Emotional Architecture for Everyday Life

Architectural Design for Senior Living Oriented by the Psychological Pattern of Elderly People

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EMOTIONAL ARCHITECTURE FOR EVERYDAY LIFE

Architectural Design for Senior Living Oriented by the Psychological Pattern of Elderly People

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Abstract

Facing the challenges to address complex issues associated with global environmental change and population ageing in the 21st century, architecture design in the developed or developing regions and countries all needs to play a role as a cost-effective tool for sustainable development of our human society rather than a creation only for the sake of art or consumption. This means a substantive ideological change to assess the essential value of architecture according to its long-term impact on people’s health and well-being instead of its metaphysical beauty, and more urgently, calls for some effective and efficient approach for architectural research and practice to integrate all the ethical, aesthetic, environmental, technological and economic considerations into an appropriate architectural model.

Beyond an intuitive assumption that the design of built environment affects people’s health and well-being, and can have long-term implications for the quality of life, this research tends to provide an evidence-based theoretical and methodological orientation to entail architecture with such positive effects, and hence started from a hypothesis that positive emotional effect is the key linkage to correlate aesthetic experience in and of architecture to human subjective well-being (SWB), which is a predominant indicator for measuring general well-being. Accordingly, emotional architecture for everyday life was coined as a special term in this research to represent such an architectural model that functions as a motivation generator for increasing positive human-environment interactions as well as an affective environment for enriching and regulating human emotional state on a basis of daily life. An interdisciplinary framework involving the research fields of environmental aesthetics, positive psychology and emotional design was formulated as theoretical foundation to direct this research.

This qualitative research has combined two research strategies of bibliographical review and field study in order to capture the pluralistic qualities of this research in relation to the multiple disciplines of psychology and neuroscience, social science, gerontology, and the professional areas of elderly care and care facility development. Seven research methods including close and extensive reading, access to official documents and statistics, field study notes and photography, semi-structured interviews, participant and non-participant observations have been used for data collection; and narrative, descriptive and interpretative analysis have been respectively employed regarding each research objective. Such a mixed method approach was considered to accumulate diversified research materials and perspectives as much as possible.
The theoretical research to identify the general concept and methodological model of emotional architecture for everyday life and the applied research to test its applicability in the specific domain of architecture design for senior living have been conducted and sequentially presented as Part I (Chapter 1 & 2) and Part II (Chapter 3, 4 & 5) in this thesis. In Chapter 1, the related philosophical and psychological theories about the role and functioning mechanism of emotions in influencing people’s perception, motivation and behavior for formulating ethical ideology, aesthetic appreciation, environmental interaction and subjective well-being have been reviewed and taken as evidence to study why and how emotional design approach is possible to comply user experience of a product or environment with user’s long-term well-being. Chapter 2 shows a filtering process to discern the exemplary qualities and design mechanism of emotional architecture for everyday life from the previous architectural design theories and practices by synthesizing the multidisciplinary knowledge reviewed in Chapter 1. Chapter 3 interprets the main influential factors that affirm or oppress design quality and efficacy of senior living architecture in a global context. Chapter 4 explores the essential spatial implications responsive to elderly’s psychological needs for everyday life through a series of field studies in a selected public care facility in Barcelona. Chapter 5 presents case studies on four selected architectural projects for senior living in order to generalize the applicable design methods for positive emotional effects.

An inherent difference in aspect of the cognitive process for aesthetic appreciation has been found among artists, design professionals and non-professional users/appreciators, which implies an empathetic thinking with the users and/or occupants of architecture is necessary for architectural designers to filter the effective emotional stimuli and design approach for positive emotional effects in the design process. A general distance between the actual efficacy of senior living architecture and its socio-political target of promoting social and individual well-being has been detected to emerge because that (1) an inherited mind-set of relying on social manifestation and engineering measures has resulted in a bureaucratic formula of architecture design to apply the standardized configurations and technologies; and/or, (2) aesthetic design associated with traditional formal and stylistic aesthetics of architecture does not respond to a user-centered design thinking and evidence-based design methodology at psychological level.

With regard to achieving the substantive quality of senior living architecture in an aged society as being perceived as safe, healthy, appealing and healing environment for all ages, technical design measures for compensating physical/mental frailty and disabilities need be fused into a humane backdrop rather than being highlighted as indifferent devices. Hence, a methodological model for designing emotional architecture for everyday life and a working model of emotional architecture design for senior living have been established and associated...
as a practical approach to enhance reciprocal improvement of architectural research and practice with an inclusive vision of human health and well-being.

The overarching conclusion of this research has been that strong potential of architecture design to comply with the socio-political paradigm for general welfare goal lies in an integration of reality-based and future-oriented aesthetic philosophy of everyday life, scientific understanding of multidisciplinary knowledge on human factors, and the application of emotional design approach to adapt various targeted users, and existing cultural/natural context and economic/technical conditions.

**Keywords**

Emotional architecture, Environmental aesthetics, Positive psychology, Emotional design, Population ageing, Senior living architecture
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Equally deep gratitude goes to my co-supervisor, Dr. Luis Bravo Farré, professor at Barcelona School of Architecture (ETSAB), Polytechnic University of Catalonia. His expertise in architectural design for senior living enhanced the strength of my research outcomes for bridging theoretical research and practical application. Also because of his help, I was allowed to conduct a series of field studies while working as a social volunteer during 2013 in Sagrera Retirement Home and Day Care Center in Barcelona, an exemplary public elderly care facility that he designed for the government of Catalonia, and has been running successfully since its completion in 2005.

I also wish to express my sincere thanks to Prof. Zhou Yanmin, instructor of my joint training program for five months at Architecture School of Tsinghua University in Beijing. She provided me the opportunity to join her research programs on senior living architecture funded by the National Science Foundation of China, and several real projects in progress. I was encouraged to apply and test my research outcomes in all these research and practical works.

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I appreciate so much the working staff and elderly occupants in Sagrera Retirement Home and Day Care Center for their participation in series of cultural workshops that I organized for them as well as for my research experiments. Occasionally, I visited them again in May of 2015, and I was so moved that most of them still remembered me, remembered the enjoyable time that we have ever spent together.

Last but not least, I would like to thank my parents, two benevolent, staunch and independent 70+ elderly, for their unconditional love and care; thanks to my dear friend, Mr. Henry Lau, who helped me on final text correction; and thanks to my other friends, Pedro Alcalde Cabrerizo, Huan and Liyuan. With their physical and spiritual accompany, many tedious days and nights that I dedicated in this work were still pretty enjoyable for me.
### Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td><strong>Quality of Life (QOL)</strong></td>
<td>A notion of human welfare (well-being) measured by social indicators rather than by &quot;quantitative&quot; measures of income and production. (United Nations Statistics Division, Department of Economic and Social Affairs)</td>
</tr>
<tr>
<td><strong>Health</strong></td>
<td>A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (World Health Organization, 1946)</td>
</tr>
<tr>
<td><strong>Subjective Well-being (SWB)</strong></td>
<td>It refers to how people experience the quality of their lives and includes both emotional reactions and cognitive judgments. It is conceptualized as an empirical measurement of Happiness itself. (Diener, 1984)</td>
</tr>
<tr>
<td><strong>Happiness</strong></td>
<td>The concept of Happiness has a culturally and philosophically diverse history, meaning that there is unlikely to be a single definition that applies to all people at all times. In the field of psychology, it can be interpreted as a combination of life satisfaction and the relative frequency of positive and negative affect. (Diener et al., 1991)</td>
</tr>
</tbody>
</table>
| **Built Environment**                   | In social science, the term built environment refers to the human-made surroundings that provide the setting for human activity, ranging in scale from buildings and parks or green space to neighborhoods and cities that can often include their supporting infrastructure, such as water supply or energy networks. (Wikipedia)  
This research adopts an interdisciplinary definition of built environment within the field of public health as building or renovating areas in an effort to improve the community’s well-being through construction of “aesthetically, health improved, and environmentally improved landscapes and living structures”(Aboelata, 2004, Prevention Institute, Oakland, CA) |
| **Everyday Architecture**               | It refers to various types of private and public buildings that are designed for optimizing people’s ordinary life and well-being. It is not a critical definition in terms of architectural typology, but do have more practical significance and applications in urban environment and tightly associated to the categories of organizational city life, such as residential, transportation, culture and education, sports and entertainment, medical and health, commercial and business, public administration, and other necessary services. |
It is defined in this research as a category of purpose-built architecture for the elderly people to live and obtain appropriate care and services. It is divided into two types as elderly housing for independent living with care and services as required and residential care facilities for dependent living with 24H formal integrated health and social care.

It is coined as a specific term in this doctoral research project to represent such an architectural model that functions as a motivation generator for increasing positive human-environment interactions as well as an affective environment for enriching and regulating human emotional state on a basis of everyday life. Correspondingly, it should be conceptualized as a tangible medium for human individuals to contact with natural and social environment as well as a physical and spatial setting composed of comprehensive sensory stimuli, personal emotional experiences and cognitive meanings of life.

It is expected to become an effective and efficient architectural model for developing a healthy and sustainable built environment that would be available and accessible for the majority people to optimize their general well-being in the different demographic, legislative, economic and cultural contexts.
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0 Introduction

0.1 The Research Topic

Social modernization is evident to have largely improved the quality of life (QOL) in the Western societies. However, the concomitant processes of industrialization and urbanization also have shown side effects on a global level. Especially, environmental change and population ageing have been regarded as two main challenges for sustainable development of human society, and need to be seriously addressed from all political, economic and social aspects in the 21st century. So far, the United Nations Environment Programme (UNEP) has been initiated to stress that “Buildings are a key component in the fabric of cities. And the building and construction sector is one of the most important areas of intervention and provides opportunities to limit environmental impact as well as contribute to the achievement of sustainable development goals” (UNEP, n.d.).

The main concern of this doctoral research project is the question of that the traditional aesthetic philosophy of confining architecture as visual art keeps producing confusions and paradoxes in on-trend architectural theory and practice, which neither is helpful to solve the present social issues, nor does match the goal of promoting sustainable and livable built environment for the future of human society. Herein the point of departure to work out a new theoretical and methodological orientation that could essentially integrate all the aesthetic, ethical and environmental values of architecture into a more holistic and concrete vision of aesthetic everyday life for optimizing social and individual well-being instead of that merely for the sake of art creation or consumption. Correspondingly, the significance of architectural
design in this research is regarded as a cost-effective tool to ensure that these multiple values can be effectively and efficiently realized in design and construction of everyday architecture for the majority of people.

From the past experience of the developed world, whereas individualism is rising and collectivist ideologies are declining along with the development of modern society, people have to rely on the organization of the state and the market for almost everything they need: food, shelter, education, health, security. When it was aware around the middle of the 20th century that the existing built environment was not supportive for the frail and disabled elderly to extend their independent life and/or obtain necessary care, senior living architecture emerged as a typical category of everyday architecture programmed for general welfare goal on a political level. The model in terms of typological system and physical setting of senior living architecture varies according to different socio-political paradigm in different regions or countries. Nevertheless, a kind of common promotion from providing elderly refuge to the multiple options of nursing home, assisted living, senior apartment and adaptive housing has shown a clearer purpose of maintain the quality of life for the elderly in a more flexible and sustainable way. This trend implies that once inclusive design principles could be applied on a general level, senior living architecture might not necessarily be a particular category for design.

However, the public perception to senior living architecture has shown a resulting duality in the developed countries and some developing countries such as China. On the positive side, this position of legislative commitment is evident to guarantee that senior living architecture will be provided in a certain typological composition and spatial configuration with respect to the basic living conditions of safety and physical accessibility for the elderly people. But on the other side, although architectural design for senior living is often appointed as a specialist area by some academics and practitioners working on it, it actually has become an enclosed field with retarded development in aspects of design notion, expertise and creativity. An exclusive and pathological mindset for dealing with ageing and senior living architecture is still predominant in current design research and practice.

Noted that ageing is an integral process of our human being associated with a stronger emotional connection to a building or a place, in some cases they become physical necessities for older people (Rowles, 1993), this research has identified senior living architecture as a typical group of emotional architecture for everyday life that should provide a physical environment perceived as safe, healthy, appealing and healing for all ages, in which technical measures for compensating the frailty and disabilities can be fused into a humane backdrop.
rather than being highlighted as indifferent devices. The interest of this research is to provide an effective and efficient approach for this direction.

0.2 Motivation of the Research

During the past two decades, a period marked with the most intensive and massive construction in the history of China, Chinese architectural professionals have not reached a consensus in modern architecture theory and methodology for combining modern social agenda and healthy lifestyle with traditional Chinese culture. Consciously or unconsciously, many of them have been involved into various formalistic trends. Some works replicated the formulas of Western classical architecture; some reinterpreted the aesthetic characteristics of Chinese traditional architecture by the symbolic forms of wood structure or structural components; some employed unusual shapes or over scaled figurations of object, people or animal to produce novelty architecture for the sake of mass culture, and so on. At the mean time, China has become a performing stage of international architects from the developed countries. As such, the contemporary architectural phenomena in China reflect an assembly of aesthetic notions with various degree of tension between traditional and modern, Eastern and Western architecture.

This problematic situation has its root in architecture education and research model in China. In the early 20th century, a few Chinese students from the family of the officials were given scholarships to train as architects at American universities whose design curricula were dominated by Beaux-Arts methods. Upon their return home in the 1920s and 1930s, these graduates began to practice architecture and create China’s first architectural schools, often transferring a version of what they had learned in the U.S. to Chinese situations. This series of design-related transplantations had major implications in China between 1911 and 1949, as China simultaneously underwent cataclysmic social, economic, and political changes. From 1949 and the founding of the People’s Republic until the 1970s, China experienced a radically different wave of influence from the Beaux-Arts through advisors from the Soviet Union who brought Beaux-Arts ideals in the guise of socialist progress (Cody, Steinhardt & Atkin, 2011). After the 1980s, the influence of American architecture education system came back into force. It is evident that considerable Chinese architects get used to a conservative paradigm of mimicking the formal languages of other cultures, each type of which may have certain connection with its origin, rather than exploit profound architectural language to reflect Chinese culture and respond to the actual social need.

I have been aware of this issue since 2000 when I travelled to Austria and Italy with the client from the Swarovski Family to do the field studies for a winery project that they
invested in China. I learned from that trip the importance of the inherent connection of architecture with its historical and contemporary context. Later, I have been to other different European countries and cities to experience architecture of different eras and different styles rather than only reading them in the book and other media. This kind of study helps me to understand the Western architectural phenomena in their social, economic and cultural context, and to keep my critical thinking against the idolatrous mentality to the masterpieces.

In fact, some masterpieces of architecture that have been highly regarded by architectural historians and critics in modern architecture history are really questionable in aspects of their social, aesthetic and functional performance. Meanwhile, many buildings hidden in the living communities of European cities attracted my attention. Regardless of their being residential, public buildings or landscaping spaces, they look vivid, unique, modest, and friendly to all the citizens including those with disabilities. They are detailed with varying spatial experiences and material compositions instead of superficial or luxurious decoration. This current of architecture design practice has been clearly affirmed by the Mies Van der Rohe European Prize for Contemporary European Architecture, which is elaborated as “Architecture’s significance - linked with the construction market - has a social impact and transmits a cultural message. Quality therefore refers to universal values of generic buildings, independent from their programs: the essence of things rather than their formal values” (Mies van der Rohe Foundation, n.d.). Apparently, China would need more of this kind of architecture for optimizing average people’s well-being and the quality of their lives. But first of all, it comes out to be an urgent research task to transform this kind of architecture practice to generalizable and learnable knowledge at a worldwide range.

Currently, there is a prevailing myth among Chinese architectural scholars and professionals to regard that the Western architectural tradition focuses on shaping and stressing the individualistic whereas the highest pursuit of Chinese architecture is a harmonious relationship between human and nature, in which the void that formed by a group of buildings is more sensitive than the physical appearance of the buildings themselves. Many arguments about aesthetic traditions and stylistic taste are established on this assumed contradiction in aesthetic philosophy, despite that nature is the common origin and inspiration of all human civilizations in both Western and Eastern cultures, and the affinity with nature continues to be the favored body and spiritual experience in modern architecture, although it might have been hidden behind the different tangible and intangible cultural forms. In this sense, exploring the possibility of cultural exchange and fusion in architecture aesthetics becomes more pragmatic to address some global issues.
Therefore, I was motivated to do this doctoral study based in Barcelona, which was chosen because it is commonly recognized as one of the most livable cities and the best examples in modern urban planning and architectural design from all over the world. More interestingly, cultural traditions in Spain and China in aspects of tight intergenerational family relationship and collectiveness in social life are very similar, and historically, both countries concurrently met their significant turning point in political and economic circumstance in the late 1970s. However, after three decades’ efforts, the current situation of people’s well-being in Spain especially in aspect of integrated health and social care for the disabled and frail elderly people appears much better than that in China. The reasons that caused this divergence are worth of a specific investigation, and the experience of Spain is believed to be more referable than other European countries to China.

0.3 Rationale of the Research

The research presented in this thesis has been the efforts to participate in worldwide academic debates and discussions on the complexity and potentiality of everyday architecture for the purpose of benefiting average people’s well-being; and more concretely specifically, to fill the weakness in current architectural research and practice field in the following two aspects.

a) The Confusion of Emotional Architecture for Art or for Everyday Life

Compared to the utilitarian function of architecture, its emotional effect is the core value of architecture design as a kind of creative and expert activities. Those emotionally impressive architecture and city spaces in architecture history are often literally denominated and remain as mysterious creation from talent artisans or artists’ intuition. Until today, some new public architecture associated with visual and performing arts and religious activities, such as museums, theaters, churches, etc., are continuously endorsed as the representatives of emotional architecture, and become the focusing practice area of avant-garde architects who mainly pursue “peak effect” of intensive and temporary aesthetic emotions. In contrast, massively constructed buildings, which are supposed to be more relevant to people’s everyday life and long-term well-being, are usually designed with standardized program and technique, and thus appear indifferent to people’s perception. Senior living architecture is one of the most affected fields of this situation.

In order to create a new holistic view to approach appropriate architecture for our everyday life in a retrospective, a contemporary and a future-oriented perspective, it calls for more scientific study on the theoretical foundation, and evidence-based design and assessment methodology that would engage with everyday emotional states.
b) The Lack of Evidence-Based Design Methodology for Senior Living Architecture

Theoretical and applied researches on senior living architecture have been allied with the studies in the interdisciplinary field of environmental psychology since their concurrent emergence around the 1950s. Environmental psychology for application in architectural field mainly studies the relationship between human psychological states/behaviors and physical qualities of environment including noise, congestion, temperature, air quality, architectural settings, personal space, etc. The research issues such as way finding in complex settings, the effect of environmental stress on human performance, the characteristics of restorative environments, human information processing, and the promotion of durable conservation behavior, etc., had been comprehensively founded before the 1970s based on some important sociological hypotheses of place identity, place attachment, and social participation and engagement (Stokols, 1995).

American psychologist and gerontologist M.P. Lawton further developed a research field of environmental gerontology to study adaption and shaping capability of elderly to their physical and social environments. According to a series of field studies to examine how physical and social characteristics of small rural Kansas towns affected the quality of life of older people between the late 1970s and the 1980s, the interdisciplinary team of architects and psychologists including Lawton, concluded that a good architectural design can encourage independence and competence of the elderly with their environment (Scheidt and Windley eds., 2003). However, merely by employing sociological theories and research methods, this kind of research was not sufficient to testify what is a “good”, or more exactly an effective architectural design that could correspond to elderly’s well-being at psychological level.

Two main associations of environmental psychology researchers, Environmental Design Research Association (EDRA, founded in 1968) and British International Association of People-Environment Studies (IAPS, initiated in 1969, officially founded in 1981) reinforced the behavior-oriented research direction in America and Europe since the beginning of the 1970s. It was especially problematic in the field of architecture design because the user was simplified as an abstract model at level of daily functional activities for formulating engineering-based design guidelines, standards and examples. In case of senior living architecture, the cohort of elderly users was mostly identified as patients or disabled people. This preconception dismissed the important role of subjective dynamics of human individuals in constructing environmental perception that gestalt psychologist E. Brunswik proposed in 1943 when he initially coined the term of environmental psychology; as well as ignored that psychological needs, such as emotional feelings of safe, love, belonging, esteem and self-
actualization, are as indispensable as physiological need for all the people to achieve their psychological health during a whole lifespan as humanist psychologist A. Maslow stressed in his theory of hierarchy of needs (Maslow, 1943).

In order to fill this gap, this research has been dedicated to studying the elderly user’s psychological pattern as a part of scientific evidences to identify the efficacy of senior living architecture, and also testifying the effectiveness of the methodological model of emotional architecture design for optimizing human health and well-being concretely.

0.4 Research Objectives

Beyond an intuitive assumption that the design of built environment affects people’s health and well-being, and can have long-term implications for the quality of life, this research tends to provide an evidence-based theoretical and methodological orientation to entail architecture with such positive effects, and hence started from a hypothesis that positive emotional effect is the key linkage to correlate aesthetic experience in and of architecture to human subjective well-being (SWB), which is a predominant indicator for measuring general well-being. Accordingly, emotional architecture for everyday life was coined as a special term in this research to represent such an architectural model that functions as a motivation generator for increasing positive human-environment interactions as well as an affective environment for enriching and regulating human emotional state on a basis of daily life.

Accordingly, both theoretical and applied researches have been conducted with two main interlocking objectives. The theoretical research was aimed to clarify the concept and methodological model of “Emotional Architecture for Everyday Life” as the theoretical foundation. The applied research was focused on generating an effective system of interdisciplinary knowledge for promoting the application of emotional architecture design for senior living.

Five sub-objectives have been formulated as followings:

**Theoretical research on the conceptual and methodological model of “Emotional Architecture for Everyday Life”**

**Sub-Objective 1:** To understand the role of emotions in human-environment interactions from the multidisciplinary perspectives.

**Sub-Objective 2:** To discern the valid examples and reconfigure the ideal model of emotional architecture for optimizing everyday life from the previous modern architectural theories and practices.
Applied research on architecture design for senior living

Sub-Objective 3: To review and compare varied architectural solutions to address the issues of global population ageing and elderly care while discerning referable experiences for Chinese practice.

Sub-Objective 4: To understand how elderly people interact with their everyday living environment, in particular the architectural environment of institutional care facilities.

Sub-Objective 5: To explore practical design mechanism and approaches that could generalize emotional design thinking in architecture design for senior living.

0.5 Research Methodology

This is a qualitative research that combines two research strategies of bibliographical review and field study in order to capture the pluralistic qualities of this research related to the multiple disciplines of psychology and neuroscience, social science, gerontology, and the professional areas of elderly care and care facility development. Seven research methods including close and extensive reading, access to official documents and statistics, field notes and photography, semi-structured interviews, participant and non-participant observations have been used for data collection; and narrative, descriptive and interpretative analysis have been respectively employed regarding each sub-objective. Such a mixed method approach was considered to accumulate diversified research materials and perspectives as much as possible. The whole methodological framework is shown in Figure 0.1.

An interdisciplinary framework involving the research fields of environmental aesthetics, positive psychology and emotional design was formulated at first to direct this research; this will be interpreted in the next section. Then, the theoretical research and the applied research were divided as two stages in order to highlight an explicit correlation as theoretical foundation and specific practical application in this research project as well as to provide a flexibility of respective application to other future researches. The structure of the applied research mirrors the parallel processes of context study, user study and precedent case study that are usually conducted at pre-design stage of a full design process for an architectural design project. A related goal behind the proposed systematic model was to ensure that a more fine-grained analytical process would be set up prior to the design stage, and thereby respond to the increasingly complex nature of architectural projects in a postindustrial society (Groat and Wang, 2013).
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Figure 0.1. Overview of methodological framework employed in this research project.

The research task respective to each sub-objective has been completed in the following ways.

**Task 1: Multidisciplinary Theories Review**

The research areas that share common interest in the subject of human emotions but study it from multiple perspectives were consulted and synthesized, such as the researches on the relationship between public health and built environment, aesthetic experience with natural and/or artificial environment associated with the philosophy of environmental aesthetics, the psychological determinants of subjective well-being and environmental intervention, and emotional and ergonomic user-product interaction in design research. Also, related literatures written by aestheticians, social psychologists and neuroscientists, architects and engineers were reviewed for interpreting ethical and aesthetic values, aesthetic forms (appearance, spatial, environmental beauty), and aesthetic mechanism of architecture from both philosophical (ethical, political, aesthetic) and psychological perspectives.
Task 2: Architecture Theories & Practices

There was a filtering process to discern the exemplary qualities and design principles of emotional architecture for everyday life from the previous architectural design theories and practices by synthesizing the multidisciplinary knowledge obtained from the completion of task 1. The first step includes a series of critical review on cause and effect of several main architectural movements that fluctuated with the social changes in Europe and North America from the 1860s to 1980s, and are still influential for contemporary architectural practice in a certain way. The second step refers to a comparative case study on two leading architectural design trends at present, which are consciously using mutually resistant design philosophy and methodology, and emotionally perceived as heroic architecture versus serene architecture. Finally, field case studies in four Nordic countries, Finland, Sweden, Denmark and Norway were conducted during September of 2013 in order to recognize the architectural phenomenon of welfare states and testify the significance of cohering architectural design considerations to the local cultural, natural and social contexts for general improvement of social and individual well-being. The selected projects for visit were assessed as the good examples of emotional architecture that were expressed in individualistic artistic way but shared a common Nordic tradition of tying up with regional nature and culture. Meanwhile, these projects sincerely followed the welfare state concept of benefiting people’s well-being equally on a daily basis (See the list of selected Nordic architects and visited architectural works in Appendix A). Considerable amount of information about their design concepts, innovated materials and techniques, and creative design methods were collected by field notes and photographs as well as by consulting the architects’ own literary manifestations.

Task 3: Context Studies

Documents and statistics in relation to demographic status of population ageing, socio-political paradigm of societal elderly care, and financing and management tool for the creation of senior living architecture in a global context were reviewed, and analyzed in a form of comparative study only when regional differences are remarkable. Literatures in research area of ageing were also consulted in terms of age-related changes in sensory perception, cognitive functioning, emotional states and behavioral tendency, as well as external interventions for active ageing.

Task 4: User Studies

User study was conducted from May to December of year 2013 at La Sagrera Retirement Home and Day Care Center in Sant Andreu district of Barcelona by using three methods: semi-structured interview, participant observation (with experiment) and non-participant
observation. The study site is an official exemplar of public care facilities in the area of Catalonia autonomous community of Spain with respect to both design and care. Combining with a volunteering work in the social activation sector two hours a week, non-participant observation on the elderly daily living behaviors in the communal space as well as the participant observation by the use of planned activation activities and experimental stimulants for testing elderly’s sensory perception, cognitive judgment and behavioral reactions to the cultural stimulants has been carried out. The activation activities were organized for two groups of elderly participants. One group consisted of around 30 users of day care center in the ground floor; and the other involved around 30 residents who live in the first floor and have relatively better physical and mental states than another two upper floors. The semi-structured interviews were done respectively with the architect Professor Luis Bravo on his design strategies combining with observation on architectural setting (See interviewing guide in Appendix B), and three geriatric experts of working staff, Sandra Nocete (psychologist), Fran Ros (social educator), and Josep Alcocer (physiotherapist), focusing on the topic of environmental impact on the elderly’s well-being at psychological level (See interviewing guideline in Appendix C).

Task 5: Precedent Case Studies

Adopting a typical empirical research approach, four precedent cases of senior living architecture were studied. Three of them are European cases including senior apartment in Masans of Switzerland, elderly care home in Alcácer do Sal of Portugal, Santa Rita Geriatric Centre in Menorca; another is an experimental residential case, Reversible Destiny Lofts in Mitaka of Japanese. The chosen European cases were identified as representative exemplars of creative, functional and economical design for senior living. The Japanese case announced a radical philosophy of architecture to resist ageing and death, which remains unproven until now, but has shown a kind of revolutionary potential for the future vision of architecture. All the cases were analyzed based on the project data, drawings and images, the architects’ descriptions, reports consulted from professional and/or social media.

International Joint Training Program

As extended practical research on architecture design for senior living architecture in the social context of China, an international joint training program at the Institute of Housing and Community of Tsinghua University in Beijing was conducted from April to August of year 2014. During this period, the current situation of development and design of senior living architecture was investigated via various academic and professional conferences on the topic of Ageing Industry in Beijing and field studies in different types and standards of elderly care
facilities in China. In turn, the accumulated knowledge and obtained outcomes from this doctoral research project were also applied in diverse research programs and practical design projects of the Institute, including the compilation of *National Standardized Atlas of Day Care Centre* and *Guidelines of Welfare Architecture*, experimental concept of innovative housing for the aged corresponding to the exhibition of “House Vision in Asia” advocated by Japanese graphic designer and curator Hara Kenya, who is also the art director of MUJI since 2001, feasibility study and schematic design for several senior living communities and elderly care facilities in Beijing, Chengdu and Hangzhou city of China. Generally, this training program has greatly contributed to enhancing the applicability of the final outcomes of this doctoral research project; and also as a result, several papers and conceptual design related to the research topic have been published in 2015 and 2016 (see the list of publications in Appendix D).

### 0.6 Theoretical Framework

This research has abandoned the canonic approach in architectural research, which usually defines functionality and aesthetic feature as two separated aspects of architecture. Rather, it complies with a contemporary trend of viewing architecture as an interactive medium between people and natural/social environment beyond its own physical setting for utilitarian purpose. Architecture as such shall hold a “sense of the whole pattern, of form and function as a unity” (McLuhan, 1964, p.13). This idea can be traced back to the ancient Greek philosophers’ metaphysical theories of beauty, but nowadays, with the advancement of human science and technology, the integration of form and function of architecture for everyday life can be scientifically studied and defined in an interdisciplinary theoretical framework that not only involves the philosophical understanding of architecture, but also modern psychological knowledge about how aesthetic experience would occur, and the role of such a emotional and cognitive progress in optimizing human-environment interactions.

Considering that the macro-qualities of everyday architecture are deeply subject to ethical, aesthetic value and social-political paradigm of a society, while its micro-qualities should deal with individual’s psychological pattern and aesthetic experience, the correlated theories and research outcomes in the fields of environmental aesthetics, positive psychology and emotional design were synthesized as theoretical framework of conceptualizing emotional architecture for everyday life through a comprehensive literature review.

#### a) Environmental aesthetics: Aesthetic Values & Aesthetic Experience of Everyday life

The established aesthetic values in a society fundamentally impact people’s aesthetic interest and taste as well as guiding the tendency of art and design. The traditional philosophy of art
despised the functionality of architecture, and only denominated a building designed with classical aesthetic standards and monumental significance as architecture. Hence, Aesthetics of architecture was classified as visual art, and the creation of architects or artists was not necessarily validated by the usability of architecture, but the taste of the owner. When collective housings and public buildings for the massive people instead of personal custom design became primary commissions for the architects from the beginning of the 20th century, some contradictory architectural notions emerged from various perspectives of metaphysical aesthetics, and flooded along with alternately debuted modern art and architectural movements in response to the social changes. Almost all these notions finally have rebirthed and mixed in the contemporary era, while intensive debates still continue among architectural academics and professionals regarding which is the essential value of modern architecture to benefit human society. The confusion and paradox of aesthetic notion has resulted in a problematic trend of creating iconic buildings. Many of this kind of design practice stresses novel forms and technologies as symbolism of architecture for presenting triumphal image of human power, while they are not responsive to the functional, social and environmental value of ordinary people’s everyday life.

*Environmental aesthetics* has been developed as a branch of analytic aesthetics in the last forty years. Except for embracing aesthetic appreciation of natural environments to the scope of aesthetics, the discipline has broadened to include human and human-influenced environments, including the examination of that which falls within such environments, giving rise to what is called the aesthetics of everyday life (Carlson, 1999b). The development of environmental aesthetics has been encompassing more individual human factors and a broader scope of environments, including the natural environments, social settings, built environments and even virtual environments for learning and communication, while retrieving the very essence and useful experience of traditional aesthetics of art (Carlson, 2012).

An interdisciplinary perspective combining philosophic, ecological and cognitive dimensions is the most essential breakthrough of environmental aesthetics starting from the end of 20th century. Recent research on aesthetic appreciation is thus directed from the a priori speculative way of metaphysical philosophy of art toward scientific studies on the behaviors and psychological mechanism of aesthetic appreciation by empirical methods. The aesthetic objects are also expanded from the visual and performing arts to include natural and man-made environment, and human activities of everyday life, such as cleaning, cooking, gardening, etc. which could be the art of life by conscious or unconscious design. This inclusive vision better fits more complex context of contemporary society and tends to establish appropriate human-environment relationship through motivating every meticulous
improvement rather than inhibiting human impact on nature; meanwhile, the cognitive/ non-cognitive approaches of aesthetic appreciation proposed by environmental aesthetician A. Carlson remind us of the discrepancy of aesthetic experience and judgment between architectural professionals and non-professionals (Carlson and Berleant, 2007).

Furthermore, the research team of Leder et al. at the department of psychology of Vienna University worked out a model of aesthetic appreciation based on their studies on psychological mechanism and neurobiological base for appreciating artwork or object of aesthetic interest. This model shows that a cognitive process of aesthetic experience can automatically happen for the appreciator without specific expertise of art or design when the cognitive functioning of perceptual analyses, implicit memory integration and explicit classification based on his/her previous experience and personal taste are activated by the aesthetic objects. Continuously upgrading affective states will accompany this process and vice versa are appraised, resulting in an (aesthetic) emotion (Leder et al., 2004). Such a psychological mechanism implies that easily perceptible qualities and relevant experience to the user’s personal memory and taste are crucial for user-centered architecture design instead of any specific artistic law, style and symbol to stimulate necessary emotions.

b) **Positive Psychology: Individual’s Needs, Motivations and Emotions**

Psychological needs are much harder than physiological needs to capture for architects and designers not only because they are intangible, but also because they are subjective judgment that would be largely affected by the internal or external factors of individuals. In the classic time, architects and artisans worked personally for the owner of architecture, who was usually the user as well. However, in the modern time, the initial investors and/or developers of most of architectural projects are not the end-users; design brief is thus made from commercial purpose of the investors and developers, and arbitrary assumptions of architects about people. This working model actually has make architecture emotionally alien, abstract, and less supportive to the people. Apparently, there is an urgent need for architects to be aware of this situation, and find a reliable way for designing for their well-being based on scientific understanding on the users’ psychological mechanism of perceiving, using, feeling and judging their living environment.

Modern psychology studies on the functions and mechanism of human emotions from all the biological, cultural and social dimensions. The importance of emotions for cognitive judgment, decision-making and motivation of behavior from instincts to incentives has been proven. Subjective well-being equally as happiness or life satisfaction was first set as research theme in humanistic psychology, which emerged in the middle of the 20th century
as a new force of psychological study to address the individual’s subjective, conscious experience in contradiction to another two predominant objectifying approaches of behaviorism and psychoanalysis. Although the approach of humanistic psychology has been esteemed to hold advantage in obtaining a holistic and profound view on individual’s psychological pattern, its assumption of free will and qualitative research methods are often criticized as unscientific.

Positive psychology has been formally established as an academic research field since the end of the 20th century based on the achievements of humanistic psychology, but with an attempt to promote the integration of dispersing researches in this direction while triggering more efforts of emphasizing scientific study of the strengths and virtues that enable individual and communities to thrive (Seligman and Csikszentmihalyi, 2000). Compared to the previous sociological studies on social and individual well-being from an ideological perspective, the studies in positive psychology can more concretely reveal the fundamental influence of human factors and external conditions, and propose intervention solutions at a practical level.

For example, the relationship between subjective well-being and age has been studied based on the data analysis of World Value Survey (WVS), American General Social Survey (GSS) and Eurobarometer. Unlike to a common social myth that the elderly would suffer more depression and misery, the result shows that the state of subjective well-being follows to an U shape along the lifespan, which means, people at middle age normally has lowest status of happiness due to the stress from all aspects of life, such as job, family and social relationship, etc. (Blanchflower and Oswald, 2008). The research team of Carstensen et al. at the Stanford Center on Longevity has proved that emotional ageing appears to benefit from age in contrast to the decline associated with physical and cognitive ageing. The elderly people on average has potential to achieve their own subjective well-being by choosing more relevant and positive information to capture, and more stable and empathic social network to maintain, but not simply as the more is the better as commonly imagined (Carstensen et al., 2011). This implies that high level of psychological well-being is achievable and maintainable through positive emotional interventions no matter that sharp declination in physiological state is inevitable for the older people.

Subjective well-being and health are mutually influenced and mental health, meant high emotional satisfaction and low cognitive diseases, appears more crucial than physical frailty and disability for the elderly to maintain the quality of their lives (Keyes and Lopez, 2002). It is noticeable that external interventions including environmental richness and stimulation become more significant for prevention from health problems at older age.
The role of wealth for subjective well-being has been significantly studied since the 1970s when the United States and Western European countries transformed into an affluent society. It has been found that after a certain threshold there seems to be no highly correlation between income and happiness (Easterlin et al., 2010). However, focusing illusion of being richer to be happier was found among all the interviewees, and has misled a tendency of excessive production and luxury consumption (Kahneman et al., 2006).

Cultural variation has also been regarded as an important influential factor. It was observed that predictors of happiness for the individualistic cultures include elements that support personal independence, a sense of personal agency and self-expression while for the collectivistic cultures, predictors of happiness focus on an interdependent self that is inseparable from significant others. Nevertheless, the happy individual in both kinds of cultures share the common qualities of high self-esteem, a sense of personal control and consistency of identity; and self-expression produces a greater payoff compared to seeking approval outside oneself (Suh and Koo, 2008). This indicates that to a large extent, a universal methodology of psychological interventions targeted to subjective well-being could function for different cultures.

As far as the psychological mechanism of subjective well-being, some empirical researches has indicated that changing external conditions only has a temporary impact on the state of subjective well-being since people become accustomed to a positive or negative stimulus of a circumstance, a single or recurring event. This psychological process is termed as hedonic adaption. The strategies of interventions whether for impeding adaption process to enhance and sustain happiness in the positive domain or promoting adaption to facilitate coping in the negative domain are both valuable for increasing subjective well-being. In this sense, the intriguing points for architecture design to intervene also lies in the psychological mechanism of creating or associating with (a) varied and dynamic, (b) novel and surprising experiences to thwart or slow down adaption (Lyubomirsky, 2011). Though, it is also need to be recognized that both positive and negative affect cannot be eliminated in people’s everyday life; and happiness just results from the frequency, not the intensity of positive versus negative affect (Diener, Sandivik and Pavot, 1991).

With respect to this inherent mechanism of achieving subjective well-being, it is crucial to discuss appropriate environmental intervention for everyday life with a clear scope of providing living experience with dynamic rhyme and aesthetic appeal instead of agitating any type of intensive emotion like what a pure art work is supposed to do. Thus, although architecture itself cannot change as a fixed physical setting once it was built, architectural environment is actually a dynamic composition of architectural setting, and other changeable
natural elements, objects or events of everyday life, which together would play a role in producing emotionally positive sceneries beyond its utilitarian function or its aesthetic value as artistic creation.

c) Emotional Design: Design for Activating Positive Emotions

Since human society and values are changing accordingly as human science and industrial technologies are advancing, the different fields of design such as architecture design, industrial design, communication design, graphic design, and so on, all face new opportunities and challenges to go forward in terms of their cultural philosophies and methodologies.

A few overlapping design philosophies originated from and the disability movement and the impact of user-centered design on the quality of life are worth mentioning at first due to their contribution to promote accessibility and usability of products and environments. From 1960s when British architect Selwyn Goldsmith (1963) pioneered the concept of free access for disabled people until 1990s, American architect Ronald L. Mace coined the term “universal design” in 1996 when he formally renamed his accessible design research center, as The Center for Universal Design. He defined universal design as the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design (Mace, 1996). However, under such a greatest and all-encompassing expression, the seven Principles of Universal Design abstracted by Mace only represent a very limited control in aspects of usability engineering, and far can match the complexity of complete design thinking concerning all external contexts and inherent creativity of design. Nevertheless, American style universal design seems easy to remember and diffuse as a label of products or services for marketing purpose.

In contrast, similar concepts such as inclusive design and design for all developed in Europe focus more on context, process and practice. Considerable governmental or non-profit funding have been put onto ergonomic and human factors research, such as the RACE (Research in Advanced Communication Applications in Europe) program of the European Commission and the Design for All Europe platform of the Institute for Design and Disability (EIDD). The research outcomes have been widely applied to the design of technology, instruction, services, and other products and environments and evidently improved satisfaction of functional needs. The technical measures in architecture such as elevator, wheelchair ramps, handrails, handicapped bathrooms, color and signature system for orientation, etc. have been popularized.
However, merely functional quality may not be related to people’s psychological needs, even hardly can be meaningful as a quality until sensory stimuli and cognitive meaning are added to make aesthetic experience happen to users, herein the most intriguing and special part of capability associated to the discipline of design. Theoretically and practically, aesthetic quality responsive to people’s psychological pattern as well as its implication, application and its relationship with functional design are better defined in another trend of research on emotional design.

*Emotional design* moves forward to promote user-product interactions through emotional and cognitive process in the light of new scientific knowledge of aesthetic experience and human emotions. Concerning a product’s functional expression and communication of design language, many different perspectives contribute to define the qualities of a good product. For example, in the early stage, two professors of industrial design Krippendorff and Butter (1984) believed that product semantics should properly communicate the message of how to use a product while a product also possesses the function of being self-expressive. Later, the product’s narrative performance was specified to communicate psychological feelings.

The design researcher of Philips, Jordan (1998) suggested eight different kinds of pleasure based on an interview research, which with their influence evaluated from high to low, are “security”, “confidence”, “pride”, “excitement”, “satisfaction”, “entertainment”, “freedom” and “nostalgia”. Also he concluded the properties associated with pleasurable products are good features, usability, aesthetics, performance, reliability, appropriate size, convenience, low cost, and practical.

