C., Wright, J., Crocker, T., Oluboyede, Y., & House, A. (2010), "Non-pharmacological approaches for dementia that informal carers might try or

- access: a systematic review”, *International journal of geriatric psychiatry*, 25, 7: 756-763.
- Ismail, S. (2017), *Nostalgia as a psychological resource for people with dementia* (Doctoral dissertation, University of the West of England).
- Jenkins, C., & Smythe, A. (2013), “Reflections on a visit to a dementia care village: Catharine Jenkins and Analisa Smythe discuss what the UK can learn from a Dutch model of care, where residents live in an environment carefully crafted to emulate their previous lifestyles”, *Nursing older people*, 25, 6: 14-19.
- Jennings, J. (2007), “A case for a typology of design: the interior archetype project”, *Journal of Interior Design*, 32, 3: 48-68.
- Jonas, W. B., & Chez, R. A. (2004), “Toward optimal healing environments in health care”, *Journal of Alternative & Complementary Medicine*, 10, (Suppl. 1): 22-36.
- Jones, M. (1999), *Gentlecare: Changing the experience of Alzheimer's disease in a positive way*, Hartley & Marks Publishers, Vancouver.
- Kane, R. L., Ouslander, J. G., & Abrass, I. B. (1994), *Essentials of Geriatric*, McGraw-Hill, New York.
- Kaplan, R., & Kaplan, S. (1989), *The experience of nature: A psychological perspective*, Cambridge University Press, Cambridge.
- Kendon, A. (1990), *Conducting interaction: Patterns of behavior in focused encounters*, Cambridge University Press, Cambridge.
- Kennan, H. (2014), “People living with dementia and the built environment”, *Australian Journal of Dementia Care*, <https://journalofdementiacare.com/people-living-with-dementia-and-the-built-environment/> Last consultation: 02/02/2021.
- Killick, J., & Allan, K. (1999), “The arts in dementia care: tapping a rich resource”, *Journal of Dementia Care*, 7: 35-38.
- Kinsella, K. G., & Phillips, D. R. (2005), “Global aging: The challenge of success”, *Population Reference Bureau*, 60, 1: 3-5.
- Kitwood, T. (1997), *Dementia reconsidered: The person comes first*, Open University Press, London.
- Kristof, A. L. (1996), “Person-organization fit: An integrative review of its conceptualizations, measurement, and implications”, *Personnel psychology*, 49, 1: 1-49.
- Kulik, C. T., Bainbridge, H. T., & Cregan, C. (2008), “Known by the company we keep: Stigma-by-association effects in the workplace”, *Academy of Management Review*, 33, 1: 216-230.
- La Vigna, G., & Donnellan, A. (1986), *Alternative to Punishment: Solving Behavior Problems with Non-aversive Strategies*, Irvington, New York.
- Lawton, M. P. (1991), “A multidimensional view of quality of life in frail elders. The concept and measurement of quality of life in the frail elderly”, *Academic Press*, 91, 1: 4-27.
- Leichsenring, K., Strumpel, C., & Group, S. (1998), *The Use of Small Housing Units for Older Persons Suffering from Dementia*, European Centre for Social Welfare Policy and Research, Eurosocal Reports, Wien.

