U
B Universitat de Barcelona

COMUNICACIONES / *PAPERS*

Señala la línea de investigación del Programa de Doctorado EAPA:

Ⓞ Arte en la Era Digital

☑ Investigación en Imagen y Diseño

Ⓞ Otros:

TÍTULO: **Interpretation of Architecture Design for Elderly Living**

Nombre y apellidos del comunicante: **Qin Wang**

Organismo o Institución a la que pertenece: **Universitat de Barcelona**

ABSTRACT

Exploration in elderly living becomes more and more universal in the field of architecture design as the social demand of providing a adaptable living environment for the elderly has increased continuously, but elderly living design is even too professional to access for most of architects and lack of synergy with other related studies in ageing. This article targeted to interpret the driven and definition of elderly living; the status of studies and practices in this field; and philosophies and forms of architectural typologies and design approaches for it. Through this interpretation, we will get a general view how has architecture design played the role in this field, and what could be new opportunities for architecture design to contribute more in the future from a view of multi-disciplinary study in ageing.

KEY WORDS
Population Ageing, Gerontology, Elderly Living, Architectural Typologies, Design Approaches

ELDERLY LIVING AS VESSEL OF ELDERCARE

As consequence of population ageing, the social demand of providing adaptable living environment for the older population has increased quickly; accordingly, exploration in elderly living becomes more and more universal in field of architecture design. Here the Elderly Living that we are talking about specifically refers to various types of housing with spaces and objects designed and built for adapting to the elderly's changing characteristics and fulfilling their special needs in physical and spiritual aspects during an accelerating ageing process. Nowadays elderly living has been considered as the most effective vessel to support long-term eldercare and better living quality for the elderly in a level of daily life.

Anyhow, currently elderly living design is even too professional to access for most of architects, and most of design practices are merely oriented by existing design codes and regulations, which are mainly formulated basing on barrier-free design principles for physical disables. This situation has been much backward from the whole progress of study in ageing since a multi-disciplinary study frame has been established and developed as gerontology, but a lot of outcomes from related studies such as psychological ageing and social aging, etc., haven't been considered thoroughly as design conditions and aspiration drive.

In this article, I try to interpret generally what has happened about studies and practices in elderly living, how has architecture design played the role in this field, and what could be new opportunities for architecture design to contribute more in the future from a view of multi-disciplinary study in ageing.

NON-MAINSTREAM TARGETED USER FOR LIVING ENVIRONMENT DESIGN

A few decades ago, the pervasion of population ageing hadn't been noticed yet, the older people used to be an ignored group in the field of architectural design and city planning. Most typical housing, public buildings and spaces were designed and built for younger

people without any physical and mental difficulty in living, such that the normal life of frail people are highly limited by various physical barriers and cognitive obstacles in the their living environment; and for those who need more intensive assistance for daily living and medical care, there were few options for them to choose other than placement in a nursing home. Anyhow as result of either way mentioned above, the elderly was isolated from the main society to various extents and is pushed to a vulnerable and passive position.

COMMERCIAL DEVELOPMENT BEYOND PUBLIC INSTITUTION

The nursing homes initially were operated by the government institutions or charity organizations, such as church, public hospital, social welfare institution, etc., hence this was a non-profit career. But as long as the aged population increases faster and faster, the capability of public eldercare institutions has been unable to meet the social requirement both in quantity and quality aspects. On one hand, many old people who are qualified for entering the public eldercare institutions have to wait in line for being short of space and service resources to accept them; On the other hand, in many countries the codes and regulations for design and construction of a nursing home only focus more on disability issues, functional aspects of medical care and physical therapy, as a result, the built-up environment of those traditional nursing homes is more like a hospital than a cozy home, where is very negative for remaining mental healthy and evoking emotional satisfaction of the elderly. Therefore, the elderly with better economic situation and higher requirement for living quality is not willing to spend their rest life in those public eldercare institutions.