The professor of design, usability engineering, and cognitive science, Donald Norman (2005) first coined the term of *Emotional Design* as a theoretical concept in his book titled *Emotional Design: Why we love (or hate) everyday things*. In this book, he stressed a crucial role of emotions in the human ability to understand the world, and how they learn new things. Norman argued that aesthetically pleasing objects appear to be more effective to the user, by virtue of their sensual appeal, and a good design must address the user’s cognitive processing at the three levels of visceral, behavioral and reflective. Visceral level is related to external beauty; behavioral level to fun and function while reflective level emphasizes self-image, personal satisfaction, and memory, etc.

No surprisingly, the recent researches have been conducted on the “wow design” factor, the exclamation of excitement. For example, the professor of Industry Design of Delft University of Technology, Desmet (2005) synthesized pleasant surprise, fascination, and
desire to identify the “wow-experience”, with which he formed the layered-emotional approach.

With a solid functional base on ergonomic technology, the potentiality of emotional design to promote product’s own image and attractiveness, and thus motivate customer consumption by arousing the pleasant feelings win the opportunities for wider application in practice and continuous development in research. A typical case is Alessi, the well-known company of housewares and kitchen utensil from Italy. Alberto Alessi (1998) developed a design formula to evaluate its products in order to strengthen the competitiveness of products, which includes four appraisal factors: function (F), communication language (CL), sense/memory/imagination (SMI), and price (P).

More relevant design research to human well-being explores the possibilities to design with the purpose to influence mood continues to emerge in the domain of (preventive) health care (e.g., Veenhoven, 2008; Javelot et al., 2014; Valenza et al., 2013). Moreover, researchers have started to explore the effects of various interiors on mood, such as in hospitals (Dijkstra, Pieterse and Pruyn, 2008; Salonen et al., 2013), classrooms (Lundquist, Kjellberg and Holmberg, 2002; Woolner, 2010), living rooms (Yildirim, Lutfi Hidayetoglu and Capanoglu, 2011), and offices (Kwallek et al., 1997; Küler et al., 2006). But in general, these researches are very detailed in aspect of interior decoration or technical applications, whereas little research on holistic theory and methodology of emotional architectural design can be found in the realm of architecture design.

Nevertheless, there is a big potential to develop the research on emotional architectural design based on some architectural cases, such as the works of Finnish architect Alvar Aalto, Mexican architect Luis Barragán, Swiss architect Peter Zumthor, Portuguese architect Álvaro Siza, etc. Although their modern architectural languages are very distinctive from each other, their works are similarly rooted in regional context and evoke the feelings of poetic serene, sensible, familiar but also kind of surprising mainly by means of unique spatial experience rather than external form. These emotional qualities are in stark contrast to the intensive visual impact and “wow-effect” of contemporary avant-garde architecture, and can be distinguished from the aspects of the type of emotional stimulations, and the frequency and intensity of emotional effect.

It should be noted that outstanding form and “wow-effect” may be also important for commercial buildings and real estate developments to attract the customers, but not exact for enhancing long term human-environment interactions. More than for obtaining pleasant emotions at the moments, we would expect the efficacy of constant emotional pleasure to
motivate correlated cognitive processes and behaviors that will benefit our mental and physical health concretely, and reach our cognitive judgment of life satisfaction. Therefore, with the enlightenment of product design field in terms of how to synthesize the knowledge of psychology and neuroscience into design, this research work continued in this direction for generating new systematic knowledge of emotional design theory and methodology especially for architecture design.

0.7 Overview of the Chapters

The theoretical research to identify the general concept and methodological model of emotional architecture for everyday life and the applied research to test its applicability in the specific domain of architecture design for senior living have been sequentially presented as Part I (Chapter 1 & 2) and Part II (Chapter 3, 4 & 5) in this thesis.

Part I:

In Chapter 1, the related philosophical and psychological theories about the role and functioning mechanism of emotions in influencing people’s perception, motivation and behavior for formulating ethical and aesthetic ideology of architecture, aesthetic appreciation, environmental interaction and subjective well-being, have been reviewed and taken as evidence to study why emotional design approach can be used as a tool to promote positive interactions between people and environment, and how to comply user experience of a product or environment with user’s long-term well-being.

Chapter 2 shows a filtering process to discern the exemplary qualities and design principles of emotional architecture for everyday life from the previous architectural design theories and practices, including a critical review on cause and effect of several main architectural movements that fluctuated with the social changes in Europe and North America from the 1860s to 1980s; a comparative case study on heroic architecture versus serene architecture, which are two leading architectural design trends at present; and a series of regional case study on Nordic architecture to testify the significance of cohering architectural design considerations to the local cultural, natural and social contexts for general improvement of social and individual well-being.

Part II:

Chapter 3 interprets the main influential factors that affirm or oppress design quality and efficacy of senior living architecture in a global context, and comparative studies on
distinctive regional or national socio-political paradigms for design and construction of senior living architecture.

Chapter 4 explores the essential spatial implications responsive to elderly’s psychological needs for everyday life based on the data collected from a series of field studies on the elderly user and the performance of architectural setting in a selected public care facility in Barcelona.

Chapter 5 presents case studies on four selected architectural projects for senior living with focus on the effective and efficient architectural design concepts and methods that can be generalized for creating emotional senior living architecture.

Chapter 6 includes a series of discussions on the results and findings of the conducted researches. And, a methodological model for designing emotional architecture for everyday life and a working model of emotional architecture design for senior living have been established and associated as a practical approach to enhance reciprocal improvement of architectural research and practice with an inclusive vision of human health and well-being.

Chapter 7 draws general conclusions about the theoretical and methodological orientation of architecture design for everyday architecture and applicable significance for senior living architecture, as well as outlines limitations of this research and recommendations for the further research.
Part I
The Role of Emotions in Human-Environment Interactions

Emotion is an ancient philosophical theme that was recorded in the origin of Western and Eastern civilizations, such as moderate *passion* associated with human virtue in the Aristotelian view, *qi* meaning life force in traditional Chinese culture (also known as *gi* in Korean culture and *ki* in Japanese culture), which is the underlying principle in traditional Chinese medicine and martial arts. In modern psychology, emotion is defined as a “positive or negative experience that is associated with a particular pattern of physiological activity” (Schacter et al. eds., 2011, p.310). In the field of affective neuroscience, emotions are brief in duration and consist of a coordinated set of responses, which may include verbal, physiological, behavioral, and neural mechanisms; and can be differentiated from a number of similar constructs as *feelings*\(^2\), *moods*\(^3\) and *affect*\(^4\) (Fox, 2008, pp.16-17). Such an

\(^1\) Qi literally translates as “breath”, “air”, or “gas”, and figuratively as “material energy”, “life force”, or “energy flow”. (DeFrancis, ed, 2003, p.1016)

\(^2\) Feelings are understood as a subjective representation of emotions, private to the individual experiencing them.

\(^3\) Moods are diffuse affective states that generally last for much longer durations than emotions and are also usually less intense than emotions.

\(^4\) Affect is an encompassing term, used to describe the topics of emotion, feelings, and moods together, even though it is commonly used interchangeably with emotion.
evolution of the definition about emotion reflects a tendency to reveal and control this mysterious and powerful vital force by the empirical researches.

As an architectural research inherently focusing on human-environment interaction, relatively holistic understanding on human emotions from multidisciplinary perspectives is the basic lesson to learn for embedding the emotional effects into architectural settings. This chapter therefore reviews and synthesizes the related philosophical and psychological theories about the role and functioning mechanism of emotions in influencing people’s perception, motivation and behavior for formulating ethical ideology, aesthetic appreciation, environmental interaction and subjective well-being, which all can be used by architects as evidence to chase the psychological root of the fallacy and inadequacy among the existing aesthetic ideologies, and find the potential emotional design approach to correlate aesthetic experience in and of architecture to human subjective well-being.

1.1 Philosophical Roots of Western and Eastern Classical Virtues and Aesthetics

Epistemology on emotion can be traced back to many ancient civilizations, but generally, the ethics, political philosophy and aesthetics of ancient Greece and ancient China are commonly considered as the basic philosophical source of Western and East-Asian culture, wherein the ideal human being and the rationale of the best life has been established. These classical archives appear valuable to reflect the root causes and inherent logic of newly emerging social problems as well as inspiring synthetic thinking and innovative solutions to maintain the direction of constructing our built environment for the essential human well-being.

In his ethical work Nicomachean Ethics (Book II 6), Greek philosopher Aristotle (384-322BC) interpreted that human beings’ cardinal virtues are temperance, courage, wisdom and justice, among of which wisdom sits above all of the others; herein moderate passions (synonymous as emotions of today) and actions so far as “to feel them at the right times, with reference to the right objects, towards the right people, with the right motive, and in the right way” are characteristic of virtue. As such, only a person with such virtues measured by emotions and actions has the potential of achieving the best goal of life - eudaimonia, which is a Greek word meaning happiness or sometimes well-being. Regarding ideal environment for the individuals, Aristotle appointed city as where is not just aimed to avoid injustice or for economic stability, but rather to allow at least some citizens the possibility to live a good life and to perform beautiful acts in his work Politics (Book VII). Integrating these two works, the ethical role of emotion naturally lies in Aristotelian virtues of individual citizens and correspondent to an appetite or capacity of displaying the virtues in the way of performing
everyone’s wisdom in a naturally political system of city-states, the “Polis” with the creation of art and architecture included.

Greek philosophers initially felt that aesthetically appealing objects were beautiful in and of themselves. Plato was inclined to a theory of an absolute beauty that took its place within his scheme of self-existing forms or ideas. He believed that beautiful objects incorporated proportion, harmony, or unity among their parts. In Philebus, he mentioned more concretely his preference for regular and mathematical forms as the straight line and the circle. Similarly, Aristotle stated that the universal elements of beauty were order, symmetry, and definiteness in Metaphysics, as well as magnitude in Poetics. Nevertheless, Aristotle gave art a relatively independent position to virtue as he wrote in Physics (Book II 8), “art either imitates the works of nature or completes that which nature is unable to bring to completion”.

Greek and Roman architecture materialized these aesthetic theories into reality through mathematical forms abstracted from beautiful natural objects including human body. According to the book De architectura, widely known as The Ten Books on Architecture, composed by Roman architect and civil engineer Vitruvius (around 80-15BC), firmitas, utilitas, venustas in Latin, which means durability, utility, beauty in modern English are three essential qualities that a structure must exhibit, while there is a series of order in terms of proportion, characteristic profiles and details to follow in construction for this goal. Durability was originally strengthened through the process of Petrification from primitive wooden structure details in the temples, and fundamentally formed the Western architectural tradition regarding the predominant application of durable materials such as stones, concrete, fired clay bricks, terracotta and ceramics. Utility and beauty probably could have a more universal significance as the principles for rational architecture highlighted by human beings’ wisdom to achieve the harmony with nature as fundamentally Vitruvius’s reference to declaim the essence of architecture is his perception to “the truth of nature”.

As a synthetic reflection of both human’s civic ideal in mind and the truth of nature of that time, Greek and Roman cities such as Athens (Figure 1.1), were generally planned in regular orthogonal structures once if the topography allowed; at the same time, there were always some organic architectural elements embedded in this kind of rational contexture, such as housing with central courtyard or atrium, entertainment facilities of theatre, amphitheater and circus, forum as central marketplace, baths, public fountains, etc. This model is grounded as the origin of vibrant city lifestyle since the late of 5th century BC in the Mediterranean region.
8. Bouleuterion  17. Panathenaic festival
9. Monument of the Eponymous Heroes  procession

Figure 1.1. Reconstruction of Athens, 5th century BC. (Source: Ellen Papakyriakou/Anagnostou, [online] http://www.sikyon.com/athens/)

Comparably, Confucianism founded by Chinese philosopher Confucius (551-479BC) in the Spring and Autumn Period of China (770-476BC) has been the dominant philosophy in Chinese traditional culture and also deeply influential to other countries, such as Japan and Korea, etc. Confucius emphasized that the most basic elements of personal and governmental virtue are ren, yi, li, zhi and Xin in his work Five Classics. Ren is an obligation of altruism and humaneness for other individuals within a community. Yi is the upholding of righteousness and the moral disposition to do the good. Li is a system of rites that determines how a person should properly act within a community. Zhi refers to the personal and communal cultivation of knowledge, and Xin means sincerity and loyalty. (Nylan, 2001)

As the priority of correctness of social relationships is indicated in all these five virtues, skilled judgment associated with emotional qualities is believed to be more effective than knowledge of rules for the individual to be harmonious with nature and other people in a unified state. It is also important to note that the spiritual realm of human beings is highly valued in Confucianism based on the belief of that human beings are teachable, improvable
and perfectible through self-cultivation and emulation of moral exemplars. Hence, spiritual sublimation in minds is the essential condition for human beings to attain the inner-peace and self-satisfaction rather than their property.

The unity of man and universe is the basic preposition in traditional Chinese philosophy as well as the highest aesthetic value of human creation. This notion is resulted from a subtle balance of tensions between Confucius and Taoism. The philosophy of Taoism is mainly represented by the theories of two sages, Laozi (6th-5th century BC) and Zhuangzi (4th-3th century BC). Different from Confucius, which emphasized moral and personal duty, Taoism advocates “inaction” as living attitude and carefree wandering with “Dao” - the way by following nature as the way to live. So, partially with the influence of Confucius Chinese architecture is valued by its spatial relationship among a group of buildings over an individual appearance. The traditional way of using orthogonal grid in city planning and wood structure system in building rarely change except the scale and decorative standard corresponding to social hierarchy and etiquette. However, design and construction of courtyard and garden oriented by the philosophy of Taoism were the most essential part of Chinese traditional culture to the people. Commonly, the void outdoor space filled with organic landscaping, kind of refined nature, symbolized a peaceful spiritual realm with virtues; moreover, emptiness connecting architecture and nature allowed people to imagine that they are in or part of something greater than the reality.

Song dynasty (960-1279AD) was the period when Chinese aesthetics got matured and flourished accompanying the commercialization of the society. The Directorate of Buildings and Construction during the mid-Song Dynasty Li Jie published the most important technical treatise on Chinese architecture and craftsmanship titled Yingzao Fashi in 1103 in order to provide a unified set of architectural standards for builders, architects, and literate craftsmen as well as for the engineering agencies of the central government. Bianjing (Figure 1.2), the capital of Northern Song dynasty can represent the highest aesthetic level of integrated built environment and social life at that period.
Ancient Greek and Chinese civilizations are respectively considered to be the seminal cultures, which provided the foundation of modern western and eastern culture. Comparing these two philosophical systems, we find that there are some essential commonalities in ethical values of East and West civilization. Both are humanistic with belief in people’s natural virtue and capability, and espouse to employ them for pursuing the flourishing of human beings as the best goal. Furthermore, moderate emotion is commonly deemed as the fundamental nature to gain the access to this goal. However, the differences in terms of focusing more on the individual or the community, and applying more the moral virtues or the intellectual virtues to decide the way to change this world made their social mechanism and the form of physical environment different geographically. Meanwhile, how people value the importance of ethical virtues for acts also change the environment chronologically along the evolution of each civilization.

From the examples of Ancient Greek Athens and Bianjing of Song dynasty of China, we recognize that all original buildings evolved out of the dynamics between needs (shelter, security, worship, etc.) and means (available building materials and attendant skills), but as human culture developed, architecture became a product of combining the needs, means and aesthetic value of human society. And as aesthetic value is tightly associated with ethical virtue, the aesthetic attributes of two cities had different focuses as well, not only the form of architectural prototypes varied a lot in terms of order, proportion, material, color, etc., but also the tension between the built environment and natural environment were different.
regarding their preference in solid and void, definiteness and indefiniteness. Anyhow, there is no granted evidence showing that geographically different philosophy and environment for living would result in different level of the flourishing of human society since both examples are the ones of the most prosperous cities in human history. Rather, the high level of certainty and coherence of ethical, political and aesthetic values in each philosophical system matter similarly to achieve harmony and unity of human society and living environment.

Hence, it is intriguing to see that western and eastern philosophical systems can be mutual reference for their people to realize their advantages and disadvantages in terms of the strength of rational judgment and emotional regulation as well as the way to balance these two capabilities. Moreover, aesthetics could be the most accessible point to start a kind of natural and reciprocal exchange and form a contemporary ideal of well-being and happiness for all, which is equally approachable by the use of aesthetic resources from different cultures.
1.2 Environmental Aesthetics of Architecture: Art, Nature & Everyday Life

The situation of contemporary architecture is not an isolated issue from the evolution of aesthetics responding to the radical changes along the modernization of human society. Especially as the Western countries and developing countries such as China have sequentially entered into the state of consumer society, the focus of cultural and economic interest has been shifting from appealing the minority elite to the mass. However, the field of architectural design has not successfully transformed yet. Whereas traditional aesthetic notion that tends to separate aesthetic value from architectural utilitarian functions has become hindrance to apply high quality architectural design for massively produced buildings, no new aesthetic theory has been validated in architectural academic and professional fields to guarantee the quality and efficacy of architectural design for promoting public built environment.

Currently, most of design fields have been ruled by the commodity aesthetics as functional homogenization of commodity in Information Age requires an additional image value and emotional attributes to increase the competitiveness of a product. Architectural design field has been affected as well. Many architectural design practices yield to the commodity principle of distributing design resources for maximizing the commercial profit or the symbolic identity of political power. Correspondingly, the architectural design approach has been developed from the degree of increasing the visual impact for capturing the instant attention of consumers rather than long-term user experience. As a result, excessive and deficient architectural design may exist in different aspects of one project or among the projects with different investment objectives.

Except for the commodity aesthetics, there are also some other different aesthetic ideologies among architecture researchers and professional architects rooted in different classical and modern aesthetic doctrines, or subject to personal preference of exemplary and subjective re-interpretation of aesthetic value and forms to make their own statement and practice consistent. Especially regarding the question of how to connect architectural aesthetics to contemporary everyday life, the most influential modern aestheticians and architects all have their own interpretations, but rarely can reach an agreement on what would be the ideal of everyday life to pursue, what architecture should be like to express, support or participate in everyday life, and which would be the right approach that could lead to a better built environment and everyday life.

The concerns about the relationship of architectural aesthetics and everyday life from the scholars with architectural education background are usually more connected with the social
considerations. For example, Architect Serge Chermayeff (1900-1996), who was born in Russia, but studied and taught in England and in U.S. since 1940, published many articles around the topic of everyday architecture along with his career life in order to fight against aesthetic obsession. The book Design and The Public Good collects all of his writings from 1930 to 1980. He discussed the issue of community and privacy on a global scale and characterized it as a general conflict between public and privacy purpose in all of technologically advanced nations of the west (Private Affluence and Public Squalor). With the attempt to obtain a deeper understanding of enduring problem of “form and function”, Chermayeff described function in terms of private activity and communal activity rather than private and communal space (Chermayeff, 1982).

In U.S., Chermayeff never became one of the mainstream members in both professional and academic field of architecture because of his independent and consistent standpoint of “scientific socialists”, who were emphasizing on the social organism combined with rejection of stylistic or programmatic precedent. His critical provocation and educational researches at least remain the topic of public good in valid debate. However, he didn’t want to confuse himself as leftist avant-garde artists or sociologist even he worked and discussed closely with them; actually, he had an environmental view that rejected those pursuits and recreations only for a moment.

More recently, the viewpoints of some American practicing architects as well as the scholars of prestigious American architecture schools were collected in the book Architecture of the Everyday. The book encompasses a historical view and different respects in relations to the topic, and a unified distrust of the heroic and the formally fashionable, as well as a deep suspicion of the architectural object as a marketable commodity. According to the book, most of the architectural theories and movements targeted to everyday architecture failed in the political and economic background of their times, while a few survived and transformed to different extent in some countries or regions (Harris and Berke, 1997).

In the paper “Henri Lefebvre’s Critique of Everyday Life: An Introduction”, the professor of architecture at Columbia University Mary Mcleod (1997) retrieved the mentality of French philosopher and sociologist Henri Lefebvre (1901-1991), who addressed the theme of everyday life and the nature of space intrinsically relevant to urbanism and architecture, and played a critical role in French cultural and architectural debates with the Surrealists in the 1920s and 1930s, with the Situationists in the 1950s and early 1960s, and with Utopia group in the 1960s. In opposite to the revolutionary claims of these avant-garde movements that intended to merge art and life, iconoclasm, and creative visions, Lefebvre insisted on the humble and ordinary, on a vibrant accessible art, and on an engagement with the “real”.
These disagreements finally led his commitment to transforming everyday life turned from avant-garde aesthetic experimentation to strategies for the planning of cities by the late 1960s.

Indeed, Lefevre wrote several influential works on cities, urbanism, and space. In the book *The Production of Space*, which became one of the most influential and heavily cited works of urban theory, Lefevre stated that “space is a (social) product [...] the space thus produced also serves as a tool of thought and of action [...] in addition to being a means of production it is also a means of control, and hence of domination, of power” (Lefevre 1974, translated by Nicholson-Smith, 1991, p.26). In his article “Propositions”, Lefevre (1967) proposed new programs of “multifunctional” and “transfunctional” buildings and spaces with emphasis on experience, on everyday life as festival, on liberation in all spheres of existence, all of which were fundamental to the emergence of euphoric moment without the precondition of global economic forces; thus is the way to fulfill his vision of collectivity, community, spontaneity and play. His prophecy about new forms of urban contact and sociability has been pretty much realized to some extend in a physical form in the developed societies, but his social vision appears to become another Utopia as well.

Professor of architecture at Yale University Peggy Deamer (1997) recalled the visionary artistic experiments and the writings of 1960s and 1970s utopian architects, Marshall McLuhan (1911-1980), Herbert Marcuse (1898-1979), and Fredric Jameson in her paper “The Everyday and the Utopian”. Utopian group addressed the faith in an “authentic” individual able to recognize true, not produced needs and desires. As such, Marcuse defined the aesthetic dimension as “the science of sensuousness”, whereby the individual can escape rational thinking and develop a sensuous, playful engagement with the world. Deamer concluded that the substance of utopian thoughts is not a guide to the future but a protest of the present, and the experience of sensuousness is not the solution, but just highlights the problem.

Architect and architectural educator Deborah Fausch (1997) mainly questioned the postmodern style of symbolic commercial/urban vernacular that the influential American architect couple Robert Venturi and Denise Scott Brown proposed as an approach of design practice in her paper “Ugly and Ordinary: The Representation of the Everyday”. The couple visually represented their architectural concept of the Complexity and Contradiction of everyday life by their exhibition of “Signs of life” in Washington in 1976 applying their inductive approach based on a huge collection and re-composition from the visual forms of American culture, so advocated by Venturi “the ordinary” - the conventional as opposed to the original. Fausch analyzed that the reason that this approach failed to be accepted as an
ideal concept of everyday life is that the content of the communication underlying the forms is often designed to disturb rather than confirm commonly held cultural patterns.

Architect and architectural critic and educator Joan Ockman (1997) interpreted the initial intention and the consequent dilemma of the American export of International style. Initially it was expected to be the success of abstract expressionism that transmitted the message of “a maximum of technical ingenuity with a minimum of dissent” (Hudgson, 1976, cited by Ockman, 1997, p.129) during Cold War. Correspondingly, the architects of international style aspired less to avant-garde heroics and aesthetic autonomy than to integration within the mainstream of capitalist production. Ockman regarded that this effort based on such a hypothesis that a major architecture might be defined as territorial, apolitical, and conservative of the status quo or normative if a minor architecture may be defined by deterritorialization, intensified political consciousness, and the anticipatory assemblage of new cultural forces. However, such an attempt to establish a design elite whose mission was to elevate the taste of capitalist producers and consumers failed in the engagement with the everyday by the end of 1960s, and finally led to a polarized situation. While the minority of architecture served the interests of a minor but dominant power, the majority of architecture dismissed the average individual’s sense of self. Ockman suggested that currently we need a new program of architectural theory that addresses itself to the issues of normative practice rather than ally with avant-garde projects, which as she regarded has reached an impasse.

Comparing with architects’ bold design ideologies and approaches since the beginning of the last century, the theoretical study on contemporary aesthetics of architecture from the perspective of aestheticians and philosophers seems more conventional as most of contemporary aestheticians and philosophers continuously discuss the concept and approach of architectural aesthetics within the traditional criteria of visual art, and thus more concern about the problem of aesthetic degeneration in contemporary architecture practice.

American philosopher and educator of aesthetics, Harry S. Broudy (1905-1998) provided us a relatively complete concept model of architectural aesthetics (Figure 1.3). Broudy’s philosophy was based on the tradition of classical realism, dealing with truth, goodness, and beauty, and also influenced by the modern philosophy existentialism and instrumentalism. He organized the elements of architectural design into four categories as Sensory, Formal, Technical, and Expressive. Most of architects that were educated in the last follow to this kind of guideline. This model is still helpful now for architectural students as basic aesthetic skill training, but obviously lack of updating to cope with the new resources and possibilities emerged with the changes of contemporary lifestyle and social context.
The book *Architecture and Civilization* (Mitias ed., 1999) is a collection of the typical focuses and perspectives until the end of last century of some leading aestheticians in field of aesthetics of architecture.

Particularly respective to the trend of neglecting aesthetic design in architecture, Diffey (1999) stressed that we should not think of architecture uses in narrow and precisely specifiable senses, but such as it were a spiritual utilitarianism as well in his paper “Building and Human Well-being”. However, he limited so-called spiritual utilitarianism to aesthetic looking, and didn’t get approach to investigate whether or not there is a correlation between the aesthetic look of something and its effects on mental health.

With a more stressed tone, Leddy (1999) regarded that the primary task of architecture is to express spirit within the context of progressive life of a civilization in his paper “Architecture as Art”. Nevertheless, the spirit for Leddy refers to valuable aesthetic experience; and creative imagination is the tool to fulfil the aesthetic charge of architecture, which is a matter of perceiving something in a heightened way so that the perceived object has an aura of potentiality. He also developed Goodman’s view of that exemplification is a major way that architectural works mean so far as the properties exemplified in art are not just presented for our attention, but transformed for our appreciation through artistic framing devices, such as rhythm, order, simplicity, smoothing, polish, the use of actual frames, and the contextual framing of institutional setting and art theory.
Baljon (1999) pointed out that there are not strictly physical factors stating architectural creation as works of art in his article “As Architecture”. By holding on the primacy of art in the experience of beauty, he preferred to deal with the imponderables of architecture in terms of “setting and rituals”. For him, daily life activities at private residential level may be classified as functions, but all have a ritualistic dimension, which can be significantly enhanced by an appreciated setting. In the case of public facilities, they must accommodate features that might enhance the presence of such building through cultivation of the rituals that are easy enough to come by.

Unsurprisingly, without a more comprehensive and practical framework, the debates on the stylish forms and true value of architecture become usual, but all depart from the substantive problems and appropriate solutions. Nevertheless, environmental aesthetics, a newly rising sub-field of philosophical aesthetic has appeared as a force to break the ice.

The root of environmental aesthetics can be traced back to the eighteenth century when the founders of modern aesthetics began to take nature as a paradigmatic object of aesthetic experience and developed the concept of disinterestedness as mark of such experience. Since then, a lasting controversy about if appreciation of nature is aesthetics experience in philosophical perspective never stopped until the last third of the twentieth century, a renewed interest in the aesthetics of nature emerged as a response to the growing public concern about the apparent degeneration of ecological and aesthetic aspects of environment. British philosopher Ronald Hepburn (1927-2008) challenged both the idea that nature appreciation is not aesthetic and the persistence of art-oriented approaches to the aesthetic appreciation of nature, and further demonstrated that there could be significant philosophical investigation of the aesthetic experience of the world beyond the art world in his seminal article “Contemporary Aesthetics and the Neglect of Natural Beauty” (Hepburn, 1966). Hepburn not only generated renewed interest in the aesthetics of nature, but also laid foundations for environmental aesthetics in general as well as for the aesthetics of everyday life.

Canada aesthetician Allen Carlson (1999a) proposed a new concept of everyday architecture by redefining the aesthetics of architecture to be part of aesthetics of everyday life other than the philosophy of art in his paper titled “The Aesthetic Appreciation of Everyday Architecture”. He argued even the paradigm works of architecture, as they are buildings, have functions and thus are intrinsically connected to the people and cultures that use it, and related to other adjacent buildings, surrounding landscapes and broader cityscapes. So, although the concentration on the unique, sculpture-like works of architect as “artist” has been and continuous to be ubiquitous, in general the buildings do not easily fit into a concept
analogous of a favored concept of a work of art, that of a unique, functionless, and typically portable object of aesthetic appreciation. Correspondingly, Carlson established the ecological approach to promote the appreciation of everyday architecture under the concept of “Functional fit” and thereby focus our attention on buildings, cityscapes, and landscapes looking as they should.

Carlson (2006) broadened the concept of everyday architecture to environmental architecture in another essay “The Aesthetic Appreciation of Architecture under Different Conceptions of the Environment”. While he admitted that aesthetics of architecture focuses first and foremost on appearances, on that which is perceived by the senses, it is not necessarily to relegate it to the realm of the superficial. Rather, an emphasis on whether structures appear appropriate within their environments immediately moves the matter beyond simple appearances.

So far, environmental aesthetics have expanded from their initial focus on natural environments to consider human and human-influenced environments as well as everyday life in general. More recently, Carlson (2008) interpreted a new theoretical framework of environmental aesthetics from cognitive and non-cognitive views stemmed from psychological cognitive science in his paper “Environmental Aesthetics”. Cognitive approaches to raise appropriate aesthetic appreciation of human environments refer to scientific knowledge and information about the nature of object of appreciation, and relevant cultural and historical traditions to particular groups of people. Non-cognitive approaches include engagement, arousal model, mystery model and imagination. Engagement approach stresses the contextual dimensions of nature or human environments and our multi-sensory experience of them involved as a total immersion (Berleant, 1992). Arousal model refer to a more visceral experience emotionally aroused by nature or object of appreciation that does not require any knowledge gained from science or elsewhere (Carroll, 1993). Mystery model contends to incorporate a sense of mystery involving a state of appreciative incomprehension (Godlovitch, 1994). The imagination, distinguished as many different kinds like associative, metaphorical, exploratory, projective, ampliative, and revelatory imagination, also could be aroused instinctively to reveal kind of insight of abstract meaning behind.

More specific studies also have been done in the field of environmental aesthetics. For example, Jessica J. Lee (2010) proposed a concept of aesthetics in domesticity in her paper “Home Life: Cultivating a Domestic Aesthetics”. Lee argued body-cantered model based on perception itself rather than on the objects perceived must be adopted in consideration of domestic aesthetics. Various aesthetic approaches should be synthesized until achieving a balance of livability and composition, behaviors and domestic order, spontaneity and
choreography, attentiveness and habit, etc. Lee concluded that the domestic pleasures are afforded through a sense of accomplishment, through engagement with surface qualities, and through instant awareness of tactile, aural, visual, and olfactory sensations in the movement, and how all these are shaped and enhanced through imaginative capacities such as memory and nostalgia. By contradistinguishing Lee’s viewpoints and the current practice of housing design, we can find that most of residential projects neglected the domestic aesthetics or misunderstood it as domestic decoration.

In the framework of environmental aesthetics, a wide range of opinions, studies, and approaches of architectural scholars and educators, practicing architects, environmental engineers, policy advisor and project developers, etc. are constructive as well as innovative for promoting the theoretical and practical significance of aesthetics of everyday life.

In the book Building Happiness (Vernick ed., 2008), environmental engineer Max Fordham (2008) defines comfort as a state of mind that has developed through evolution to encourage us to behave in ways that ensure our survival in his essay “The role of comfort in happiness”. He pointed out modern consensus that just using mechanical systems and energy to provide a standard set of conditions is neither appropriate nor sustainable, while only experiencing our surroundings through our senses make us vibrant and alive, and feel happy. The key environmental conditions such as smell, noise, light and temperature need to be controlled from all aspects of sanitary requirement, sensory and emotional response, and eco-sustainability.

The professor of architecture in Oxford Brookes’ School, Byron Mikellides (2008) criticized that a considerable amount of conclusive knowledge from the studies of architectural psychology such as a better understanding of human needs, perception, color, Post Occupancy Evaluation (POE), participation and architectural aesthetics, and looking at objective as opposed to subjective criteria, are unnoticed in the field of architecture, and very limitedly taught in architecture schools. He worried that the architect without training in psychology or human aspects of design will either fail to understand the practical use of such research, or view it with unrealistic enthusiasm.

Considering such a big environmental change and long-term impact on human’s health and life quality that construction would result in, housing and public buildings for people’s everyday life shall not be allowed to become surplus commodities or futile artworks. It must be clarified that both physical and spiritual natures of everyday architecture are necessary to deal with the problems of reality and regular people’s emotions to be intermediate, herein the difference from artworks, which purely pursue absolute beauty or emotional agitation.
Meanwhile, both physical and spiritual nature shall work together to produce an inherent value of architecture to benefit people’s well-being rather than transfer aesthetic attributes to an additional value in order to seduce overdue production and consumption.

In general, neither metaphysical aesthetics nor commodity aesthetics is proper to orientate design for everyday architecture of today and future. The challenge for aesthetics of everyday life to orientate design research and practice lies in reunifying the ethical value and people’s motivation to behave appropriately and feel good, herein the potential for architecture to communicate such kind of information through engagement with people’s psychological pattern, and the uniqueness and creativity of architecture that largely respond to the geographical and cultural identity of the users and place as well as sustainable innovations in technique and material application.
1.3 Human Needs, Motivations and Emotions

Needs and Motivations

In the modern society, design for people’s needs becomes an arguable manifestation as the implication of human needs has been often deliberately manipulated for persuasive consumption. As such, people as consumers are trapped in the hedonic mill of living with better and better material conditions, and hardly feel happy and satisfied with their lives. Without exception, there is also confusion about what are the essential needs of people that architectural design should meet fundamentally among the architects, who represent in architectural work as two opposite processes of reducing it to mere utility and economy, or on the other hand to pure representation or aestheticization. To correct this situation, a clear recognition on human needs is the basic knowledge for architects to understand that except for being a material condition for people to use and be protected, why and how architectural environment could optimize people’s long-term well-being and lasting happiness.

American humanistic psychologist Abraham Maslow (1908-1970) theorized that people would travel up a “Hierarchy of needs” with five levels through their lives so long as they do not encounter insurmountable social or environmental obstacles. The lowest level includes the physiological needs for survival; the higher levels refer to the physiological needs of feeling safety, love and belonging, esteem, and self-actualization (Figure 1.4). Maslow pointed out that human needs at lower level must be met before the individual will strongly desire (or focus motivation upon) the higher ones; however, all the first four levels are the “deficiency needs”, which means indispensable for general people's life satisfaction. If these “deficiency needs” are not met – with the exception of the most fundamental (physiological) need – there may not be a physical indication, but the individual will feel anxious and tense. And relatively, self-actualization becomes “metamotivation” of people who go beyond the scope of the basic needs and strive for constant betterment. (Maslow, 1943; 1954)

| L1: Physiological needs - Air, water, and food, provide necessary protection from the elements such as clothing and shelter, sexual instinct, elimination of fatigue and pain |
| L2: Safety needs - Personal security, financial security, health and well-being, safety net against accidents/illness and their adverse impacts |
| L3: Love and Belonging needs - A sense of belonging and acceptance among social groups, friendship, intimacy, family |
| L4: Esteem needs - Achievement, prestige, status, competence, approval |
| L5: Self-actualization - Fulfillment of one’s unique potential |

Figure 1.4. Maslow’s Hierarchy of Needs (Reproduced by the author)
Some recent researches to question Maslow’s theory should be noted as well because there are also specific circumstances that we cannot ignore for addressing people’s psychological needs in architectural environment. For example, Goebel et al. (1981) found that Maslow’s hierarchy might vary across age groups through a survey study by asking participants of varying ages to rate a set number of statements from most important to least important. Children had higher physical need scores than the other groups, the love need emerged from childhood to young adulthood, the esteem need was highest among the adolescent group, young adults had the highest self-actualization level, and while old age had the highest level of security, it was needed across all levels comparably.

Cianci et al. (2003) argued that Maslow’s hierarchy of needs fails to illustrate and expand upon the difference between the social and intellectual needs of those raised in individualistic societies and those raised in collectivist societies. The needs and drives of those in individualistic societies tend to be more self-centered than those in collectivist societies, focusing on improvement of the self, with self-actualization being the apex of self-improvement. In collectivist societies, the needs of acceptance and community will outweigh the needs for freedom and individuality.

In general, these psychological studies have provided us a clearer perspective to see that personal needs drive people to form a hypothetical state (motivation) that activates behavior and propels one towards goals through incentives, which could be objects, persons, or situation that is perceived as being capable of satisfying a need/drive. As such, it is assumed in this research that the most essential function of design is to meet people’s needs by providing incentives, and motivate them to achieve a better goal and better state by their own.

**The Functioning Mechanism of Emotions**

In psychology, emotion is often defined as a complex state of feeling that results in physical and psychological changes that influence thought and behavior. Emotionality is associated with a range of psychological phenomena including temperament, personality, mood and motivation (Myers, 2004). Emotions are important for human vitality as English neurophysiologist and Nobel Laureate, Sir Charles Sherrington stated (1906),

“We are not machines. We are not automata. We are not puppets. We are not animals. We are human beings. We are alive. We have emotions. We have feelings. We have desires. We have needs. We have fears. We have hopes. We have dreams. We have ambitions. We have passions. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. We have loves. We have hates. 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William James and physiologist Carl Lange suggested that emotions follow behavioral responses rather than cause them; responses are instinctive behavior patterns (James, 1884). Nevertheless, the Cannon-Bard Theory argued that an event triggers an emotion and a response simultaneously (Cannon, 1927). From the cognitive perspective, the Schachter-Singer Theory found that all emotions have approximately the same arousal pattern; theorizes that variation is only in strength of the impulse and actions are largely dependent on our cognitive appraisal of the situation; the way we appraise is influenced by many factors, including other people’s reactions if they are present, and appraisal of the same emotion can be drastically different in different situations (Schachter and Singer, 1962).

Based on the discoveries made through neural mapping of the limbic system, the neurobiological explanation of human emotion is a pleasant or unpleasant mental state organized in the limbic system of the mammalian brain. Much of emotion's practical value comes from its interplay with neural circuits. Lövheim (2011) proposed a direct relation between specific combinations of the levels of the signal substances dopamine, noradrenaline and serotonin and eight basic emotions (Figure 1.5). The reward circuit is a loosely defined collection of brain pathways that seem to produce pleasurable feelings when activated. It is hard to say whether a pleasurable emotion is something that activates the reward pathway, or if activation of the pathway itself creates the emotion that feels pleasurable, but in either case the positive feelings foster a desire to have those feelings repeated. This may manifest itself in intense motivation to achieve gratification, up to the point seen in addiction.

![Figure 1.5. Cube of emotion (Source: Lövheim, 2011)](image)

Although emotional responses vary more than any one theory allows depending on the situation, and none of emotional theories mentioned above is currently accepted as completely correct, at least, we can make sure that our emotion is coherent with human
physio-psychological pattern and involved in both instinctive and conscious responses to external stimulus. Reward or reinforcement is an objective way to describe the positive value that an individual ascribes to an object, behavioral act or an internal physical state. Positive emotions cause a specific situation to be tied to feelings of reward, altering future decision making related to that situation or at least giving an understanding that that situation was a “good” one (Schultz, Dayan and Montague, 1997).
1.4 Psychological Implications of Well-being and Happiness

Nowadays, people in modern society are more likely agitated and manipulated by the intensive emotional stimulations embedded in the flood of political and commercial messages, and thus feel more and more difficult to stay in an undisturbed and lasting affective state of happiness even though the quality of material life is much better than before. The seemingly simple question of what is for the good and happiness of human individuals and whole society become most arguable among the scholars as well; and here is the root to produce many confusing and paradoxical views to justify the actual state of modern life and society. For example, the Whig view of history espouses that the rise of constitutional government, personal freedoms, and scientific progress definitely made people become more powerful than ever, and this power must have made people happier than the past, whereas the opposite one of romantic view believes that as humankind gained more power, it created a cold mechanistic world, which is ill-suited to our real needs. Both preconceptions are controversial concerning many conflicts with the facts, but they are widely influencing popular understandings of political and social development and disturbing people’s judgment and expectation in relations to a good life (Harari, 2014).

Under this situation, the studies on happiness have regained its importance in socio-psychological research fields since the late twentieth century. Different from the previous philosophical studies focusing on the metaphysical ideal of happiness, the socio-psychological scholars have been trying to explain this topic from the physical, mental and social dimensions of well-being based on human agency and social reality, and emphasize the applicable significance of empirical studies as a system of preventive interventions to help people in approaching their own positive emotional states. This section reviews this part of psychological knowledge in order to establish a clear viewpoint on the ethical and psychological implications of built environment for people’s general well-being.

1.4.1 Humanistic Psychology & Positive Psychology

There are two main fields of study in the history of psychology sharing the goal of promoting human potentials and well-being and practically contributing to psychotherapy for mental health. Humanistic psychology first emerged in the middle of the twentieth century as a new force to direct psychology towards the study of the uniqueness of human beings from the perspective of the individual’s subjective, conscious experience in contradiction to another two predominant objectifying approaches of behaviorism and psychoanalysis. Then American psychologist Martin Seligman founded positive psychology as an academic branch of psychology in 1998 to promote the integration of dispersing researches in this direction as
well as trigger more efforts of emphasizing scientific study of the strengths and virtues that enable individuals and communities to thrive (Seligman, 2000). Currently, although humanistic psychology still has a far-reaching impact on the way in which theory and research proceeds in psychology, cognitive psychology, neuroscience and positive psychology are in more dynamic segments of the arc (Waterman, 2013).

Positive psychology has roots in the humanistic psychology. Abraham Maslow, one of the leading founders of humanistic psychology, wrote extensively about positive motivation, positive growth and positive emotions (Maslow, 1943, 1954) and first used the term “positive psychology” in his groundbreaking book *Motivation and Personality* (1954). However, the succession between humanistic and positive psychology actually has started since 1980s, coupled with increasing differences in aspects of philosophical groundings about human nature, epistemology of choosing research methodologies, and the goals and strategies for the practical applications in therapy and interventions.

Humanistic psychology begins with the existential assumption of that people have free will and generically good and creative, and therefore views the self-rooted in experience, context and interpretation. According to the theories of Carl Roger (1902-1987), who was another key figure of humanistic psychology, this means that people must define themselves through consciousness and are responsible for the life decisions they make as well as need an environment that provides them with genuineness, acceptance and empathy for developing relationships and healthy personalities (Roger, 1951; 1959).