- Livingston, J. D., & Boyd, J. E. (2010), "Correlates and consequences of internalized stigma for people living with mental illness: A systematic review and meta-analysis", *Social science & medicine*, 71, 12: 2150-2161.
- Locke, E. A. (1976), "The nature and causes of job satisfaction", *Handbook of industrial and organizational psychology*, 1: 1297-1343.
- Lyman, K. A. (1989), "Day care for persons with dementia: The impact of the physical environment on staff stress and quality of care", *The Gerontologist*, 29, 4: 557-560.
- Malmberg, B., & Zarit, S. H. (1993), "Group homes for people with dementia: a Swedish example", *The Gerontologist*, 33, 5: 682-686.
- Marshall, M. J., Brown, M., Stewart, S., Hoskins, G., Page, S., & Laurie, C. (1999), *Just Another Disability: Making Design Dementia Friendly: Tools for the Future Dementia Services Development Centre*, University of Stirling, Stirling.
- Marshall, M. J., & Hutchinson, S. A. (2001), "A critique of research on the use of activities with persons with Alzheimer's disease: A systematic literature review", *Journal of advanced nursing*, 35, 4: 488-496.
- Marshall, P., Rogers, Y., & Pantidi, N. (2011), "Using F-formations to analyse spatial patterns of interaction in physical environments", *Proceedings of the ACM 2011 conference on Computer supported cooperative work*, 445-454.
- McAllister, C. L., & Silverman, M. A. (1999), "Community formation and community roles among persons with Alzheimer's disease: a comparative study of experiences in a residential Alzheimer's facility and a traditional nursing home", *Qualitative Health Research*, 9, 1: 65-85.
- Melin, L., & Göttestam, K. G. (1981), "The effects of rearranging ward routines on communication and eating behaviors of psychogeriatric patients", *Journal of applied behavior analysis*, 14, 1: 47-51.
- Millen N, Walker C., (2002), "Overcoming the stigma of chronic illness: strategies for normalisation of a "spoiled identity", *Health Sociology Review*, 10, 2: 89-97.
- Mitchell, S. L., Black, B. S., Ersek, M., Hanson, L. C., Miller, S. C., Sachs, G. A., ... & Morrison, R. S. (2012), "Advanced dementia: state of the art and priorities for the next decade", *Annals of Internal Medicine*, 156, 1: 45-51.
- Miyashiro, M. R. (2011), *The empathy factor: your competitive advantage for personal, team, and business success*, Puddledancer Press, Encinitas.
- Mooney, P., & Nicell, P. L. (1992), "The importance of exterior environment for Alzheimer residents: Effective care and risk management", *Healthcare management forum*, 5, 2: 23-29.
- Murphy, A., Kowal, P., Albertini, M., Rechel, B., Chatterji, S., & Hanson, K. (2018), "Family transfers and long-term care: An analysis of the WHO Study on global AGEing and adult health", *The Journal of the Economics of Ageing*, 12: 195-201.
- Namazi, K. H., Rosner, T. T., & Calkins, M. P. (1989), "Visual barriers to prevent ambulatory Alzheimer's patients from exiting through an emergency door", *The Gerontologist*, 29, 5: 699-702.

- Neary, D., Snowden, J. S., Gustafson, L., Passant, U., Stuss, D., Black, S. A., ... & Boone, K. (1998), "Frontotemporal lobar degeneration A consensus on clinical diagnostic criteria", *Neurology*, 51, 6: 1546-1554.
- NICE/SCIE (2006), *Dementia: Supporting people with dementia and their carers in health and social care*, TSO, London.
- Norman, D. A. (1988), *The psychology of everyday things*, Basic books, New York.
- Olazarán, J., Reisberg, B., Clare, L., Cruz, I. Peña-Casanova, J., Del Ser, T. (2010), "Non-pharmacological therapies in Alzheimer's disease: a systematic review of efficacy", *Dementia and Geriatric Cognitive Disorders*, 30: 161-178.
- Ostroff, C., & Schulte, M. (2007), "Perspectives on Organizational Fit", *SIOP Organizational Frontiers Series*, 3-69.
- Phelan, J. C., Bromet, E. J., & Link, B. G. (1998), "Psychiatric illness and family stigma", *Schizophrenia Bulletin*, 24: 115-126.
- Phinney, A., Chaudhury, H., & O'Connor, D. L. (2007), "Doing as much as I can do: The meaning of activity for people with dementia", *Ageing and Mental Health*, 11, 4: 384-393.
- Poey, J. L., Burr, J. A., & Roberts, J. S. (2017), "Social connectedness, perceived isolation, and dementia: does the social environment moderate the relationship between genetic risk and cognitive well-being?", *The Gerontologist*, 57, 6: 1031-1040.
- Powell, J. L. (2010), "The power of global aging", *Ageing International*, 35,1: 1-14.
- Power, G. A. (2014), *Dementia beyond disease: Enhancing well-being*, Health Professions Press Inc., New York.
- Prince, M., Bryce, R., Albanese, E., Wimo, A., Ribeiro, W., & Ferri, C. P. (2013), "The global prevalence of dementia: a systematic review and metaanalysis", *Alzheimer's & Dementia*, 9, 1: 63-75.
- Prince, M., Comas-Herrera, A., Knapp, M., Guerchet, M., & Karagiannidou, M. (2016), *World Alzheimer Report 2016: Improving Healthcare for People Living with Dementia: Coverage, Quality and Costs Now and in the Future*, Alzheimer's Disease International (ADI), London.
- Pryor, J. B., Reeder, G. D., & Monroe, A. E. (2012), "The infection of bad company: Stigma by association", *Journal of Personality and Social Psychology*, 102, 2: 224-241.
- Rabig, J., Thomas, W., Kane, R. A., Cutler, L. J., & McAlilly, S. (2006), "Radical redesign of nursing homes: Applying the Green House concept in Tupelo, Mississippi", *The Gerontologist*, 46, 4: 533-539.
- Raina, P., Waltner-Toews, D., Bonnett, B., Woodward, C., & Abernathy, T. (1999), "Influence of Companion Animals on the Physical and Psychological Health of Older People: An Analysis of a One-Year Longitudinal Study", *Journal of the American Geriatrics Society*, 47, 3: 323-329.
- Regnier, V. (2013), *USC Apartment for Life*, Blurb, San Francisco.
- Regnier, V. (1998, September), "An environment-behavior model of Alzheimer special care units (John Zeisel's study, Assisted Living Treatment Residences for People with Alzheimer's Disease)", In *Places-A Forum of Environmental Design*, 12, 1: 42-43.