So, as a worldwide trend stimulated by growing demand, the long-term eldercare systems of many countries have been broadly socialized, and has been driving a bloom of senior living in real estate industry. More and more subsidized and private elderly care institutions and senior residence properties have been built as supplementary to public institutions for providing better living environment and care services/facilities to the elderly. This trend also has proposed a new challenge for researchers and designers of all related disciplines in study of ageing to react.

RESEARCHES AND PRACTICES IN DEVELOPED COUNTRIES

As population ageing became a very notable social problem firstly in those developed countries such as Japan, German, Sweden, Denmark, U.K., U.S., etc. [1], and also because their considerably good economic situation and higher democratic level make it possible to pursue a better well-being for the elderly, long-term care and daily living became one of priority and specific field for governmental institutions, academic researchers and estate professionals to explore since 1980s. Therefore, these countries have represented the world's highest level on the subject of theoretical study and practice in this field. Another interesting phenomenon is that, although they all are targeted to improve the status of older people, such as independence, participation, care, self-fulfillment and dignity, there have been formed two types of philosophy about the long-term eldercare and accordingly two different elderly living mode systems based on their different cultural and historical background and socio-political and economic systems of these developed countries. As far as this point, more academic value and practical contribution has emerged for those developing countries to refer according to their own situation.

One philosophy represented by U.S. and Japan regards to guarantee the safety and security as priority for eldercare and promotion of the living environment to be more friendly to the elderly as additional value; Basing on which, home-like nursing homes and assisted living buildings initiated by professional elderly care institutions have been vigorously developing during latest two decades, and most of them are private properties, but well controlled by complete laws and regulations formulated by the government. Normally there's a common schedule of activities for all the residents in nursing homes and assisted living, and their care and entertainment services and facilities cannot be shared with the public. The families, friends and social volunteers are encouraged to visit and participate into the care for the elderly.

The other philosophy is generally advocated in European countries as Aging in Place, which regards extending the independent living as long as possible and enhancing the social connection in a natural manner for the elderly as main targets. Therefore, rather than

---

[1] Web United Nations, Department of Economic and Social Affairs, "Table 4: Selected Demographic Indicators: Population Ageing, 2010* of World Population Prospects", 2010 Revision, [online] <http://esa.un.org/unpd/wpp/Sorting-Tables/tab-sorting_ageing.htm > (Accessed 6th, May)

a single building, the elderly living are normally considered in a scale of community embedded into the city or mixed with multi aged community, by which way the social connection and interaction is augmented as much as possible and inside of which more residential living forms were composed together to fit various situations during the aging process, which make it possible to spend whole life in one community. A community center is essential for providing physical exercises and therapies, social meeting points and facilities, and home-delivery homecare and medical care, etc., where can serve all the residents and can be shared with other neighborhoods, which also contribute more for aging in place in a broader social scope. This kind of elderly living community can be initiated by non-professional elderly care institutions with cooperation with the professional elderly care institutions in respect of some particular services. Moreover, during latest several years, as the concept of universal design has been acknowledged gradually, some promoted intergenerational communities has been put into practice as another feasible solution for elderly living. For example, mix the elderly and young families in one community, combine the training school or kindergarten to the community center, etc. Living in this kind of environment, the older residents are entitled more conscious and opportunities of an independent and dynamic life; even the elderly living in an assisted living center, they live in a more autonomous status.

In the research of Victor Regnier [2] about design for assisted living, he has collected and analysis many cases throughout the United States and Northern European countries accomplished during1990s, and demonstrated clearly those differences of these two philosophy and living mode systems in his book [3].

ARCHITECTURAL TYPOLOGIES OF ELDERLY LIVING

There is no doubt when the elderly is still capable to live independently or cared by his/her relatives, they prefer to live at their own home as long as possible, for example, in German, there's over 90% of over 65 years old live in private households. For this great majority of old people, individual house renovation for adapting their previous home to be more suitable and accessible to their aging status, and provide emergency medical and safety

---

[2] Victor Regnier, FAIA, is an architect, gerontologist and one of the world's leading authorities on the design of housing for older people.