To the contrary, positive psychology espouses the ethical philosophy of human essence originated from the Greek philosophers that a true self also includes an individual nature of innate potentials and strengths as well as limitations and weaknesses aside from a generic human nature. Decision-making therefore is not an arbitrary undertaking, nor is a function of being shaped by the contingencies of one’s social milieu (Waterman, 2013) for positive psychologists, but a process of self-disclosure.

Humanistic psychologists typically use the qualitative research methods such as diary accounts, open-ended questionnaires, unstructured interviews and unstructured observations, with the phenomenological, idiographic objectives to understand the psychological functioning of specific individuals within their mental, physical, social, community, and broader environmental context. Hence, other psychologists, including positive psychologists, also criticized their unscientific-subjective concepts and approaches as the limitations of this research line. Hence, this kind of unfavorable position would not trouble positive psychology since positive psychologists are generally associated with a preference for using quantitative
methodologies with rigorous experimental and/or statistic techniques with positivistic, nomological objectives to understand general principles of human psychological functioning that are applicable across people or at least across broad categories of people. Nevertheless, humanistic psychologists would regard superficial about how positive psychology explore human potentials and well-beings.

1.4.2 Three Relevant Empirical Findings in Positive Psychology

a) The Components of Happiness

It has been commonly accepted among positive psychologists that subjective well-being is influenced by a combination of personality/genetics, external circumstances, and activities (Røysamb, et al., 2002). Nevertheless, they might weight and investigate the components of happiness in different ways.

The positive psychologists holding a top-down perspective regard that personal traits and interpersonal relationships provides a baseline for emotional responses and has a large influence on long-term subjective well-being (Diener, et al., 1999; 2008; Seligman, 2007; Myers, 2004). They work in a way of creating the theoretical framework to interpret a general picture of psychological well-being, in which community does not only mean a physical connection but also should embody personal meaning and hope as well as pleasant relationships.

Another group of positive psychologists working from the bottom-up perspective regard that happiness represents an accumulation of happy experiences and thus focus on testing the variables of experiences. Schimmack (2008) found that the emotions could be combined in many ways to create subtle variations of emotional experience. This suggests that any attempt to wholly eliminate negative emotions from our life would have the unintended consequence of losing the variety and subtlety of our most profound emotional experiences. Correspondingly, design efforts should mainly point to increase positive emotional experiences. Happiness is also concerned with the dimension of time. Lyubomirsky (2001) tested the timing dimension of happiness and found that changing one's external circumstances tends to have only a temporary effect on subjective well-being, whereas engaging in activities (mental and/or physical) can lead to more lasting improvements. Hence, suitable and attractive architectural spaces whether indoor or outdoor will be desirable. Kahneman (2010) explained the discrepancy by differentiating between happiness according to the “Experiencing Self” compared to the “Remembering Self”: when asked to reflect on experiences, memory biases like the Peak-End effect (e.g. we mostly remember the dramatic parts of a vacation, and how it was at the end) play a large role. This finding implies
potential emotional effects and cognitive meanings of engaging architectural atmosphere and experience to the specific emotional memories of people.

Noted that the findings from academic study in the field of positive psychology on the relationships between human subjective well-being and several important objective factors such as wealth, health, age and cultural variations may be different from public awareness, and hence are more important for architects and designers to know in order to set up right design premises and methods for human well-being based on the proofed evidences other than any arbitrary assumption.

[SWB & Wealth] The relationship between subjective well-being and wealth has been more significantly studied with scientific methods since 1970s when the United States and Western European countries transformed into an affluent society. Diener (2004) announced that after a certain threshold there seems to be no highly correlation between income and happiness. Similar conclusion was drawn in many more empirical researches. Myers (2004) concluded that in materially affluent countries like America, the link between wealth and self-reported well-being has been surprisingly weak based on the data analysis of the annual UCLA/American Council on Education (ACE) survey. Kahneman et al. (2006) found that focusing illusion of being richer to be happier has misled a tendency of overdue production and luxury consumption, which cost much more resources and energies than necessary, but actually not relevant to the essential well-being. Easterlin et al. (2010) suggested that money makes a significant difference to the poor where basic needs are not yet met, but has a greatly diminished effect once one reaches middle class based on their research of testing the relationship between Happiness and Gross Domestic Product (GDP) across and within countries with different economic levels. Aknin and Norton found in their research (2009) that people overestimate the influence of wealth by 100%.

[SWB & Health] Regarding the relationship between subjective well-being and overall health, Veenhoven (1996) proposed that overall health, exemplified by bio-physiological functioning and mental health indicated by socio-psychological functioning can be defined in two ways: one by “negative health”, or the absence of disease or impairment, and the other by “positive health”, or signs of good functioning. Keyes and Lopez (2002) defined that complete mental health is a combination of high emotional well-being, high psychological well-being, and high social well-being, along with low mental illness.

Some evidences indicate that health and subjective well-being may mutually influence each other, as good health tends to be associated with greater happiness, good subjective well-being contributes to better health. Howard Mumford Jones (1953) explained that
interventions such as mediation and relaxation training have power to increase happiness because it can improve a sense of belong and self-confidence, and reduces anxiety. Diener and Chan (1984) found that subjective well-being contributes to health and longevity mostly because positive emotions and optimism have a beneficial influence on cardiovascular health and immune functioning. Further, interventions that are successful in improving subjective well-being, such as, can have beneficial effects on aspects of health. More recently, Veenhoven (2008) tested the notion that happiness is good for your health in a synthetic analysis of 30 follow-up studies on happiness and longevity. It appears that happiness does not predict longevity in sick populations, but that it does predict longevity among healthy populations. So, happiness does not cure illness but it does protect against becoming ill, and the effect of happiness on longevity in healthy populations is remarkably strong.

[SWB & Age] The relationship between subjective well-being and age has attracted more attention from the last decade. By analyzing the database of World Value Survey (WVS), General Social Surveys (GSS) of United States and Eurobarometer Surveys, Blanchflower and Oswald (2008) reported that with the ceteris paribus correlation between well-being and age shows a U-shaped pattern of happiness over the life circle in seventy-two developed and developing nations around North America, West Europe, East Europe, Latin America and Asia, which means mental distress tends to reach a maximum in middle age. At the same time, they also got another finding from comparative data analysis. Though common trends in technology, both continents’ ways of living have changed in broadly similar ways since 1900, successive American generations became progressively less happy from 1900 to today, while in Europe, cohort well-being fell initially from the beginning of the century but has actually been rising slightly after bottoming out in the 1950s throughout the most recent generations. The reason for this difference was not clarified in this paper; probably because the existing differences in social values and public awareness are out of discussion in this research.

The study of Smith et al. (2005) found that older individuals reported more health problems, but fewer problems overall, whereas young adults reported more anger, anxiety, depression, financial problems, troubled relationships and career stress. Ross and Mirowsky (2008) suggested that depression in the elderly is often due largely to passivity and inaction, and they recommend people continue to undertake activities that bring happiness, even in old age. Carstensen’s research team at Stanford University found more evidences based on over ten years of experience sampling, and suggested that one of the biggest hurdles to overcome as we age is a phenomenon called the “misery myth”, and we need to overcome this tendency to imagine old age as bleak and dreaded. Actually aged people present a high profile of Socioemotional Selectivity and Positivity Affect on average, which means that they chose
more relevant and positive information to capture, and more stable and empathic social network to maintain, but not simply as the more is the better as commonly imagined. (Scheibe and Carstensen, 2010; Carstensen, et al., 2011; Carstensen, 2012)

**[SWB & Cultural Variations]** Suh and Koo’s Research (2008) found that people in more individualistic cultures tend to rate themselves as higher in subjective well-being compared to people in more collectivistic cultures. In the Western cultures where individualistic notion is predominant, predictors of happiness include elements that support personal independence, a sense of personal agency, and self-expression. In the Eastern cultures mostly identified as being collectivistic cultures, predictors of happiness focus on an interdependent self that is inseparable from significant others, meant that people are more likely to base their judgments of life satisfaction on how significant others appraise their life than on the balance of inner emotions experienced as pleasant versus unpleasant. Thus, high self-esteem, a sense of personal control and a consistent sense of identity are more strongly related to subjective well-being in Western cultures. In contrast, pleasant emotional experiences have a stronger social component in East cultures; nevertheless, even within the Eastern cultures, people with high self-esteem and a more consistent sense of identity are somewhat happier than those who are low in these characteristics.

In addition, individualistic versus collectivistic nations reliably differ in a variety of psychological characteristics that are related to subjective well-being, such as emotion norms and attitudes to the expression of individual needs. Collectivistic culture emphasizes maintaining social order and harmony, therefore expects members to suppress their personal desires when necessary in order to promote collective interests. Self-regulation is therefore considered more important than self-expression or individual rights. Individualistic cultures by contrast emphasize the inalienable value of each person and expect that individuals will be self-directive and self-sufficient. Although people in collectivistic cultures may gain happiness from the social approval they receive from suppressing self-interest, this research suggested that self-expression produces a greater happiness “payoff” compared to seeking approval outside oneself. This research actually implies the feasibility for each nation to produce lasting boosts for their own people’s well-being according to their own political, economic and cultural context.

**b) Subjective Well-being & Positive Set Point**

American psychologist Edward Diener (1984), who is nicknamed as Dr. Happiness, proposed the concept of “Subjective well-being”, generally abbreviated as SWB, that refers to how people experience the quality of their lives and includes both emotional reactions (positive
and negative affect), and cognitive judgments of life satisfaction, and further developed the concept to an assessment tool of subject well-being or equally described as happiness for the empirical studies in positive psychology. Affect balance and Life satisfaction are measured separately but generally using self-report method through questionnaires. In some researches, informant reports from the participant’s closest friends and family are used to check the accuracy of the self-report results. This tool also has been widely used by the sociological surveys concerning with the topic of happiness, and in turn can provide a wide range of data for positive psychologists to do both quantitative and qualitative researches.

Diener (1996) found that there is a positive level of SWB throughout the world by analyzing the data from various U.S. national and Cross-national surveys, as well as his team’s laboratory experiments through experience-sampling method. The majority of disadvantaged individuals including people with disabilities ranging from quadriplegia to blindness, people in the lowest income group, unemployed, and older people, etc. on average report positive well-being as well. Diener explained this phenomenon through the theories of that a relatively positive set point preset for affect in human beings allows threatening events to be noticed quickly and the desire to be in positive mood and attain positive states promote human approach tendencies of sociability, exploration, creativity and a strong immune response to infections for motivational reasons.

c) **Hedonic Adaption**

The phenomenon of hedonic adaption is worthy of special concern as seemingly it may be a formidable barrier to raising happiness. Hedonic adaption is the psychological process by which people become accustomed to a positive or negative stimulus of a circumstance, a single or recurring event. For example, the homeowner will experience hedonic adaption as long as her mansion remains unchanged no matter how poor or luxurious it is. The social scientists alternatively termed it as hedonic treadmill to explain people’s dissatisfaction in affluent societies where dramatic improvements in material conditions have happened.

There have been numerous studies dedicating in this topic by psychologists and economists. According to the Hedonic Adaption to Positive and Negative Experiences (HAPNE) model (Figure 1.6; 1.7) developed by the psychologists Sonja Lyubomirsky and Ken Sheldon (Lyubomirsky, 2010), adaption proceeds via two separate paths of that positive or negative emotions resulting from life change may lessen overtime reverting people’s happiness levels back to their baseline, and that positive or negative events resulting in the change may shift people’s expectation about the positivity of their lives.
The strategies of interventions whether for impeding adaption process to enhance and sustain happiness in the positive domain or promoting adaption to facilitate coping in the negative domain are valuable for increasing people’s well-being. Although positive
psychology mainly focus on human inner strength and techniques to consciously intervene in adaption by changing to positive thinking and behaving, the intriguing points for architectural design to intervene also lie in the psychological mechanism of that (a) varied and dynamic and (b) novel and surprising experiences are best able to maintain attention, which is the key to thwart or slow down adaption; and thereby the approach of cultivating interpersonal relationships (such as intimate relationship and friendships) by working to create a steam of positive and varied experience (such as personal communications and social activities) appears convincing to be effective to inhibit adaption since one does not adapt as swiftly to other people as to objects and possessions.

1.4.3 Potential Application of Humanistic Approaches in Architecture Design

Although humanistic psychologists and positive psychologists mutually criticize one to the other and have seldom been attempted to integrate their different perspectives, the outcomes from both fields can provide evidences to rectify some taken-for granted notions and misunderstandings on human well-being in the field of architectural design, and testify the potentials and limitations of architectural environment as a kind of healing interventions for people’s mental health and psychological well-being.

As the approaches of humanistic psychology have been highly valued to have a deeper insight into an individual and more holistic view of human behavior than nomothetic behaviorist approach, the extensive application of humanistic psychology and positive psychology seems intriguing to provide evidence for better positioning the design premises, strategy and objectives at practical level, and inspire appropriate concepts and approaches for expressing and communicating with people about the meanings of life under the different circumstances. For example, the attentions to self-esteem, self-fulfillment, self-actualization and the role of the negative in life that humanistic psychologists usually pay could foster architecture design thinking of making positive meanings for the specific habitants and place as a response to existential isolation and meaninglessness, as well as balancing the tragic or angst situation. In contrast, the reference to positive psychology may indicate to achieve a kind of general improvement of life quality at a bigger and faster pace by programming a relatively more relaxed and favorable environment, which allows the habitants to have varied and dynamic experiences in ordinary life and continuously develop themselves and healthy interpersonal relationships in the future.
1.5 Neuropsychological Mechanism of Aesthetic Experience

In experimental psychology and neuroscience, study on the mechanism of aesthetic experience respect to artwork and design product with aesthetic interest. Architectural environment may house a wide range of living experiences as well as these two kinds of objects, so that the key issue to explore in this section is actually the functional mechanism of emotions in the process of aesthetic experience to everyday life with aesthetic interest, which is much richer than aesthetic experience to an artwork or product.

Professor Helmut Leder is leading a research team at the Faculty of Psychology, University of Vienna, for testing and defining the psychological processes involved in the appreciation of art and design. The team found that people are attracted by art with special interest paid to psychologically relevant features of art, especially modern art, and cognitive processing of art produces affective, often positive and self-rewarding aesthetic experiences. They worked out “a model of aesthetic appreciation and aesthetic judgments” (Figure 1.8) to demonstrate that an aesthetic experience is a cognitive process accompanied by continuously upgrading affective states that vice versa are appraised, resulting in an (aesthetic) emotion (Leder et al., 2004).

![Figure 1.8. A model of Aesthetic Experience and aesthetic judgments (Source: Leder et al., 2004)](image)

Their research also suggested that simple perceptual variables usually affect relatively simple judgments of aesthetic preference, as far as visual stimuli, such as contrast, clarity, visual complexity, intensity, brightness, saturation, size, color, symmetry, grouping and order, etc. The processing of the perceptual variables proceeds quickly, without effort and is
somehow time sensitive. The stage of implicit memory integration is where artists often concept the features like familiarity, prototypicality, peak-shift phenomenon processed at this stage to bear some aspects specific to art and exploit processing means of the human perceptual system. The self-rewarding character of art processing also explains why perceivers continue to perceive art, and the persistence of artists producing new and innovative styles guarantees that challenging aesthetic experience remains possible. Aesthetic experience is a time-consuming process in everyday life, and visual and cognitive judgments are inherent in the processing which results in an aesthetic emotion and, if required, in an aesthetic judgment. The possibly positive affect when people deliberately search for aesthetic experience makes it likely that often-positive emotional experience should occur.

Sensory stimuli are fundamental to initiate the emotional and cognitive process of aesthetic experience. As far as how can they be perceived and conceived, the study of neuroaesthetics can explain the general functioning mechanism of our brain as well as individual variability at the neurological level.

One of the pioneers of neuroaesthetics, Semir Zeki proposed in his paper “Art and the brain” (1999), what as it is viewed in visual world all has features with perceptual constancy, situational constancy, and even narrative constancy. The brain extracts these constant features to get knowledge about them and categorize them. A feature of an efficient knowledge-acquiring system is its capacity to abstract and to formulate ideals. The function of art is defined as a research for constancies, which is also one of the most fundamental functions of the brain, therefore is an extension of the function of the brain; meanwhile, art externalizes the functions of abstraction in the brain. Zeki further used the functions of stored memory and imagination of the brain to interpret Artists’ capability for distilling the essences from that the brain has seen or represent bizarre scenes to against it.

Neuroscientists Ramachandran and Hirstein (1999) proposed eight laws of artistic experience as a common mechanism underlying all types of art, which include “Peak shift principle”, “Isolation”, “Grouping”, “Perceptual problem solving”, “Contrast extraction”, “Symmetry”, “Generic viewpoint”, and “Visual metaphors”. This approach can be used to handle the visual stimuli in and of architecture. Ramachandran interpreted that “Peak Shift Principle” in artistic experience is “to capture the essence of something, an artist amplifies the differences of that object, or what makes it unique, to highlight the essential features and reduce redundant information. This process mimics what the visual areas of the brain have evolved to do and more powerfully activates the same neural mechanisms that were originally activated by the original object.” (Ramachandran and Hirstein, 1999, pp.15-51)
Regarding the source for creativity, Zeki (1999; 2008) regarded that creativity intimately linked to variability across individuals, which together with capacity to acquire knowledge are two evolutionary developments underlying the enormous success of the human brain. Zeki explained that both attributes carry with them a clash between experience of the particular and what the brain has developed from experience of the many; both therefore can lead to much disappointment in our daily lives. This disappointment is heightened by the fact that both abstraction and ideals are subject to variability in time within an individual and between individuals. Variability, which is a cherished source for evolutionary selection, can also be an isolating and individualizing feature in society - a major source of our misery. Art with creativity turn this man’s misery to advantage. So that it is important to leave variability and commonality in the organization and functioning of the brain appear relatively, and from a common plan or action, so many variations that serve to enrich our experience of life emerge.

In the case of everyday architecture, which interacts with people in a much complex timing and spatial dimension, aesthetic experiences could be extremely diverse and rich in and of architecture. As such, there are some potential advantages based on the multiple relationships between human and architectural environment to affect general well-being and deep affections rather than intensive appeal for a moment.

Firstly, for people living in and with everyday architecture stably for a long term, one aesthetic experience could be made repeatable with a certain frequency, such as in cuisine and eating, bathing, gardening, festival celebrating, etc. Secondly, the spatial dimension of architecture make it a container of rich aesthetic experiences that could be stimulated by its inherent aesthetic attributes as well as by adding other artworks, daily activities, hobbies and special events that it would host in its physical settings. Thirdly, all these diverse aesthetic experiences could involve all the sensory systems as vision, hearing, touch, taste, smell, balance and movement, and substantively relevant to personal traits of the occupants or users, such as personality, cognitive knowledge, memory, values and meanings of life. Lastly, architectural skin and spaces could be the medium for people to appreciate the dynamic beauty of nature.

A common character among these four types of aesthetic experience in and of everyday architecture is that it would not obligate any expertise knowledge about art for the perceiver to attain positive emotional state as we can notice from the model of aesthetic experience, after aesthetic experience is aroused by the sensory stimuli, there is a basic but complete reward circuit starting from the stage of implicit memory integration, go to affective satisfaction and cognitive evaluation through emotional evaluation, and back to stored...
memory through personal taste. So, no matter if one person could aesthetically evaluate this architecture or not, positive emotional experiences occur without difficulty. This suggests that dealing with implicit memory integration is dispensable for processing aesthetic experiences in an everyday architecture.

Such kind of aesthetic experience could be voluntarily or involuntarily emotional for the users of architecture and allow them to autonomously arrange it as they wish; but for architects, it should be a conscious choreography somehow like what artistic directors of drama or even performance art do regarding the creativity of promoting aesthetic experiences and the intention to some extent of challenging the conformist of life. In this sense, creativity is not optional but mandatory in architecture design in order to break the indifferent and boring monotone of daily life, and substantially has no conflict with the strategy of using repeatable technologies and standards in terms of structural and material application to achieve high efficiency relative to its cost.
1.6 Emotional Approach for Design

The greatest applied artists and designers count on their own intuition, expertise, and capability of synthesizing aesthetic visions, technical and industrial constrains, functional needs and market requirements to create things or solutions for people’s everyday life, which somehow can be world widely appreciated. However, as the level of rational organization become higher and higher along with the progress of social modernization, almost everything tends to be designed for purposes. The scarcity of design resources and quality for massive production has caused that more and more troublesome or wasteful products come into our lives, as the focus of design fields have been mostly decided according to the rule of maximizing the commercial profit.

Unsurprisingly, once the qualities of a thing become additional values rather than its inherent natures, it would not be affordable and/or substantively good for the majority of people, and thus alienated from our everyday life. Here is why the luxurious fashion always stays on the trend. This is not merely a moral phenomenon to criticize, but is a practical issue that needs to work out some effective approach to drive the motivation of design activity with an emphasis of balancing the ethical and economic value and integrating the material and spiritual natures of design itself in one complete design process. This section mainly reviews the pros and cons of two interlocked but also differentiated research and practice frameworks for all design disciplines with this intention. One is denominated as universal design in U.S. or inclusive design and design for all in Europe, which can be tracked back to accessible design for the disabled people since the 1960s. The other is a relatively new approach rising from the 1990s, called emotional design or design for emotions, which is tied up with the concept of user-product experience.

1.6.1 Universal Design, Inclusive Design & Design for All

Among actual design theories and practices, universal design under American cultural and marketing strategy and inclusive design or design for all in European social context have been good efforts regarding their solid contributions to promote accessibility and usability of consumer products and built environments. Although holding the similar goal, American and European model are nevertheless distinctive in many aspects.

American definition of universal design is described as “design for all products and the built environment to be aesthetic and usable to the greatest extent possible by everyone, regardless of their age, ability, or status in life” in the website of the Center for Universal Design (CUD) at North Carolina State University, which was established in 1989 under a grant from the National Institute on Disability and Rehabilitation Research (NIDRR) as the
Center for Accessible Housing with a mission to improve the quality and availability of housing for people with disabilities, including disabilities that result from aging. The term universal design, coined in 1985 by American architect, also the founder of CUD Ronald L. Mace (1941-1998), appears to have reached its linguistic apogee; however, its underlying discourse is just simplified to seven “Principles of Universal Design” (Figure 1.9), and its focus in the application of adaptive and assistive technologies for the specific groups with physical disabilities has never changed since its incept driven by the requirement of large number of disabled Vietnam War veterans, and modeled on the Civil Rights Movement that promised “full and equal enjoyment…of goods and services” (Civil Right Act, 1964, 42 U.S.C., §2000(a)).

| Equitable Use: The design is useful and marketable to people with diverse abilities. |
| Flexibility in Use: The design accommodates a wide range of individual preferences and abilities. |
| Simple and Intuitive Use: Use of the design is easy to understand, regardless of the user’s experience, knowledge, language skills, or current concentration level. |
| Perceptible Information: The design communicates necessary information effectively to the user, regardless of ambient conditions or the user’s sensory abilities. |
| Tolerance for Error: The design minimizes hazards and the adverse consequences of accidental or unintended actions. |
| Low Physical Effort: The design can be used efficiently and comfortably and with a minimum of fatigue. |
| Size and Space for Approach and Use: Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user’s body size, posture, or mobility. |

Figure 1.9. Mace et al., “Seven Principles of Universal Design” (Source: Center for Universal Design, College of Design, North Carolina State University)

Universal design researcher Jim Sandu (2011) criticized in Universal Design Handbook that such a package has gained a considerably high esteem among people with serious social and political concerns, but had little validity to orientate mainstream design trend or concretely initiate a good design. Another fundamental weakness is that people appear to an abstraction in this concept. Hence the codes and standards authorized for the sake of universal design suffer the problems of ineptness to deal with complex context such as poverty and cultural variability, while largely stifling creativity in design practices.

So far as Mace himself realized that the absence of economic, engineering, cultural, gender, and environmental considerations in the previous framework of universal design is problematic, three concerns, Long-term usable & economic, High quality & aesthetic, and
Harmless to humans and the environment have been added as note to seven principles; yet their substantial implications for application and assessment remain devoid. Some efforts have been made by the other design researchers and practitioners in order to fill the weakness of universal design in aesthetic aspect. For example, Cynthia A. Leibrock and James E. Terry published a book titled Beautiful Universal Design: A Visual Guide (1999), in which they tried to promote a “one size fits all” approach, which means full design installations for a wide variety of settings that range from exterior landscaping and approach to interior finishes, furnishings, signage, etc. However, the cases they illustrated in the book not likely make such an approach universal fall into a kind of subjective judgment of formalistic perfection.

To the contrary, the European approach has clearly delimited their concepts and direction of development to respond to the demographic, legislative, economic and social changes within Europe. The UK Government defines inclusive design as “products, services and environments that include the needs of the widest number of consumers” (UK Department of Trade and Industry, 2000). It has a history stretching back to the social ideals in Europe that materialized after World War II mostly in aspects of healthcare and housing for everyone, and goes beyond older and disabled people to focus on other excluded groups to deliver mainstream solutions now. Design for All highlighted by the European Commission started by looking at barrier-free accessibility for people with disabilities but has become a strategy for mainstream, inclusive solutions to ensure that environments, products, services and interfaces work for people of all ages and abilities in different situations and under various circumstances in continental Europe and Scandinavia. There are also some other terms that are used with varying relevance to inclusive design, such as Co-design, People-centered Design, User-focused Design and Transgenerational Design. Designers and any people with interests can joined in networks, such as EDeAN (The European Design for All eAccessibility Network) and EIDD (Design for All Europe), to promote and develop Design for All.

Nevertheless, the fact is that either American or European model still has big difficulties to be truly adaptive to the majority world. There may be two main reasons for it. First, even all these allied concepts have been driven by person-centered ideology, they only have achieved to associate with governmental and organizational policy, social methodologies and (ergonomic, adaptive, assistive) engineering technologies at the macro-social level, and still have long distance from reaching human agents of perception. Second, the application of Universal Design or Inclusive Design mostly depend on the development of technique-oriented means, which affordability and availability are largely subject to the social, cultural, and economic conditions. Indeed, it is urgent to drive more researches to find design theories
and approaches in its own realm of design in order to land principles to practice at a micro level, where people’s body, mind and emotions are tangible.

1.6.2 Emotional Design or Design for Emotions

The concept of Emotional design or Design for Emotions was initiated to promote product’s own image and attractiveness to motivate customer consumption by arousing the pleasant feelings, and has moved forward to promote user experience through emotional and cognitive process in the light of new scientific knowledge of aesthetic experience and human emotions.

Concerning a product’s functional expression and communication of design language, many different perspectives have contributed to define the qualities of a good product. For example, Professors Krippendorff and Butter (1984) of industrial design proposed that product semantics should properly communicate the message of how to use a product while a product also possesses the function of being self-expressive. Later, as the product’s narrative performance was concerned to communicate psychological feelings, design researcher of the company of Philips, Patrick Jordan (1998) suggested eight different kinds of pleasure based on his interview researches, which with their influence evaluated from high to low, are “security”, “confidence”, “Pride”, “excitement”, “satisfaction”, “entertainment”, “freedom” and “Nostalgia”. Corresponding, the properties associated with pleasurable products are good features, usability, aesthetics, performance, reliability, appropriate size, convenience, low cost, and practical. A successful case involving emotional thinking in design is Alessi, the well-known company of housewares and kitchen utensil from Italy. Alberto Alessi (1998) described in his book The Dream Factory: Alessi since 1921, Alessi has developed a design formula to evaluate its products in order to strengthen the competitiveness of products, which includes four appraisal factors: function (F), communication language (CL), sense/memory/imagination (SMI), and price (P).

More recently, there has been an impetus to build up a more solid theoretical foundation for the emotional design approach. Professor Donald Norman, the expert in the fields of design, usability engineering, and cognitive science, first coined the term Emotional Design in his book Emotional Design: Why we love (or hate) everyday things (2005) to represent a central concept for stressing a crucial role of emotions in the human ability to understand the world, and how they learn new things. Norman advocated connecting beauty and function based in biology, neuroscience, and psychology, but not mysticism. He summarized that affect, including emotion is a system of judgment, also controls the muscles of human body, and through chemical neurotransmitters, changes how the brain functions; negative affect
plays a major role to deal with danger, whereas positive affect arouses curiosity, engages creativity, and makes the brain into an effective learning organism.

Norman especially stressed the impact of positive emotions on cognition functioning based on these scientific findings, and thereby suggested the role of aesthetics in product design. He explains the logic as attractive things make people feel good, which in turn makes them think more creatively and be apt to look around for alternative approaches, which is very likely to lead to the appropriate response; such by making this product easier for people to find solutions to the problems they encounter, in short, aesthetic design makes this product easier to use.

With regard to assess the quality of design, Norman argued that a good design must address the user’s cognitive processing at visceral, behavioral and reflective levels. Visceral level is related to external beauty; behavioral level to fun and function while reflective level emphasizes self-image, personal satisfaction, and memory, etc. Norman also collaborated with psychological specialists Andrew Ortony and William Revelle to study how each level plays a different role in the total functioning of people, and how interact with and complement one another, and drew an conclusion that by dissecting the nature of brain processing at these three levels, such as at the visceral level, people are pretty much the same all over the world whereas the behavioral and reflective levels are very sensitive to experiences, training, and education under huge impact of various cultural views. Anyhow, all these prewired mechanisms are vital to daily life and our interactions with people and things; as such, they are important for design. Nevertheless, while designers can use this knowledge of the brain to make designs more effective, there is no simple set of rules due to the complexity of human brain functioning and individual differences.

Pieter Desmet, professor of Industrial Design of Delft University of Technology has been focusing on the research in the field of design, emotion, and subjective well-being since his doctoral thesis (2002), in which a non-verbal self-report tool called PrEmo (Product Emotion Measurement) was developed to measure the typical product emotions consisted of low intensity and mixed character.

As a response to one of the most remarkable phenomena in the consumerist society, the recent Desmet has conducted the research on the “wow design” factor - the exclamation of excitement, and synthesized pleasant surprise, fascination, and desire to identify the “wow-experience”, with which he formed the layered-emotional approach (Desmet, 2005).

Further with the researches on the principles of emotion-driven design, Desmet and Hekkert (2007) classified all affective responses that can be experienced in human-product
interaction in three levels: *aesthetic experience*, *experience of meaning*, and *emotional experience* in their paper “Framework of product experience”. This framework was aimed to facilitate the designers’ structured attempts to “design for experience”. Further, they categorized human-product interactions in three types: *instrumental, non-instrumental, and non-physical interaction*. Desmet adopted the “Core affect” model (Figure 1.10) to describe all possible affective experiences involved in user-product interaction, which can be neutral (the central point), moderate, or extreme (the periphery) in intensity. Changes can be shortly lived or long lasting, and can be in the focus of attention (in the case of intense core affect), or a part of the background of a person’s experience (in the case of mild core affect). Core affect is typically elicited by combinations of internal or external causes, but also can be elicited by a single and identifiable cause, such as human-product interaction can be a cause of change in core affect, and the product functions as a particular stimulus. Correspondingly, product experience is a multi-faceted phenomenon that involves manifestations such as subjective feelings, behavioral reactions, expressive reactions, and physiological reactions.

![Figure 1.10. Circumflex model of core affect with product relevant emotions (Source: Desmet 2008, adapted from Russell 1980)](image)

Synthesizing contemporary theories on emotions, Desmet and Hekkert summarized that appraisal is an evaluation of the significance of a stimulus for one’s personal well-being. It is this personal significance of a product, rather than the product itself, which causes the emotion. Moreover, by comparing with some others with different focus on sources and influencers of experience; in which usability and culture have received much attention, they identified usability as a source of product experience, and regarded that the correlation between individual/cultural differences and product experience is tangible in a few specific design cases, but the precise relationship remains inconclusive.
Recently, the application of PrEmo has been further enhanced through cooperation between Desmet’s studio and the company SusaGroup. People can report their emotions with the use of 14 expressive cartoon animations instead of relying on the use of words, which presents seven positive emotions, i.e. inspiration, desire, satisfaction, pleasant surprise, fascination, amusement, admiration, and seven negative, i.e. disgust, indignancy, contempt, disappointment, dissatisfaction, boredom, and unpleasant surprise (Figure 1.11). Validation studies have shown that PrEmo can be used cross-culturally and from young children to elderly to identify the dominant emotions and their positive or negative quality, but it is also clear that a design can evoke multiple emotions at the same time that might be much subtler and more diverse than these 14 emotions, which are reduced by the researchers as the most relevant emotions for product experience from an empirical studying list of 305 emotions (IDStudioLab, n.d.; SusaGroup, n.d.).

![Figure 1.11. Exemplary interface of PrEmo (Source: www.susagroup.com/tools-to-measure-emotions/premo/)](image)

Different from the researches to generate knowledge-based approaches mainly by taking user or customer’s response as evidences, Macro Maiocchi, professor of Design at the Polytechnic University of Milan focuses more on transforming design masters’ design intuition and expertise to generalizable knowledge for increasing general design quality from the perspective of designers. In his book *The Neuroscientific Basis of Successful Design*, Maiocchi (2015) summarized that currently design has changed (1) from material products to non-tangible goods, from objects to services; (2) from static things to interactive solutions; (3) from artistic authorship to teamwork and co-design; (4) from the aesthetics of material shapes to user experience; (5) from design as style counselor orienting tastes to Design for Social Innovation. Maiocchi synthesized the knowledge from brain science to explain the mechanism of attraction behind the qualified formal attributes of traditional design, and thus to cultivate a greater awareness of the communication consequences from material attributes.
to emotional outcomes as well as the messages and values that such kind of metaphoric communication implied. Based on learning from the Masters’ creation of intuition and expertise in such a way, Maiocchi also demonstrate how brain science results can contribute to update design methodologies by processing emotional thinking as conceptual tools in all project phases from preliminary ethnographic analysis to concept generation, to prototype and evaluation tests to team building and management in multicultural and multidisciplinary project groups.

All better understanding and control of product experience ultimately need to be reflected through design conceptualization and transformed to effective and efficient design approach. Philip Ross and Stephen Venswee, the professors of Industrial Design of Eindhoven University of Technology, proposed to use aesthetic experience as a mechanism for design based on their case study involving the design of intelligent lamps (Ross and Venswee, 2010). This is an example focusing on how to design the aesthetics of interactive product behavior, which according to previously reviewed Norman’s classification, can be considered as a trial at behavioral level of product experience. They suggested that aesthetic interaction consists of four principles: practical use next to intrinsic value, social and ethical dimensions, satisfying dynamic form, and actively involves people’s bodily, cognitive, emotional and social skills. Their study also reflected an active response of design to a radical change on the concept of aesthetics in design. The traditional one is often related to the nice looking shape of a product, a trendy color scheme, or a pleasant surface texture; it is also commonly viewed as a way to express a socio-cultural message, e.g., a specific lifestyle, through the use of form and material (Muller, 1997); however, nowadays products are becoming ever more networked, adaptive, context-aware and pro-active as envisioned (Aarts and Marzano, 2003) and we increasingly integrate such intelligent technologies into our everyday lives.

Environmental design research relevant to human well-being mostly explores the possibilities to design with the purpose to influence mood continues to emerge in the domain of (preventive and healing) healthcare environments through psychologically mediated effects aroused by one or several interior stimuli, such as music background, color, indoor plants, (Ulrich, 1995; Dijkstra, 2009; Salonen et al., 2013), or by therapeutic garden (Barnes and Marcus, 1999; Marcus, 2005; Mahan, 2006; Sadler, 2007). Some other environmental design researches concern more cheerful and playful emotions for increasing work or study efficiency and creativity, such as in classrooms (Lundquist, Kjellberg and Holmberg, 2002; Woolner, 2010), living rooms (Yildirim, Lutfi Hidayetoglu and Capanoglu, 2011), and offices (Kwallek et al., 1997; Küller et al., 2006). In contrast, very little research can be found with an emphasis on cognitive functioning and emotional effects of inherent qualities
of architecture to improve people’s health and well-being with proofed evidences rather than some common social notions or assumptions.

Some researches on aesthetic experience of architecture are still largely subjected to the conventional rules and interest in aesthetic style. For example, Casakin and Mastandrea (2009) conducted a research to study aesthetic emotions and their relationship to architectural design styles. Their experiment took thirty-five students as participants to reveal how people assess two contrasting design styles, namely Renaissance and Contemporary styles by considering aesthetic and emotional aspects, and thus concluded that Renaissance design style was perceived as more figurative, more relaxing, simpler, typical, familiar and easy to understand, while contemporary design style was found more interesting, and most liked. Their finding may be referable, but not relevant to direct contemporary architecture practice for human health and well-being.

In general, emotional design is convincing to be an effective design strategy and approach for optimizing people’s emotional state and cognitive response far beyond the fulfillment of the basic needs for survival as it has inherited the core value of beauty in traditional aesthetics as well as the contemporary aesthetic value for everyday life. It also has high potentiality to become an advanced system of design theory and methodology as its interdisciplinary theoretical framework and multidisciplinary working style constantly generate new and reliable knowledge. Moreover, it is intriguing to see that more and more efforts have been made to balance the social and commercial benefit in one product for the purpose of sustainability.

It is promising but also challenging to exploit the potential of emotional design in the discipline of architectural. Firstly, it is because that emotional design has been mostly studied and applied in the field of consumerist product and interaction design until now. Only “wow-experience” has been stressed in some particular cases of iconic buildings with similar interest of stimulating consumption or performing as a symbolic show of political and economic power. Even though, not like that the feeling of excitement or surprise is workable to promote customers so prefer one product over another, and result in a quick decision to buy it, architecture merely relying on formal novelty to surprise the public appears critical or not interesting at all for them shortly after its stunning inauguration. This implies that the target of emotional design is more critical for architecture design - only architecture that is convincing to benefit people’s well-being and foster a long-term emotional connection with them can guarantee that its own presence is not a mistake or waste. Second, although human-environment interaction that architecture undertakes can share the common emotional mechanism of user-product interaction at a very basic level, the distinctive spatial quality of
architecture enables it to provide more frequent, lasting and sophisticated emotional experiences by intertwining with people and nature in a broader and variable way.

The next chapter hence will focus on the establishment of knowledge and principle for emotional architectural design with purpose of promoting human well-being by revealing and comparing the emotional qualities and the effectiveness of approaches in the previous modern architectural theories and practices based on the multidisciplinary framework that has been reviewed in this chapter.
Towards “Emotional Architecture for Everyday Life”

By synthesizing with the philosophical and psychological knowledge about aesthetics of everyday architecture, emotions, well-being and happiness, and emotional design that have been reviewed in chapter 1, the continuing theoretical research has been developed as a filtering process to examine the necessary emotional qualities and effective approaches regarding of promoting individual and social well-being in a certain situation subject to the time, place and people along the evolution of modern architectural theories and practice. Three main kinds of architectural phenomena were detected through a chronicle and geographical scan. Accordingly, this chapter includes three sections, including (1) a critical review on cause and effect of several main architectural movements that fluctuated with the social changes in Europe and North America from the 1860s to 1980s; (2) a comparative case study on heroic architecture versus serene architecture, which present two distinctive contemporary trends of architectural design; (3) and a series of regional case study on Nordic architecture to testify the significance of cohering architectural design considerations to the local cultural, natural and social contexts for general improvement of social and individual well-being.

2.1 A Historical Review on the Implications of Emotional Architecture

“Emotional architecture” has never been precisely defined as an architectural terminology before in architectural history, but had been frequently manifested either for the sake of art or social ideal of zeitgeist by all the architectural movements appeared along the
evolution of modern architecture from the 1860s to the 1980s. This formula was useful to immediately attract the public’s attention and push a new architectural style or movement in time, but did not warrant its presence and effectiveness as an appropriate architectural solution with respect to the social contexts at that time. Thus, a historical review of restoring architectural phenomenon as a fact into its social context must be done in order to check the strength and weakness of architect’s concept and means of expression with respect to the specific problem or objective. The findings will be used to explain the causality in terms of the rise and fall of each reviewed architectural movements and styles, and provide evidence for framing the basic premises of the emotional architecture that would be evidently beneficial to social and individual well-being for today.

It was noted that as the history of architecture written by architectural critics and historians is formed based on a stylistic classifications and denominates the architects and their works within such an artificial system; architecture is stripped from its rationale and specific contexts of being built, and thus become an aesthetic issue to argue among academic field. While this way has been fostering the problematic tradition of idol worship and stylistic imitation to the architectural masterpieces in worldwide architectural education and practice, it also initiated some confusion and paradox in the logic and standpoint for criticizing the social and aesthetic value of architecture, such as the assumed opposition and exclusiveness between architecture’s functional and aesthetic nature.

So, apart from consulting the written architectural history, this part of research has made more efforts into the investigation on the specific social context, and the key exponents’ own interpretation on architectural theories and methodologies in order to avoid the critical bias as much as possible. Moreover, the self-transformation in theory and practice of some architects in this delimited research scope was examined as a part of architectural phenomena.

2.1.1 Arts and Crafts Movement and Art Nouveau Architecture

The Arts and Crafts movement was developed earliest and most fully in the British Isles around 1960s, mainly inspired by the writings of John Ruskin (1819–1900) and advocated by English textile designer, artist and socialist, and the Arts and Crafts pioneer William Morris (1834–1896).

John Ruskin was the leading English art critic of the Victorian era. He defined that “Architecture is the art which so disposes and adorns the edifices raised by mans…that the sight of them contributes to his mental health, power and pleasure” in his book The
Seven Lamps of Architecture (1849); and thus endowed architecture with a moral dimension associated with the social, political and economic issues in the context of rashly growing industrialization at that time. In another architectural writing, The Stones of Venice (1851–53), he proposed a warning about the moral and spiritual health of society as he discerned that new classical artists honored themselves in a way of arrogantly celebrating human sensuousness while forming the physical environment of Venice.

Through the boost of William Morris, Ruskin’s critical concerns and ideas that emphasized the connections between nature, art and society had timely impact on architectural practice during the Arts and Crafts movement, and further was enlightening to some extent for the most influential pioneers of modern architecture including Louis Henry Sullivan (1856-1924), Frank Lloyd Wright (1867-1959) and Walter Gropius (1883-1969) and Le Corbusier (1887-1965) (Daniels and Brandwood, 2003).