- Reimer, M. A., Slaughter, S., Donaldson, C., Currie, G., & Eliasziw, M. (2004), "Special care facility compared with traditional environments for dementia care: a longitudinal study of quality of life", *Journal of the American Geriatrics Society*, 52, 7: 1085-1092.
- Roland, K. P., & Chappell, N. L. (2015), "Meaningful activity for persons with dementia: Family caregiver perspectives", *American Journal of Alzheimer's Disease & Other Dementias*, 30, 6: 559-568.
- Sales, E. (2003), "Family burden and quality of life", *Quality of Life Research*, 12, 1: 33-4.
- Salthe, S. N. (1993), *Development and evolution: complexity and change in biology*, Mit Press, Boston.
- Schein, E. H. (2010), *Organizational culture and leadership*, John Wiley, New York.
- Schreiner, A. S., Yamamoto, E., & Shiotani, H. (2005), "Positive affect among nursing home residents with Alzheimer's dementia: the effect of recreational activity", *Aging & Mental Health*, 9, 2: 129-134.
- Sedikides, C., Wildschut, T., Routledge, C., Arndt, J., Hepper, E. G., & Zhou, X. (2015), "To nostalgize: Mixing memory with affect and desire", *Advances in experimental social psychology*, 51: 189-273.
- Skea, D., & Lindesay, J. (1996), "An evaluation of two models of long-term residential care for elderly people with dementia", *International Journal of Geriatric Psychiatry*, 11, 3: 233-241.
- Sloane, P. D., & Mathew, L. J. (1991), *Dementia units in long-term care*, Johns Hopkins University Press, Baltimore.
- Sloane, P. D., Mitchell, C. M., Preisser, J. S., Phillips, C., Commander, C., & Burker, E. (1998), "Environmental correlates of resident agitation in Alzheimer's disease special care units", *Journal of the American Geriatrics Society*, 46,7: 862-869.
- Sloane, P. D., Zimmerman, S., Gruber-Baldini, A. L., Hebel, J. R., Magaziner, J., & Konrad, T. R. (2005), "Health and functional outcomes and health care utilization of persons with dementia in residential care and assisted living facilities: comparison with nursing homes", *The Gerontologist*, 45, 1: 124-134.
- Sun, W., Clarke, S. L., Madahey, H., & Zou, P. (2019), *Recovery Intervention to Promote Social Connectedness through Social Recreational Programs for Persons with Dementia: A Critical Analysis*. In *Advances in Dementia Research*, Intech Open, London.
- Surr, C. A. (2006), "Preservation of self in people with dementia living in residential care: A socio-biographical approach", *Social science & medicine*, 62, 7: 1720-1730.
- Tapus, A., Tapus, C., & Mataric, M. J., (2009), "The Use of Socially Assistive Robots in the Design of Intelligent Cognitive Therapies for People with Dementia", In *Proceeding of 11th International Conference on Rehabilitation Robotics, Kyoto International Conference Center*, 924-929.
- Te Boekhorst, S., Depla, M. F. I. A., De Lange, J., Pot, A. M., & Eefsting, J. A. (2007), "Kleinschalig wonen voor ouderen met dementie: een begripsverheldering", *Gerontologie en Geriatrie*, 38, 1: 15-23.