[3] Regnier, V. (2002) *Design for Assisted Living: Guidelines for Housing the Physically and Mentally Frail.* Hoboken, N.J.: Wiley.

contact at home; Meanwhile, enhance the community center with eldercare services for call and delivery to home is more meaningful for accomplishing the concept of ageing in place. By this way, their original home can support their independence and privacy for living as long time as possible. However, when some of old people need some special care and services in various level or look for a certain social connection among their generation, they would like to choose some other options built up with specific target for supporting the elderly living. Generally these options can be sorted into two categories, all day-cared institutions and independent residences. The advantage of having more alternative forms for elderly living is obvious, currently the elderly have more choices of where and how to spend their rest life with necessary assistance according to their own healthy and economic situations.

All day-cared institution is a place where provide full accommodation and professional care services for the elderly to live in; they include nursing homes, assisted living center, and hospice.

Nursing Homes

Firstly the most traditional option, nursing homes are still necessary for the elderly who need 24 hours of daily life care and professional medical care.

Example: Sonnweid Nursing Home Extension, Wetzikon, Switzerland

Assisted Living

Assisted living residence emerged as an alternative living environment for whom independent living is no longer appropriate but who do not need the 24-hour medical care provided by a nursing home. Assisted living is a philosophy of care and services promoting more independence and privacy and social interaction.

Example: Competence Centre for People with Dementia, Nuremberg, Germany

Hospice

Hospice is where can provide both outpatient and inpatient care and were conceived with the objective of helping people face death as positively as possible. The focus for hospice is not curing but providing care to palliate a terminally ill patient's symptoms, and bringing comfort, self-respect, and tranquility to the dying patient. It's a short stay normally less than six months but companied by simultaneity of quite different emotions, such as joy, sadness, reflection, and sincerity, etc. Cicely Saunders (1918-2005), initiator of the modern hospice movement and founder of the world's first purpose-built hospice (St Christopher's Hospice, London, established in 1967), always restated, the aim of a hospice is "not to prolong the days of your life but to improve your quality of life for the days that remain." [4] Therefore, the architectural design here undertakes the task not least to provide hospice immediate connection with urban and historical context and private retreat for patients and their relatives; but it's more challenge to deal with the topic of death in this living environment.

Example: Ricam Hospice, Berlin

Independent living is for the elderly with better healthy status, and can live independently only with selective care and services in need. There have been emerging a number of alternative forms of housing with combined care and support services during latest two decades in this category, such as private house, serviced apartment/studio, co-housing, etc., and all these housing types can be planned in a scale from a single building to a living community responding to the urban texture and social requirement. They come in a range of costs, including subsidized housing for low-income older adults. Continuing care retirement facilities provide independent living as well as other housing with more services at the same facility.

Senior Apartment and Retirement Communities

Senior apartments and retirement communities are privately financed, well-equipped housing schemes exclusively for the elderly. Retirement communities are groups of housing units, which can be single-family homes, duplexes, mobile homes, townhouses, apartment complexes or communal flats and co-housing.

---

4 Connor, Stephen R. (1998) *Hospice: Practice, Pitfalls, and Promise.* Taylor & Francis. p. 5.

Senior Apartments consist suites and small apartments with all functional spaces inside similar to normal residence compacted but not exactly need to be separated by partitions. Barrier- free design is fully applied, and care and support is provided at home by a call.

Example: Stadtcarré, Bad Rappenau, Germany, 2007

Communal flats and co-housing refer to integrate several private suites in one single building or a big flat and share a series of common space, which includes a small kitchen, a living room, a green house sunspace, etc. in it. Social continuity is important to the success of co-housing. Normally six is considered the minimum-size group for social cohesiveness. These residents can live separate lives but also come together to celebrate birthdays and special occasions. This type will be the choice of elderly who pursue a more economic living manner and prefer a communal life; meanwhile, this kind of daily interconnection highly encourages a life style of being independent, sharing, and helping each other.