Since the 1860s, Morris continuously developed and advocated his socialist viewpoints along with his designing and making practice. Morris (1884) regarded that Art should improve the lives of ordinary people, all objects should be attractive, useful, endurable and had to be hand-made; so called “labor-saving” machines ever used for minimizing the amount of time spent in unattractive labor would most certainly improved when it was no longer a question as to whether their improvement would “pay” the individual, but rather whether it would benefit the community. Morris also explained the core role of mood, and the tendency of pursuing happiness to make men cherish and practise Art and his clear attitude to combat all this luxury and waste as he stated in his book Signs of change (Morris, 1886, reprinted 2006, p.61),

“The Aim of Art is to increase the happiness of men, by giving them beauty and interest of incident to amuse their leisure, and prevent them wearying even of rest, and by giving them hope and bodily pleasure in their work; or, shortly, to make mans work happy and his rest fruitful”… and, “they will discover, or rediscover rather, that the true secret of happiness lies in the taking a genuine interest in all the details of daily life, in elevating them by art instead of handing the performance of them over to unregarded drudges, and ignoring them.”

Different from English architect, designer, artist and critic Augustus Pugin (1812–1852), who was remembered as a champion of a branch of the Gothic Revival in the service of a renewed public presence of Roman Catholicism in England, Ruskin promoted the virtues of a secular and Protestant form of Gothic as rejection to
mechanization and standardization. Ruskin praised the Gothic style in *The Stones of Venice* for what he saw as its reverence for nature and natural forms; the free, unfettered expression of artisans constructing and decorating buildings; and for the organic relationship he perceived between worker and guild, worker and community, worker and natural environment, and between worker and God. Highly influenced by Ruskin’s writings about Gothic Revival, the arts and craft style was generally characterized by truth to materials, simple forms, natural motifs, and the vernacular traditions of British countryside. However, architecture in Gothic revival style did not reach any satisfying results like what Ruskin himself expected, but another two approaches became more practical for that time, and continuously influence the evolution of modern architecture and urban planning regarding their effectiveness to reduce social alienation.

One is the Anglo-Japanese style, which was developed in the period from approximately 1851 to 1900 by the influence of Oriental design and culture, and featured by simple rectilinear structure, minimal decoration, often limited to incised and gilt lines or motifs placed in a novel asymmetrical fashion. This rectilinear style of arts and crafts later anticipated the minimalism of 20th-century Modernism in defiance of Western tradition.

The other is the model of “Garden City” that British urbanist Ebenezer Howard (1850-1928) proposed in his book *Garden Cities of To-morrow* (1902). The model included an idea of situating a city within a belt of open countryside where could significantly contribute to food production for the population, and a system of community management.

Letchworth in Hertfordshire of England is one of the world’s first new towns and the first “Garden City” that translated Howard’s ideas into the reality. The company First Garden City Ltd. was formed in 1903, and appointed Barry Parker and Raymond Unwin as architects that started to work on 16 km² of land. The first houses that they designed in the vernacular style (Figure 2.1) pioneered such concepts as pre-fabrication, the use of new building materials, and front and back gardens, and was popularized through the Cheap Cottages Exhibitions held by the company in 1903 and 1907. The town thus became associated with high-mindedness and simple living.

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5 In parallel with the revivalism of his actual buildings, Augustus Pugin set in place attitudes concerning the ‘honesty’ of materials and structure in his polemic book entitled *Contrasts, or, A Parallel Between the Noble Edifices of the 14th and 15th Centuries and Similar Buildings of the Present Day, Shewing the Present Decay of Taste* (1836). (Curtis, 2012)

6 Arts and Crafts Style Guide. British Galleries, Victoria and Albert Museum.
From the 1880s to the 1910s, the spirit of Arts and Crafts movement spread to the rest of Europe and North America as a common reaction against the academic schools and ancient Classicist renditions. However, the form of the movement varied in different nations as the revival and preservation of national styles. Art Nouveau in France is adopted in English as the name to represent an international philosophy and style of art, architecture and applied art, especially the decorative arts through a series of promotion in international fairs. It is also known as Jugendstil in Germany, as Modern (ведение) in Russia, as Modernisme in Catalonia of Spain, as Secession in Austria-Hungary and as Stile Liberty in Italy (Ducan, 1994, pp.23-24). Though similarly inspired by natural forms and structures, Art Nouveau has essentially deviated from the orientation of Arts and Crafts Movement in terms of promoting craftsmanship and simplicity in art and design for the majority of people. Rather, Art Nouveau artists readily used new materials, machined surfaces, and abstraction in the service of pure design to stir up intensive aesthetic emotions as a proposal of modern lifestyle with total art.

Undoubtedly, the manifestation of Art Nouveau demonstrated a groundbreaking attitude to step out of crisis regarding mechanization, standardization, and alienation of faster paced life by the mass production system since the Industrial Revolution, and exhaustive efforts of artists and designers to emotionalize the new mass production culture and create art of modern life. The significant contribution of Art Nouveau movement to the birth of modern design is undeniable regarding its concept of non-dualistic aesthetics, which was liberated from Cartesian dualism that had elevated binary oppositions such as intellect and emotion, culture and nature, rationality and chance, order and chaos, good and evil, and male and female (Ko, 2003).

However, as an artistically avant-gardist movement mainly focusing on decorative and visual arts, there was an apparent formal obsession of using dynamic, undulating, and flowing lines in a syncopated rhythm and asymmetrical shape rather than inputting more innovative thinking on improving inherent qualities of life for the ordinary people under a
realistic situation subject to their social position and economic condition. This way is mostly problematic in the field of architectural design and construction.

Art Nouveau architecture in Europe made use of many technological innovations of the late 19th century, especially the use of exposed iron and large, irregularly shaped pieces of glass for architecture. Nevertheless, most of technological application was not targeted to free the inner space and lighten the structure, but to enforce the stylized nature onto architecture, which made construction costly. So, when the influence of Art Nouveau spread to North America, it was rationalized into a pragmatic approach in high-rise office building, and bungalow style private housing, which is less art-obsessive and more adaptive to the popular taste and perception in North America.

American architects Louis Henry Sullivan (1856–1924) especially contributed to the theoretical adjustment and methodological localization to American society via different approaches. Sullivan addressed to American Institute of Architects (AIA) in 1894 with the title of “Emotional architecture as compared to intellectual: A study in subjective and objective” to advocate the integration of the intellect and the emotions in architectural education and practice, as he said (Sullivan, 1894, reprinted in Twombly ed., 1988),

“No complete architecture has yet appeared in the history of the world because men, in this form of art alone, have obstinately sought to express themselves solely in terms either of the head or of the heart...architectural art, thus far, has failed to reach its highest development, its fullest capability of imagination, of thought and expression, because it has not yet found a way to become truly plastic: it does not yet respond to the poet’s touch. That it is today the only art for which the multitudinous rhythms of outward nature, the manifold fluctuations of man’s inner being have no significance, no place” (p.101) … (The intellect and the emotions) “are two beautifully congenial and harmonious phases of that single and integral essence that we call the soul” (p.101) … (The architecture schools shall teach) “directness, simplicity, naturalness: they shall protect the young against palpable illusion.” (p.103)

Although Sullivan was marked as the proponent of Art Nouveau style in America, his architectural theory and practice was not merely a stylistic experiment. Rather, he coined the phrase, “Form ever follows function...Where function does not change, form does not change” (Sullivan, 1896, reprinted in Twombly ed., 1988, p.111) in his article “The tall office building artistically considered”. He meant it as distilled wisdom, an aesthetic credo based on his observation to the nature of the world. In order to enforce this law into architectural practice, Sullivan referred to the core idea of Roman architect
Vitruvius’s *De architectura* - a structure must exhibit the three qualities of *firmitas, utilitas, venustas*, which can be understood as, architecture must be solid, useful, beautiful (Sullivan, 1924).

It should be noted that Sullivan used this basic architectural notion to fight against the strict aesthetic rules and dogmatic replication to the classic architecture styles, which were still prevailing in architectural education and practice at his time. In this context, the law of “form follows function” neither meant the pursuit of extreme functionality nor the rejection to aesthetic quality of architecture, no matter that the credo was taken as a battle-cry of some Modern architects after the 1930s to assert that all decorative elements, which architects call “ornament”, were superfluous in modern buildings. Sullivan’s personal approach to pursue the balance between the rational and emotional effect can be clearly identified in his high-rise buildings, such as Prudential Building in New York (Figure 2.2), which is characterized by the innovation of steel structure and more open working space inside, and his typical aesthetic methods of vertical three-part division on façade, massive and semi-circular arch, iron or terra cotta decoration elements attached to the plain surfaces of his buildings, etc. Reasonably, such kind of synthetic approach was inspired by Renaissance art that he ever touched closely during his one-year’s study in Paris and his innate Celtic origin. By the start of the World War I, the flourishing of Arts and Crafts movement in the British Empire and Art Nouveau as a general label in Europe was erupted. Facing the difficult situation regarding the physical and social devastation by the war, the reflections and arguments about the fundamental questions of craftsmanship versus mass production, the relationship of usefulness and beauty, the practical purpose of formal beauty in a commonplace object, and whether or not a single proper form could exist, etc., had started during and after World War I. Correspondingly, Expressionist architecture as an artistic expression of the social turmoil was the direct reaction from the architects with arts and crafts training background and deeply impacted by the war; whereas the trend of New Objectivity emerged as an practical solution to fit people’s urgent need for

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*Figure 2.2. Prudential Building (1894), Buffalo, New York, designed by Louis H. Sullivan. (Photo by Jack E. Boucher)*
rehabilitation with tough material conditions in this specific period. Meanwhile, architecture in North America continued its modernization through another way since the war in contrast stimulated its regional economic and technique development. As a result, Art Nouveau design was disused in favor of industrialized, more streamlined, rectilinear Art Deco.

Rather than following a common sense of regarding British Arts and Crafts and Art Nouveau as the same strain of decorative art and design current, it is arguable that they have essentially paradoxical nature with respect to the order of function and form, the simplicity and complexity. As such, Arts and Crafts movement may be more likely the origin of essential modern architect that is based on the truth of function, structure and materials, and becomes art as a result, whereas Art Nouveau should be the first modernist architectural style to initiate the expressionistic and symbolic interests that is honored for the sake of art.

2.1.2 The Bauhaus: From Expressionism to New Objectivity

Expressionism and New Objectivity art movements were initiated in German and other European countries historically associated with Germanic culture such as Austria, Denmark, Holland and Czech around the 1910s. The architectural theories and practices emerged under these trends have groundbreaking significance for forming theoretical and practical foundation of modern architecture as well as far-reaching influence on contemporary architecture. The Bauhaus school was founded in 1919 when German zeitgeist had been turning from Expressionism to matter-of-fact New Objectivity; and it has been admired as the cradle of modern architecture education and practice until now. However, when the underlying interconnection among Expressionism, New Objectivity and the Bauhaus is concerned, it can be found that there is full of confusing descriptions and conflicting evaluations in the historic writings of modern architecture.

Most notably, Expressionist and New Objectivity architectural movements have been often explained as the opposite styles staying at two ends of extremely emotional and rational, and given a definite ending point at the same time as the close of the Bauhaus school in 1933; or, “Bauhaus style” was directly cited as an art genre despite the fact that the Bauhaus school was bound by its programmatic content with distinctive focuses oriented by three directors, where diverse styles ranging from Expressionism to New Objectivity were combined to maximum intensity during its operative time from 1919-1933.
During the first decades of the 20th century, being tangled with intense political conflict between the socialist and capitalist ideology at both international and national level as well as personal aesthetic attitude to recognize and evaluate modern architectural phenomenon, the neglect to Expressionist architecture and hostility to New Objectivity were predominant among architectural historians and critics.

A paradoxical tone to the original impetus of modern architecture was initially laid when Henry-Russell Hitchcock and Philip Johnson introduced European modernist architecture into America through an exhibition at the Museum of Modern Art (MOMA) in 1932. In the logbook entitled The International Style: Architecture Since 1922, Hitchcock and Johnson (1932) only admitted European Modernism as a new stylistic integration of aesthetic and technical innovations to step out of imitation to the styles of the past like that revivalism and eclecticism did, and therefore dubbed it International Style and bunched the selected works together with an additional set of principles according to American ideology. Meanwhile, they neglected Expressionist movement by labeling it as Romantic Individualism, and denied the ethical views of John Ruskin and William Morris, and so far overstated the functionalist theories reinforced by New Objectivity movement as “anti-aesthetic” and conflating them with American functionalists yielding to commodity.

German-born British architectural historian Nicolaus Pevsner (1936) identified William Morris and his circle of Arts and Crafts designers in England, with Herman Muthesius as a connection to German, as the forerunners of German New objectivity in his book Pioneers of the modern movement: From William Morris to Walter Gropius. While Pevsner also examined Art Nouveau in Vienna, mentioned avant-garde Futurism, he completely ignored Constructivism, De Stijl and Expressionism. Similar view was found in Swiss architectural historian and critic Sigfried Giedion’s book Space, Time and Architecture, which was published in 1941 and soon became a textbook in architectural history classes in many Modernist schools of architecture from the 1940s to 1960s, including Massachusetts Institute of Technology and Harvard University, where he had taught (Moffett, Fazio and Vodehouse, 2003).

Surrounded by such intricate controversy and confusion, this part of architecture history needs more comprehensive and most importantly comparative investigations in order to clarify the true implications of fundamental architectural theories and practices propelled by Expressionism and New Objectivity movements. Still, the Bauhaus school undoubtedly is from where we can find a relatively clear thread and rich sources for further analysis on the process of self evolution of distinctive architectural though as well
as the substantive cause of lasting debate about the ideal of modern architecture owing to its most visible and influential position through teaching.

1919 to 1928: Gropius and Bauhaus

German architect Walter Gropius (1883–1969) took over the Grand-Ducal Saxon School of Arts and Crafts in Weimar from Belgian painter, architect and interior designer Henry van de Velde, and founded the Bauhaus school in 1919. He undertook the role of director from 1919 to 1928. The first department of architecture independent from art and craft was established in 1927 under his leadership. Gropius therefore had been esteemed as one of the most influential pioneers of modern architecture for the achievement of Bauhaus school as well as his own architecture works in Europe. There was a dynamic balance between aesthetic and ethical considerations in the evolution of his architectural philosophy and practice.

Gropius declared Proclamation of the Weimar Bauhaus in 1919 (cited in Frampton, 1992, p.123),

“Let us create a new guild of craftsman without the class distinctions which raise an arrogant barrier between craftsman and artist. Together let us conceive and create the new building of the future, which will embrace architecture and sculpture and painting in one unity and which will rise one day toward heaven from the hands of a million workers like the crystal symbol of a new faith.”

This was a social vision of eliminating the class distinctions between artist (elites) and craftsman (workers), and an aesthetic ideal of architecture as “collective work of art” can be read. This part of philosophical though was clearly influenced by the spirit of British Art and Craft Movement. The progress was that Gropius shared an explicit stand to embrace a reunion of artists and industrial world and creative aesthetic form not subjected to any classical style, which was particularly advocated in Expressionist movement since its emergence before World War I.

In terms of the emotional effects of Expressionist architecture, Sigmund Freud and Karl Jung’s psychological theories of dreams and the unconscious provided the possibility to arrive at a scientific approach to aesthetic experience, and the consciousness of “science of art” was rising at that time. Nevertheless, British scholar John Willett (1970) generally defined the feature of Expressionist architecture as “distortion, fragmentation or the communication of violent or overstressed emotion” in his book Expressionism. Although these words have been widely diffused as a common definition in public media and even some academic articles, they are suspicious to have been
because of the fact that several Expressionist architects such as Bruno Taut (1880-1938), Henry van de Velde (1863-1957) and Hans Poelzig (1869-1936) were active in theater and scenography design for the performing art and film, and inspired by these art forms as well when exploring the psychological effects of form and space (Pehnt, 1973).

Rather, from the “Monument to the March Dead”, one of representative Expressionist works of Gropius (Figure 2.3), it is evident to see what he intended to express was the feeling of “sublime”, which was related to Kant and Schopenhauer’s aesthetic philosophy and inspired by the painting The Sea of Ice (Figure 2.4), draw by the 19th-century German Romantic landscape painter, Caspar David Friedrich. French philosopher, sociologist, and literary theorist, Jean-François Lyotard (1994) regarded that replacing the beautiful with the sublime as aesthetic theme was the founding move of the Modernist period with purpose for the release of the perceiver from the constraints of the human condition. But this opinion may be only true for some other cases. For Gropius, such a replacement never happened since either the sublime or the beautiful would be expressed in his works seems all depending on emotional and spiritual function of each circumstance.

The aesthetic methods of Expressionist architects were varying from costly sculptural shaping inspired by natural romantic phenomena such like caves, mountains, lightning, crystal and rock formations and abstract expression of constructivist art to more regular forms, which would be easier, quicker and cheaper for construction by means of new technical possibilities offered by the mass production of brick, steel and especially glass in one’s career or among different ones. Although architectural historian and critic Frampton (1992) gave this kind of elasticity an explanation that an entire group of working architects, including Erich Mendelsohn (1887-1953), Bruno Taut, Hans Poelzig, Ludwig Mies van der Rohe (1886-1969) and Walter Gropius himself turned away from fanciful experimentation and toward rational, functional, sometimes standardized
Ludwig Mies van der Rohe (1886-1969) and Walter Gropius himself turned away from fanciful experimentation and toward rational, functional, sometimes standardized building after World War I, it also can be argued that aesthetic experiments of architecture was not necessarily opposite to the rationality and functionality, or vice versa, but more likely depending on the practical conditions. Gropius’s earlier work of Fagus factory (Figure 2.5) in Alfeld an der Leine and postwar work of Bauhaus campus (Figure 2.6) in Dessau are the typical examples to reflect the architect’s precise response to the changed social environment, in which democratic spirit was rising among public while the economic situation was still severe just after war.

In this sense, there may not be a sharp break happened from Expressionist movement to New Objectivity movement in terms of achieving the integration of aesthetic and functional value of architecture, neither does it mean that these architects ever gave up the aesthetic pursuit when mass construction and standardized housing were critical and urgent to meet social requirements for postwar restoration. The architects of New Objectivity were eager to build as much cost-effective housing as possible, partly to address Germany’s postwar housing crisis, and partly to fulfill the promise of Article 155 of the 1919 Weimar Constitution, which provided for “a healthy dwelling” for all Germans. This phrase drove the technical definition of Existenzminimum (subsistence dwelling) in terms of minimally acceptable floor space, density, fresh air, access to green space and to transit, and other such resident issues.

Under this circumstance, an attitude became more clearly stressed by Gropius (1923) in the theory and organization of the Bauhaus against the isolation of “art for the sake of art”, which had no relation to the realities of materials, techniques or economics and was lack of all vital connection with the life of the community. Nevertheless, both his aesthetic and functional inspirations from Art and Craft Movement and socialist vision
obviously associated with New Objectivity movement was diluted or avoided when his theory and practice landed to America.

1928 to 1930: Hannes Meyer and Bauhaus

Swiss architect Hannes Meyer (1989-1954) was appointed as the second director of the Bauhaus by Gropius, which implies that there must be an agreement and consistence in the underlying architectural philosophy between these two architects. However, Meyer together with his manifestation of Functionalism became the target of criticism by some influential America-based architectural historians and critics. Henry-Russell Hitchcock (1903-1987) and Philip Johnson (1906-2005) took Meyer as example of “anti-aesthetic functionalists” for whom “the basis is economic rather than ethical” in the logbook of International Style Exhibition at MOMA in 1932, and that the book’s preface by the director of MOMA, Alfred Barr (1902-1981) defined functionalism as the “utility-and-nothing-more theory of design” and Meyer a “fanatical functionalist”. Meyer was also criticized by Dennis Sharp (1972) as an “anti-art” architect, and by Michael Hays (1992) as “posthumanism”. All these negative labels were arbitrarily tagged through hostile interpretation on the fragmented words of Meyer. Their writings were so persuasive that if they could present Meyer’s original implications rarely had been questioned, but successfully blocked Meyer’s works away from the public sight.

In fact, the term “Functionalism” began to be used by German art historian and critic Adolf Behne (1885-1948) in his book The Modern Functional Building (1926) to identify such an attitude that refused to find beauty in the superfluous and willingly followed the logic of the functional as German modernist architects’ response to the revolution of “Aesthetic sensibility” to “appreciation of light, conciseness, and clarity”. While Behne confirmed the progress of German architects’ decisive turn from formal restraint to a commitment to life itself in the confidence that a form appropriate to a healthy and orderly life will of necessity be beautiful space newly conquered by purpose and function. Behne also especially clarified the crucial distinction between functionalism, rationalism, and utilitarianism, and thus reminded the functionalist architects of avoiding exaggerated characterization and expressive individuality as well as extreme attitude to reject aesthetic demands while being against aesthetic speculation, formalism, and doctrine.

Regarding the role of Meyer in New Objectivity movement, it was not until the mid-1960s that the historical facts started to be restored when a few scholars tried to do a more objective and systematic analysis on Meyer’s theory and his architectural works. With respect to his mostly criticized quote, “All these things are a product of the formula: function times economics” that Meyer first proclaimed in his publication “The New
World” in 1926, French-German architectural historian Claude Schnaidt (1965) stressed that it is necessary to situate Meyer’s text in its written period in order to reveal the substance of the debates on the topics of the status and role of the architect in an industrial civilization, the controversy raging around functionalism, the reassessment of the heritage of the Bauhaus, and the crisis in the teaching of architecture that Meyer was involved.

Meyer did not believe that society could change merely by changing its architecture and town planning. He opposed this idealist dream and made a deliberate attempt to adapt his work to the living reality of the world. That is why there is something disconcerting about Meyer’s work at first sight: it is based on very strict principles but assumes a great variety of forms of expression. From close detection to his architectural works, more architectural researchers would agree that while Meyer insisted on the primary importance of practical functions in the design study of a project and in his “scientization of architecture”, instinctive aesthetic expression has been settled in his so-called functional and technical design owing to his solid expertise in art and craftsmanship. Without wishing to, Meyer worked out a functionalist aesthetics (Schnaidt, 1964; Poerschke, 2007).

For example, in the planning of Freidorf estate (built 1919-1921), the first full-scale co-operative in Switzerland, all the external spaces (squares, streets, gardens) and all public internal spaces (school, restaurant, shop, meeting rooms) were laid out in an artistic pattern which would be perceived by those living there as the spatial harmony of proportion by means of the modular system of an architectural order. In another un-built design for the competition of the League of Nations building (1926-27) (Figure 2.7) in Geneva, he sought a more Constructivist approach, with the emphasis placed on the secretariat in an open-framed tower and used a highly repetitive ordering system throughout the complex with the only expressive element being a bulbous glass roof over the assembly hall while aesthetically expressing the intention to play down hierarchical associations as he saw the complex as being “an entirely open, egalitarian forum.” It is interesting to see this effect distinctive from the entry of Le Corbusier (Figure 2.8), who used the modular, order and proportion to pursue “a communal machine for enlightened, well-meaning functionaries whose life would be daily nourished through contact with nature” (Mckay, 2012).
Despite the bias on the aesthetic and formalistic methods of Functionalism, it was Meyer who practically connected architecture with socialist ideal. When Meyer took over the Bauhaus in 1928, its development was in a critical phase of that “the incompatibility between its liberal and humanist conception of industrial civilization and the commercialism of bourgeois society had, on one hand, converted its search for contemporary design into aestheticism and, on the other, stirred reactionary circles into aggressive violence” (Schnaidt, 1964). In his manifesto of directorship entitled “bauen” (building), Meyer (1928) advocated, “Building is social, technological, economic, psychological organization, product of the formula: function times economy.” He modified the curriculum to emphasize the value of practical work for the purpose of raising the workshops production and gearing it towards serving the needs of the people rather than luxury-oriented buyers (Kentgens-Craig, 2001, p.123).

Meyer was one of the founders of the International Congresses of Modern Architecture (CIAM, 1928-1959). The earliest conferences of CIAM dedicated to questions of ExistenZminimum were dominated by the social programs of German architects. Meyer developed a continuous philosophy of organization from the smallest (a building element) to the biggest (the being), fulfilled by the architect who “was an artist and has become a specialist in organization” (Meyer, 1928, in Schnaidt 1965, p.95).

Meyer especially detailed the function of housing to a list of activities and environmental qualities that compose a healthy and enjoyable life as below (Meyer, 1928, in Schnaidt, 1965, p.97),
“1. sex life, 2. sleeping habits, 3. pets, 4. gardening, 5. personal hygiene, 6. weather protection, 7. hygiene in the home, 8. car maintenance, 9. cooking, 10. heating, 11. exposure to the sun, 12. services – these are the only motives when building a house. We examine the daily routine of everyone who lives in the house and this gives us the functional diagram – the functional diagram and the economic programme are the determining principles of the building project.”

Architectural scholar Poerschke (2007) analyzed that while the list might refer to the totality and complexity of life in which everything is connected with everything, the missing hierarchy ironically shows the limits of the same totality and scientific method. Nevertheless, this situation is not conflict to view that these issues are just as relevant today as they were then to human well-being.

Meyer was dismissed from the Bauhaus for the excuse of allowing politics to be brought into the Bauhaus to a dangerous extent. Schnaidt (1964) pointed out that it is impossible to imagine by what miracle the Bauhaus could have remained aloof from the dramatic political tensions of Germany between 1928 and 1930. Substantively, it can be argued that Meyer’s socialist stand became the fundamental barrier for him to be objectively evaluated as a creative and humanist architect. More than 40 years after the International Style exhibition in 1932, Philip Johnson admitted (Cook and Klotz, 1973, p.38),

“Hannes Meyer was a communist and was a damned good architect and the more I see of Hannes Meyer, the greater man I think he was. But I don’t like what he said…in those days I hated Hannes Meyer because I thought that the shit of the Neue Sachlichkeit Weltanschauung (the new objectivity) had something to do with architecture. The only mistake I made was to try to think that somehow the political opinion had something to do with the architecture.”

Nowadays, misunderstanding on Functionalism and Meyer’s ideas still exists due to canonic education of architectural history; however, it appears more obvious for today to prove the practical significance of Meyer’s architectural approach to create architecture for the majority of people’s better life before for luxury as what Schnaidt (1964, republished online) had detected,

“The tremendously fruitful renewal of the human environment in Western Europe which followed when functionalist ideas were put into action showed that they were a true instrument of progress. The functionalists were indeed partly successful in
creating an architecture which provided the best conditions for human development by satisfying material needs with the aid of modern technology.”

1930 to 1933: Ludwig Mies van der Rohe and Bauhaus from

Mies van der Rohe (1886-1969) became the last director of the school in 1930. Soon after, he dismissed all the supporters of Meyer in school, and finally turned it to be private.

After World War I, while continuing his traditional neoclassical design practice for private housing, Mies began to develop visionary projects that reflected the influence of both Futurism and Expressionism, such as his competition proposal for the Friedrichstraße skyscraper (Figure 2.9) in 1921. He ever adopted aesthetic credos of Russian Constructivism to design Liebknecht-Luxemburg Monument (Figure 2.10) commissioned by Eduard Fuchs (1870-1940), president of the German Communist Party in 1926. He designed Afrikanischestrasse Apartments, his only one low-cost housing project in 1927 as a response to New Objectivity movement. He also referred to the American Prairie Style initiated by Frank Lloyd Wright (1867-1959), which was characterized with free-flowing spaces of inter-connected rooms, encompassing their outdoor surroundings while seeking his own rational approach stated with extreme clarity and simplicity by replacing elaborate applied artistic ornament with the straightforward display of innate visual qualities of materials and forms associated with high technology at that time. However, such “skin and bones” architecture as Mies called his buildings at that time was often attached to produce luxurious buildings like German Pavilion (1929) in Barcelona and Tugendhat House (1929-30) in today’s Czech Republic.
These frequent changes in architectural notions and stylistic innovations show that Mies had a considerable flexibility for adapting to various clients with practical commissions and unexhausted ambition to find the perfection of his own individualistic style and architectural language. In this sense, Mies kept his works away from the social requirements for solving really conflict problems. So-called the spirit of age that Mies had expressed can be seen as the same spirit of intellectual elite as traditional art academic defended. It is even more evident to see the similar ideology in his teaching as he required the students working in his own vein, and hoped that his model could be imitated. Here is the fundamental divergence of Mies from the original intention of the Bauhaus to serve the people that his two predecessors Gropius and Meyer all insisted.

Mies has been highly esteemed as an architectural master, who created an influential twentieth-century architectural style particularly for his works of skyscraper in America, which is characterized by a minimal framework of structural order balanced against the implied freedom of free-flowing open space. But ironically, all these formal concepts had been thoroughly presented in Meyer’s design for the League of Nations building in 1927.

The Bauhaus school was closed in 1933 threatened by the Nazi regime. The subjective bias of taking the form of European modern architecture but cutting its essential root of both aesthetic and ethical concerns responsive to the role of modern architecture for the social equality and welfare was further enforced after Gropius, Mies van der Rohe and some other previous Bauhaus staff fled to America and started to teach in the American universities whereas Hannes Meyer transited to the Soviet Union. Anyhow, all above investigations are expected to provide a clearer view on the historical causality and influence of the Bauhaus for architectural education and practice in Western Europe, where the social agenda for improving average people’s life quality has gained its consensus. At the meantime, it is also notable that ideological discrepancy on the social role of architecture between Western Europe and North America has resulted in a formal and methodological difference in architectural education and practice for now. So, this is an alert whenever and wherever architectural education and practice fall into a utilitarian situation dominated by commercial sense, and architects have to associate with normative business and authoritative fame to get success, aesthetics of architecture will lose its strength and potentiality to benefit average people in a society.
2.1.3 Art Deco versus Organic Architecture

When Art Nouveau style was still in fashion, French garden designer, town planner and pioneer of the Art Deco style, André Vera (1881-1971) published *Le Nouveau style* in 1912 as a manifesto to reject asymmetric, polychrome and picturesque forms of Art Nouveau, and meanwhile call for voluntary simplicity, apparent symmetry, order and harmony, themes to better match the industrial age, which eventually became ubiquitous within the context of Art Deco. Though Paris was announced as the hub of Art Deco, it globally spread in 1920s, and its popularity peaked in America in 1930s. Art Deco style was widely applied to public and commercial buildings as well as apartments. So many examples still can be found today, among of which, New York’s Chrysler Building (Figure 2.11) designed by William Van Alen (1883-1954) is considered as one of the world’s greatest Art Deco style buildings.

![Chrysler Building](Photo by David Shankbone)

The flourishing of Art Deco architecture in America was not an accidental phenomenon. Compared to the serious damage caused by the World War I to Europe, America largely accumulated its wealth and human resource, and established the strongest international status from the war. Its industries also quickly developed in this context. Art Deco architecture was just timely for reflecting all of these advantages in a physical form.

Art Deco architecture in America is substantively an eclectic style influenced by pre-modern art from around the world, but also by Cubism, Constructivism, Functionalism, Modernism, and Futurism. Artists and designers in this trend integrated motifs from ancient Egypt, Mesopotamia, Greece, Rome, Asia, Mesoamerica and Oceania with Machine Age elements characterized by smooth lines, geometric shapes, streamlined forms, rich colors and lavish ornamentation, which is more likely an aesthetic exercise to represent luxury, glamour, exuberance and faith in social and technological progress.
American architect Frank Lloyd Wright (1867-1959) was an exception out of the mainstream of American Art Deco in terms of his aesthetic inspiration and approach, which is called Prairie Style or Organic architecture. It is undeniable that Wright was deeply influenced by the theories and approaches of Sullivan as he was ever an apprentice of him, and Wright himself also practiced conservative house styles sometimes as he never turned down the clients’ requirements for the business profit. However, the innate affinity with primitive nature and rejection to the academic education in classic architecture styles in his mind urged him to look for new architectural language to express American architecture. Fundamentally, Wright regarded that a horizontal orientation was a distinctly American design motif, in that the younger country had much more open, undeveloped land than found in most older, urbanized European nations. Wright’s Organic style had fully matured during the later 1920s and 1930s, which are characterized by unrestrained use of geometric massing, innovative structural systems, materials with handicraft sense, and oriental taste of fusing the outdoor and indoor spaces with the nature. “Fallingwater” (Figure 2.12) is considered as his most representative housing projects to fulfill his primary tenet of that a structure should look as if it naturally grew from the site to the greatest extent.

Despite their distinctive applicable areas and aesthetic tastes, it is more meaningful to compare their substantive significance of Art Deco architecture and Organic architecture, which has determined their influence in contemporary art and design. Art Deco style declined in popularity after the 1930s as it was perceived as gaudy and inappropriately luxurious in contrast to the austerities imposed by World War II; but it was reminded as a broadly applied stylistic label in the 1960s by art dealers and historians, especially when English art historian Bevis published the first book on the subject: Art Deco of the ’20s and ’30s in 1968. Even though Hillier defended Art Deco as an assertively modern style that responded to the demands of the machine and of new material and the requirements of mass production in this book, the nature of Art Deco as a purely decorative style has decided its destination to provoke short-life fashion and consumption rather than to meet with people’s essential needs for a better life.
To the contrary, no matter that Wright mostly designed for wealthy clients at that time, his organic architecture theory and approach can be used at a wide range for architects to pursue an emotional form in any functional building. This is why Wright’s works had been admired and learned by the European architects as well. Dutch architect and an active follower of the De Stijl movement, Jacobus Oud (1890-1963) wrote this in his article “The influence of Frank Llioyd Wright on the architecture of Europe” (1925, pp.85-89),

“…the application of Wright’s means, even where they were applied less faultlessly, with less virtuosity than by the master, appeared as a rule to warrant a tolerable enve piquant effect! Thus did the architecture of Holland, Germany, Czecho-Slovakia, France, Belgium, Poland, Roumania etc. in its ‘avant-garde’ and all those who, if things are not going too far, like to consider themselves as belonging to this, willingly undergo the influence of this admirable talent.”

2.1.4 American International Style

The term International Style first came into use via Modern Architecture - International Exhibition held at the Museum of Modern Art (MoMA) in New York in 1932 and curated by American architectural historian and critic Henry-Russell Hitchcock (1903-1987) and recently graduated Harvard University philosophy student (and later self-taught architect) Philip Johnson (1906-2005) (Riley, 1998, pp.35-69). Together with the exhibition catalogue of 1932 and a follow-up book The International Style published in 1935, they established an official “canon” of the style. Hitchcock and Johnson identified three principles: the expression of volume rather than mass, the emphasis on balance rather than preconceived symmetry, and the expulsion of applied ornament. The aim of Hitchcock and Johnson was to define a style that would encapsulate this modern architecture, doing this by the inclusion of specific architects (Hitchcock and Johnson, 1935).

Although declared as an aesthetics-based architectural style with an emphasis on, the selection criteria for the Exhibition implied an exclusive stand on the socialist ideology, noting that stressed attention to Mies, Gropius, and Le Corbusier came as the expense of the Social Democratic context of Neues Bauen (New Building), and the architectural logic of state-sponsored mass-produced dwellings. At the meantime, “fanatical functionalists” like Hannes Meyer, so criticized by Johnson and Hitchcock, were derided for building for “some proletarian superman of the future” (Hitchcock and Johnson, 1935).
Some local American architects’ works were displayed as well including Philadelphia’s PSFS Building (Figure 2.13), which is considered as the first International style skyscraper built in the United States. The works of Frank Lloyd Wright were also included in the exhibition but only with an attempt to provide a contrast to the International Style examples, and therefore not featured in the catalogue and the book that followed at all.

After a show for six weeks in New York, Modern Architecture - International Exhibition as the first “travelling-exhibition” of architecture toured in the United States for six years. As Terence Riley, architectural critic and the former senior curator of MOMA, stated in his book The International Style: Exhibition 15 and The Museum of Modern Art, “Ironically the catalogue, and to some extent, the book The International Style, published at the same time of the exhibition, have supplanted the actual historical event.” (Riley, 1992, p.9)

Since this exhibition, many Modernist architects that used to believing that they had arrived at an approach to architecture that transcended “style” along with any national or regional or continental identity, were all entangled into the International for the sake of anonymous architecture. However, the implication of anonymous architecture for them is not that relevant. For example, Gropius ever identified functionalism with anonymous teamwork relating only to the life of the people (Moholy-Nagy, 1968). Mies embraced new technology and luxurious materials in his works while sharing with Adolf Loos (1870-1933) in provocative catchphrases in his essay/manifesto entitled Ornament and Crime (Loos, 1908) and his design theories about the nobility that could be found in the anonymity of modern life, art and crafts should be entirely independent of architecture, that the architect should no longer control those cultural elements as the Beaux Arts principles had dictated. Le Corbusier (1923) also had laid the principle for the autonomy of architecture, which means that architecture could be discussed in purely formal or aesthetic terms. Modern architecture, a truly international style, would serve any political position.
International Style initiated the practice of normative architecture and organizational teamwork in two models of *bureaucratic architecture* or *genius architecture*. According to Hitchcock, *bureaucratic architecture* is the product of large-scale architectural organizations, from which personal expression is absent; while *genius architecture* is a particular psychological approach and way of working at architecture that may or may not produce masterpieces (1947, pp.3-6).

The International Style skyscrapers in North America not only became a combination of design and signature of elite architects and intensive commercial propaganda of corporate label, but also were largely fostered as a national illusion of democracy and freedom. Anonymous, one original ideology of International Style was forgotten. After World War II, with an attempt to maximize technical ingenuity, and its tectonic, programmatic and professional refinement, international style produced some masterpieces of post-war modern architecture of being laconic, transparent and open; nevertheless, such as Seagram Building (Figure 2.14) designed by Mies Van der Rohe as the headquarters for the Canadian distillers Joseph E. Seagram’s & Sons.

However, when the desire to breach the divide between iconic and everyday architecture, elite and mass culture was reframed in the pragmatic terms of normative building practice, “code-made architecture” were poorly standardized by “code-making expert”, and aesthetic dimension was the first to be extruded from the normative, and the politics of consensus and conformism vastly dismissed the average individual’s sense of self (Wright, 1949).

Canadian historian Robert W. Collier (1975) pointed out the polemical situation of prevailing International Style. He described that the International Style provided an easily achievable style option for vast-scale urban development projects, “cities within cities”, intended to maximize the amount of floor space for a given site, while attempting to convince local planners, politicians and the general public that the development would bring much-needed wealth to the city while, on the other hand, rejecting the proposal would lead to the development being taken to a different, competing city.
In fact, the proposed strength of International Style as being a universally applicable solution regardless of location, site, and climate was criticized by the public as a primary weakness of being too indifferent to the local history or national vernacular. Nevertheless, in the preface of his book *Modern Architecture - A Critical History*, British architect, critic and historian Kenneth Frampton (2007) argued that there has been a “disturbing Eurocentric bias” because at the same time as key “International Style” works were being built, some architects were already adapting it to local conditions. Frampton could be totally right only if he referred those good examples of modern architecture that fulfill the functions with concise and decent form. But meanwhile, it is questionable if a so-called “international” style would be capable of handling diverse and dynamic human life, and if such an exclusive canon should be followed in architectural education and practice.

2.1.5 Le Corbusier: Functionalism, Rationalism or Utilitarianism?

Swiss-born French architect Le Corbusier (1887–1965) was appointed as one of the most influential pioneers of International Style; however, as a modernist architect based in Europe, he was a key member of the International Congresses of Modern Architecture (CIAM, 1928-1959), which was a platform of European Functionalism. Le Corbusier probably is the most rhetoric architect who was enthusiastic to establish and push the universal rules for urban planning and architecture design. But on the other hand, he kept changing his theories and aesthetic methods in practice once he saw a new solution would be necessary. Sometimes, these changes seem radical in totally distinctive forms.

Architectural historians and critics have marked Le Corbusier’s projects with many labels in style such as European Functionalism, American International Style, Brutalism, Constructivism, Futurism, Expressionism, as well as in ideology such as Rationalism, Totalitarianism, and Purism. Both praise and criticism are extreme. For example, French architect and Le Corbusier’s assistant for 20 years, André Wogenscky claimed that “We cannot simply understand the books; we have to surrender to them, resonate, in the acoustical sense, with their vibrations, the ebb and flow of his thinking” (Wogenscky, 1987). To the contrary, British physician and editor Theodore Dalrymple asserted in his article “The Architect as Totalitarian - Le Corbusier’s baleful influence” (2007), “A terminal inhumanity characterizes Le Corbusier’s thought and writing…Le Corbusier does not belong so much to the history of architecture as to that of totalitarianism, to the spiritual, intellectual, and moral deformity of the interbellum years in Europe. Clearly, he was not alone; he was both a creator and a symptom of the zeitgeist.”

Putting aside literary bias aroused by his personal styles and forceful manifestos such as “all men have the same needs”, “a machine for living” and “standardized”, and
focusing onto his design work and his detailed interpretations of thoughts, Le Corbusier will be a good example to review European Functionalism from another degree. It is also interesting to discern his different architectural philosophy from German functionalist architects, which was identified by German art historian and critic Adolf Behne as Rationalism. Behne (1926) detected that when the functionalist refers to the machine, he sees it as the moving tool, the perfect approximation to an organism; when the utilitarian refers to the machine, he sees it as an economic principle of saving work, power, and time; when the rationalist refers to the machine, he sees it as the representative and patron of standardization and typification. While the functionalist wants what is absolutely fitting and unique for the particular case; the rationalist wants what is most fitting for general need, the norm. Behne therefore suggested that “play” requires community, order, rules, and German functionalists should learn from Corbusier’s collective thinking moving from the whole to details.

Truly in his book Toward an Architecture, Le Corbusier (1923) highly expressed his homage to the advanced engineering at his time such as automobiles and airplanes, which embrace new technologies, build simple, effective structures that serve their purpose and are honest in construction, and allow for continued progress and refinement in function and aesthetics. Referring to these characteristics, he set standards of contemporary architecture for the use of all people, which must entail an ideal structure, timeless in beauty, and perfect in proportions. For him, the establishment of a standard means exhausting all practical and reasonable possibilities, deriving a type that will be recognized as appropriate to the maximum performance of functions, using minimal means, as little hand assembly as possible, and a minimum of materials: words, sounds, colors, forms.