- Teresi, J. A., Holmes, D., & Ory, M. G. (2000), "The Therapeutic Design of Environments for People with Dementia Further Reflections and Recent Findings from the National Institute on Aging Collaborative Studies of Dementia Special Care Units", *The Gerontologist*, 40, 4: 417-421.
- Thiis-Evensen, T., Waaler, R., & Campbell, S. (1987), *Archetypes in architecture*, Norwegian University Press, Oslo.
- Thomas, W. H. (1996), *Life worth living: How someone you love can still enjoy life in a nursing home: The Eden Alternative in action*, VanderWyk & Burnham, St. Louis.
- Ulrich, R., Zimring, C., Quan, X., Joseph, A., & Choudhary, R. (2004), *The role of the physical environment in the hospital of the 21st century*, Robert Wood Johnson Foundation, NJ.
- Van Amerongen-Heijer, Y. E. (2013), "A creative pioneering neighborhood model for demented elderly- De Hogeweyk, normal living for people with severe dementia", *Journal of Nutrition, Health, & Aging*, 17, 1: 56.
- Van Bel, D. T., Smolders, K. C. H. J., IJsselsteijn, W. A., & de Kort, Y. (2009), "Social connectedness: concept and measurement", *Intelligent Environments*, 2: 67-74.
- Van Hoof, J., & Kort, H. S. (2009), "Supportive living environments: a first concept of a dwelling designed for older adults with dementia", *Dementia*, 8, 2: 293-316.
- Van Hoof, J., Kort, H. S., Duijnste, M. S. H., Rutten, P. G. S., & Hensen, J. L. M. (2010), "The indoor environment and the integrated design of homes for older people with dementia", *Building and Environment*, 45, 5: 1244-1261.
- Van Hoof, J., Kort, H. S., & Van Waarde, H. (2009), "Housing and care for older adults with dementia: a European perspective", *Journal of Housing and the Built Environment*, 24, 3: 369-390.
- Van Steenwinkel, I., Van Audenhove, C., & Heylighen, A. (2012), "Spatial clues for orientation: Architectural design meets people with dementia", *Designing inclusive systems*, 1: 227-236.
- Velde, B. P., Cipriani, J., & Fisher, G. (2005), "Resident and therapist views of animal-assisted therapy: Implications for occupational therapy practice", *Australian Occupational Therapy Journal*, 52, 1: 43-50.
- Verbeek, H. (2011), *Redesigning dementia care*, Maastricht University, Maastricht.
- Verbeek, H., van Rossum, E., Zwakhalen, S. M., Kempen, G. I., & Hamers, J. P. (2009), "Small, homelike care environments for older people with dementia: a literature review", *International Psychogeriatrics*, 21, 2: 252-264.
- Vernooij-Dassen, M. J. F. J. (2007), "Meaningful activities for people with dementia", *Aging & Mental Health*, 11, 4: 359-360.
- Wang, S., & Hwang, S. (2010), "A case Study of Empathic design", *17th International Conference on Learning / Creative and Imaginative Futures for Schooling*, Hong Kong, 07/06-09/2010.
- Wildevuur, S. E., & van Dijk, D. (2011), "Scottie: design for social connectedness in healthcare", *CoDesign*, 7, 2: 131-138.
- Wood, W., Womack, J., & Hooper, B. (2009), "Dying of boredom: An exploratory case study of time use, apparent affect, and routine activity situations on two