Example: GYNGEMOSEGÅRD, Herlev, Denmark, 1993

Either the single building or a whole community often has a hotel-like character with F&B and common areas for social activities, physical exercise, and entertainment facilities in it. Hereby the architectural design for these common spaces is as important as for the private units. The residents can live an independent life to a maximum extent and choose the services depending on what would exactly need. Hence, this type makes it more affordable to the elderly.

Continuing Care Retirement Communities (CCRCs)

CCRCs offer service and housing packages that allow access to independent living, assisted living, and skilled nursing facilities in one community. If residents begin to need help with activities of daily living, for example, they can transfer to an assisted living or skilled nursing facility on the same site.

Intergenerational Communities and complexes

The development of existing and new urban quarters as intergenerational neighborhoods or communities for all aged will be a trend to creating more sustainable living environment

for everybody. For some limitations in practices, the most cases of this type we have seen in the estate market are selective mixtures of several targeted groups, for example, baby-center, kindergarten, young families housing and various senior living is a common combination for harmony and positive interaction.

DESIGN APPROACHES FOR ELDERLY LIVING

At preliminary stage, respect to elderly living design, most studies and formulation of design code and regulation for building and public space design are initiated from barrier-free, or accessible design for the disables, which is targeted to overcome the difficulty of the elderly in aspect of physical mobility in their living environment. Until now as many new design concepts and approaches have emerged such as adaptable design, universal design, and emotional design, etc., the researchers have been aware that design a better living environment for the elderly is not only mean a barrier-free environment, but also create a meaningful place where could positively influence the psychological functioning of the older residents, therefore to play a role of extending the independent life time, evoke positive affection and emotions as signs of adaption and/or stimulus for elderly's perception.

The current trend of design for elderly living environment is to introduce the philosophy, principles and approaches of universal design in this field as a basis for providing increased accessibility, safety and health for a diverse population rather than only make more specific design for the elderly. It maps well onto the United Nations principles for older persons framed in five main issues of independence, participation, care, self-fulfillment and dignity [5] and goes further, defining more clearly the practices necessary to transfer living environment into one that can accommodate those with different needs. Moreover, beyond physical functional consideration, the universal design also stresses comprehension and sensory perception enhancement of products, environments and systems, which is especially meaningful for the older people who generally suffer the declination of sensory perception or mental impairment. The application of universal design has driven many innovative ideas about living full lives for as long as possible in

---

[5] Web United Nations (1991) "The United Nations Principles for Older Persons" [online], <http://www.un.org/documents/ga/res/46/a46r091.htm >(Accessed10th, June)

aspect of diverse living arrangements like inter-generational housing, co-housing, etc., and the redesign of housing itself to support a wider range of abilities.

Obviously, by applying this approach, the whole housing industry will be promoted to a higher standard than ever; as result, it will benefit to the social sustainability for a long term, and the elderly will be more involved in the whole society. I agree that this is a good direction to go, but from my observation, currently there are also existing several problems and constrains, which could be the obstacles for the application of universal design in practice for general living environment design.

- Who shall, can and will pay for the extra cost for the promotion of general standard of living environment?

As statistics in estate market of U.S., the cost for developing a pure senior living community is almost twice the normal residential community as the accessibility and adaptability of housing are required to be preset in the design and construction, and the developer must pass through a considerable strict national regulation to get the property qualified as senior living community.

Ideally this promotion could be brought into the social welfare system, but it really depends on if the economic status of a country or area can afford it; Although there will be a new notion cultivated in the mind of young people, they pay higher for a living conditions beyond their current necessity is for aging in the same place in the future. However, the truth is more and more young people are changed to a more movable and flexible life style.

- How to make a private and single commercial development integrated to the whole social benefit target?

In commercial development model, especially in the social system where take land privatization as premise, the application of universal design will be adjudged by private profit rule.

- And even among all the frail people, the elderly also has their specific characteristics and changing requirements for living environment, which will be very different from those

younger ones in aspect of which kind and to what extend of care they would need, so how to fit these specialties with universal design? So that, to what extent universal design can be compatible with such a lot and detailed differences among targeted groups is another question to consider.