According to Le Corbusier’s own interpretation, “Machine for living” actually refers to “a house: protection against heat, cold, rain, thieves, the curious - a receptacle for light and sun; and a certain number of compartments for cooking, work, intimate life” (Le Corbusier, 1923, p.253). Five Points of Architecture - Pilotis, ribbon windows, a free façade, open floor plan, roof garden, were more concretely appointed as a prototypical form in the book (Le Corbusier, 1923), and later demonstrated in the design of Villa Savoye (Figure 2.15). Continually, he introduced his famous golden ratio Modulor in the books Le Modulor and Le Modulor 2 from Leonardo da Vinci’s “Vitruvian Man” for scaling architectural proportion (Le Corbusier, 1948, 1955).

In the field of urban planning, Le Corbusier first presented his scheme “Ville Contemporaine” (Contemporary City) for three million inhabitants in 1922, and further advocated it through the exhibition “Plan Voisin” in 1925, which was a renovation
proposal respective to central Paris north of the Seine coupled with his hope that politically minded industrialists in France would lead the way with the efficient Taylorism\(^7\) and Fordism\(^8\) strategies adopted from American industrial models to reorganize society. This stand shows that Le Corbusier might hold the trend of utilitarianism at the same time. The centerpiece of this plan was the group of sixty-story cruciform skyscrapers, steel-framed office buildings encased in huge curtain walls of glass and situated within large, rectangular, park-like green spaces.

In the 1930s, Le Corbusier expanded and reformulated his ideas on urbanism, eventually publishing them in *La Ville radieuse* (The Radiant City) in 1935. Notably, the most significant difference between the Contemporary City and the Radiant City is that the latter abandoned the class-based stratification of the former and housing was now assigned according to family size, not economic position (Fishman, 1982). In all of his urban concepts, the automobile is regarded as a predominant means of transportation. He developed his urban concept in a neighborhood scale as the

\(^7\) Taylorism is a theory of scientific management that analyzes and synthesizes workflows with main objective to improve economic efficiency, especially labor productivity (Taylor, 1911).

\(^8\) Fordism is “the eponymous manufacturing system designed to spew out standardized, low-cost goods and afford its workers decent enough wages to buy them” (De Grazia, 2005, p.4)
model of “Unité d’Habitation”, the social housing in Marseille (Figure 2.16) is the first constructed example. And in a city scale, India Chandigarh city in the 1950s was a unique possibility for him to realize the idea of the Radiant City. Almost at the same time of producing “Unité d’Habitation” for social housing, Le Corbusier took a turn to Expressionist architecture with sculptural form in the design for the Chapel Notre-dame du haut in Ronchamp (Figure 2.17) as symbolic expression and spiritual metaphor better fit the meaning of a religious architecture.

“Construction, that is for making things hold together; architecture, that is for stirring emotion. Architectural emotion is when the work resounds inside us in tune with a universe, whose laws we are subject to, recognize and admire.” As such, “architecture is a matter of Relationships” and “a pure creation of mind” (Le Corbusier, 1923, p.97). For Le Corbusier, both rationality and emotionality of architecture are not about straight or curved, box or organic body, but lie in “ordonnance”, “proportion”, “hierarchy”, and “clearness of composition” by using the geometric elements in architecture. Such designed architecture must achieve utilitarian precision and efficiency; and its emotional mechanism shall produce beauty and reflect the essential needs of well-being for all the people instead only for the elites and riches...after all, the qualities that are associated with the spirit of that era (Le Corbusier, 1923).

The dramatic self-transcendence is an enlightening phenomenon for us to explore a masterful architect’s thinking pattern. Typically, this ability comes from the brain of a creative architect and should not be fragmented into stylistic pieces or fixed canon. No architectural work should or could be commented or learned separately from its exact context.

2.1.6 Neoexpressionist and Postmodern Architecture

Expressionistic and Eclectic impulses re-emerged after World War II in Europe and North America as response to stable social contexts and promising public interests of promoting the quality of everyday life. However, the ideology and approach for design and construction of architecture in these two regions are totally different.

In Europe, the post-war reconstruction of housing and basic public facilities in Western Europe had been largely completed by the end of the 1950s, and the main task for design and construction of architecture successively shifted from recovering basic living conditions to shape the towns and cities for improving the national welfare, including civic infrastructure, housing and public facilities. Rapid economic growth and modernization in this period was open to more alternative solutions. This general
situation allowed architects to break through the boundaries of styles that used to dominate architectural history in sequence, and take them all as reference for practice.

Le Corbusier’s Ronchamp Chapel was an important sign in the 1950s to indicate this trend, but not the only pulse. Neo expressionist architecture returned as an inclusive mind-set that can be executed by diverse individualistic approaches rather than merely an architectural style. It could include all the efforts driven by kind of artist’s freedom and passion in mind to release the emotional power of architecture. Most of architects in this vein were dedicated to express more sophisticated and humane emotions instead of working with the overstressed intension that Expressionist artists and architects of the 1910s - 1930s ever pursued. They were also more sensitive to look at the social context, and careful about the coherence of form to the function and scale of buildings. In general, it is easier to create unusual or highly personal architecture on a small scale, and more specifically in a suburban or rural context, while larger projects are inevitably subjected to all manners of constraints of every type, making the out-of-the-ordinary difficult. Such a kind of intrinsic adaption not only made expressionist architecture more usable and appreciable to the public, but also proved its practical significance of providing alternative solutions against typological architecture resulted from canonic education and normative practice, and fostering regional and national identities. The success of the Sydney Opera House (Figure 2.18) designed by Danish architect Jørn Utzon is one of the good examples to show such an effect.

In North America, European expat architects of the Bauhaus were largely involved in architectural pedagogy in America universities. Gropius accepted the appointment as chairman of Harvard’s Graduate School of Design since 1937; Marcel Breuer followed
his mentor to join the faculty in Cambridge, Massachusetts. The two men formed a partnership that was to greatly influence the establishment of an American way of designing modern houses – spread by their great collection of wartime students including Paul Rudolph (1918-1997), Eliot Noyes (1910-1977), I. M. Pei (1917-), Ulrich Franzen (1921-2012), John Johansen (1916-2012), and Philip Johnson (1906-2005). During the after war time, their ambition of reviving Expressionist architecture was reflected in creation of monumental architecture with more modernist language of architectural box. The Whitney Museum of American Art designed by Marcel Breuer is a typical exemplar of this period (Figure 2.19).

American historian and critic Sibyl Moholy-Nagy (1903-1971) pointed out the way that the European modernist masters were designing in the United States might imply that the revolutionary potential of modern architecture had degenerated into nothing more than the stylistic battles of old, in which one obsolete fashion randomly replaced the next, and that the lack of interest in the human life of the street would lead to its abandonment in ever-taller, ever more technologically sophisticated but also more isolated and undemocratic skyscrapers (Moholy-Nagy, 1968).

On the other hand, the postmodern movement started in America around the 1960s–1970s. American architect and theorist Robert Venturi was at the forefront of it. He published Complexity and Contradiction in Architecture in 1966 as a gentle manifesto against overly simplistic Functional Modernism. Venturi thought that the language of architecture consists of clear signs and symbols, which are indeed an integral part of the architecture, but there exist “outside” of its utility function. Hence, Venturi and his wife Denise Scott Brown adopted in their projects the forms absorbed from the non-architectural sources of imagery and spatial organization, such as Las Vegas, Oberlin, and myriad signs in the street with an attempt to realistically represent a commercial/Urban American vernacular image.

Although the couple distinguished their own works from the pop artists’ ironic or detached attitude to the popular, their inductive approach was criticized as being based on mass administration of the visual forms of American culture rather than a truly popular culture (Frampton, 1971). The artistic critics caused them stuck in a formal particularity instead of creating a complete theoretical position, and their selection and re-composition was highly doubted to be a better vision that the new society ought to look and function.

Nevertheless, Robert Venturi, Denise Scott Brown, and Steven Izenour wrote a book Learning from Las Vegas in 1972. This book has been translated into 18 languages and had a huge theoretical impact on the emergence of postmodernism. Later in the 1980s,
some American International Style architects turned to wring decorative variations out of the diagrammatic clarities of abstract functionalism to infuse architecture with the emotional and representational content for elite and affluent clients. Influential early large-scale examples of postmodern architecture are Michael Graves’ Portland Building (Figure 2.20) in Portland, Oregon, and Philip Johnson’s Sony Building (originally AT&T Building) in New York City.

2.1.7 Summary: Time, Place, Purpose and Method to Design and Build

This historical review on the main architectural movements appeared in the overlapping or successive stages of modern architecture history between 1860 and 1980 has shown a series of intensive experiments of Western architects for seeking alternative architectural solutions to handle with the consequences of industrialization and international or domestic social turmoil. And almost every architectural movement debuted by the declaration of an intensive manifesto, in which the proponents established their new architectural thought and method as rejection to the actually predominant architectural style. Clearly, the cause of this exclusivity to each other was rooted in an idealistic belief or utopian thinking like that there must be a universal architectural solution for solving all the social problems. However, the reality is that people with different economic conditions and cultural backgrounds have totally different perception about what is the spirit of the times and different vision about what could be an ideal form of modern life. Moreover, only the cultural value in a dominant position can determine for whom and for what architectural design will be applied, which also means what types and forms of architecture can be built. So unsurprisingly, the substantive discrepancy between the social value and the business value had been fully reflected as different development orientations of modern architecture in Western Europe and America.

In Europe, with the gradual establishment of social welfare and equality notion during this period, how to make architecture improve and enrich the lives of average people had become a common proposition for European modern architects. So, from the Arts and Crafts, Art Nouveau, Expressionism, Art Deco, New Objectivity to Functionalism, which are all architectural movements originated in Europe, the transform

Figure 2.20. Portland Building (1982), designed by Micheal Graves. (Photo by Brian Libby)
of architectural forms is not a purely aesthetic issue, but rather reflects an evolving process to recognize the essence of modern architecture from superficial matters to profound relationship between function and form of architecture. And the feasibility and effectiveness of each architectural movement under its specific social context are the determinant causes for its survival.

But in America, where the business culture dominated human and material resources, the significance of architecture is more likely to symbolically show affluent and stylish life, and thus become the dream for ordinary people to pursue. In this social environment, architects had not been given the role to undertake the social responsibility and solve the social problems. Rather, their primary task is to make building look more attractive within the permissible range of investment. In this sense, no breakthrough of architectural thinking would be required. This is believed to be the reason why only the eclectic styles characterized by symbolic decorations and International Style that encouraged fast replication got popularized in America.

The purpose of comparing the significance and effectiveness of these architectural movements is not only to stress the importance for architects to design respective to specific time, place, purpose and means, but also to identify the key principles for promoting emotional architecture for contemporary everyday life from their practical experiences in the following four aspects.

(1) The contextuality of architectural criticism

Although architectural criticism is definitely necessary to better reveal the strength and weakness of any architectural phenomenon, it doesn’t mean that it would make it easier to find the truth from the previous architectural criticism as architects, architectural historians and critics similarly hold subjective stance to judge architectural phenomena. Among the reviewed literatures for this historical study, three kinds of the contextuality of architectural criticism can be found to judge one architectural phenomenon, which are the judgment for the sake of art, social value or economic law. The controversial conclusions draw from these three different standing points truly have blurred the focus that we could learn from the modern architectural history.

It shall be clarified that although good architectural design will result in an artistic work, it is not appropriate to judge architecture with the rules of art because architecture and pure art have different nature as the impulse to distort reality for all kinds of intensive emotional effects is the core value to exhibit in all art forms, but the role of architecture, in contrast, is to regular people’s emotions with the reality. In another words, art for art’s
sake - there is nothing wrong in that as long as it belongs to pure art. This has been the case of visionary architecture and some other avant-garde movements during this period such as Futurism, Constructivism, De Stijl, etc. But architecture for art’s sake is prone to fall into the free-floating realm of “taste”. Art Nouveau, Art Deco, Postmodernism, and another branch of (super) high-tech expressionist architecture are the examples. The loss of design restraints implies an inevitable dismantling of the immediate past along with the wave of fashion and consumption. They will not extinguish so long as the consumerist society exists, but clearly, their direction is not that emotional architecture for everyday life should go.

Economic law is also not reliable for judging the quality of architecture since neither architecture with business success nor architecture designed and built with large budget is bound to benefit ordinary people’s well-being. In most of times, economic situation appears as a dialectical condition for the development of architecture. It is evident to see when economic crisis and material scarcity after World wars had largely limited the cost of new construction in Europe, more intellectual efforts and creativity were encouraged to explore cost-effective architectural solutions and functional aesthetics for restoring and improving the quality of life from the most essential aspects of human health and equality. In contrast, modern architecture associated with decorative art rose to gratify luxurious appearance and fortify the social inequality when human power and wealth were celebrated.

Logically, architecture should be treated as a complex social issue; and at the same time, this standing point is not necessarily conflict with the pursuit of aesthetic and economic value. Architectural movements with strong social awareness of ordinary people’s living status, such as Arts and Crafts, New Objectivity or European Functionalism, and a branch of functional expressionist architecture, all stressed architecture’s functionality as opposed to excessive formalism. And architects worked with caution and limit in artistic application and cost control. As a result, many architectural works with this direction are persistently attractive as well as move people deeply no less than pure art. So, it is fundamental to have such a clear starting point to conceptualize an architecture from its social nature for ensuring and maximizing the value of architecture.

(2) The Vision about Inhabitants

The vision about inhabitants also matters what approach that architects could and would apply, and the effects of such a selected approach. The following perspectives are detected as the roots for some parallel notions of today on the users of architecture, which
call for a critical thinking and choice among contemporary architects to position their design purposes and means.

John Ruskin and William Morris, the theoretical founders of the Arts and Crafts Movement, had an abiding confidence in the natural, untutored instinct for rightness and beauty in the average person. Ruskin wrote in “The lamp of beauty”, “all men have sense of what is right in this matter, if they would only use and apply this sense; every man knows where and how beauty gives him pleasure, if he would only ask for it when he does so, and not allow it to be forced upon him when he does not want it” (1849). Embedded with such a kind of humane care to the people’s feelings and needs from architecture, the spirit of craftsmanship become inherited belief in some architects’ mind, who insist to express inherent qualities of materials and structure in contemporary architecture.

The New Objectivity fulfilled a minimum standard of “a healthy dwelling” for all Germans with acceptable floor space, density, fresh air, access to green space, access to transit, and other such resident issues. Such a standard is still decent and open to any upgrading possibilities.

The vision of inhabitants might become more abstract and dual-layer since Le Corbusier as he eloquently stated that whereas architecture must achieve utilitarian precision and efficiency; its emotional mechanism shall produce beauty and reflect the essential needs of well-being for all the people instead only for the elites and riches (1923). To endow such a social vision with a physical form is in fact more difficult than it seems to be. No sign in his theories can defend from the critics that Functionalism or “code-made” International Style architecture posited the man who had inhabited modernist architecture as an ant-worker who needed a place and conditions for eating, sleeping and regenerating his power to permanent work.

According to Venturi’s proposition, the architecture in addition to its purely utility function serves as a sort of relay or a mirror reflecting the message understandable to the people of the community. In this sense, architecture “says”. The role of such a relay can satisfy ornament and the repetitive, formal style attributes. Decoding these characters allows the observer “embed” building in our consciousness, to identify with him, and with all those who understand this language (Venturi, 1972). It seems inevitable for Venturi to view the people as customers or consumers rather than inhabitants in the commercial-oriented social context as he assumed certain taste of the people of the community is to identify their “self” and have fun from the signs and symbols that they could understand in the street. The only difference of Venturi’s vision from another two
ornamental styles, Art Nouveau and Art Deco might be his concern to the present mass culture instead of artistic precedent of the past.

(3) The Essence of Architecture

In philosophy, essence is the attribute or set of attributes that make an entity or substance what it fundamentally is, and which it has by necessity, and without which it loses its identity. As far as the essence of modern architecture is concerned, Ruskin’s theory (1849) is one of the most optimistic interpretations in both practical and visionary sense. He defined that Architecture is the art raised by man, and in turn contributes to their mental health, power and pleasure; and naturally, vital beauty of form is revealed in organisms which have developed perfectly according to their laws of growth, and so give the appearance of felicitous fulfillment of function in living things. The “function” of architecture thereby can be understood as an inseparable whole of usability and ethical value of the era, which has certainty to be a determinant criterion for reviewing and criticizing various architectures in the same contextuality of human well-being. Moreover, to achieve the essence of modern architecture in contemporary context, the resistance to excessive application of materials and technologies is not a suggestion, but a must because this trend is not only inclined to cover the essence of architecture with decorative elements more than necessary, but also has been a threaten for social sustainability.

(4) The Consequence of Modern Architecture Movements

Finally, this research would suggest noticing the phenomenon of intensive re-evaluation and revival of the previous architectural theories and approaches during the 1970s and the 1980s, when an affluent and prosperous vision had been foreseeable in Western societies. As the gap between Western European countries and America in the economic and technological conditions gradually disappeared in these two transitional decades, either pursuing the essence of architecture or creating fantastic art through architecture became architects’ personal choice. With these two distinctive orientations, architects extracted different inspirations, resources, design methods, and expected emotional and social effects from the past experiments for creating modern architecture as they felt necessary and convincing to defend their own architectural practice. As such, the stylistic boundaries diluted whereas two types of mind-sets were formed as foundation for contemporary architectural practice.

Although architectural historian and critics still tried to classify the contemporary architecture according to their formal and/or structural attributes, such as Blobitecture,
Deconstructivist architecture, Futurist architecture, High-tech architecture (Structural Expressionism), Novelty architecture, Conceptual architecture etc., these terms appear exhausted and confusing to express their own meanings, not mention to represent the hybrid nature of contemporary architecture. Hence, the next section will discuss and compare two leading contemporary architectural design trends on basis of the public perception on their respective architectural phenomenon rather than any stylistic theory.
2.2 Poetic Serene vs. Heroism Architecture - a Filtration of Appropriate Architecture for Everyday Life

From the 1990s, the Western society holds an opener and supportive attitude to the individualistic architecture, and the more innovations of new construction technologies and materials give architects more possibilities for creating new architectural forms. Such social environment and material conditions starts an unprecedented experience in terms of the evolution of architecture. Since then, architects do not need a critical way to validate an exclusive architectural vision, but feel free to pick up and reconstruct the elements from all kinds of historical evolution of architecture to formulate their own architectural thoughts and means. if only from a technical and aesthetic viewpoint, there seem to be no boundaries any more in terms of archetypes; and no matter of the deconstruction or composition of tectonic architecture system, or the free formal transformation of stereotomic architecture system, all these efforts can be ascribed to architects’ passion to break through the limitation of human imagination. However, architecture is not a kind of artwork merely for appreciation, nor is dispensable commodity. Regarding the questions of “what”, “why” and “how” of architecture, the perception and judgment on the macro-significance of architecture to the social and natural environment and its micro-significance to the users whets our appetite for the specific and simultaneously creates new boundaries.

Commercial culture becomes more and more prevailing owing to the propaganda of various types of mass media in the contemporary time. Without an exception, the motivation, stance point and standard of architectural criticism can be manipulated for a certain purpose, while the particular interests of attracting the mass attention by the novel things gives the highest visibility of the formalist architecture with maverick shape, and consequentially the birth of “Starchitect”\(^9\) phenomenon, which presents as the utilitarian association of the most famous architects and the most important buildings to illustrate economic and political power around the world.

At the meantime, world-class architectural prizes are more likely diffused as the benchmark of architectural design trend instead of the analytical and critical criticism, and the styles of awarded architects become a fashion to follow at a worldwide range in

\(^9\) Starchitect is a portmanteau used to describe architects whose celebrity and critical acclaim have transformed them into idols of the architecture world and may even have given them some degree of fame amongst the general public. Celebrity status is generally associated with avant-gardist novelty. Developers around the world have proven eager to sign up "top talent" in hopes of convincing reluctant municipalities to approve large developments, of obtaining financing or of increasing the value of their buildings. (Ponzini and Nastasi, 2011)
the field of architecture. However, since the evaluation criteria of these architectural prizes are simultaneously shifting with the different preposition of architecture’s artistic, economic and social value as mentioned in the previous section, two counter-types of architecture have been pushed to the leading positions, which are heroism architecture versus poetic serene architecture. Notably, as the way to classify the archetype according to architect’s formal and structural characteristics has gradually lost its validity to indicate the essential differences of architecture, architects’ philosophy and attitude implied in their architectural works become the descriptive definitions of contemporary archetypes.

So, heroism architecture is the type of architecture with an appearance protruding from the surrounding physical and social environment, which results from a kind of architectural design base on the subjective aesthetic preferences and social consciousness of the architect, and highly depends on the high-tech technology to build. In contrast, poetic serene architecture refers to the type embedded in the contexture of site to express the regional characters of nature and culture with creative forms that can be easily built with the local construction techniques and materials.

Why the built effects of the architectural works designed by these talent architects are so different? Which kind of architectural concepts and design methods can be transformed to generalizable knowledge for promoting the average design quality of everyday architecture except the iconic ones? This section therefore mainly analyses representative cases of these two architectural types, compares the cause and effect of their different ways to address the relationship with the people and society with the clues of public perception and evaluation, and thus to figure out the architectural solutions that should be learned or avoid.

2.2.1 The Phenomenon of Contemporary Heroism Architecture

The heroic belief that highest art form would raise the quality of society has been asserted since the Renaissance, and all the modern architectural movements were led by the “heroic” architects to a large extent, who even had a bigger ambition to change the form of the world and the way how people to live. However, in the contemporary time, the consciousness of the public in terms of arranging their own lives is largely rising especially in the Western society, correspondingly, the demanding position of architects has declined. Thus, today’s heroism architects have to ally with the power of privilege, material wealth, and high technology to realize their ambitions. However, the tacit agreement between the heroism architects and the owners of the economic and political power has decided the purpose of such designed and built architecture must symbolically
express these social advantages and advertising effects rather than serve for average people’s necessity and aspiration as a priority.

American architect and professor of Yale University, Steven Harris provided a thorough explanation on this architectural phenomenon in terms of its social root in the book *Architecture of the Everyday* (1997). He stated that, “the hegemony of Structuralism and its derivatives coincided with the virtual abandonment of architecture’s social and political ambitions and the estrangement of direct experience from architectural discourse”; and the reason for these styles eclipsing other schools of theory is, “as a pedagogically efficient technique of textual analysis, it could be deployed on a purely formal level, safely removed from the intense intellectual and political critique of consumer society inherent in theories derived from Marxist analysis” (Harris and Berke, 1997, p.2).

Guggenheim Museum in Bilbao of Spain (Figure 2.21) designed by Canadian architect Frank Gehry has been hailed as a “signal moment in the architectural culture” because it represents “one of those rare moments when critics, academics, and the general public were all completely united about something” (Tyrnauer, 2013). This project was constructed on time and budget, has perfectly integrated into the context of cityscape and gained numerous benefits for the city because of its attraction for tourism. This success has been accredited to the economic and cultural revitalization of cities through iconic and innovative architecture, called “Bilbao Effect” (Rybczynski, 2002).

When Spanish architect Enric Miralles (1955-2000) designed Scottish Parliament Building (Figure 2.22), the architect represented a complex concept on a parliament building that encompasses many...
abstractive interpretations of Scottish landscape, people, culture, and political implications of enforced national identity (Miralles, 1998). However, the controversy on this case was intensive after its completion in 2005. On one side, the building has been lavishly praised by architectural academics and critics, and won several awards in United Kingdom and Spain, such as the 2005 Royal Institute of British Architects’ Stirling Prize, which honored it as “a statement of sparkling excellence” (RIBA, 2005). Landscape architect Charles Jencks applauded it as having “a tour de force of arts and crafts and quality without parallel in the last 100 years of British architecture” (Jencks, 2005). On the other side, the public reacted to it in a shapely different way from the architectural critics. Other than the problems of overtime and budget, its rampant complexity, iconography and layering of meaning and metaphor are publicly regarded excessive. Although finally, this building has to be accepted as a particular case, the paradoxical result from architects’ ambitions in relations to the place and people has reminded critical thinking on this trend.

Iraqi-British architect Zaha Hadid is introduced in the on-line homepage of London Design Museum as the one who “has defined a radical new approach to architecture with multiple perspective points and fragmented geometry to evoke the chaos of modern life”. Hadid has won numerous architectural awards, including the Pritzker Architecture Prize in 2004 and the Stirling Prize in 2010 for the National Museum of the 21st Century Arts (Maxxi) in Rome (Figure 2.23) and 2011 for the Evelyn Grace Academy School in London, etc. Indeed, Hadid has been one of the leading figures of Starchitects with high productivity of the iconic buildings all over the world. The heroism complex reached its peak when Italian designer Vito Di Bari launched “Manifesto of Neo-Futuristic City” in 2007, in which his neo-futuristic vision was defined as the “cross-pollination of art, cutting edge technologies and ethical values combined to create a pervasively higher quality of life” (Di Bari, 2007). Noting that Di Bari took Zaha Hadid as the inspiration, and some other architects of this movement such as Buckminster Fuller (1895-1983), Norman Foster, Kenzo Tange, Renzo Piano, Richard Rogers, Frei Otto, and Santiago Calatrava as a general context to debut his opinion. Architectural historians and critics Jean-Louis Cohen on the other hand has defined Neo-Futurism as “a corollary to technology, being the structures built today byproducts of new materials to create previously impossible forms” (Cohen, 2012, p.438). Interestingly, whereas this polemic label made Hadid become a flag of avant-gardist fashion, other pointed contemporary architects actually refuse to be labeled like this. Moreover, the public rejection to the way that starchitects design has been rising in the recent years, and
finally breaks up in the project of Tokyo New National Stadium for the Olympic game of year 2018 (Figure 2.24).

Hadid got the commission of this project in 2012 as the winner of the international competition. But later, Japanese architect and the 1993 laureate of the Pritzker Architecture Prize, Fumihiko Maki initiated an argument by an essay and a public seminar participated by a group of prominent Japanese architects, sociologists and historian. They all criticized that Hadid’s proposal is too big to coordinate with the historic and physical surroundings, and the cost keep increasing as the design is developed. The arguments become more and more intense, in which the avant-gardist form and technology that Hadid adopts for the project are not the main issues to question. Rather, it can be regarded as a backlash among Japanese architectural academics and professionals with respect to starchitect’s indifference to the place and people. Japanese government finally announced to cancel the contract with Hadid in July of 2015 with the excuse of the failure in cost control. Anyhow, the public protest of Japanese people is the substantive force to make this decision. This result is a remarkable sign to indicate that the situation of unanimous applause to starchitects and heroism architecture has changed, as the social concern is moving onto the problem of social sustainability from an illusion of social prosperity.

In general, the strategy of starchitects to remain the high visibility of their profiles urges continuing inventions of novel design concepts and approaches, which are out of the real context of architecture. In most of the cases perceived as heroism architecture, the root of stereotomic architecture for a sense of sublimation is legible, and extraordinary forms are used for arousing the intensive feeling of novelty and curiosity at the first sight. This trend is problematic for leading contemporary architecture regarding if this kind of emotional effects could last, and while the sculptural shape loss its capability to indicate
the human scale and the complexity of functional program, it cost much more to build than necessary.

2.2.2 The Phenomenon of Contemporary Poetic Serene Architecture

In 1954, Mexican artist with German origin, Mathias Goeritz (1915-1990) first proposed the term of “Emotional architecture” in his El manifiesto de arquitectura emocional as reaction against Functionalism. Goertiz stated, “I have worked with total freedom to make work whose function is to produce emotion. The aim is to restore architecture’s status as art” (cited in Kassner ed., pp.272-273). However, Most of Goertiz’s works are architectural sculptures out of human scale for landscaping or infrastructure, such as the Satellite Tower of Mexico City in collaboration with Mexican architect Luis Barragán (1902-1988).

Luis Barragán

Indeed, the concrete efforts to develop a practical sense of “Emotional Architecture” rather than an arbitrary attitude of artist start from Barragán. And more concretely, the architectural works of Barragán initiate the trend of poetic serene architecture, meant as his own words for the Pritzker Prize acceptance speech (1980),

“Serenity is the great and true antidote against anguish and fear, and today, more than ever, it is the architect’s duty to make of it a permanent guest in the home, no matter how sumptuous or how humble. Throughout my work I have always strived to achieve serenity, but one must be on guard not to destroy it by the use of an indiscriminate palette.”

As an architect, Barragán acknowledged Goertiz’s artistic manifestation, but also clearly delimited the connection of architecture with art in terms of adopted aesthetic meaning and emotions of “Beauty, Inspiration, Magic, Spellbound, Enchantment, as well as the concepts of Serenity, Silence, Intimacy and Amazement”, which together are accentuated as an divergent mindset of “The Art of Seeing”, which as he thought is essential “to see in such a way that the vision is not overpowered by rational analysis” (Barragán, 1980).

Most importantly, Barragán sought the form of “Emotional Architecture” in the realm of architecture by combining Mexico vernacular architectural language and modernist structural and functional principles. This methodology resulted in a distinctive personal style of Barragán characterized by the use of vivid colors and raw materials of Mexican tradition and sensuous interplay with the nature, such as light, water, garden,
etc. These elements are coherent in all his projects, but for representing different aesthetic meanings and emotions, such as peaceful and free in his own house (Figure 2.25), divine and humane in Chapel of the Capuchinas (Figure 2.26), and human love to horse and nature in Los clubs (Figure 2.27) for Folke Egerstrom family, dedicated to the training of thoroughbred horses.

From left to right
Figure 2.25. Barragán House (1947-48), Mexico City, designed by Barragán. (Photo©Casa Luis Barragán)

Figure 2.26. Chapel of the Capuchinas (1953-60), Tlalpan, Mexico City, designed by Barragán. (Photo©Barragán Foundation)

Figure 2.27. Los clubs (1966-68), Mexico City, designed by Barragán. (Photo©Barragán Foundation)

Barragán’s architectural approach stemmed from the regional culture not only has fundamental influence on Mexico’s contemporary Architects, but also became an international reference for this type of poetic serene architecture, which is emotional as well as functional. Prominent Portugal architect Álvaro Siza stressed his idea of “an extraordinary combination of complexity and simplicity” in the “preface” written for the book Barragan: The Complete Works (Rispa ed., 2003), and frankly credited Barragán as his own inspiration to pursue the similar poetic virtue in his own works.

Álvaro Siza

Portuguese architect Álvaro Siza is esteemed as one of the most masterful architects in the vein of poetic serene architecture. He was rewarded the 1992 Pritzker Prize, 2009 Royal Gold Medal, 2011 UIA Gold Medal, 2012 Golden Lion for lifetime achievement, etc., and has prolific works worldwide. However, he is always rooted in his native city Porto and focusing on everyday architecture.

Álvaro Siza’s architectural works are highly strategic and rational because of his education background in modern architecture school and the self-actualization along his
architectural practice and pedagogy. The architectural idea that modernist and contemporary Portuguese architects always persist is usually identified by the architectural critics as a utopian thinking, such as Levit defined, “where form would be neither an arbitrary inheritance nor an arbitrary system of forms, but would grow directly out of our needs, and those needs’ interaction with our environments, and most generally (if also most vaguely) out of who we are” (Levit, 1996, p.247).

But compared with the first generation of modern architects who had strong motivation to underpin the unified order and rule to modern architecture, Siza has formed a more flexible and down-to-earth mindset to integrate artistic and ethical principles in his works. Siza intends to clearly settle the formal language with specific feeling, meaning and logic to each project, and thus his work can be free from any style just as he said (1978, cited in Levit, 1996, p.227),

“My architecture does not have a pre-established language nor does it establish a language. It is a response to a concrete problem, a situation in transformation in which I participate… In architecture, we have already passed the phase during which we thought that the unity of language would resolve everything. A pre-established language, pure, beautiful, does not interest me.”

So, it is impossible to interpret the complexity of his entire works in one specification; rather, the better way to learn from his work is to trace the theoretical foundation and evolution of his thoughts that lead to various solutions with respect to the concrete problems, among of which, two precedent works evidently formed Siza’s architectural vision. One was the re-interpretation of Portuguese vernacular architecture developed by the previous generation of Portuguese architects such as Keil Amaral (1910-1975) and his mentor Fernando Távora (1923-2005). The other was extended from Le Corbusier’s notion of people as a mobile subject and the concept of architectural promenade (Levit, 1996).

What Amaral and Távora sought in the vernacular was a form of building without resort to “style”, or what they called “constants”, by which we can understand formal norms, but the identity of Portuguese people as they believed laid in the “strict correlation” in those buildings “with geographical factors, as well as economic and social conditions” (Sindicato Nacional dos Arquitectos, 1961). The vernacular is evident to have an archeological effect whereby its own history and natural history are inscribed in its form. In this respect it satisfies some of those objectives sought out by its investigators under the contemporary circumstance. For example, Siza took the chance of a specific location besides the coast of Boa Nova (Portugal) and recalled this identity in the design
of the Tea House (Figure 2.28), using pitched roofs of ceramic tile and stucco wall in contrast to the light structure, concrete retaining wall, and full-high windows/doors in the other side toward the sea, which are totally modern language and better resonant with the nature. The fusion of modern and vernacular language results in a timeless poetic effect.

Regarding the inspiration from Le Corbusier, the conceptualization of “architectural promenade” is the major impact. Although Le Corbusier only use this word to describe the effect of the ramp rising from ground level to the third-floor roof terrace that allows for passing through the structure in the Villa Savoye; the investigators (Levit, 1996; Birksted, 2006; Samuel, 2010; etc.) hold a consensus that the architectural promenade was a key idea of arranging the circulation and form with a mind to the arousal of sensation and related to our “free” movement in much of Le Corbusier's architectural work. This is considered as a significant transformation in the attitude toward the relationship between subject and object. The stairs and ramps, these components of circulation working as “ergonometric furniture” in a “free plan” and distinct from the structure of the architecture, will seem like a more natural and human language as an amore spontaneous and natural appeal will be made to a self involved in a more spontaneous and natural response (Levit, 1996).

In this vein, Siza’s works, such as the Setubal Teachers’ Training College (Figure 2.29), imply the unique moments of perception of the seeing subject for a comfortable stay while being rigorously orchestrated in an enjoyable sequence to indicate the continue movement.

Though consciously avoiding the stylistic mindset to be heroism, the trend to form a personal “type” is a paradoxical situation in the design pattern of the architects who are mainly based on the rational thinking. In the case of Siza, “U” shape layout appears many times in his work, which is suspicious to be certain of pre-established languages. So, some of Siza’s strategies against this trend are to
deform the “U” and break its integrity according to the necessity of constructing a relationship between site and architectural intervention.

For example, in the Carlos Ramos Pavilion (Figure 2.30), the building was designed to naturally integrate the scale of existing constructions and the presence of secular trees. Thus, the presence of camellias, rhododendrons and a eucalyptus determine the twists of the building and the retreat of its base in a way that would not affect the root of the trees that outline the landscape with it. In another project much bigger in scale, the Museum Mimesis in Korea (Figure 2.31), the curved “U” box is engraved and protruded by the passage ways, windows, terraces and shed panels, where the light effect and the “seeing” is necessary and particularly interesting during a stroll.

Figure 2.30. The Carlos Ramos Pavilion (1985-1986), School of Architecture of Porto, designed by Álvaro Siza. (Photo by Nelson Garrido)

Figure 2.31. Museum Mimesis (2006-2009), Paju Book City, Korea, designed by Álvaro Siza with Carlos Castanheira & Jun Sung Kim. (Photo by Fernando Guerra/FG+SG)
Swiss architect Peter Zumthor is another contemporary master to create poetic serene architecture. With a mixed training background in handicrafts and architecture design, the ascribes the emotional power of architecture to some of its qualities of art; however, this art for him has nothing to do with interesting configurations or originality, but concerned with insight and understanding, and above all with the truth (Zumthor, 2006, p.19). He advocated that architecture can put up a resistance, counteract the waste of forms and meanings, and speak its own language in a society that celebrates the inessential; and the language for every building is unique not for a style, but because it is built for a specific use in a specific place and for a specific society (Zumthor, 2006, p.27).

This philosophy is rooted in Zumthor’s empathetic thinking with people who are flooded by artificial signs and information that stand for things that they cannot fully understand. For him, it would be ideal for the inhabitants and spectators that if the building is conceived accurately enough for its place and its function, it will develop its own strength, with no need for artistic additions (Zumthor, 2006, p.27). Then, this peace within architecture lets people’s perceptive faculties grow quiet, unprejudiced, unacquisitive, and reach beyond signs and symbols (Zumthor, 2006, p.17). Zumthor suggest filling this perceptual vacuum with beautiful memories of personal experience and a power existed in the ordinary things of everyday life that he has felt concretely in his own life (Zumthor, 2006, p.8, 17).

Zumthor announced his understanding on architecture in his RIBA Royal Gold Medal laureate speech (RIBA, 2013).

“Architecture is not about form, it is about many other things, the light and the use, and the structure, and the shadow, the smell and so on. I think form is the easiest to control, it can be done at the end…it’s about creating emotional space.”

Zumthor feels confident to find out the real things in nature and man-made objects, which are not only the vehicles for an artistic message, but also whose presence is self-evident (Zumthor, 2006, p.16). He also believed that building can have a beautiful silence associated with attributes such as composure, self-evidence, durability, presence, and integrity, and with warmth and sensuousness as well (Zumthor, 2006, p.34); and this kind of silence building allows emotions to emerge along the time rather than stir up emotions for the moments.

Zumthor approaches architecture as a focal point historically, aesthetically, functionally, personally, passionately (Zumthor, 2006, p.18). He intends to avoid the way
of forming preliminary images of the building in mind and subsequently adapting them to
the assignment, and starts from answering basic questions arising from the location of the
given site, the purpose, and the building materials, which as he believed possess the
potential of a primordial force that reaches deeper than the mere arrangement of
stylistically preconceived forms. In particular, materials and light are the essential
qualities that Zumthor assign to form sensuous experience and emotional atmosphere in
his works.

For example, driven by the multiple meanings of stone for the site, the Thermal Bath
Vals (Figure 2.32) is conceptualized as cave and quarry as well as built from layer upon
layer of locally quarried Valser Quarzite slabs. The light and water are the dynamic
elements to play on the static surfaces and in the articulate spaces formed by stone. A
series of dramatic sceneries is orchestrated along a deliberately configured meander for
the bathers to discover. The Kolumba Museum (Figure 2.33) in Cologne grows up upon a
bombed old church with Roman, Gothic and Medieval ruins exposed underneath. A winding
passage over the ruins is leading an experience of walking through the archaeological sites. The
texture of thin gray brick, handmade by Tegl Petersen of Denmark lighten the perception of
simple volumes from outside and sensory interplay of light and materials inside.

The coherence among Zumthor’s architectural theories, approaches and the effects of his
buildings has proven that art and everyday life based on the reality are not mutually exclusive in an
architectural object. Rather, architecture can be silence but expressive, meticulous but unitary,
modest but bold, critical but affirmative, rational but emotional.
2.2.3 Summary: A filtration of Appropriate Architecture for Everyday Life

Although all the generations of architects hold a certain kind of Utopian thinking to approach a better life by architecture, it is always an arguable question if such an ideal should be developed on basis of truth or something never existing before. Nowadays, as technology has gradually changed from one of the main constraints to an advocating position for construction, visionary architecture that used to only exist on paper could be built into the reality only if it would be allowed. That’s why the avant-gardist architecture gets its golden time to show. However, as the dual consequences of the avant-gardist architecture become more and more visible to public, the debate about what is the appropriate architecture to promote is rising.

Heroism architecture and poetic serene architecture apparently reflect two types of social ideology and attitude to regard the model of our contemporary and future life and treat the average people of a society. This divergence of mind-set has resulted in their controversial architectural philosophies and totally different design approaches, no matter that these two groups of architects all have the awareness and ability to create artwork with both rational and emotional characteristics.

In most of cases, the public mixed by the citizens as well as social and architectural professionals has shown a clear resistance to heroism architecture because they feel these buildings fail to be healthy backdrop of everyday life, and express the right social value. However, it is not that clear that which is the right direction for architecture to go. Even though some architectural professionals and academics have recalled poetic serene architecture in the resent years as rejection to the heroism and consumer value, the message is not easy to diffuse to the public and influence the contemporary architectural practices around the world just because of the serene nature of this type of architecture, which fully functions on the sensory perception and processing of information when it is experienced in person rather than is viewed as some pictorial images in the medias.

In this context, a filtration of appropriate architecture for everyday life is urgently needed for architects to better understand the conflicts between “illusion and truth, power and helplessness; the sector man controls and the sector he does not control” (Lefevre, 1947, p.40), and make their choice to create the appropriate architecture for people in a right way. So, three points as follows are proposed for architects’ critical thinking.

(1) Relationship Between Individualistic and Collective Identity

In fact, if an architect’s individual architectural style could transcend to an acceptable collective identity is neither a question of the style per se, nor a choice of being novel or
conventional, but depends on if a new building can be designed with the concrete qualities that could participate into a meaningful dialogue with the existing context in a friendly posture.

The success of the Bilbao Guggenheim Museum is remarkable, but also unrepeatable in terms of its consequences of reviving the economic development of a city at the same time of promoting the optimistic social life for citizens. It is a cultural center and public space, which is stemmed from a sincere civic commitment of rising up the collective identity of city rather than the mere success of the owner or developer. Moreover, it is also crucial that the visual image and architectural experience of the building coincides with such a collective identity. According to a report in the journal of Financial Times, the director of the museum, Juan Ignacio Vidarte believes that the psychological impact of the museum on Bilbao’s inhabitants in terms of recovering their self-esteem to reverse a trajectory of industrial decline has been just as important as the tourist industry it created (Crawford, 2007). Gehry’s individualistic architectural design in this case is actually a city design with consideration of the existing context and other associated social problems of this area more than an individual building of art museum. And his design purpose is also clear to reflect a realistic vision of solidarity, which is consisted of rich, diverse and dynamic fragments.