- Alzheimer's special care units", *American Journal of Occupational Therapy*, 63, 3: 337-350.
- Woods, B., O'Philbin, L., Farrell, E.M., Spector, A.E., and Orrell, M. (2018), "Reminiscence therapy for dementia", *Cochrane Database of Systematic Reviews*, 1, 3: 9.
- Woods, B., Spector, A., Jones, C., Orrell, M., & Davies, S. (2005), "Reminiscence therapy for dementia", *Cochrane Database of Systematic Reviews*, 2, 4: 71-87.
- Woods, R. (2001), "Discovering the person with Alzheimer's disease: Cognitive, emotional and behavioural aspects", *Aging and Mental Health*, 5, 1: 7-16.
- World Health Organization (2021), *Decade of healthy ageing 2020-2030*, World Health Organization.
- World Health Organization (2015), *World report on ageing and health*, World Health Organization.
- World Health Organization (2012), *Dementia, a public health priority*, World Health Organization.
- World Health Organization (1948), *WHO definition of health*, Retrieved from <http://www.who.int/about/definition/en/print.html>
- Wright, P. & McCarthy, J. (2008), "Empathy and experience in HCI", In *Proceedings CHI 2008*, 637-646.
- Yaffe, K., Fox, P., Newcomer, R., Sands, L., Lindquist, K., Dane, K., & Covinsky, K. E. (2002), "Patient and caregiver characteristics and nursing home placement in patients with dementia", *Jama*, 287, 16: 2090-2097.
- Yamagami, T., Oosawa, M., Ito, S., & Yamaguchi, H. (2007), "Effect of activity reminiscence therapy as brain-activating rehabilitation for elderly people with and without dementia", *Psychogeriatrics*, 7, 2: 69-75.
- Yin, R. K. (2009), "How to do better case studies", *The SAGE handbook of applied social research methods*, 2: 254-282.
- Zeisel, J. (2009), *I'm still here: A breakthrough approach to understanding someone living with Alzheimer's*, Penguin, New York.
- Zeisel, J. (1997), "Space design and management for people with dementia", *Edra*, 28: 40-55.
- Zeisel, J., Hyde, J., & Levkoff, S. (1994), "Best practices: An environment-behavior (EB) model for Alzheimer special care units", *American Journal of Alzheimer's Disease*, 9, 2: 166-190.
- Zeisel, J. & Raia, P. (2000), "Non-pharmacological treatment for Alzheimer's disease: a mind-brain approach", *American Journal of Alzheimer's Disease and Other Dementias*, 15, 6: 90-115.
- Zeisel, J., Silverstein, N. M., Hyde, J., Levkoff, S., Lawton, M. P., & Holmes, W. (2003), "Environmental correlates to behavioral health outcomes in Alzheimer's special care units", *The Gerontologist*, 43, 5: 697-711.
- Zgola, J. M., & Bordillon, G. (2001), *Bon appetit!: The joy of dining in long-term care*, Health Professions Press Inc., New York.
- Zimmerman, S., & Cohen, L. W. (2010), "Evidence behind The Green House and similar models of nursing home care", *Aging Health*, 6, 6: 717-737.

This book investigates the role of interior design in the enhancement of the effectiveness of Non-Pharmacological therapies for Alzheimer's disease care.

The environment plays a main role inside the framework of Non-Pharmacological care interventions, as it can reduce behavioural disturbances, and act as a sort of "prosthesis" in the compensation of losses and cognitive deficits, especially in the last stages of Alzheimer's disease, when the severe symptoms occurring to the person require the hospitalization. In fact, when people with dementia experience a transition from their home to a care facility, interiors play a very important role, as their sense of belonging towards the living environment is mined, causing anxiety and stress, decreased well-being and poor quality of life.

Aim of this book is to present the conceptual model for an environmental system called "Therapeutic Habitat", meant as a system of environmental interventions, based on tangible and intangible aspects, products and furniture, objects and services – close to the logic of Design Discipline – that can enhance the well-being of people with dementia and stimulate recognition and interaction with the surrounding environment.

This model is articulated through a set of guidelines for designers, defining specific environmental intervention and strategies aimed at increasing inclusion, independence, interaction and self-confidence in people with dementia.

Silvia Maria Gramegna, Designer and PhD, member of Lab.I.R.Int. - Laboratory of Innovation and Research on Interiors, is a PostDoc Researcher and an Adjunct Professor at the Design School and Department of Politecnico di Milano. Her research work addresses issues that explore the strong anthropological value of Design. In particular, her covered research topics encompass the development of therapeutic environments for elderly with dementia, within the context of GRACE_Lab, an experimental interdisciplinary laboratory aimed at developing spatial solutions and devices to enhance the effectiveness of Non-Pharmacological Therapies for Alzheimer's Disease. Furthermore, her research explores the enhancement of sensoriality and perceived quality of places (interiors and urban areas), through an inclusive approach, which focuses on the evolution of the concept of Inclusive Design, into Design for Diversities – experienced in the field of ageing society. This field of research, which recognizes the different types of fragilities (physical, sensory, communicative and cognitive) and marginalization, has developed different action-research activities.