- Can universal design evoke the happiness and satisfaction of diverse aged residence with different perception model/capability and aesthetic tasty?

From this profile, we found although universal design and personality are not against each other，neither the universal design can cover all the design issues for personal emotional satisfaction.

CONCLUSION

I think that universal design will be a long-term approach for achieving the social sustainability, accompanied by a long process of global standardization for production and construction, and will be limited critically by regional economic conditions.

Anyhow, as a supplement to universal design, there's another human-center design approach could be more accessible for elderly living design regardless of different political and economic conditions, called Emotional Design. It's a theory about design for everything proposed by Donald Norman, American academic in cognitive science and usability engineering, which explores how emotional system could change how the cognitive system operates, and how aesthetics could affect how easy something is to use [6]. Although the perception and emotion oriented design has been very popular in the field of products design, it hasn't been widely understood and adopted in the field of architecture design yet, because it's lack of theoretical research to guide and support the practices.

When I started to focus on the topic of elderly living, I found that compared with biological changes concerned with physical frailty and disability, psychological changes are more personalized and culturally influenced, and it's harder to have common quantitative criteria for testing all effects. But as more and more studies have been carried

---

[6] Norman, D. A.(2004) *Emotional Design: Why we love (or hate) everyday things.* New York: Basic Books.

on in this field, we have evidences to believe the psychological facets including the changes that occur in sensory and perceptual processes, cognitive abilities, adaptive capacity, and personality, could play a dominated role for influencing the elderly's living status during their accelerated ageing process and arise a direct and timeless relationship between their needs and living environment. So, how to react and fit these needs as architect and designer of elderly living environment is just the problematic that I think worthy of more theoretical researches on; and applying perception and emotion oriented design to elderly living environment is a hypothesis that I want to propose and prove in my doctoral research, which is tool that could activated for any space and time that we could do for elderly living environment design and help to achieve the elderly's happiness and psychological satisfaction in their living environment.

Example: Residencia Alcázar Juan Hermanitas Ancianos, Alcázar de San Juan, Spain

Example: Santa Rita Geriatric Centre, Ciutadella, Menorca, Spain

REFERENCES

Connor, Stephen R. (1998) *Hospice: Practice, Pitfalls, and Promise.* Taylor & Francis. p. 5.

Feddersen, E.; Lüdtke, Insa (2009) *Living for the Elderly: A Design Manual.* Basel, Switzerland: Birkhäuser.

Hooyman, N. R., & Kiyak, H. A. (2011) *Social gerontology: A multidisciplinary perspective* (9th ed.). Boston: Pearson Education, Inc.

Norman, D. A. (2004) *Emotional Design: Why we love (or hate) everyday things.* New York: Basic Books.

Lidwell, W; Butler, J; Holder, K (2010) *Universal Principles of Design, Revised and Updated: 125 Ways to Enhance Usability, Influence Perception, Increase Appeal, Make Better Design Decisions, and Teach through Desig*n. Gloucester, Ma.: Rockport Publishers Inc.

Regnier, V. (2002) *Design for Assisted Living: Guidelines for Housing the Physically and Mentally Frail.* Hoboken, N. J.: Wiley.

Web United Nations (1991) **"**The United Nations Principles for Older Persons" [online] <http://www.un.org/documents/ga/res/46/a46r091.htm> (Accessed 10th, June, 2012)

Web United Nations, Department of Economic and Social Affairs, Population Division (2009) "The Ageing Population 2009"[online] <http://www.un.org/esa/population/> (Accessed 6th, May, 2012)

Web United Nations, Department of Economic and Social Affairs, Population Division (2010) "Table 4: Selected Demographic Indicators: Population Ageing, 2010* of World Population Prospects", 2010 Revision, [online] <http://esa.un.org/unpd/wpp/Sorting-Tables/tab-sorting_ageing.htm > (Accessed 6th, May, 2012)