Other strategic followers encounter the public resistance partially due to the visual fatigue to the flux of novel things in consumer society, but more substantively because they are aware of that the developers and architects push such kind of architecture into reality and manipulate the public resources only for their own interests and profits. The Scottish Parliament Building designed by Enric Miralles met this dilemmatic situation because the collective identity of the people and place has finally been override by the political ambition of representing the national symbol, no matter that the architect’s original intention was to represent the local nature and culture in the building. In addition, the trivial massing and decorative details of this building further reflect an uncertainty as the architect wanted to transmit so many formal messages in an obscure way.

Hadid’s works reach to a peak of individual formalist. Either the fragmented geometry or fluid contour that she uses all follow a tradition in sculpture that minimizes the expression of the joints and joins between the single parts in favor of the overall form. Hadid is interested in immediately stir up spectators’ strong emotions in each of her works by highlighting the visual impacts which repeat the same message of that an optimistic future needs to break with the past. Her works do not show any familiar connection with people, and can be located at anywhere in any scale. That’s why there is a monotonous psychological reaction of people to witness her works as the architect’s
“strength of spirit in individualist isolation” (Pehnt, 1973, p.41), no matter these works are exhibited as a sculpture in museum or a huge building dominating a site.

To the contrary, poetic serene architecture, such as the architectural works designed by three masterful architects that have just been reviewed, all bears a kind of sensory atmosphere that is not excessively stimulating, but sufficient to arouse the full sensory perception, and spatial experience easy to recognize and memorize owing to the remind of moderate and pleasant emotional resonance. Just because of a seamless integration of sensory atmosphere and spatial experience in and of architecture, architecture is possible to naturally and frequently drive people’s motivations to interact with their physical environment for living, working and playing, and inspire them to elevate the functional and spiritual daily activities to aesthetic life experience with poetic serene.

At the meantime, it is noteworthy that this type of poetic serene architecture can be realized by various individualistic design methods that could fully take advantage of the existing natural and cultural resources and economical materials and technologies, just like Barragán, who integrated the color identity of Mexican tradition and concise modern architecture composition; Siza, who creates subtle changes in the spatial form and feelings in order to break the indifferent expression of standardized modern architecture system by local low-tech building means; and Zumthor, who injects the emotional effect of *deja vu* into the construction of architecture through the innovative and sensitive application of the materials with local arts and crafts contexture. Poetic serene architecture appeared to have a personality due to regional differences and cultural diversity, and in turn, can strengthen the regional identity. In such a mutually beneficial relationship, communicable emotions and meanings are produced between architecture and people.

(2) Economic Value of Creativity

The creativity of architect definitely has its extra value in many aspects. However, in terms of its economic value, heroism architecture and poetic serene architecture follow the totally different laws of investment and benefit. Making iconic architecture is essentially a marketing strategy to visually transmit the specific message of political and/or economic power. To obtain the high visibility, more investment on formal creation and high-tech application is needed to demonstrate an advantaged posture. This formula tends to idolize heroism architect’s creativity as a mythical identity and additional value for attracting the predicted revenue. In contrast, architect’s creativity for poetic serene architecture contributes to increase the economic feasibility without compromising functional and emotional attributes in architecture, and produce the effects that cannot be
gained and measured by economic value thus to improve the cost-effect of an architectural project.

When Alvaro Siza said, “Architects do not invent, they just transform reality” (Glažar et al., 2006), he tried to remind architects not to confuse design creativity to look into new things with novel application of the technologies that have already been experimented on by other disciplines; also, an architect’s personal experience is useful, but not the way to a new project because a new project involves other people, sites, conditions, and human atmosphere When Peter Zumthor advocated that architecture can speak its own language and put up a resistance to the celebration for the inessentials, he means to counteract the waste of forms and meanings (Zumthor, P27).

Honesty, respect and confidence are not only moral qualities of the architects, but drive architects to engage the existing conditions with new sensory and emotional experiences in more concrete and creative ways. As such, they can efficiently achieve an atmosphere rather than a delicate object, in which architecture is modest in their forms, self-explanatory in space, and timeless in the richness of offered experiences. All these aspects contribute to create an emotional architecture for our everyday life at minimum cost possible.

(3) Emotional Effect of Architecture

In light of the psychological knowledge that has been reviewed in the previous chapter, design motivations all can be regarded as architect’s personal need of self-actualization, and more or less surpass the average vision and reality of ordinary people’s everyday life. That’s why architectural work can be especially perceived, felt and/or judged as being art, and undoubtedly cost extra creativity to achieve such an aesthetic status. Without a doubt, every architect hopes that his or her work would be accepted and appreciated by the public or to a minimum extent by its inhabitants and users. However, it seems not easy even for the masterful architects if they only care about the art of architecture, and do not take into account the users’ needs, aspiration and their ability of reasoning no matter if they have been trained or not for aesthetic appreciation.

In most persuasive situations, people react based on the emotional appraisal, and then adjust their actions practically. Heroism architecture follows the principles of art, in which five primary aesthetic forms, “the beautiful, the sublime, the tragic, the ugly, and the comic” (Dessoir, 1906), and intense and unusual emotions are celebrated. “Peak
experience”\(^\text{10}\) accompanied by a euphoric mental state might be achieved at some specific moments and in some specific situations when people visit some artistic architecture for purposes. In contrast, poetic serene architecture might give people “Peak experience” in less intensity, but be capable of providing more frequent and unconditional experiences of “Flow”\(^\text{11}\) through the sensuous qualities and affective meanings endowed by architects.

So, it is not surprising that whereas heroism architecture finds its place as a short-life fashion for the moments, serene architecture will be more appreciated to be an indispensable part of people’s everyday life as well as the backdrop of their self-development.

In general, heroism architecture and poetic serene architecture can be well distinguished from each other by the comparison in three aspects of relationship between individualistic and collective identity, economic value of creativity, and emotional effect of architecture. The discrepancies of heroism architecture and poetic serene architecture are not in their aesthetic value, but reflected as a fight of social value. However, for most of architects, even we choose poetic serene architecture as example considering the potentiality, flexibility and efficiency of this type to address the context and human emotions, we need to sharpen our design ability and methodology for achieving the expected effectiveness of architecture design for everyday architecture. In this sense, the following section records the enlightenment from Nordic architects, who are never exhausted to explore the alternative architectural solutions for a common target of people’s well-being.

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\(^{10}\) Peak experiences have been described as rare, exciting, oceanic, deeply moving, exhilarating, elevating experiences that generate an advanced form of perceiving reality, and are even mystic and magical in their effect upon the experimenter by Abraham Maslow in his work *Religions, Values, and Peak Experiences* (Maslow, 1964).

\(^{11}\) Flow has been described as a state of mind when one is using their full potential, completely immersed in their current activity, and are therefore not conscious of time, or anything else for that matter. It is a common phenomenon that many self-actualized people experience proposed by Mihaly Czikszentmihalyi proposed by Mihaly Czikszentmihalyi in his book *Flow: The Psychology of Optimal Experience* (Czikszentmihalyi, 1990).
2.3 An Emotional Architecture Trip to the Nordic Countries

The Nordic countries are evident to hold a successful profile of the welfare states in the mode of high taxes in return for the state taking care of its citizens from cradle to grave since the 1950s. Socio-politically, an average modern life is standardized as healthy, sanitary, equal, and joyful for everyone. It is notable that this kind of social agenda did not stifle the creativity of Nordic architects. To the contrary, Nordic architects have successfully remained their individualistic architectural language and expression in accordance with this unified social vision, and thus form a constant tradition of creating affective architecture with strong cultural, natural and environmental identity at reasonable cost.

Phenomenally, Nordic architecture can be regarded as an exemplary group to refer for defining the conceptual and methodological model of emotional architecture for everyday life, which would be also feasible in the less developed regions or countries as its essential qualities is not subject to the power of wealth and high technologies. However, the aesthetic and ethical value of Nordic modern architecture appear to be largely undervalued at global range as Nordic architects mostly focus on the local practice of designing everyday building for ordinary people, which are rarely exposed to the world outside the Nordic region. Therefore, a series of field studies and literature review on the architectural practices and theories of several influential Nordic architects or architectural firm have been done in this research project in order to examine this regional architectural phenomenon concerning with various architecture types for everyday life, such as working-class apartment, hospital, elementary school, university campus, civic center, bookstore, institutional office, elderly care facility, church and cemetery, etc. In the following part of this section, the alternative architectural approaches of seven Nordic architects and architectural firm are mainly reviewed according to the order of time from the beginning of the modernist architecture movement until now, and their common characteristics are discussed in the summary.

Before we go through each architectural approach, it is necessary to understand a general historical background about the emergence of Nordic modern architecture, which was the starting point of a unique path to develop regional architecture. Nordic architects have almost not been involved into any avant-gardist art movements in Europe since the beginning of the modernist movement of art and architecture, but mainly focused onto creating their own architecture of democracy with respect to their distinctive climatic and geographic conditions and cultural traditions. This doesn’t mean that Nordic architects were isolated from the worldwide architectural trend. Many of them traveled to Mediterranean countries like Italy, Greece and Spain, to seek the inspiration of passionate
lifestyle and aesthetic creation of ancient civilization. And on the other hand, they also visited Germany, France and the Netherlands, where were the enclaves of all the most avant-gardist ideologies, practices and exhibition events in art and architecture in order to grasp the pulse of the times.

As such, when Nordic modern architecture went through a short transition period of Neoclassicism from the 1910s to the 1930s, some new architectural theories were fostered as well. The Swedish art historian Gregor Paulsson (1889-1977) published a book *Den nya arkitekturen (The New Architecture)* in 1916 to advocate a sociological aesthetic and fighting for an everyday art. Later, Nordic architects adopted the ideology of Functionalism raised by the New Objectivity movement during the Weima Republic era (1918-1933) in Germany, which emphasized the use and expectation of a better world realized with the help of modern technology and rational planning. However, they modified the international style into a regional version of Nordic organic modernism or called “baptized Functionalism” to define this current of Nordic architecture during the late 1920s and the 1930s (Lund, 1998, p7, 10). Since ever, Nordic architects have been able to continuously work in an independent position and free posture along the progress of architecture modernization.

### 2.3.1 Erik Gunnar Asplund: The Movement of Modern City Life

Swedish architect Erik Gunnar Asplund (1885-1940) had been one of the most influential mentors for the new generations of Nordic architects. He broadly sought the inspirations from the natural and cultural experiences of different times and different regions. For example, he expressed the mood of starry sky, festival ceremony and Greece amphitheater that he experienced in Mediterranean countries into the ambient of Skandia Cinema in Stockholm. He considered the circulation in his architecture and landscaping work just like the moving consequence in ancient Roman Forum and those temples. He also learned from Japanese impermanent house in terms of “dissolution of space and its adaptability, the freeing of building form, and the closer relationship between interior and exterior” (Asplund, 1931, p.41) as a formal approach in his own work to infuse the concept of *infinite space*, which was proposed by German historian and philosopher Oswald Spengler (1880-1936). Modern, classic and vernacular architectural languages were mixed in Asplund’s projects with the functional and structural purpose rather than useless decoration. Such a hybrid approach results in some unprecedented formal expressions that can often give people a subtle feeling of harmony, freedom and surprise.

The Woodland Cemetery (Skogskyrkogården) in Stockholm is a representative architecture-landscaping work that can best reflect Asplund’s evolution in design
concepts and approaches from 1914 to 1940. Asplund together with another Swedish architect Sigurd Lewerentz (1885-1975) won the competition in 1912 and both collaborated until 1935. As two young architects declared (Asplund, 1931, p.40),

“We do not comprehend the city from a picture postcard point of view or stand in one well-chosen spot to enjoy its rhythm and color…Our image of the city is now first formed as we move through it, looking at the development as a whole…The idea of movement now occupies our concept of space” … “contrast (in the modern city) will be between the soft vegetation, the hill and a simplified architecture…between movement and rest, and if movement becomes more intense, then rest will be more absolute.”

The final plan is composed by the fluctuating topography, Meditation hill, Seven Springs Way, Holly Cross path, grave in the forest, architectural compounds including the Woodland Chapel (1918-20) (Figure 2.34), the Chapel Resurrection (1923-25), the Chapels of Faith, Hope, Holy Cross and a crematorium complex (1937-40), and a service center dispersed along the route (Figure 2.35; 2.36; 2.37).

Rather than a strange, sorrow and fearful scenery that a traditional cemetery would appear, the Woodland Cemetery is a place to accomplish dignified funeral arrangement and ritual, but also for the living people to experience a sequential trip of emotional relief accompanied by the humane architectural details, where generous and closer contact of sacredness is represented as a new experience of infinite space emerging into the grand landscaping.

Figure 2.34. Exterior and interior of the Woodland Chapel (Photo by the author)
Figure 2.35. View from the main road access to the Holy Cross and meditation hill (Photo by the author)

Figure 2.36. View to the Chapels of Faith and Hope (Photo by the author)

Figure 2.37. View from the portico of the Chapel of Holly Cross to the meditation hill (Photo by the author)
2.3.2 Sigurd Lewerentz: New Tradition of Nordic Architecture

Swedish architect Sigurd Lewerentz (1885-1975) has a profound influence on the younger generations of Nordic architects such as Peter Celsing (1920-1974) and Bengt Lindroos (1918-2010), etc., in terms of his uncommon vernacular approach of combining rational layout with a consistent programmatic concept of mixed use function and emotional form with the spirit of craftsmanship. In his work, the inhabitants are always gracefully included and cared in the community as well as in the nature.

St. Mark’s Church (Figure 2.38) in the outskirt town of Stockholm is a compound of buildings including the church, clock tower, and priest’s office, and a civic center hosting a youth and children’s activity center, an auditorium/restaurant/banquet hall, a small cafeteria, a forum and a separated dining hall. Moreover, Lewerentz initiated a modern concept for the church. The church area is divided to three zones to adapt; the axial symmetric layout that a classic church must follow was replaced by a zoning layout adapted to the different scaled ceremonies. The whole plan (Figure 2.39) is efficient without any pure circulation space from one functional space to another, so that in this project emotional resonance does not lie in a consequence of movement, but in the sensuous qualities inside each architectural space with deliberately designed light and views, and of pristine brick texture (Figure 2.40).

![Figure 2.38. St. Mark’s Church (1956-1960), Björkhagen, Stockholm. (Photo by the author)](image)
Figure 2.39. Plan of St. Mark’s Church, Björkhagen, Stockholm. (Source: plansofarchitecture.tumblr.com)

Figure 2.40. Pristine brick texture of the wall (Photo by the author)
2.3.3 Alvar Aalto: Human Psyche in Architecture

It is not until the 1950s that Finland turned out to be an industrialized country and adopted the regime of Nordic Welfare State due to its specific historical relationship with Sweden and the Russian Empire, and except Finnish Civil War in 1918, Finnish forces fought in three separate conflicts during World War II. However, in such a complicated social context, Finnish architect Alvar Aalto (1898-1976) successfully developed his professional career, and first achieved world attention in architecture for the completion of the Paimio Sanatorium (1932) and Viipuri Library (1935), and then gained his international reputation for his design of the Finnish Pavilion at the 1939 New York World’s Fair (Figure 2.41). The adaptability of his works is ascribed to his architectural philosophy, which Aalto (1950) reclaimed in the eulogy that he delivered for Eliel Saarinen (1873-1950)’s pass away,

“Regardless of which social system prevails in the world or its parts, a softening human touch is needed to mold societies, cities, buildings, and even the smallest machine-made objects into something positive to one human psyche, without bringing individual freedom and the common good into conflict.”

Among all of his works that I visited in this trip, Säynätsalo Town Hall near his hometown Jyväskylä in Central Finland is the one most coherent to his social and aesthetic vision: small-scale democracy, individualism, harmony with nature, civilized moderation, disdain of ostentation and superficial effects (Alvar Aalto Foundation).
The plan of building (Figure 2.42) combines the functions of the municipal council, administration, library, housing for municipal employees, and several renting shops for living services, which is a humanized architectural planning that represents a framework of modern democratic civilization opposed to a regimented, top-down approach. The idea of the elevated courtyard (Figure 2.43) makes the environment idiosyncratic to the genius loci, and simultaneously results in a series of functional and aesthetic advantages: (1) situ earthwork balance of excavation; (2) intimate interaction within courtyard landscaping and extended views towards distant lake; (3) penetration of the low northern sun; (4) smoothly separated massing with a more modest scale; (5) and natural functional zonings with the public access to the library and shops from the ground floor, and to the administration area on the first floor at the courtyard’s level.

Functional aesthetics is not necessarily standardized, but is the opportunity for the architect to fit the layout of circulation (Figure 2.44), the position, size and form of openings, and the selection and application of materials to structural and mechanical (illumination, ventilation and acoustics) requirements in a sensuous way. The council chamber is the only space with certain of symbolic meaning for the authority. Even though, it is just a simple room with theatrical atmosphere rendered by the side-light through the wooden louvers, and two technically innovative roof trusses justified in need of ventilation between the ceiling and roof structure. (Figure 2.45)
Aalto’s creative use of local materials and technology is valuable reference for design and construction in the less developed areas. In his own summerhouse, called Experimental House in Muuratsalo (Figure 2.46), Aalto experimented various modelling and application ways of brick and ceramic, which are the local materials adapted for the basic masonry structure.
2.3.4 Sverre Fehn: Essential Things

Norwegian architect Sverre Fehn (1924-2009) preferred to find the simplest solution that can provide answers to several different questions, and was well known for his aesthetic style denominated as “the poetry of straight line” in the exhibition (Museum of Finnish Architecture, 1992). However, there is more sophisticated thinking on architecture behind his functionalist layout and minimalist architectural form.

Fehn (1992) interpreted the essential relationship between human and nature from its primitive root, when the autonomous dimension was born for human from a cave; the stone was hacked in one rectangular volume with height, length, and width. How incomprehensible the work of creation in a limited malleable quality must have seen: the greatest poetic manifestation in limited form; the first security; the first written sign in the landscape resting secretively in the hewn stone. (Figure 2.47) Fehn (1997) stated in an interview in his Oslo office, “Norwegians’ worship of nature consists merely of going as fast as you can as far as you can.” (Almaas, 2010) So, there is always an active and inseparable relationship of human and nature in his works because Norwegians have their sensational tradition to participate into nature instead of cultivating it for close appreciation.

The Økern retirement home in Oslo is a typical example to represent this poetic idea. The project was planned in an old manorial park with hilly grassland and several preserved trees. The original complex designed by Sverre Fehn and Geir Grung consists
of a nursing home with two inner courtyards and a residential block for the pensioners, who still can live independently with assistance as need (Figure 2.48). The advantage of its location on the hilltop is not only to provide every private room a grand city view through the exterior balcony, but also make the project meaningful for the Norwegian elderly as its relative distance and altitude is part of their abundant experience of living with nature.

The serene contrast of light, color, form and contexture between the artificial structure and organic nature plays the prominent role in Fehn’s work to produce the poetic effect. In other words, an absolutely rigid building with the horizontal and straight lines would not have any native poetic sense in itself until Fehn had took the slightly fluctuating grassland and the trees in the front and/or behind, and their seasonal changes into account as the soft and dynamic elements to break the straight line in both spatial and time dimensions (Figure 2.49; 2.50; 2.51). As such, the whole scenery of a precision and concision building and its natural surroundings becomes poetry.

![Figure 2.49. View from the public park to the Økern retirement home. (Photo by the author)](image)

![Figure 2.50. Exterior view of the nursing home. (Photo by the author)](image)
2.3.5 Arne Jacobsen: Ephemeral Quality of Architecture

Danish architect Arne Jacobsen (1902-1971) acknowledged his architectural education in classic architecture and some modernist architects’ influence, such as Erik Gunnar Asplund, the Bauhaus, Mies, Saarinen, SOM, Luis Kahn, etc., in his early works. However, he declared that he had no complete philosophical vision, and even refused to cling to one for his post-war works. The rupture of his architectural career due to the material shortage and especially his two years’ exile life in Sweden during World War II gave him an important interval for a thorough metamorphosis in design thinking. He started to take inspirations from natural form for designing fabrics and wallpapers in that period, and this work encouraged him to capture the qualities of nature and the essence of things through direct observation rather than refer to the other people’s creation. Jacobsen drew the things that could evoke emotional responses in order to absorb the hidden logic in the meaning of reality into his own creative process. By this way, he found his own design model of creating emotional experience by using standardized pattern and industrial components.

Jacobsen normally simplified the exterior appearance of his architectural work with geometrical abstraction to reach its ephemeral quality, like that of a vanishing presence, whereas the interiors exhibit all of the energy of mannerist creativity with details. This approach was valid for both corporate buildings such as National Bank in Copenhagen (Figure 2.52; 2.53) and the community facilities, such as Munkegaard School in Gentofte of Copenhagen, which is regarded as a significant architecture because Jacobson’s architectural design augmented children-centered teaching model of a modern society, and suggested an awareness of active vitality and enriched individuality from childhood.
Jacobsen’s proposal for the project of Munkegaard School in pursuit of high performance in response to physiological and psychological quality was ever suspended by the local authority of that time, who worried about how these children would view the family dwelling when they came home from this luxurious school. However, the materials and construction technology applied in the project are all easy and economical to achieve; and positive feedback from the public was given immediately to Jacobsen’s optimistic view and full endeavor to promote the social well-being through architectural design.

Jacobsen layout the main building of school in a grid of solid modules and voids, adopted an amiable human scale and proportions of one or two stories, and more delicate composition of materials to form a warm and intimate atmosphere for the pupils (Figure 2.54). Functionally, the integrate design of the module and void provide a good sanitary environment for study and play. The module of classroom is formed with a jagged roof for introducing sufficient natural sunlight and fresh air ventilation into the room (Figure 2.55; 2.56). Every classroom is attached to an atrium-like courtyard, in which the paving and vegetation is distinct from each other for giving an individual identity to the pupils.
Five vertical corridors connect four horizontal rows of classrooms could be boring; however, with the penetrated view and light from the courtyard and mansard ceiling painted in different color for each corridor, the sensory effect of each corridor was enriched by the rhythm, dynamic variation and subtext of identification for the orientation in a modularized layout (Figure 2.57). Moreover, there is also easy access to the common playground alternatively from the courtyards or corridors. Even the bike shelter is part of this circulation designed as a fantastic place for the children to play.
2.3.6 Jørn Utzon: Additive Architecture

Danish architect Jørn Utzon (1918-2008) was deeply influenced by his professor at Royal Danish Academy of Fine Arts, Steen Eiler Rasmussen (1898-1990), who led the typological study on Chinese Courtyard House as well as was advocate of “Finger Plan” in Denmark. In his article “The innermost being of architecture” published in 1948, Utzon claimed that study in the architectural legacies of the ancient Mayas, the Islamic world, China and Japan would help “to understand all the inspiration present in every one of Man’s countless means of expression, to work on the basis of our hands, eyes, feet, stomachs, on the basis of our movements and not of statistical norms and rules created on the principle of what is most usual - this is the way forward to an architecture that is both varied and human” (Utzon, 2004, p11).

Utzon coined Additive Architecture. In 1965 as a design approach to coordinate the relationship between individual and society under the different circumstances by starting modestly with one unit and proceeding from there to consider the lie of the land and the surroundings (Utzon, 2009). “Expansive Byg System” was accordingly established in 1968 as the module to derive various types of unit. In such a design way, a community can grow like a tree (Utzon, 2004).
Utzon employed the idea of “Finger Plan” in his project of Fredensborg Houses (Figure 2.58) designed for Danish pensioners returning after a long career abroad. He abstracted the suitable advantage and components from original inspiration of Chinese courtyard house with comfort of privacy for inhabitants to feel their large role within an intimate atmosphere of family relationship; and further transformed it in his Nordic way, which is open toward sunlight and pleasant views of the landscape and more flexible for individual pursuits (Figure 2.59; 2.60). To some extent, every unit restores the memory of a traditional Danish farm as well, in which three or four buildings surround a yard for the farm work and storage.

As observed on site, the inhabitants use their individual courtyard creatively and distinctly. They even actively adjust themselves to adapt to a lifestyle requiring more movement between indoor and outdoor space than in a Danish traditional house. And several neighbors there told me that they are proud of living in a multicultural way, which can represent their special background as identity of the community. It is enlightening that a multicultural approach can not only respond to people’s retrospection, but also effectively arouses people’s potentials to achieve a higher level of spiritual satisfaction.

2.3.7 BIG: A pragmatic Utopian Architecture

Danish architecture studio BIG is a young architects’ team founded in 2005; they have won their international reputation during only one decade for their extraordinary creativity and complexity in design thinking and practice with a clear direction towards “a pragmatic utopian architecture that steers clear of the petrifying pragmatism of boring boxes and the naïve utopian ideas of digital formalism.” (BIG, www.big.dk)

In BIG’s works, regional traditions become recessive genes and continue to participate in the evolution of contemporary life inherently, while the most advanced digital technologies are used to analyze the existing context and test the effects of size and the balance of programmatic mixtures on the triple bottom line of the social, economic and ecological outcome rather than forming the sculptural architecture. Essentially, BIG has provided an alternative approach of mixing conventional ingredients such as living, leisure, working, parking and shopping in an unconventional way, and demonstrated an intriguing fact – the architects independent from the realm of art still can find more freedom to design and built while better fit architecture to the contemporary life forms.

In the project of residential community 8 House (Figure 2.61) located in the new urbanized district Ørestaden of Copenhagen, the common framework - the retail facing
street, the offices towards northern light and the residences with sun and views to the open spaces is morphed into a knot, twisting and turning to maximize the life quality of its many inhabitants. The various functions have been spread out horizontally. The apartments are placed at the top while the commercial program unfolds at the base of the building. Surrounding two intimate interior courtyards, there are service facilities for residential living, such as kindergarten, small shops and cafeteria (Figure 2.62).

A continuous public path stretches from street level to the penthouses and allows people to bike all the way from the ground floor to the top, moving alongside townhouses with gardens, winding through an urban perimeter block (Figure 2.63). Two sloping green roofs are strategically placed to reduce the urban heat island effect as well as providing the visual identity to the project and tying it back to the adjacent farmlands towards the south. From general planning to architectural details, every form has its exact function and inherent logic that is involved in an upgraded living experience.

To a large extent, BIG represents a new force of European architecture to lead a kind of quickly transformed and vigorous communal lifestyle for the new generations born in an information society without escaping from the reality or cutting off the history. Nevertheless, this open attitude to adapt architecture to any kinds of reality could be dialectical as well. As BIG is transferring their practice to America for the new
commission, the fourth and final skyscraper at the rebuilt World Trade Center in Manhattan, it would be interesting to see if the inherent conflict of producing a sustainable hedonistic office building at a big cost for a real estate building could be solved without the protection and constraints of welfare state policy.

2.3.8 Summary: A Collective Effect of Critical Regionalism

From Erik Gunnar Asplund to BIG, all these best Nordic architectural works can be identified as alternative means for seeking a collective effect of Critical Regionalism. The phrase “Critical Regionalism” was first used by the architectural theorists Alexander Tzonis and Liane Lefaivre and, by the historian-theorist Kenneth Frampton with a slightly different meaning.

Tzonis and Lefaivre continuously extend this type of design philosophy and its corresponding approaches from the theory of Regionalism, which was originally proposed by American historian and sociologist, Lewis Mumford (1895-1990). However, they think the philosophy of Critical Regionalism not only needs to be distinguished from that of traditional regionalism, such as what national regionalism and romantic regionalism represented when they were ever in force during a certain period at a certain place, but also from that of vernacular architecture when it was arbitrarily used as synonymous of regionalism. Lefaivre and Tzonis believe that the five poles of Mumford’s theories indicated as the following have been better used in creative and intensive ways as a vehicle for a critique of the International Style in Europe, particularly in Nordic countries and Italy since Mumford’s regionalism came from America during the 1950s (Lefaivre and Tzonis 2003, pp.35-39). Owing to a consistent social context, around one century’s practices of Nordic modern architecture naturally fit all of these five poles, and at the same time, become strong evidences to proof the effectiveness and efficiency of these principles in creating appropriate architecture for our everyday life.

(1) Rejection of absolute historicism.

Mumford (1941, p.18, p.30) reminded that our task is not to imitate the past, but to understand it, so that we may face the opportunity of our own day and deal with them in an equally creative spirit; and Regionalism is not a matter of using the most available local material, or of copying some simple form of construction that our ancestors used, for want of anything better, a century or two ago.

(2) Rejection of picturesqueness as the purely aesthetic or spiritual enjoyment of landscape for its own sake.
Mumford (1941, p.32) suggested that *regional* means a place for the personal touch and the cherished accident besides the genius loci. Thus, “Return to Nature”, the mainstay of traditional regionalism need to be extended to include sustainably living with nature.

(3) Be for the use of the most advanced technology of the day, as long as it was functionally optimal and sustainable.

(4) Definition of community and multicultural vision.

According to Mumford (1946, pp.43-65, p.61), we have treated the art of building not as a simple means of providing shelter or a clumsy kind of scene painting, but as an effort to reflect and enhance the purposes and ideals which characterize a particular age and people. This effort takes form in meeting the practical demands for an environment modified for human use; but the modifications that are made serve something more than the immediate needs: they testify to the degree of order, cooperation, intelligence, sensitiveness, which characterize Community.

(5) A balance between regionalism and globalism rather than *regional* versus *global*.

Mumford (1946, p.32) interpreted that the philosophic problem of the general and the particular has its counterpart in architecture; and during the last century that problem has shaped itself more and more into the question of what weight should be the universal imprint of the machine and the local imprint of the region and the community. As with a human being, every culture must both be itself and transcend itself; it must make most of its limitations and pass beyond them; it must be open to fresh experience and yet maintain its integrity. In no other art is that process more sharply focused than in architecture.
Part II
From this point, the research has passed on to the second stage of identifying the main external and internal factors that affirm or oppress the development of senior living architecture, and testing the applicability of emotional architectural design concept and methodology for improving the quality and efficacy of architectural research and practice in this specific field. This chapter 3 includes interpretation and analysis on the impetus of global population ageing and its consequential issues in relation to elderly care, and comparative studies on distinctive strategic implication and architectural approach for “ageing in place” in Europe, North America, and Japan, which are associated with their different socio-political paradigms to define and evaluate the quality of life for the elderly people. All the sections presented in this chapter are aimed to provide comprehensive reference and alternative solutions to China, and other developing countries, where both research and practical experience for pursuing general people’s well-being is weak, but population ageing and elderly care have become urgent issues to handle at present.

3.1 Global Visions on Population Ageing and Elderly Care

Global Trend of Population Ageing

Population ageing results from rising life expectancy and declining fertility, and leads to a relative reduction in the proportion of children and to an increase in the share of people in the main working ages and of older persons in the population. This demographic change
had started first in the most developed European and North American countries since the mid-twentieth century, and then in some developing countries such as China, Brazil around the 1990s. It has become more evident to be a global trend in the 21st century as the United Nations announced in the report of World Population Ageing (2013). According to the data of World Population Prospects: The 2012 Revision (United Nations, Department of Economic and Social Affairs, Population Division, 2013), the global share of older persons (aged 60 years or over) increased from 9.2% in 1990 to 11.7% in 2013 and will continue to grow as a proportion of the world population, reaching 21.1% by 2050; the number of older persons is expected to more than double from 841 million people in 2013 to more than 2 billion in 2050, and older persons are projected to exceed the number of children for the first time in 2047. Regionally, Asia and Europe are the two regions where a significant number of countries face population ageing in the near future and the proportion of older population will be more than 30% by 2050 (Figure 3.1; 3.2).

Figure 3.1. Global overview of national proportion of older population (aged 60 or over) in 2012. (Source: United Nations, Population Ageing and Development 2012 WallChart)

Figure 3.2. Global overview of national proportion of older population (aged 60 or over) in 2050. (Source: United Nations, Population Ageing and Development 2012 WallChart)
Notably, about two thirds of the world’s older persons live in the less developed regions at present, and because the older population in the less developed regions is growing faster than in the more developed regions, this proportion is projected to reach 8 of 10 by 2050 (United Nations, 2013, p.xii). This implies that the most affected developing countries will have much less time in agenda and more limited care resources per person than that had been the case for the developed countries to prepare for addressing an ageing society.

**Political Foundations of Action on Ageing**

Population ageing has profound consequences on a broad range of economic, political and social processes. First and foremost is the increasing priority to promoting the well-being of the growing number and proportion of older persons in most countries of the world. The United Nations had started to build up common political foundations in order to address the ageing issues since 1980s.

The first World Assembly on Ageing was held in Vienna of Austria in 1982, and the resolution of The Vienna International Plan of Action on Ageing comprises a series of directional policy and programs in the following areas: *health and nutrition, protection on elderly consumers, housing and environment, family, social welfare, income security and employment*, and *education* (United Nations, 1982). As response to the criticism about that the Vienna Plan did little to address older persons’ issues in poor countries, the United Nations formulated the “United Nations Principles for Older Persons” in the 74th plenary meeting in 1991 to address the older people’s human rights of *independence, participation, care, self-fulfillment* and *dignity* (United Nations, 1991) as a universal standard for the members of the United Nations to incorporate into their national programs.

In 2002, the Madrid International Plan of Action on Ageing (MIPPA) was adopted at the Second World Assembly to completely replace the Vienna Plan. This Plan represented a more inclusive insight in terms of how the world should and could address the common challenge of “building a society for all ages”. It suggests the member states to integrate the rights and needs of older persons into national and international economic and social development polices; and especially emphasized that older persons should be able to participate in and benefit equitably from the fruits of development to advance their health and well-being, and that societies should provide enabling environments for them to do so.
Towards a Sustainable Societal Pension and Care System

Ageing is accompanied with the decline of physical and cognitive functioning and higher risk to suffer chronic diseases that may significantly impact on older adults’ personal and social life. With respect to different situations, the frail and disabled older adults might need extra support and assistance from their physical and social environment for maximizing the time and extent of their own independent life, or more extensive personal assistance for accomplishing activities of daily living (ADLs) as well as health and social care for maintaining life vitality.

Traditionally, elderly care has been the responsibility of family members and was provided within the extended family home. However, first in the western countries and then in the eastern countries such as Japan, China, family care has been shrinking mainly because people’s life style has been radically changed for the impact of industrialization and urbanization. On one hand, long-term family caregiver may not be available as a result of the tendency for women to be educated and work outside the home, the geographical dispersion of families, and the decreasing family size, etc. On the other hand, some elderly people with education and working skills also become more economically and spiritually independent and prefer to pursue more autonomous and better choice for their later life instead of troubling their families. In either situation, the way of elderly care has been more than a moral issue or cultural difference, but a social and economic affair that needs to be handled at both social and individual level.

The governments of European and North American countries used to address societal elderly care by means of increasing the quantity and expanding the scale of nursing homes oriented by medical-care model from the 1950s to 1970s. But since the 1980s, they have changed the social welfare policies to promote assisted living, elderly housing and home care for the purpose of reducing unnecessary public expenditure while promoting the coverage and appropriateness of elderly care. More recently, in regard to maintain the sustainability of pension and social security systems and cope with the relative shortage in professionally trained workforce for acute, primary and long term health care, paid or unpaid informal care by the families, friends and communities has started to be incorporated into societal elderly care system.

The developing countries are in more complicated and uncertain situations for distinct reasons, and may need distinct solutions as well. For example, China as a forerunner of the developing countries has had the largest older population in the world, numbered as 132 million of older than 65 years old, 9.5% of the national population, and that is projected to 331 million, 23.9% of the population by 2050 (United Nations, 2013).
And Chinese elderly people are living in very different social, cultural and economic conditions due to large regional and individual differences. Huge amount of requirements for social elderly care services have emerged as many young people go for the more developed area to live and work while their parents are still at hometown, but it was not until 2010 that the goal of establishing societal elderly care and service system was first officially added into the National Plan (2010-2015).

Presently, China is at very initial stage to address two basic tasks as World Health Organization has called for immediate action in the developing countries. One is the provision of state funded basic pensions adequate to protect older people against extreme poverty; and the other is the provision of basic primary health care and mechanisms to support the long term care of those with functional loss (WHO, 2012). How to undertake these tasks according to the national contexts, and what can be learned from the experiences of the developed countries in order to shorten this basic process are still the questions that need to be clarified at first.

In the meantime, there is an essential challenge resulted from global population ageing that all the nations shall face together. The old-age support ratios (number of working-age adults per older person in the population) are already low in the more developed regions and in some developing countries, and are expected to continue to fall in the coming decades with ensuing fiscal pressures on support systems for older persons (United Nations, 2013). The only opportunity for alleviating this substantive problem and sustaining the economic and social development of human society depends on if we can ensure older people live healthier as well as longer lives, and thus can be as active and productive as any others during the extended life span. In a foreseeable future, the societies that adapt to this changing demographic can reap a sizeable “longevity dividend”, and will have a competitive advantage over those that don’t (WHO, 2012).

3.2 Environmental Intervention for Successful Ageing

Successful ageing means one’s physical, mental and social well-being in older age, which concerns with positive external interventions to protect health and well-being from aging. This section especially reviews age-related changes and characteristics along psychological ageing, and corresponding social and psychological theories about environmental interventions in the research field of environmental gerontology; herein is the base to explore the potential role of architectural environment in optimizing psychological ageing with the help of biological and psychological evidences rather than unproved social assumptions.
3.2.1 Challenge and Opportunity along Psychological Ageing

Ageing is viewed as four distinct processes in gerontology\footnote{Ilya Ilyich Mechnikov coined the term of Gerontology in 1903 to describe the study of the social, psychological, cognitive, and biological aspects of aging. It is distinguished from geriatrics, which is the branch of medicine that specializes in the treatment of existing disease in older adults. Gerontologists include researchers and practitioners in the fields of biology, nursing, medicine, criminology, dentistry, social work, physical and occupational therapy, psychology, psychiatry, sociology, economics, political science, architecture, geography, pharmacy, public health, housing, and anthropology. (Hooyman and Kiyak, 2011)}: chronological aging, biological aging, psychological aging, and social aging. Chronological aging is the definition of aging based on a person’s years lived from birth. Biological aging refers to the physical changes that reduce the efficiency of organ systems. Social aging refers to an individual’s changing roles and relationships with family, friends, and other informal supports, productive roles and within organizations. Psychological aging includes the changes that occur in sensory and perceptual processes, cognitive abilities, adaptive capacity, and personality (Hooyman and Kiyak, 2011).

While chronological aging and biological aging are mainly concerned with life expectancy, social ageing and psychological ageing are interactive processes more associated with the quality of life along normal ageing and more likely intervened by the external factors. Especially psychological ageing is a life-span process in which continuous subjective shifting will play the predominant role in determining how people could perceive, feel, think and react to their external environments, and if they could successfully handle with the inevitable changes of biological and social status for achieving a satisfying state of well-being. Thus, the essential issues associated with psychological ageing need to be especially concerned as they indicate both challenge to overcome the age-related negative impacts and opportunity to promote successful ageing by activating people’s inner force and abilities.

The process of psychological ageing has been systematically studied from three aspects of a) sensory ageing, b) cognitive ageing and c) emotional ageing, which have different implications for designing environmental interventions.

a) Sensory Ageing

Advancing adult ageing brings with it systematic reductions in the efficiency of our sensory systems, which are charge of processing sensory input to initiate our ability to cope with the environment. In the sub-field of sensory ageing, the gerontologists generally share a consensus about the physiological and psychological effects of sensory ageing to the elderly people. Respective to the sensory declinations, there are also
ongoing researches with targets to explore effective interventions of synthesizing human and environmental factors to help the elderly overcome the sensory barriers and difficulties in receiving sensory information while eliminating negative psychological impacts.

Regarding the vision, the normal age-related changes include decrease in visual acuity, ability to focus on objects, color discrimination, function in low light levels, adaptation to dark and glare, judgment of distance, which also brings the problems with mobility, orientation and psychological frightening. Four type of eye diseases are also more common after 65 years old, which are cataracts, glaucoma, macular degeneration, and diabetic retinopathy.

In their research paper “Sensory and Perceptual Considerations in Designing Environments for the Elderly”, Fozard et al. (1993) concluded that the major environmental interventions to enhance visual function in elderly individuals include increased levels and better distribution of illumination, control of glare, increased stimulus contrast, and reductions in visual “clutter” by using predictable and simply structured formats.

Particularly about the older person’s color vision, professor and researcher specialized in vision and ageing, Frank Schieber (2006) found that the older observers consistently reported significant reductions in the strength of the chromatic component of their perceptual experience, especially at the lower lightness levels. However, color constancy mechanisms contribute to the maintenance of robust color perception in old age. This implies that the application of colors in the living environment to enhance the elderly’s visual perception is not an isolated problem about color, but need to be considered synthetically with light environment.

Hearing loss brings difficulty for understanding and communicating. Approximately 30 to 50% of the people more than 65 years old suffer a significant hearing loss that affects their communications and relationship with others, which could lead to social isolation, paranoid behavior, fatigue and depression. Apart from using hearing aids and artificial help in communication, the gerontologists suggest reducing background noise and reverberation while providing visual information as compensation in their living environment.

Touch sensitivity and the ability to detect pain decreases with age. Some older persons find it difficult to distinguish textures and objects on the basis of touch alone. Some may experience a delayed reaction to being touched. In this case, preventive
measures in their living environment should be done to protect older persons from dangers. Yet, some older adults are touched very little or not at all and suffer from “touch hunger.” Touch is a powerful means of communication and can help to reduce anxiety and provide comfort. Nevertheless, when using touch as a therapeutic tool, the person’s background, culture, and sense of personal space need to be considered.

The sense of taste does not decline significantly as much as other senses along with ageing and people with taste declination appear to need more concentrated flavors. Since declination in taste and smell can largely reduce the pleasure and satisfaction from daily life, such as eating, fragrance of plants, etc., the gerontologists suggest adding related visual information to stimulate the pleasant memory and experience associated with the taste and smell in the living environment.

b) Cognitive Ageing

Cognitive ageing is a relatively new research field in the disciplines of neuropsychology and cognitive psychology as well. Many themes are still under study without certain conclusions, for example, whether preservation of executive function relates to factors such as activation of additional brain resources, level of education, low blood pressure, cognitively stimulating activities during middle age, emotional support, or depression, etc. Though, there are still some intriguing findings we can refer.

The research of Treitz et al. (2007) used a cross-sectional design with four consecutive age groups to access the course of executive control changes during normal aging, especially focusing on task management and inhibition as the most elementary executive processes. The results of their experiments suggested an accelerated cognitive decline after the age of 60, which is consistent with longitudinal ageing studies that suggest a gradual decline across the adult life span. However, they found that there is also strategic memory processing, reasoning, verbal fluency, cognitive flexibility, or executive problems in everyday life that were not affected by age, which they believe is because older adults can show preserved behavior, and also the self-awareness for behavior is intact in the older group in spite of cognitive executive deficits. The research also showed that the inter-individual variability of inhibition and task management performances appeared to increase with age, which means while some older adults are able to maintain their cognitive performance at a level comparable to young individuals; others suffer from significant cognitive decline.

Williams and Kemper (2010) reviewed the previous researches evaluating cognitively stimulating lifestyles and the effects of interventions on cognitive function of
older adults in their essay “Exploring Interventions to Reduce Cognitive Decline in Aging”. They found that overall research findings support positive effects of cognitive and physical activity, social engagement, and therapeutic nutrition in optimizing cognitive aging; however, the strength of the research evidence is limited by research designs, because either current cross-sectional studies or longitudinal studies still have constraints for testing such a correlational research.

Joel Kramer’s team in Memory and Aging Centre of the University of California, San Francisco (UCSF) explores the interventions that may optimize cognitive functioning as we age, and thus mitigate age-related problem based on the findings of the underlying biological structure and functioning mechanisms of brain. Kramer (2012) concluded in a lecture that ageing can have a significant impact on brain structure and function like declination of memory and processing speed, but these changes are neither universal nor inevitable; and multiple factors influence how the brain damages with age, some of which are under the control. Suggestions on intervention include cognitive reserve according to the finding of The Nun Study of Aging and Alzheimer’s Disease since 1986 (Snowdon, 2001), and enriched environments (Diamond, et al., 1964), which as Kramer developed means more physically, cognitively and socially enriched with respective activities.

c) Emotional Ageing

Professor and founding Director of the Stanford Center on Longevity, Laura Carstensen, mainly has been the leading researcher in the research field of emotional ageing. Her team claimed the contributions of age-related changes in emotional motivation and competence to positive affect trajectories with the evidences from correlational and experimental, as well as behavioral and neuroscience studies, and keep going with the focus on motion–cognition interactions to testify their hypotheses.

Carstensen et al. (2010; 2011; 2012) especially argued about their theories of Positivity Affect and Socioemotional Selectivity. The former refers that aging is associated with a relative preference for positive over negative information in attention and memory; while the latter means that as time horizons shrink as they typically do with age, people become increasingly selective, investing greater resources in emotionally meaningful goals and activities.

Based on the outcomes of the past researches on emotional ageing and their own specific experiments, Carstensen et al draw the conclusion that emotional ageing appears to benefit from age in contrast to the decline associated with physical and cognitive ageing. Positive shifts in cognitive processing of emotional stimuli, enhanced emotional
motivation, and emotional competence likely contribute to improvements. Moreover, as noted that affective well-being increases with age on average but certainly not for everyone because of inter-individual differences, they suggested changing trajectories of emotional ageing through intervention, which is supposed to be able to teach people with less adaptive profiles the use of specific emotional competencies to underpin affective well-being and correct for the costs of an enhanced emotion regulation for protecting the elder adults from deceit.

The researches of Carstensen’s team break the “misery myth”, which refers to the tendency to imagine old age as bleak and dreaded (Carstensen, 2012). Rather, more and more evidences have shown that the elderly on average chose more relevant and positive information to capture, and more stable and empathic social network to maintain, but not simply as the more is the better as commonly imagined.

3.2.2 Contributions and Limitation of Environmental Gerontology

The environmental gerontology is another knowledge area of Gerontology which aims to understand, analyze, modify and optimize the relationship between the aging person and their physical and social environment from interdisciplinary perspectives and approaches. It was propelled in the 1960s in accordance with the emergence of purpose-built elderly housing policy in the United States (Scheidt and Schwarz, 2012, p.8). The researches in this area are expected to provide evidences for initiating social and environmental policies that enable successful aging and solutions for the practice of creating an supportive and adaptive environment for all the people from macro scales (neighborhood, city, region) to micro scales (home and family).

This area involves a loose confederation of disciplines, such as psychologists, sociologists, social workers, allied health professionals, architects, interior designers, urban planners, and social policy makers. As a result of this pluralism within environmental gerontology, various theoretical and empirical approaches are applied in the varied research agenda to address different levels of analysis regarding both place type and scale of social-physical aggregation and the different processes within psychological pattern, such as perceptual, cognitive and affective.

The most important contributions are the theory of aging at home (aging in place), and that older people prefer to age in their immediate environment (housing), where aspects such as spatial experience and place attachment are important for understanding the process (Andrews and Phillips, 2005, p.272). This theory will be particularly discussed in the section 3.3.
American psychologist and gerontologist M. Powell Lawton (1923-2001) proposed ecological adaptation model (Lawton and Nahemow, 1973), which indicates that the behavior of the elderly is determined by the ambient pressure and the degree of competence of the subject, and indirectly confirm the importance of the physical and social environment for the aging population and the possibility of improving the quality of life in old age. He also hypothesized environmental proactivity based on the defense that older people can shape and adapt their environment to their needs and preferences (Lawton, 1989).

American architects working in the field of gerontology honor M. Powell Lawton as the most significant researcher and practitioner in environment-behavior studies, and acknowledge his substantive contributions and influences to environmental theory, purpose-built housing design for the elderly, meanings of community, long-term care settings, place therapy, home modification, etc. (Scheidt and Windley, 2003). For example, American architect and gerontologist Paul Gordon Windley (1941-2007) led an interdisciplinary team of architects and psychologists, including M. Powell Lawton to examine how physical and social characteristics of small rural Kansas towns affected the quality of life of older people between the late 1970s and the 1980s, and concluded that a good architectural design can encourage independence and competence of the elderly with their environment.

However, while the social implications of physical environment is highlighted in the field of environmental gerontology, the research of transferring theoretical scientific findings to empirical knowledge beyond designers’ experience is still weak, and the applicability in terms of design effectiveness of physical environment to improve the quality of life in old age is limited. Many positivist urban planning and architecture design notions and approaches are just built on the untested social consensus or research hypotheses regarding the relationship between the ageing people and their environment, which usually focuses on predictive, context-independent processes rather than person-environment process through subjective experience of the ageing individual and his or her interaction with the environment.

### 3.2.3 The Potential Role of Architectural Environment in Optimizing the Process of Psychological Ageing

As the provision of personal care either at home or in professional care facilities become increasingly difficult because of general financial problems and care labor shortages along with the trend of global population ageing, physical environment would play a more crucial role in helping the elderly people to maintain their physically and mentally
independent living as much and as long as possible, and a potential role to promote their psychological well-being.

In light of research findings and outcomes on psychological ageing, we can find that whereas the irreversible decline in sensory and cognitive function may largely limit elderly people’s independently living and social contact in both spatial and temporal dimensions, elderly people are able or willing to achieve their psychological well-being through emotional input.

This situation implies that deliberately designed physical environment could largely improve elderly individual’s life quality and psychological well-being on three levels. First, physical barrier-free and supportive installations are basic for moving and conducting activities of daily living. Second, it is necessary to provide clearer environmental orientation that could facilitate the process of perception and cognition through appropriate sensory and spatial settings. The third level respects to active communications and interactions between the elderly people and their living environment that could arouse positive emotional state by providing the meeting points with other people and with natural and cultural stimulus. All these three levels of architectural interventions are correlated to approach the elderly’s psychological well-being by increasing positive emotional stimulants while reducing the negative impacts of the physical and/or mental disabilities in their everyday life.

Hence, a qualified architectural environment for elderly housing and care facilities would have multi-effect on prevention, protection, assistance, maintenance, and promotion with respect to the body and mental changes along ageing, and must achieve this multi-effect through efficient and economical architectural solutions orientated by the elderly people’s psychological pattern.

3.3 Comparable Implications and Approaches of “Ageing in Place”

The notion of “ageing in place” is not a radical idea as traditionally a family just cared for their elderly members at home. It was first stressed as a social manifestation in the more developed countries around the 1970s and 1980s as reaction to the flood of constructing nursing homes as a key solution to provide long-term care (LTC)\textsuperscript{13} at that period, which forced the elderly people to move from their own home to nursing home when they needed long-term care. Then, it was developed as a core theory in the research field of

\textsuperscript{13} Long-term care (LTC) involves a variety of services designed to meet a person's health or personal care needs during a short or long period of time. These services help people live as independently and safely as possible when they can no longer perform everyday activities on their own. (NIH Senior Health, n.d.)
environmental psychology to call for alternative solutions for ageing at home, which should reflect the importance of autonomy, privacy and the right to choose independent living for the elderly, as well as the necessity to reduce the costs of collectively financed facilities. Since the early 2000s, “aging in place” has been widely acknowledged as a cost-effective solution for both older person and providers/payers of care services. However, there is no uniform implication and corresponding approach of “ageing in place” in the world. This section will mainly discuss three representative ways to define and practice this concept in North America, European Unions and Japan and their enlightenment to China.

### 3.3.1 North American Model

The Center for Disease Control (CDC) of the U.S. Department of Health and Human Services defines “ageing in place” as “the ability to live in one’s own home and community safely, independently, and comfortably, regardless of age, income, or ability level”; and thus, CDC stresses simple and low-cost modifications to an older person’s home targeted to decrease the risk of falling and other forms of injury. The Geriatric Social Work Researcher J. Ivry (1995) defined ageing in place as “the trends whereby older persons are living in their own residences and communities as long as possible despite increasing frailty and its associated problems”, so far as more social work is involved to create responsive housing environments for their elderly tenants.

On the executive branch, the overwhelming difficulty for older Americans to ageing at home has been aware that most Americans are living in the suburbs where mobility is essential and public transportation is sparse, social services and health care are not uniform, and housing options are limited. So, in order to enhance the self-service ability of the existing communities, many local and county governments have launched “livable communities” and “aging in place” initiatives to help older adults avoid moving away or to assisted living or nursing homes. Supports in aspects of community engagement, economic security, housing issues, health, wellness and social services, transportation and mobility, institutions and public space, and information are suggested to provide for promoting a livable community. Most states have undertaken initiatives to help older adults remain in their homes in an effort to conserve public Medicaid funds, which pay for long-term care for people who have depleted their own resources.

Non-profit foundations and organizations are the main funders for programing and sustaining various models of “livable communities” such as “Naturally Occurring Retirement Community” (NORC) Programs, “Beacon Hill Village” model, co-housing, continuing care at home, etc. Professor Michael Hunt at the Architecture and Urban
Planning School of University of Wisconsin coined the term of NORC in 1984 to describe a community not specifically built for older adults, but where at least 50 percent of residents were age 60 or older. Communities can benefit when older people are connected and involved in the life of their neighborhoods. Older adults have time, talents, and experience to share, and many enjoy lending a caring ear for a youngster, another older person, or a parent. Likely to be long-term residents, they bring stability and a rich knowledge of local history. When home during daytime hours, they also are available to keep watch in the neighborhood. They are steady customers at local shops and restaurants. The NORC Program is to help the cooperative management and residents design a unique program of activities, lectures, art classes, and social gatherings, through which older adults could easily be connected with preventive health and social services before a health or safety crisis occurred. Undoubtedly, all these efforts seem intriguing to improve the life quality of the older residents who are capable of independent living in an economical way; nevertheless, as institutional facilities are normally programmed separately from residential communities in the United States, once arriving at the point one has to move to a care facility, it would imply a radical fall in all aspects of material and spiritual life that is more difficult to adapt and overcome.

It is also noticeable that a type of real estate development called continuing care retirement communities (CCRCs) is also using the concept of “ageing in place”. They are purposely built for older adults (usually age 65 and older) and contracted with various entrance-fee options plus monthly fee and care-service packages. CCRCs generally feature a campus-like built environment (Figure 3.3) and a combination of independent living apartments and/or cottages and nursing care, and many offer assisted living, memory support care, and other specially care arrangement. They also provide residents with 24-hour security, housekeeping, transportation, attractive dining options, and wellness and fitness services. The distinct strength of CCRC model is a continuum of services and long-term care at a single place; however, just because the cost for constructing and running an enclosed community with exclusive services and facilities is high, most of CCRC residents represent the middle- or upper-income brackets. Moreover, since CCRCs are often isolated in the area between urban to suburban to rural, it has no much advantage in terms of natural social engagement.
According to the pension policy of the United States., only the elderly with an economic condition below the poverty line of America (14.8% 65+, 2012)\(^\text{14}\) could live in their governmental care facilities with public finance, the others either living in their own home or in purpose-built senior living residences or facilities have to pay all the expense by their own savings and commercial medical and pension insurance. So, American elderly care system is generally running in a commercial model, in which the physical, mental, social well-being of the majority of middle- and lower-income older adults is still under big pressure in affordability and access to long-term care services.

### 3.3.2 European Model

European elderly care model is mostly associated with welfare state system, in which everybody has equal right to get decent care as needed. Most of European citizens live in a way of historically formed neighborhoods or open communities without fences, which refer to an executive scope rather than the divisions on the ownership of real estate. A city or town is an ensemble of live-work-play lifestyle. According to municipal scale, it will form multi-level service areas from the central to the neighborhoods, where full course of services, facilities and institutions are available. Similarly, the public or private elderly housing and care institutions are embedded into this kind of municipal structure. Even new development for elderly living is programmed as intergenerational communities and complexes through combining the common functions for the neighborhood such as baby-center, kindergarten, young families housing, library, civic center, and so on (Figure 3.4).

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\(^\text{14}\) Data source: Administration on Aging, 2013, Aging Statistics.
“Ageing in place” is thus based on the commonly existing resources plus particular supports from four sections run through public and/or private entities: informal services of home-delivered housekeeping and daily personal care, Telecare system with city-scale coverage to monitor and handle with the elderly’s emergent situations at home, day care center and residential care facilities with formal personal and health care averagely distributed in the neighborhoods. New urban planning in such a way is regarded as a positive trend to create a sustainable society.

Most importantly, public elderly care services, facilities and institutions are regulated at a relatively high standard responding to provide conditions for average well-being. Most of private entities follow up with this standard and are motivated to increase their competence through more innovative methods that could lead to higher quality and efficiency.

Regional exchange of elderly living and care resources among European countries is another efficient option of “ageing in place” with respect to national advantages and disadvantages. For example, in Spain and other Mediterranean countries, retirement resort and part of serviced apartment complex are designed and constructed as commercial developments mainly targeted to the foreign retired elderly (e.g. English, German and Dutch people) from Northern European countries, who prefer to spend their later life in a place with better climatic, physical and social environments. The planning concept is similar to American CCRCs, but with more attractions of hospitality.
3.3.3 Japanese Model

Japan has the highest proportion of older adults (26.3%, 65+; 12.7%, 75+; 3.9%, 85+)\textsuperscript{15}, as well as the highest life expectancy at birth in the world (79.29 years for males and 86.96 years for women, 2010)\textsuperscript{16}. In the 1980s, there was a major trend toward the elderly maintaining separate households rather than co-residing with the families of adult children. The proportion living with children decreased from 77% in 1970 to 65% in 1985, while the number of elderly living in Japan’s retirement or nursing homes also increased from around 75,000 in 1970 to more than 216,000 in 1987. At the same time, the government began to reevaluate the relative burdens of government and the private sector in health care and pensions, and it established policies to control government costs in these programs.

Recognizing the lower probability that an elderly person will be residing with an adult child and the higher probability of any daughter or daughter-in-law’s participation in the paid labor force, the government encouraged establishment of nursing homes, day-care facilities for the elderly, and home health programs. As a consequence, Japan has become a country heavily depending on the institutional facilities to provide long-term care to their elderly until now. Even though the quality of physical environment, care equipment and labor force in care facilities keeps increasing during these years, generally, “ageing in place” is not a concept with priority in the whole elderly care system.

Japanese scholar in Sociology Yoko Matsuoka (2009) suggested that Japan should learn from the experience of North European countries, where the governments prohibited building new nursing home around the 1980s and turned to encourage “ageing in place” by developing elderly housing and funding the informal home care. Matsuoka noticed that after Japan central government quitted the financial support for building any new nursing homes in 2005, the local Japanese governments did few to support the elderly’s everyday life. In her sequential researches, Matsuoka (2011) further stressed that under the new housing law for older persons and the amendment of public long-term care insurance law, Japan would develop ‘ageing in place’ with sufficient independent elderly housing and with the action of ‘moving in time’ (before one has to) and with community-based care. Here, specifically developed elderly housing neither is linked to the elderly’s original home, nor is very likely avoid institutional living at later stage of life, but may provide a better transition for extending a few years’ independent living. In

\textsuperscript{15} Data source: Japan Statistics Bureau, March 1, 2015 (final estimates)

\textsuperscript{16} Data source: United Nations, Department of Economic and Social Affairs (3 May 2011). \textit{World Population Prospects: The 2010 Revision}. 
this sense, this approach does have potential to improve the life quality to some extent comparing with remaining at the previous home or living in the facility for longer time.

### 3.3.4 Enlightenment to China

The desire for remaining at home as long as possible is common among most of the elderly people no matter of their ages, nations, and economic status. However, the implication of “ageing in place” is not necessarily limited to fix at a same home or community. Rather, the balance of affordability for maintaining a stable life quality, availability of appropriate physical and social environment, and easy and flexible access to various levels of residential care and services as needed, is crucial to validate a program of “Ageing in Place”.

Moreover, the smooth transition from independent living to dependent living might be more significant for the elderly’s well-being than sided emphasis on independent living. In this sense, the community-based care facilities with active and home-like environment and integrated social and medical care are indispensable components for “ageing in place”. In short, “Ageing in Place” in modern society only can be realized through intensive operation from the macro level of policy and management execution to the micro level of design and care service.

### 3.4 Comparative Situation of Architectural Design Research and Practice for Senior Living

Correspondent to the divergence in socio-political paradigm for elderly people’s well-being that has been discussed in the previous section 3.3, two different tracks for conducting architectural design research and practice in the category of senior living architecture were respectively originated in the Nordic countries and the United States of America, and have been widely adopted as European and North American protocols. This section discusses this comparative situation from aspects of architectural typology, project programming and problems in approach for architectural research and practice.

#### 3.4.1 Architectural Types for Senior Living

Senior living architecture has been an indispensable component of a whole built environment adaptive to the modern welfare societies in which public services are regularly programed for improving ordinary people’s well-being on a political level. Nursing home was the first architectural prototype with emphasis on the elderly people to replace the role of charitable organizations and hospitals for healthcare and poor relief aid from the half of the 20th century in European and North American countries. Along with
the advancement of elderly care notions and conditions, more architecture types for senior living such as various models of elderly housing and residential care facilities have emerged for both social and commercial purposes.

However, currently there is no globally uniform definition and catalog to describe the whole category and each architectural type in terminology for senior living, and the difference is more likely subject to adopted political and economic system and elderly care model in each country. American architect and expert in senior living architecture design Perkins Eastman defined that there are eight major building types in American elderly care system, named as Geriatric Outpatient Clinic, Adult Day Care/Adult Day health, Nursing Homes/Long-Term Care, Assisted Living Residences, Dementia/Alzheimer’s Care, Independent/Residential Living Apartment/Congregate housing, Continuing Care Retirement Community (CCRC), Active Adult Communities (Perkins, 2003, p.3). In most of European countries, the type of nursing home has been almost substituted by residential care home facility for eliminating hospital-like environment as well as unnecessary cost. For example, in Spain, architectural types for senior living include Centers for Senior Citizens, Day-Care Centers, Equipped Residence, Residential Care Homes, Serviced Apartments and Retirement Complex/Resort (Torres, et al., 2007).

For statement convenience, “Senior Living Architecture” is termed in this research project to represent a category of purpose-built or renovated architecture adaptive and supportive for the older population to live and obtain appropriate care and service. It is normally divided into elderly housing for independent living with care and services as needed and residential care facilities for dependent living. Elderly housing could be single-family homes, duplexes, mobile homes, townhouses, apartment complexes or communal flats and co-housing; residential care facilities might include day/night care center, assisted living home, nursing home, hospice, etc. The different architectural types may be combined in one project in form of a complex building or a living community depending on the project’s business model. Although each type of senior living architecture may differ in functional program, the whole category will share the same design purpose, principle and methodology.

3.4.2 Location, Size and Functional Program of Residential Care Facilities

This study takes the development of residential care facilities in the United States and in Spain as exemplary research objects to represent the global trend and regional divergence, and thus indicate a rationale of reference for the practice in China.
The latest global trend for programming a residential care facility is the concept of “cluster”, which is aimed to reduce the size of elderly care facilities so as to provide better quality of personal care as much as possible. Both American and Spanish model have regulated it in their national design guidelines around a decade ago, and the recent statistical data have reflected the effects.

According to result of “2010 National Survey of Residential Care Facilities (NSRCF)”, Residential Care Facilities (RCFs) in the United States totaled 31,100 in 2010 with 971,900 state-licensed, certified, or registered residential care beds. About one-half of RCFs were small facilities (4-10 beds), which served one-tenth of all RCF residents. The remaining RCFs were medium-sized facilities (16 %, 11-25 beds), which served about 9% of all RCF residents, large facilities (28%, 26-100 beds), which served 52% of all RCF residents, and extra-large facilities (7%, >100 beds), which house about 29% of all RCF residents.

According to the statistics in Informe 2010, Las personas mayores en España: Datos Estadísticos Estatales y por Comunidades Autónomas (IMSERSO, 2012), there are 5,426 care homes in Spain with 335,380 beds totally, addressing more than 248,000 residents at that time until January of 2010. 56% of these care homes have less than 50 beds, 28% having 50 to 100 beds, 10% having 100 to 150 beds, 6% having more than 150 beds.

The data show that the distributions in two countries in terms of the size of residential care facilities are quite similar, showing as 84% of residential care homes in Spain while 94% in the United States have less than 100 beds. However, their design planning in terms of the location and functional program are distinct.

Nearly all of the residential care homes in Spain were located in the contexture of mature neighborhoods of city or urbanized counties with complete living services and facilities nearby. While the old residents can conveniently fuse themselves to the surrounding environment alone or sometimes with other people’s company if necessary, their families and friends also can visit them at any time. As such, they are never isolated from a natural social life that they were familiar with when they lived in their previous home.

In contrast, according to the data from National Center for Health Statistics (NCHS), and Centers for Disease Control and Prevention (CDC) of U.S. Department of Health and Human Services (2011), in the United States, small (89%, 4-10 beds) and extra-large (93%, 100+ beds) RCFs were most likely to be located in metropolitan statistical area
medium RCFs were least likely to be in an MSA (65%, 11-25 beds); and there were just 75% of large-sized (26-100 beds) RCFs in an MSA. The main reason for this result is that the private developers have to take advantage of regional difference in land price to reduce their investment cost. The derived problem is that although the care facilities could be equipped well inside of their complex, considerably low density and isolated location would make the residents feel boring and lonely.

Consequently, the location of project site also affected the optimum scale of residential care facilities responding to the optimization of care management and quality. In Spain, relying on the surrounding community services, the optimum capacity of a residential care facility is 90 to 100 beds with social and health care services including skilled nursing, social and recreational activities within the facility, meals, personal laundry, haircut, occupational and physical therapy, social services counseling, case management, transportation to medical, accordingly, the building size is 4,000 to 5,000 square meters. In the United States, RCFs with the similar package of services are mostly chain-affiliated and in extra-large size for reaching self-sufficiency in services and financial operation. High density of older population is not good for cultivating personal attention and healthy social relationship since the old persons become more sensitive to be irrigated by extensively negative status of the others. The remedy under this circumstance is to separate them into different clusters or floors according to respective dependence level. However, there is no evident to show this way will be effective to reduce the mutual negative psychological impact among the older residents.

### 3.4.3 The Problematic Status of Architectural Design Research on Senior Living Architecture

Senior living architecture is commonly driven by general welfare goals that are defined on a socio-political level, and regionally or nationally or locally programmed with its ecological, cultural and economic feasibility and sustainability taken into account. While architectural design practice of this field is expected to quickly transfer the societal ambition and service act from political level into various levels and types of spatial dimensions, architectural design research is responsible for providing rationales for the adjustment of social policies, producing national guidelines and spatial models for directing design practice, integrating necessary knowledge and new findings, also very importantly, evaluating the effectiveness and correcting frequently misunderstood aspect of architectural practice.

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17 NSRCF defines; Metropolitan statistical area (MSA) designates a county or group of contiguous that contains at least one urbanized area of 50,000 or more populations.
The current situation of architectural design research and practice for senior living is more complicated than other architectural fields. On one hand, due to the divergence of regional social-economic development models, such as in European and North America area, architectural design research and practice may be undertaken in very different and even paradoxical ways. On the other hand, architectural design researches are either lagging behind or confused with architectural design practice in this category, and thus make the applicability and qualification of architectural design researches questionable. A considerable number of published researches are subjected to a weak and non-inclusive foundation of theoretical or conceptual considerations; some are even suffering obvious confusion, bias and inadequacy in specialist knowledge of gerontology as well as architecture design theories. The underlying reasons causing this puzzle might be concerned with research capability of individual architects or researchers, but more likely lie in inherent deficiencies of the research approaches that are adopted in general or particular situations as followings.

a) Use Guidelines as Shortcut

Various architectural design researches for senior living adopt different manners to apply and produce guidelines depending on how far the practicing architects and/or academic researchers could understand the role and mechanism of architectural environment to influence the human being, and how architecture design for the success of a project would be evaluated.

When care and service management is positioned to play a predominant role, some guidelines made by multi-disciplinary professionals conceptualize the environment as a social and organizational component to integrate with the management of working staff as well as a supportive setting for older residents and their families. Architecture design process is therefore simplified as a must-do list of technical issues and administrative procedures, and not surprisingly, the impact of architecture as well as the effectiveness of design not only have not been discovered through research, but were suppressed.

Some architectural researches use descriptive guidelines to justify the research framework, among of which, “Twelve Environment and Behavior principles” proposed by American architect and professor of architecture and Gerontology Victor Regnier is a relatively complete guideline to refer. It encompasses qualitative considerations including privacy, social interaction, control, choice and autonomy, orientation and wayfinding, safe and security, accessibility and manipulation, stimulation and challenge, sensory aspects, and familiarity (Regnier, 1993). But apparently, many principles overlap and some represent polar opposites. For example, social interaction and privacy can be viewed as
two ends of a continuum just as safety, security and challenge can be similarly arrayed, an architectural model only can be validated for senior living if it is an integration with inherent balance and synergy of all these environmental attributes.

But problematically, most of sequential researches only take one or some themes to study, such like “Privacy and Community”, “Home-like Environment”, etc. This might be regarded as a safe shortcut to draw a conclusion sound in principle by some researchers, but such kind of conclusion would be of little applicability for directing a complex design practice.

b) Fragmental and Non-Inclusive Research Subject

Architectural design researches at a micro level in terms of the spatial attributes, elderly users’ characteristics and needs, and corresponding relationship of both, often adopt information-organizing approach either by room or type of spaces directly linked to the architectural programming process, or using a pathological model of decreasing competency to suggest differences in design to maximize independence of older people, such as specific environmental requirements for Alzheimer victims.

This type of fragmental and non-inclusive researches involve considerably personal emphasis, sometimes professional bias of individual architect or researcher, which might lead him or her to focus on certain architectural details of importance for the assumed efficacy to some elderly’s particular circumstance while ignoring that even for the elderly with particular situations, a senior living architecture first needs to be an integrated architectural environment engaging with the regularity of human-environment interaction for a normal life.

c) Self-Consistent Case Study

It’s also a classic way to use case study as empirical basis for testing and improving design theories and methodologies as well as providing references for the future practice. However, case study in the field of senior living architecture more likely enter into an enclosed circuit defined by an exclusive format, and the concomitant implication and value of such type of empirical research changes as well.

In America, architecture design for senior living is addressed as a specific professional area that only limited architects or architecture design companies are involved as experts, such as Perkins Eastman, SFCS Architects, etc. This kind of membership practicing model at a national level is subject to the uniformed protocols, guidelines and post-occupancy evaluation (POE) criteria issued by The American
Institute of Architects Design For Ageing Committee (AIA DFA). The American Institute of Architects hold a biannual competition and showcases publication entitled *Design for Aging Review* since 1992, which is officially announced as a research program that “seeks not only to demonstrate architectural design trends and recognize excellence but also to serve as a reference for providers, developers, users, advocates, architects, and other design professionals in this growing market” (AIAKnowledgeNet, n.d.).

Newly completed architectural projects that were designed with reference to AIA DFA standards then were rewarded by AIA DFA as the reference for the next competition. It is notable that POE toolkit is an expert-centered criteria based on a one day’s site visit rather than a user-centered evaluation. So, unsurprisingly, all the collections of *Design for Aging Review* appear considerably homogeneous in terms of the selected cases’ functional spatial configuration and aesthetic form, which are intendedly associated with traditional American housing stereotypes based on a persistent notion of equalizing the concept of home-like environment to a formula of institutional plan plus home-like stylized exterior façade and interior decorations. Within such a self-consistent system, it is hard to initiate any critical thinking about if the elderly’s adaption ability to the new environment might be highly underestimated while the potential of architecture to provide extra spatial experience and emotional arousals for activating the elderly’s everyday life has been omitted.

Evidently, “Design for Aging Review” can be regarded as a typical example of the research programs that are undertaken with focus on developing sector expertise which enhances credibility and provides competitive advantage.

d) Experience-Based Practice

In most of developed European countries, public design competition is an obligatory procedure for initiating any new architecture project in the scope of social welfare. This execution measure has proven to largely contribute to the improvement of design quality for senior living architecture in terms of its functional effectiveness and aesthetic creativity as well as popularize the necessary knowledge for inclusive design among architects and other design professionals. With sufficient design resources within European area, designing for senior living architecture is not necessarily limited as a specialized design field; neither does any architect only work on the category of senior living architecture.

From a global vision, the architecture competition for the low-cost public projects is not only valuable as an effective approach to promote an accessible and usable built
environment for all the people, but also could provide affluent resources in terms of appropriate and creative design concepts, approaches, methodologies and in-depth study of dynamics between architectonic visions, ideological-historical paradigms and primary generators (Andersson and Rönn, 2010) for design research on senior living architecture at a universal level. But it is a pity that the research value of the individual cases is largely ignored. Based on an experience-based practicing tradition, design among European architects or academics is commonly viewed as individual creation, and not necessarily transferred to communicable knowledge at academic level. The processing documents and submissions of a single competition are usually archived in low-tone and almost have no visibility to the public. Only final constructed projects may be simply collected into an album issued by the governmental executives. Even fewer extraordinary designs could be published in professional architecture Medias. This situation makes it extremely difficult to do case study on European public projects outside Europe.

The following research work recorded in next two chapters of this thesis is dedicated to fill this vacancy not only with focus on senior living architecture but also on the people, and more specifically on the elderly for the purpose of capturing the design intelligence behind the myth of individual design genius.
Field User Studies: Synergy of Care and Architectural Environment for the Elderly’s Psychological Well-Being

General Introduction

This chapter presents a series of field study conducted in La Sagrera Retirement Home and Day-care Center in the Sant Andreu district of Barcelona. The study started from the observation on the whole architectural settings and interview with the principle architect of this project Luis Bravo Farre from the Bravo & Contepomi Studio on April 21, 2013; then further moved forward to the researches on the elderly occupants and users with the support of the working staff from May to December of year 2013. The whole process appears fruitful for empirically testifying the relationship between architectural environment and elderly’s everyday Life, as well as dispensable for architects to building up an empathic thinking with the elderly people about their perception to the spatial implications, the way to use spaces and assessment of satisfying life.

Background of the Site

La Sagrera Retirement Home and Day-care Center in the Sant Andreu district of Barcelona has been open since 2005, running as a community-based residential care
facility. It is a public property held by the government of the Autonomous Community of Catalonia and managed by the private entity L’Onada group. The facility totally serves for 96 elderly residents and 30 elderly users of day-care center belonging to the moderate-severe degree of dependence, which means who need help to perform various basic daily living activities two or three times a day, but don’t need the permanent presence of a caregiver yet according to the Spanish official classification of dependence. Correspondingly, there are around 60-70 working staff members; 40 of them are the auxiliary and technical caregivers who provide direct care, and the others are the administration and logistical service team members.

This facility was chosen for this field study as it has been appointed by the Catalonia government as an exemplar for presenting the regional quality standard of public elderly care facility in terms of its whole executive process from the planning, architecture design, construction to operation under the inspection of the Ministry of Social Action and Citizenship of Catalonia, which will be introduced in the first section of this chapter.

**Study Objects**

From an architect’s viewpoint, the elderly should be the main targeted users for the study in terms architectural design for elderly care facility, but meanwhile, the caregivers’ feelings and opinions can not be ignored either because of their double role as care provider to the elderly and user of the facility for working.

Especially in this case, the experienced working staff members recognize more deeply and accurately about the elderly’s characteristics and needs from the long-term professional and emotional contacts and communications; they also become the experts on allocating the flexible spaces for improving working efficiency and care quality during the operation. Hence, they are not only qualified to provide comment and suggestion on the relationship of architectural environment and the elderly’s everyday life from their own perspectives, but also can take the role as the representative to express the elderly’s general and specific requirements for living environment since all the elderly accommodated in the facility are more than 80 years old, and considerable number of them suffer the decline of cognitive functioning and even the loss of language expression ability to some extent.

With the permission from the management of facility, two groups of elderly with relatively better mental and physical state were selected as study objects for the observations and experiments. One group was the thirty users in the day care center, who only spend day-time from 8am to 6pm of the working days in the pubic lounge room that
is located on the ground floor besides a garden. The other group included around 30 inhabitants living in the first floor equipped with a common living and dining area as well as a landscaped roof terrace besides the part of private bedrooms.

**Study methods**

Choosing appropriate study method is crucial for maximizing the data collection according to the practical conditions of study objects and management possibility of the facility. So, three research methods were employed in this study, (1) direct observations on the architectural settings and the elderly daily living activities in the public spaces; (2) experiments designed and combined into the activation activities for testing elderly’s sensory perception, cognitive judgment and behavioral reactions to several preset cultural stimulants; and (3) semi-structured interviews respectively with the architect of the building, Luis Bravo Farre on architecture design issues, and with three geriatric experts of working staff, who are psychologist Sandra Nocete, social educator Fran Ros, and physiotherapist Josep Alcocer on the topic of environmental impact on the elderly’s psychological well-being.

Noted that all the feedbacks either collected from the working staff or the elderly are generally holistic and ambiguous by fusing together the influences of the physical settings, artificial care and other more internal or external factors, hence need further interpretation and analysis to draw the specific conclusion about the architectural environment.
4.1 Governmental Spatial Requirements for Designing a Residential Care Home in Catalonia

In the 1990s, the political standard of elderly care and service throughout the autonomous communities of Spain upgraded from assistance in the basic activities of daily living (ADLs), such as dressing, bathing, eating, moving, toileting, hygiene, to the personal-attention model that focuses more on the elderly’s autonomy and life satisfaction. Correspondingly, the organization of care staff in a care facility has been changed to involve more technical professionals in psychological/physical therapy and social activation, and the physical setting of the facility has been reconfigured to provide more public spaces for various activities to enrich the elderly’s daily life while enhancing the privacy and autonomy of elderly’s personal space by reducing the scale of care facility and creating home-like atmosphere. As a result, hospital-like nursing homes gradually disappeared, whereas the type of residential care home has become the mainstream in the current elderly care and service market.

Although there is a national system of social welfare policy and implementation measures in Spain, the actual situation of elderly care facilities in each autonomous community could be different due to regional political, economic and cultural conditions. The Autonomous Community of Catalonia has the largest number of day care centers with totally 14,554 places covering 1.17% elderly citizens over 65 years old, and 1,246 residential care homes with 59,391 places covering 4.79% elderly citizens over 65 years old according to the national report informe 2010: Las personas mayores en España published by the Institute of the Elderly and Social Services of Spain (IMERSO, p.365, 371).

In terms of redefining care model including the architecture design for new elderly care facilities, the Catalan Institute of Assistance and Social Services (ICASS) has been a leading research institute since the 1980s. Such model has changed greatly until now corresponding to the evolutionary situations of users, which implies that the elderly population’s life quality has reduced in proportion to increment in the degree of dependence since life expectancy has risen. In particular, the reduced mobility of dependent persons has become one of the factors that have influenced mostly on the model of care facilities. Apart from the continuing ground without physical barriers, the movement of the person with assistance from people or equipment demands adequate spaces in bedrooms, dining rooms, living rooms and care rooms, and calls for a radically different approach to the design of toilet facilities.
This factor is also crucial for evacuation. New clause has been incorporated into the new Building Code that came into force in September of 2006, in which the treatment of residential building for the elderly has been elevated to the same level of restriction as hospital, such as the dimension of the doorways, corridors and stairs, etc., on the evacuation routes. The new trend for architecture design is to increase the number of individual rooms and cut down on the number of double rooms to break the old-fashioned arrangements of communal dormitories responding to the elderly’s increased willing of privacy and autonomy, and provide dining and living area for each cluster considering the difficulty of organization for transferring all the disable residents to a single communal space of living and dining at the same time, as well as endue the residents their personal choice of conducting daily activities in their own rooms.

In order to coordinate the architectural settings with the new care model, a series of functional principles (Figure 4.1) is formulated by the Department of Social Action and Citizenship of Catalonia as a basic standard for all the new or renovation projects of residential care homes.

- Optimum Capacity: 90-100 places with regard to both criteria for excellence of care and the optimization of resource management.
- Obvious main entrance of building; clearly marked and simple circulation routes; and the daily activities of residents must be concentrated around communication nuclei to encourage personal interrelationship and a sense of community.
- Each cluster of 20-30 beds in individual or double rooms, two bedrooms share one bathroom.
- Each cluster must include the day rooms for residents to conduct general activities and interact with each other, and the support services that allow the residents to live fully within their environment. Dining area and common room must be divided.
- Supportive services need to be planned on a centralized basis and located on the lower floors so as to optimize the circulation routes to gain access to them. These services are organized in six categories as personal care for residents, administration and management, human resources, technical management of the building, catering and complementary services.

Figure 4.1. The functional principles of residential care homes, Department of Social Action and Citizenship of Catalonia. (Source: Generalitat de Catalunya, 2009, p.226)
4.2 Architectural Project Execution and Design Strategies

La Sagrera Retirement Home and Day-care Center (Figure 4.2) is an exemplary case of complying with all the legislative requirements in terms of architectural model for residential care facilities that has been introduced in the previous section, while providing a humane and distinctive architecture design under the constraints of tight construction budget and land resource in the urban environment. The architectural design strategies were interpreted by the principal architect of this project Luis Bravo Farré (LB) in an interview conducted on September 21st, 2013 with a semi-structured interviewing guiding (see Appendix B), and reorganized in the following memo accompanying with corresponding images taken by the author during the site observation except being particularly indicated.

**About Project Execution**

Architecture design for the social healthcare facilities all starts from public competitions according to the law of Spain. The Ministry of Social Welfare and Family of the Government of Catalonia will announce the project and open the application channel through its official web, then check the portfolio of hundreds of applicators and choose the best 4 or 5 candidates to enter into the design competition. There are usually only 2 to 3 weeks to work on and produce a full set of concept design; so, it needs a very quick reaction based on rich working experiences on healthcare facilities.

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**Project Information**
(Source: Generalitat de Catalunya, 2009, p.76)

**Architects:** Bravo& Contepomi Studio

**Engineers:** Asdoconsult Engineers, SL

**Contractor:** Construcciones Deco, SA

**Client:** Ministry of Social Action and Citizenship (Re-organized as Ministry of Social Welfare and Family since 2010), Catalonia

**Project Executer:** GISA

**Design and Construction Period:** 2001-2004

**Location:** C. Camp del Ferro, 19-25, San Andreu, Barcelona

**Building Area:** 4,596m²

**Budget:** 4,290,324.53€

**Capacity:** 96 residents+30 Day-care center users
The starting point for designing this kind of public care facility for the elderly

The functional layout and circulation (Figure 4.3) is a priority to consider. The budget of social project is usually tight, and to achieve the economic and efficiency requirements is basic. Hence, in order to guarantee the design quality, the architects focused more on the environmental qualities of the spaces which the elderly and the working staff will use frequently rather than the superficial appearance although sometimes may be important as well for some private facilities with regard to show their own brand identity and competence and attract the customers at the first sight.

Public spaces for the elderly:
1. Main entry & reception hall
2. Day-care center (multifunctional hall)
3. Occupational therapy room
4. Gymnasium
5. Physiotherapy room
6. Doctor
7. Beauty salon
8. Social works
9. Garden
10. Dining
11. Living space
12. Family meeting room
13. Roof terrace
14. Balcony

Figure 4.3. The ground floor and typical floor plan (Source: Bravo & Contepomi Studio)
The key architectural design issues

The layout corresponds to the grouping care approach. There totally four floors; each floor is treated as one cluster with a complete functional nucleus that is equipped with respective nursing station, communal living and dining spaces, outdoor gardens or roof terrace or balconies for various daytime activities and has easy access to each guest room.

Building orientation for maximizing sunlight and interesting outside view is essential compensation for the elderly with the difficulties in mobility, who prefer more interior activities. That's why the windows of the guest rooms on the northeast façade were treated to be triangle-shape bay window with opening to the east while on the west façade, horizontal shadow panels were installed in a way to fit the local sun angle according to careful calculations and tests (Figure 4.4). Environmental comfort is achieved by the prior use of natural illumination and ventilation rather than by mechanical system. It is also important for making landscaping spaces more usable and comfortable for outdoor activities (Figure 4.5).

Figure 4.4. Triangle bay windows facing to the East and The sun shadings facing to the West.

Figure 4.5. Outdoor spaces: the garden on the ground floor and roof terrace on the first floor.

Clear circulation with color-coding system was planned to facilitate internal management and orientation for all the elderly occupants’ routine activities. Meanwhile, there are also alternative paths available for external interactions such as temporary consolidation with neighborhoods and logistical services. The entry hall should perform as a highly efficient control point (Figure 4.6).
The characteristics distinct from the traditional nursing home

Using home style decoration elements is an effective way to eliminate the hospital-like feeling, for example, the use of warm materials like wood and handicraft technique in railing and trellis, domestic style lamps and furniture and also leaving free spaces in the private rooms for the elders to take in their own furniture and things (Figure 4.7).

Specific measures for facilitating the process of place making for the elderly under restrict budget

Restrict budget is always accompanied with a reduced standard on the dimensions of both private and public spaces. The architects tried to keep the quality by endowing the public spaces with multiple functions to increase use efficiency and efficacy (Figure 4.8; 4.9). The vivid colors are carefully used to stress the wall of corridors as well as partial finishing and flooring in the communal areas for identification and cheering up the atmosphere. Sunlight and shadows, creative composition of materials and unconventional joint details (Figure 4.10) logically result in enriched exterior appearance. In short, it’s necessary to have smart and flexible thinking of using alternative materials to achieve
richness and high-quality of textural feeling in an economic way, such as the application of some pre-fabric material instead of expensive metal, wood or stone panels.

Figure 4.8. Multiple uses of public spaces: the day-care center and the hall of collective activities

Figure 4.9 Multiple uses of public spaces: living space and the hall of activation activities

Figure 4.10. The details of green fences, Railings and shading panels
4.3 Multidisciplinary Approaches towards Elderly’s Psychological Well-Being

The semi-structured interview was respectively conducted with the psychologist Sandra Nocete, the social educator Fran Ros, and the physiotherapist Josep Alcocer by using a same interviewing guide (see appendix C) in December 12 of 2013 in the facility. The memo was translated and reorganized in the following three aspects: (1) Recognition on the elderly’s psychological pattern based on their professional knowledge and working experience, (2) Respective working approaches of each professional, and (3) Comments about the existing architectural environment in terms of its impact on elderly’s psychological well-being.

Recognition on the elderly’s psychological pattern

According to the opinions of the psychologist Sandra Nocete, one remarkable difference between the professional and non-professional care is the way of caring through objective empathy or subjective sympathy. The subjective sympathy is usually based on an old myth to segment the elderly people as a vulnerable group. Correspondingly, caregivers with the subjective sympathy assume the older people commonly suffering from depression, sadness, and many other negative emotions, and thus often misunderstand the essential needs of the elderly and impose inappropriate care measures onto the elderly.

Sandra Nocete addressed that the geriatric professionals don’t view the elderly people as psychological vulnerable. Even as she believed, rich life experiences could make the elderly wiser and more stable than younger people. With this notion, the care staff focuses onto discovering remained capabilities and unexploited potentiality of each elderly individual, and activating them to enforce their autonomy and independence. With respect to the elderly’s autonomy, the orientation work in any understandable manner like oral explication, visual media, etc. is indispensable before the caregivers want to do anything onto or for the elderly, including the inhabitants with cognitive disease like dementia.

Sandra Nocete felt confident that since care principle in Spain turned to the person-centered model, the professional caregivers and the elderly have generally reach at a state of empathy that the most essential psychological needs for the elderly’s life satisfaction are joy and self-esteemed in everyday life.
Psychological Mechanism of multidisciplinary Approaches for Activation

Sandra Nocete stressed that an elderly care facility should not be treated as a hospital; and the elderly move into for continuing a meaningful life more than extending their life span. Activation is the primary strategy of personal attention care model to encourage the elderly people using their own capabilities while feeling satisfied with their normal life. The intervention for activation needs to be realized based on a personal care plan involving multidisciplinary approaches through different psychological mechanisms.

For a psychologist expert working in a residential care facility, a routine procedure is to timely assess the actual psychological status of the elderly by conducting a series of professional questionnaires with the elderly and his/her families. However, Sandra Nocete didn’t think this result would be enough for making an effective personal care plan. Personally she would use more investigating methods such as free conversation and direct observation in order to discover every elderly’s personal trait as much as possible. In particular, she felt it is important to understand each elderly individual’s psychological problems, needs and expectations for the present life through his or her memories, and only the psychological interventions that could connect with the elderly’s affective memories is effective to activate the elderly’s psychological reaction. The special approach for exploring each elderly’s memory in La Sagrera is through establishing a physical small box with the help of the elderly’s families. Some special objects related to the personal history, the special memories, and habitual interests of the elderly are provided and conserved inside the box, such as a favorite book, a CD, a spool for weaving, a photo of marriage, a letter from the grandson, etc. The box will be put in the elderly’s room, close enough for the elderly to reach and open by oneself (Figure 4.11).
Sandra Nocete stated the memory box has proven to be effective in her practice to activate the emotions of the elderly with dementia. She mentioned one example of using the box to work with an elderly, who has lost body mobility, language ability and orientation in time, place and person. The elderly shed tears when she saw a yellowed photo of herself nestled in the arms of her husband, which she has seen countless times in her life. Sandra believed that although the cognitive memory has gone, the emotions, the most primitive functioning of human being remains until the last minutes of one’s life.

The physiotherapist Josep Alcocer regarded that physiotherapy is also a kind of personal attention and emotional activation to the elderly except for its function of maintenance and rehabilitation of physical health. The activities of physiotherapy include individual physical therapy and moderate physical exercise in the gymnasium as well as collective physical recreation activities in groups. Josep Alcocer addressed that, although it cannot see a miracle of reverse age-related physical decline through physiotherapy, the elderly appreciated his work as regarding it as a kind of affective touch and spiritual care.

The social educator Fran Ros took charge of occupational therapy and social activation for the elderly. According to his practical experience, apart from the general functions of the occupational therapy to develop, recover, or maintain the daily living and work skills for the people with physical or mental impairments, its associated effects for transmitting personal attention, and the feelings of pleasure and self-esteem through team collaborations are convincing to be more meaningful for the elderly participants than the expectation to be as productive as before.

In terms of the significance of social activation, Fran Ros stressed that making the elderly smile is the core value of this work. So, a professional social educator on one hand needs to collaborate with the psychologist to purposely apply the sensory stimulations and cognitive exercises, such as music, visual art, thematic conversation and debate, puzzle games, etc., for keeping the elderly active in cognitive functioning and delighted in the emotional state. Music is reported as the most effective tool for the expected impact on the elderly.

On the other hand, social activation also means to maintain the elderly’s connection with the social reality and social relationship with their families and friends through the common activities such as festival celebrations, artisan workshops and flea market, etc. It is noticeable that dynamic social status does not only make the leisure time more enjoyable, but also provide them a bigger context to reflect self-presence and self-efficacy for the elderly people. In this sense, an elderly care facility is not a refugee
merely for the elderly, but an effective way to re-engage his or her own to the social environment.

*Psychological significance of Architectural Environment*

The interviewees reached a consensus that the building has been performing its utilitarian and spiritual function appropriately for the elderly and the care staff. Nevertheless, while they confirmed that the general layout of locating the day care center on the ground floor and separating it from the residential section above is reasonable, they questioned that the way of dividing care clusters by floor might have negative psychological impact for the elderly inhabitants and the care staff under the following circumstances.

Firstly, since each floor is fully equipped by the nursing station, kitchen, and public space for dining and leisure activities, the care staff on the three floors feel like working in three separated facilities, and there is almost no communication among the elderly living on the different floors either except of occasional collective activities. Secondly, as every care cluster is classified by different dependence level, when one elderly is required to move to the other floor, it is an obvious sign to show that one’s health status appears deteriorated. Emotionally, this is often the most difficult time for the elderly and his or her families to accept such a grim reality. Also as another consequence of this vertical zoning model, the public spaces are dispersed into four floors, and only the space of the daycare center can be shared as the common hall for the collective activities involving all the facility members and the visitors. So, every time when there is a special event, the space on the ground floor becomes overly crowded and the vertical transportation through elevator is a serious problem as well.

Hence, all the interviewees suggested that an ideal architectural layout for elderly care facilities would be horizontal if the land use permits. However, in this case, the current layout might have been the best solution considering the convenience of the elderly’s routine life and care staff’s working efficiency as priority.

All the interviewees affirmed that diverse outdoor spaces provided by the architect are very useful for the elderly to do outdoor activities. Nevertheless, the garden in the shadow during the wintertime will be useless because the elderly will not go there in the cold weather. Similarly, balconies and roof terraces without sunshade are not good in hot summer days either. Therefore, they suggested the indoor or introverted courtyard that could be a usable space for full-seasonal activities.

Both the elderly inhabitants and the working staff generally appreciate generous natural light and ventilation in the building for environmental comfort and cheerful
atmosphere. The interviewees suggested that adjustable natural light and artificial illumination would be welcome to the specific needs of the elderly, such as during napping time, for the regulation of emotions, etc.

The interviewees reflected that the large-scale use of exciting colors might not be appropriate, such as the dark red applied on the corridor wall of the second floor. The effect has caused inadequate illumination and anxious feeling. Regarding the color environment for elderly care facilities, the psychologist Sandra Nocete suggested creating a peaceful and lively ambient by using light and pastel colors in the main areas, whereas a few bright and exciting colors could be arranged carefully in the partial areas with particular function as chromatic therapy or specific emotional stimulation.

Considering the spatial form for the group activities, the social educator Fran Ros suggested an open space following the round-table concept, which means a layout that would permit the participants sitting in a circle. As such, the instructor of the activity could have equal contact with every participant, and in turn, make every participant feel being cared.

**Summary**

Notably, multidisciplinary care experts have a consensus according to their working experience that assistance merely targeted to the basic functional activities of daily living is indispensable for avoiding extreme stress to survive, but would not be effective to improve the elderly's psychological well-being. Rather, filling in the leisure time and breaking the dullness and boredom with meaningful activities and things are the key psychological needs for the elderly people, the interventions either from people or physical environment should be approached based on this kind of empathetic thinking with them.
4.4 Experimental Stimulant and its Psychological Meaning to the Elderly

Six experiments with six culturally meaningful stimulants were designed as the form of regular activation activities collaborated with the social educators of the facility, and conducted respectively with two elderly groups in Day Care Center and in the first floor during the period from May to December of year 2013. In order to detect the elderly’s cognitive, physical and emotional reaction to the stimulants under a natural situation, the way and extent of participation totally depended on the elderly’s voluntary. Thus, these experiments were not as strict as psychological study and only qualitative findings were expected to be referable for architectural design considerations in terms of (1) the balance point of novelty vs. familiarity, (2) the effectiveness of graphical expression for mental orientation, (3) the different aesthetic experience stimulated by the local or exotic vernacular elements, (4) the significance of motivational sequence for producing layered emotional effects, (5) the function of challenging experience for the satisfaction from self-actualization, and (6) the function of affective memories recall for mental activation. In the following, each experiment is interpreted in each sub-section, including its organization, observation and revelation.

4.4.1 Multi-cultural Elements

*Activity: Stories of those similar foods in China and Spain*

The elderly is often assumed to be conservative and hardly accept the change and learn new things in a common sense. Though, this experiment proposed an opposite assumption as some multi-cultural elements can attract the attention of the elderly because of their own curiosity. Thus, this kind of multi-cultural elements can be used to foster their motivation to learn and make them feel the excitement and joy for their discovery as a result.

In the activity, we presented to the elderly participants several pairs of Chinese food and Spanish food, which are similar in form, but different in taste and their cooking way, with colorful images while telling them the stories about their related origins and distinctive evolutions in each country’s traditional culture (Figure 4.12). As food is regarded as one of the most important aspects of everyday life for both Spanish people and Chinese people, the theme of the presentation essentially had been an appealing one to the elderly. As observed, although many of Spanish elderly rarely tried and never cooked Chinese food at home, all the participants were attentive to look and listen during the presentation, some of them made comments, ask questions, and tried to tell us their own cooking stories.
There is an intriguing sign that the elderly people are sensitively attracted by the contrast between the new things/experience and the familiar ones, as well as actively using their cognitive and language abilities to respond to the theme. Nevertheless, we also found that the inherent connection of the novel things to their knowledge and memories of the past experience is necessary to evoke such a kind of emotional effects, and cognitive exercises. So, we can conclude that not only what kind of the multi-cultural elements are but also their relationship between are crucial for achieving the effectiveness of using multi-cultural elements as environmental stimulation to improve the elderly’s psychological state.

### 4.4.2 Graphic Identification

**Activity: Drawing your name in Chinese style Calligraphy or Painting**

It has been well-acknowledged among the gerontologists that the environmental familiarity can greatly help in the mental orientation for the elderly, who is suffering the cognitive declination and memory lost, such as dementia patients. It is believed that helping them to understand and adapt to a new environment is more meaningful for them to remain the quality and freedom of life than enclose them in an exclusive and so-called safe area. Therefore, this experiment tried to test the effectiveness of increasing the visual impact and graphical expression of identification as an approach to facilitate the mental orientation for the elderly.

The scripts of each participant’s given name were edited in three forms - alphabetic Spanish word, calligraphic Chinese word and colorful Chinese painting, and printed in
one page of paper. The form of colorful Chinese painting was composed by means of transforming the strokes of the Chinese word to the pictographic icons of nature elements, such as the water, bird, fish, flower, bamboo, etc.

After every participant got the paper of his or her name in the activity, they were asked to choose one from three forms as their own identification, and draw it down on a piece of blank paper. Interestingly, none of them chose the one written in Spanish, their native language. Instead, most participants chose to draw some pictographic icons selected from the painting, and a few tried to draw the Chinese words (Figure 4.13).

![Figure 4.13. The elderly's favourable graphical expression of their own identification.](image)

The key point of this experiment is not about the elderly’s response to the meaning, but their intuition to the color and form, as they had been fully informed that three forms all have the same meaning of their given name. The results of experiment show that the elderly can quickly discern and react to the colorful icons, no matter that they are totally novel and have more complicated form compared with the alphabets of Spanish and abstract strokes of Chinese words. This finding suggests the form of intuitive icon with stronger visual impact would be more effective for the elderly to identify, and thus can be helpful for their mental orientation and way-finding in an architectural environment.

### 4.4.3 Vernacular Elements

**Activity: Traditional costumes show of 56 Nations of China and 19 Autonomous Communities and Cities of Spain**

Vernacular crafts such as costumes and buildings usually represent the highest aesthetic realm of a region’s traditional culture. Along with social modernization from the last century, many vernacular crafts have become the mementos of the past or only appeared in the traditional festivals. Revival of vernacular crafts is supposed to recall the pleasant
memory of the elderly, and thus possibly becomes the resources of stimuli to enrich the aesthetic experience in the actual living environment.

Most of inhabitants and users of La Sagrera Retirement home moved in Barcelona from other parts of Spain in their adulthood as the industrial growth after the Civil War required more city workers. They came with the cultural identities of their original hometowns, which are distinctive to each other. The regional culture discrepancies are even bigger in China as they are represented by 56 ethnic nations. We prepared two separate albums to present the traditional costumes of two countries. For the participants, Chinese traditional costumes were pure sensory stimulus, whereas the album of Spanish traditional costumes is used to test the specific aesthetic experience (Figure 4.14).

![Figure 4.14. Experiments of Chinese vs. Spanish vernacular costumes for sensory stimulation and aesthetic experience.](image)

During the activity, a discussion naturally started from interpreting the different implications of colors and patterns that used for the costumes, and quickly expanded to broader topics about the ceremony ritual, the music and dance, the relationship of people, the languages, etc. I found that once this kind of intensive cognitive activities was aroused, the process was successfully conducted by their voluntary. By the end of the activity, the participants showed a high-level emotional satisfaction for their self-achievement.

The effect implies that the particularity of vernacular culture not only brings the elderly's individual feeling of pride and belonging, but also activates their memories and associated imagination. Based on the same logic, architecture design to achieve the similar impact on the elderly could be considered respective to two situations. For the case in the rural area, where the vernacular identity is continuously maintained in visibility, the vernacular style could be a predominant form whereas the modern elements could be novel stimuli. On the contrary, in the city area, where the modern architecture is popular in construction, the modern style could be an efficient base, and use the vernacular elements to evoke the memories.
4.4.4 Motivational Sequence

Activity: Workshop of Origami

The circulation defines people’s itinerary and scope of movement in a built environment. Especially for the elderly who prefer to stay with indoors environment or have to do so due to the limitation of physical and mental status, the delight and orientation of circulation in their living environment is supposed to be more crucial than the traffic efficiency in such a kind of institutional building to maintain the elderly’s life vital. However, the layout of circulation needs to coordinate with the elderly’s cognitive abilities and potentiality to motivate and accomplish more dynamic movement and activities.

This experiment was designed to test the state of two cognitive functions, working-memory capacity and sequence learning testing among the participants. In the activity, we demonstrated hand to hand and step by step how to do origami of Crane and Boat. All the participants appeared to be able to accomplish the sequential steps on one side, but most of them started to make mistakes from the point that we reversed to another side of paper to repeat the same steps as the first half of the task. They got confused and needed help to correct and continue.

The reactions of the participants showed that with the help of clear indications that can attract their attention along a sequence without break and return, the elderly’s cognitive processing can move forward smoothly with their own cognitive ability and effectively motivate continuous physical actions. Otherwise, the elderly would be easily stuck in a static status and feel anxious, lost and frustrated. Based on the same cognitive mechanism, the architectural circulation in a loop would be more promising than the dead-end model to provide a motivational environment for cognitive and behavioral processing, and result in positive emotional state.

4.4.5 Challenging Experience

Activity: Art of Paper A4

Boredom is a common emotional state that the elderly would experience, especially for the ones who have no special hobbies and don’t like being social either, or the ones with more than enough skills to cope with the existing conditions. With respect to these both kinds of cases, a playful and surprising built environment with possibility for the elderly to explore and experience by their own is supposed to be helpful to eliminate boredom and prevent them from the fall to the passivity and depression.
This experiment was for testing the elderly’s reaction to their own new discovery in an ordinary task. Inspired by Danish artist Peter Callesean’s jaw-drooping intricately intricate paper cut artwork just using one sheet of A4 paper, two silhouette paintings, “Spanish farm” and “dancing couple”, were prepared and printed separately onto the A4 papers. Paper cut is a normal activity that the participants usually do as occupational therapeutic exercises. So, when the elderly received the papers with the paintings, none of them was aware that it would be a process of new creation; they just tried to cut precisely according to indicated lines as they are usually asked to do before. Only until the moment that their cutting work had been done, the final step to make it become 3D sceneries would be taught. They were really surprised and delighted by their own final work (Figure 4.15).

The changed reaction and emotional effects of the participants imply that a moderate challenge and surprising elements in their living environment not only could attract the elderly’s attention and break the boredom in the ordinary life, but also activate their own motivation to find the interesting elements and enjoy them alone. In this sense, forming this kind of spontaneous interaction between the elderly and their physical environment through architecture design is probably more meaningful for the elderly than the provision of the artificial care in terms of pursuing their own autonomy, self-esteem and self-actualization.

4.4.6 Affective Memories

Activity: Love songs of different generations

One of the key concerns of older adults is the experience of memory loss, especially as it is one of the hallmark symptoms of Alzheimer's disease. In this situation, the elderly would not only suffer the loss of cognitive ability, but also the affects that were linked to the memories. So, apart from the care and medical intervention, embedding the sensory stimulus related to the past experience of the elderly in their living environment is supposed to help the elderly recalling emotional memory as well as enrich their current emotional state.
Music has been proven to be an effective therapeutic tool for psychological problems in the field of psychology. So, this experiment took music as sensory stimuli for testing the emotional effects of memory recall. Hundred percentages of the participants are affected by the memory loss to various degrees; several of them are dementia patients who are also accompanied with the gradual loss of language-expressing ability. Five pairs of love songs in Spanish were selected. In each pair, one is the old song very popular in 1920s-40s around the elderly’s youth time; the other new one is of the lyrical style in current fashion (Figure 4.16).

<table>
<thead>
<tr>
<th>Nuestra generación</th>
<th>La generación de nuestros padres y abuelos</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mi Buen Amor - Gloria Estefan</td>
<td>1. Toda una vida - Antonio Machin</td>
</tr>
<tr>
<td>2. Para tu amor - Juanes</td>
<td>2. La barca - Luis Miguel</td>
</tr>
<tr>
<td>3. No sé por qué te quiero - Ana Belén y Antonio Banderas</td>
<td>3. Te quiero - Nino Bravo</td>
</tr>
<tr>
<td>4. Como quieres que te quiera - Rosario Flores</td>
<td>4. Perdoname - Camilo Sesto</td>
</tr>
<tr>
<td>5. Te He Echado - De Menos Pablo Alborán</td>
<td>5. Abrazame - Julio Iglesias</td>
</tr>
</tbody>
</table>

Figure 4.16. List of love songs for the Workshop: Recall the affective memories.

In the activity, the songs were played in pair for the participants. Then in every interval, the participants were asked to choose their favorite one between the old and new love songs, and tell the names of the singers if they could. More than half of the participants were not able to remember and evaluate the songs afterwards, and the rest elderly with better cognitive state chose the old one as their favorite, a few even can tell the name of the singer. Most importantly, all the participants showed attention and a heightened emotional state during the process of listening to the songs, including the ones who have great difficulties in memory, evaluation and language expression.

Memory recall has been found valid to all the elderly with different mental status for promoting their emotional state. In an architectural environment, not only music and odor can be used as background for memory recall, but all the visual form, material texture and spatial sequence could be orchestrated as a meaningful situation and specific scenery for the elderly people.
4.5 Psychological Implication of the Elderly’s Behaviors in the Public Space

Except studying the elderly’s cognitive and emotional states through the planned experiments interpreted in the previous section, the elderly occupants’ spontaneous behavioral pattern during their leisure time in the public space of the facility has also been observed without any intervention in order to get a holistic impression on the elderly’ psychological pattern. This part of the elastic use of time and space correlates with cultural particularities of specific cohort of residences and users of a collective living environment as well as the individual differences in mental and physical states. Therefore, the purpose of this non-participant observation is to reveal the certain psychological pattern and needs hidden behind the elderly’s tangible behaviors. The results of this kind of field observation may vary for specific cohorts and individual cases, and not as strict as lab user research; but just because of this nature, it is expected to provide rich inspirations for fostering person-centered architecture design.

Common Behavioral Characteristics

(1) The elderly of two observed groups all care very much their personal images and present themselves in the public space, and dress themselves in daywear with individual style rather than housecoat and pajamas, including the ones with severe mental and physical disabilities.

(2) The elderly no matter of the physical and mental state all try their best to accomplish the basic living activities independently such as going bathroom, eating and drinking with the help of assistive fixtures and tools instead of asking for help from the others including the care givers.

(3) Mutual behavioral assistance among the elderly is common.

(4) The elderly with better cognitive state normally show a certain high level of tolerance to the dysfunctional performance of the other fellows with cognitive disabilities; though, they report emotionally affected as being sad or nervous by this kind of negative situation.

(5) The elderly generally prefers to spend the free time indoors than outdoors; and outdoors stay is critically motivated by the good weather, moderate temperature, or especially interesting activities such as a picnic party, gardening, etc.

Individual Behavioral Characteristics

The elderly individuals use the public lounge and common living space in various ways, which reflected a random behavioral pattern at the same time (Figure 4.17).
(1) The elderly with good cognitive state prefer to gather in a small group to play the games in relatively central position of the public space.

(2) A few elderly people who have achieved close fellowship prefer exclusive talk in pair at the edge position against the wall.

(3) The elderly taking a nap prefer to sit beside the window with good views and sunlight.

(4) The elderly with dementia wander around the whole space most of time if there is nothing special happened to attract his/her attention.

(5) A few elderly people who don’t show interests to communicate with the others usually choose to sit or sleep in a fixed place beside the common furniture rather than any isolated places, such as the position in the corner of the wall, which implies that they still want to be noticed.

Figure 4.17. The random behavioural pattern of elderly individuals in the public spaces (Illustration by the author)

**Summary**

The elderly occupants’ common and individual behavioral characteristics in the public space proved that the public space is as important as personal room for their daily life, and even more significant in terms of spending their leisure time and receiving more
dynamic emotional and cognitive stimulants consciously or unconsciously. At the same
time, the results of the observation also suggest that there could be several possible
improvements such as to provide a more interesting loop circulation for the elderly who
have pathological symptom of wandering; to identify the division of public space with
respect to more specific activities to avoid the mutual interference in terms of
crowdedness and noises; and to increase the particular sensory stimuli and functions in
the garden to motivate full-seasonal outdoor activities.
5 Precedent Case Studies: Emotional Architecture for Senior Living

General Introduction

Architecture design for nursing home has been practiced more specifically and intensively as part of national welfare in the developed countries since the 1960s, but a considerable amount of projects was normatively designed and didn’t show any positive emotional effect on the elderly occupants except for being a shelter. From the 1990s, more types of senior living architecture come into practice as both social demands and pension industry with commercial interest are rising. However, most of new efforts go to the aspects of interior decoration and engineering equipment whereas the innovation and improvement on the performance of architecture itself is rare. As it has been mentioned in the previous chapters, such a direction is not affordable for the developing countries, neither is evident to be more effective for achieving the elderly’s subjective well-being, this research tried to find the exceptional examples of alternative and comparable architectural solutions from this retarded mainstream.

Hence, four architectural projects have been finally selected and analyzed in this chapter in terms of their aesthetic concepts, design approach and methods for promoting elderly-environment interactions while addressing the specific requirements and
problems. The target of this series of case studies was to transfer individual design talent to knowledgeable design intelligence that can be widely applicable in architecture design for senior living.

Three cases in European countries include an elderly apartment in Switzerland designed by Peter Zumthor Studio, a residential care facility in Portugal designed by Aires Mateus Arquitectos, and another care facility in Menorca of Spain designed by Manuel Ocaña Arquitectos. They were designed at different periods and in different environment of rural or urban, but commonly conform to the philosophy of providing positive living experiences for the elderly with both familiar and surprising pleasure. Moreover, all of them have shown tight engagement with the local context and existing conditions such as climatic factors, topology, cultural traditions, user-profiles, etc., while being designed and constructed under a low-budget condition.

The last case is an experimental residential project in Japan called Reversible Destiny Lofts, designed by the artists Shusaku Arakawa and Marline Gins, who are dedicated to explore the possibility to strengthen human’s vitality along the life course through living with challenging architectural settings. Although the designers’ theoretical hypothesis still needs to be further proved, and the construction fee of this case is extremely high, this case was especially chosen for indicating a preventive vision and future-oriented methodology for architecture design to address an ageing society from the optimization of every individual’s agent.
Case 1: Elderly Home in Masans, Switzerland

**Project Information**
(Source: Kantonsbibliothek Graubünden, “Wohnhaus für Betagte, 1993”)

**Client:** Stiftung Evangelische Alterssiedlung Masans  
**Location:** Kronengasse, Masans, Chur  
**Architects:** Peter Zumthor Studio  
**Engineers:** Jürg Buchli, Haldenstein/Stadlin Bautechnologie, Buchs  
**Building Area:** 2336m² (above ground)  
**Capacity:** 22 flats  
**Competition:** 1989  
**Completion:** 1992-1993  
**Construction Cost:** 8,200,000 CHF

This residential project (Figure 5.1) especially serves the senior citizens who are still able to live independently, but happy to use the services offered by the adjacent nursing home as needed while having more spontaneous options to be alone or social. There are twenty-two flats, including four type a-42m² units with 2 bedrooms and an open kitchen, and seventeen type b-53m² units with 2½ bedrooms and a separate kitchen for the senior citizens and one guest room for the visitors.

This development has been running for more than twenty years, and still on the trend because on the one hand, independent living model has become more world-widely acknowledged and adopted for today; and on the other hand, Zumthor’s design represent a timeless adaption to the local elderly’s lifestyle and emotional complex. This effect resulted from an initial concern and profound understanding on the elderly’s psychological pattern that is partially universal in relation to psychological ageing and partially unique associated with local culture and nature. As spectators, the exterior appearance of the building is not stunning, but fused into its environment and produces a serene harmony and beauty like a common feature that we can find in all the projects of Zumthor. Particularly in this design, there is no any unusual shape and mysterious form, but a frank and constant authenticity of structure and materials, and easily perceived domestic aesthetics of everyday life accompanied by the changing light, views and people. This is probably the minimum but essential capability of architecture to be a place of
home rather than a home-like setting. The followings are the design key points we can learn from this project.

**Emotional Place: Identity and Container of Remembrance/ Memory**

How to identify the right emotions in residential environment through architecture design? Zumthor stressed in an interview “to use common sense: what is beautiful? What would be the best thing to have? What does arouse a positive feeling? What are the things that you want when you will be elderly?” (Saieh, 2010) The answers came from Zumthor’s acquaintance of local identity, and the sense of belonging to this country that is founded on a constant history with shared values of federalism and direct democracy from the year 1291, and Alpine symbolism with respect to its cultural and aesthetic affinity with German and Austria. Zumthor chose to embody the idyll of Alpine mountain village and rural life in this project just because this form is all about the presence of the place and affective resonance of the inhabitants to their remembrance and memory.

Zumthor don’t think that emotions can be planned or are what an architect should be looking for, but something pertaining to the craft’s material, to the linking mechanism between the things, so they can assume a meaning to the user. Then, emotions emerge once all is made based on a strong connection between the reality and living, and in relation to use and perception. Things, objects, the world of references, transform our sensations in remembrance. Hence, shape is the result, not the reason. Beauty doesn’t come out of the shape alone, but of the multiplicity of impressions, sensations and emotions that the shape has us to discover (Saieh, 2010). The followings are the key points to achieve such a multiplicity of usability and emotional effects in a minimalist shape and simple structure.

**Precision in Use and Functions**

From the aspect of site planning, the building simply shaped as a long slab box is oriented parallel to the trend of mountain and with two main façades towards east and west; it relates with the existing L-shape nursing home building to form a semi-enclosed cluster, where is facilitated with walking loop and landscaped yard for the senior residents to do outdoor activities (Figure 5.2).
Functionally, this is a concise plan divided into two parallel zones, private apartment units on the west part and public corridor on the east part (Figure 5.3, 5.4), but there are a series of special considerations in spatial use for the senior residents to develop by themselves.

Figure 5.3. The second floor plan (Source: Peter Zumthor Studio)

Figure 5.4. The section (Source: Peter Zumthor Studio)

The external corridor is set on the east side with a façade consisted of pieces of structural walls and big full-height windows in the intervals open to the yard and main accessing path to the building, two main entrances and traffic cores are located on this side as well. Here the corridor is intently broaden to 3m’s wide to become a large common place, apart from working as an aisle that distributes the inhabitants into their personal living units, the space besides the windows is more like an extended living room for each unit or a casual meeting point for all the residents, where they are encouraged to decorate with their own furniture and plants, drink a cup a tea and chat with their neighbors and visitors, something just like what they are used to do in their own garden of their previous home.

The interface between the flats and the public corridor is defined by the volumes of kitchen and bathroom staggered to each other; the surface between them further setbacks for indicating the unit entry; such to create a repeated rhythm along the corridor by the jumping notes of each individual unit. Moreover, a special design of opening a smaller window on the kitchen’s exterior partition makes such an interface between the public and private space penetrable, through which the resident can cast an inquisitive glance.
onto the common space in the corridor or the scenery of the outdoor courtyard on the east side (Figure 5.5).

Figure 5.5. Interior and exterior view of the furniture corridor (Photo by Petr Šmídek)

All the flats are set along the west side exposed to the mountain and sunset view, and the facade expresses the individuality of the living units while still remaining loyal to the singularity of the whole. Each unit is working as a vibrant organic cell although it is small in scale (Figure 5.6). The living room and bedroom are partially separated by full-height fixed wardrobe, and an embedded sliding door can be closed to totally separate the two spaces or leave them open to each other (Figure 5.7). Part of the exterior interface on the west recesses to form a balcony, where the elderly will have a private and sheltered outdoor space to use throughout all four seasons; sunshine and shade can also be further adjusted through the awning by the occupant (Figure 5.8). In addition, the regular shear wall structure system naturally results in the form of solid and void with rhythm.

Figure 5.6. Unit type a -42m² (left) and unit type b-53m² (right) plans (Source: Peter Zumthor Studio)
Alpine Idyll: Materials & Craftsmanship

Zumthor adopted the local traditional building materials and craftsmanship in finishing details of the building to express the vernacular aesthetics and multiple meanings of the place where the project was supposed to merge. The vertical structural walls are covered by tufa blocks, whereas the horizontal floor and roof slabs remain the nature of exposed concrete. Larch, pine and maple wood with much softer and warmer perception are used for the framing of openings and the interior paneling for the partition walls, fixed furniture and flooring that the visual and physical contacts would happen more frequently to the residents. When the senior residents walk on the timber floor, it sounds hollow and springs very slightly, which is a typical experience in a decent and cozy Alpine village home.

His application way of exposing the authentic natures in color and texture of each material itself while balancing the contrast and combination among the different materials, further enhance the clarity and legibility of the real structure, and results in vernacular beauty and emotional resonance that stimulate sensory perception and cognitive engagement with our people’s memory and imagination.
Architectural Experience with Time and Space

The views of surrounding during a day and four seasons, the olfactory and tactile information that the flowing air is carrying, the dynamic print and tone of natural light casting on the surfaces and pervading in the space...all these experiences keep changing along the time and spatial dimension, and always live in “emptiness” as Zumthor announced, at the center of architecture, “You can’t plan emptiness, but you can draw its boundaries, and so empty comes to life” (Saieh, 2010).

Although Zumthor ever said that not everybody is a composer of emotional experiences, and needs a special talent to design so, his architectural design approach can be analyzed and learned in this way. In this building, Zumthor combined a simple and silence physical setting with flexible emptiness for the elderly to fill in their own activities and affections with a spectrum of emotions from neutral to positive, and from calm and comfort to joyfulness and fascination as the status of their body and mind feel the changing elements in surroundings. In turn, the building is softened and humanized by the occupants as the architect expected. Moreover, temporality is perceivable through light, air, smell, touch and sound...all intangible sensory experiences playing with the tangible objects and penetrating them in and out aesthetically (Figure 5.9). As such, aesthetic appreciation of daily life not only instantly brings the pleasant feelings to the elderly, but also becomes ritual and enters a timeless field: the space of memories.

Figure 5.9. Sensory experiences in and of the building (Photo©Ludwig Abache & Carolin Hinne)

The talent can be learned once we could understand the mechanism of such talent intellectually, especially its hard core as what Zumthor summarized, “Multiplicity of objects is shown only when who is living with them can distinguish their single parts and, at the same time, can see the work in its wholeness.” (Saieh, 2010)
Case 2: Lar de Idosos em Alcácer do Sal, Portugal

The architects positioned this project as a program between a hotel and a hospital (VIII BIAU, p.224). This may be a more practical attitude to identify a nursing home, where provides a stable living place and care services for the elderly people with severe physical and mental disabilities. From such a starting point totally opposite to the current trend of making home-like environment, and also distinct from a traditional nursing home arrangement, this project is a pioneer to challenge many commonly adopted notions about the elderly’s perception and the ideal model of elderly care environment. The architects worked with a strong motivation of employing a series of creative design methods with interlocking rationality to strengthen the individuals in a predominantly collective living environment as well as produce an extraordinary visual impact with extremely simple materials. These unconventional efforts to work on the elderly people psychologically can be found in the following aspects.

Non-epidermal Topography: Flowing Circulation between Outdoors & Indoors

The linear building is deliberately folded to define a social yard together with the existing neighborhoods (Figure 5.10); and it is orientated in a way that the sunlight can penetrate into every surfaces of the building, and embedded into the undulating topography of the site. As result, outdoor barrier-free facilities like ramps and railings are naturally fused
into the contour of landscaping, not only acting as landscape components, but also making indoor and outdoor space seamlessly accessible from any floor level (Figure 5.11).

One side corridor layout is essential to upgrade the relationship of indoors and outdoors, and the width of corridor varies gradually to integrate the elevator hall and form the multifunctional spaces. The exterior wall is perforated to form the recessed private balconies on the room side and floor high opening windows on the corridor side; both are located corresponding to the module of individual units, and the rhythm varies subtly when interpreting the entries and other functional spaces.

All these indoor and outdoor components are smoothly connected as a spatial loop, which architecturally represented a similar concept of Möbius strip\(^\text{18}\) or Klein bottle\(^\text{19}\) (Figure 5.12). The inhabitants with restricted mobility are strongly motivated and facilitated to flow along this extended and continued path, and enjoy safe, dynamic, variable and autonomous moving experiences oriented by the architectural settings such as the lighting belts, the views outside window, double-layer high intersection space, and so on (figure 5.13). Meanwhile, this design also proved that to melt the boundary of indoors and outdoors by design, it’s not

\(^{18}\) The Möbius Strip was discovered independently by the German mathematicians August Ferdinand Möbius and Johann Benedict Listing in 1858. It is an example of a non-orientable surface, a two-dimensional compact manifold with boundary. The effect is if an ant were to crawl along the length of this strip, it would return to its starting point having traversed the entire length of the strip without ever crossing an edge.

\(^{19}\) The Klein Bottle was first described in 1882 by the German mathematician Felix Klein. It is also an example of a non-orientable surface, but a two-dimensional compact manifold without boundary
necessarily indulged in the complexity of epidermal topography of architecture and pay extra cost for any superficial architectural form, but remain the building expressive to the essential functions.

*Figure 5.12. Examples of Möbius strip & Klein bottle*

*Figure 5.13. Moving experiences along the circulation (Photos by Fernando Guerra/FG+SG)*

**Courtesy to the Privacy**

Individuality entails so many meanings like independence, dignity, freedom, personality, privacy, etc., but suddenly the architects propose us a surprising theme, *Solitude*, which is taken for granted as a tragic situation for the elderly. However, once we rethink it from the perspective of a constant ageing course, solitude is always a dispensable part of our life for which we would like to cast about specific time and space for making it enjoyable, and such a requirement would not change as we aged. In this project, the intention to fulfill this requirement is clear.

The design is cutting off one corner from the rectangular box of each guest room unit with a slight angle to form a private trapezoid-shape balcony, and puncturing the two recessed surfaces with full-height glazing (Figure 5.14). So, the division of every unit becomes clearly articulated because of this subtraction treatment on massing and enhanced depth of field by the contrast of solid wall and glazing. By this way, the resident would have a view corridor to see the outside surroundings while the light entering the bedrooms is screened by reflections on the terrace walls, which shelter the residents from obtrusive views and excessive sunlight during the summer time.
Figure 5.14. The Plans (Source: Aires Mateus Arquitectos)
With more options for making solitude more enjoyable in terms of being outdoors or indoors, and taking the sunlight or the shadow, the individuality is reinforced for the residents (Figure 5.15). In addition, aggregating all these detailed modules of individuality into one simply geometric and white-painted building, a variable texture and poetic rhythm on the façade of the building become a logical result and impressive aesthetic expression of integrity and individuality (Figure 5.16).

**Filling Emptiness with Emotive & Variable Experience**

The predominantly social and recreational areas are on the ground floor: reception, dining and common rooms, technical zones such as the kitchens and the cloakroom, linked closely to the existing building, which is given a slightly revamped image to adapt it to the new residence. The upper floors are primarily used for bedrooms and service areas, including zones for social relations. Emotive and variable experiences more likely happen in a kind of exquisite and imaginative emptiness that the architect composed for the residents and care staff to fill. Once he/she comes out, whether photographing the
panorama with his/her eyes on the balcony, wandering in the garden, and even smoothly heading to the roof terrace, exploring the puzzle of recognizing the being of modularity and personality, etc., the building, together with the light and air, continues to compose the poem of time and place for him/her. While an elderly is reading in his/her private room, chatting and playing with others in the common room, eating in the canteen, or passing through the corridor, his/her view is extended to the surrounding nature and village through the full high windows; meanwhile, the sunlight enters, radiating the heat onto the body, and casting the shadow of people and things onto the wall, floor and furniture, which looks like one and another appreciative and changing pattern painting on the white canvas.

A white tone dominates the interior and exterior appearance, but in different textures for defining the different surfaces with specific functional attributes such as white painted walls, white marble flooring with light grey veins in all public areas, light grey antibacterial vinyl flooring in guest rooms, linear embedded florescent lighting implying the orientation along the corridor, perforated gypsum board suspended ceiling and Artemide Castore suspension lighting in the common areas. It might be questionable from a common sense if white color would be emotionally too cold, and if the material contrast is enough for the elderly with vision problems to distinguish the spaces, surfaces and objects. According to the biological studies on sensory ageing (i.e. Fozard et al., 1993; Schieber, 2006; etc.), the first crucial condition to bring the difficulty of visual function and psychological barrier is under dim lighting conditions and at night, which is attributable to age-related declines in the sensitivity of the scotopic system, as well as the rate at which scotopic sensitivity dynamically adjusts to decreases in background illumination. The age-related loss of contrast sensitivity is more likely counted synthetically for the declination of visual acuity. So, it’s noted that the color application in this project actually coordinates well with both natural light and artificial illumination to provide increased lightness level; which makes inhabitants better cope with the physical environment. In addition, the humane decorations appear to be more highlighted in such a neural and quite backdrop (Figure 5.17).

Figure 5.17. Humane decorations (Source: Pontos de referencia, http://pontosdereferencia.pt/?p=56)
Case 3: Santa Rita Geriatric Centre, Menorca, Spain

The project is located in a block on the most northern periphery of Menorca City of Menorca Island, where is a little far from the city center with more convenient services and vibrant city life (Figure 5.18). Therefore, the self-sufficiency in leisure and security/safety control became essential issues to response at the initial stage. Architect maximizes the use of the land and only embeds a single level building in, which is formed with the exterior polygonal perimeter determined by the building restriction line of the site, and interior perimeter of closed curve with three lobes, where outdoor space is enclosed to be three connected gardens. Although the building density becomes relatively high as nearly up to 50%, this creative layout brings several extraordinary advantages with respects to both quality and efficiency of an assisted living and care facility.

*Horizontal topological structure*

How can the architect evolve a single floor building to be an effective and efficient project encompassing more possibilities of enjoying a cheerful life for the elderly inhabitants under a very limited budget? This project implies that it can be realized by the design intelligence, which is initially positioned to break through the topological structure of a traditional nursing home, and synchronized with the contemporary architecture trend in terms of innovative technology and materials.

Geometry is the basis of the architecture design process; it exists and evolves in the architect’s synthetic thinking on functional program planning and characteristics of

Project Information
(Source: Ocaña. Academic and Profesional Profile, 2011, p.24)

Client: Consell Insular de Menorca
Location: Ciutadella, Menorca
Architects: Manuel Ocaña Arquitectos
Civil Engineering: J.M. Churtichaga
Technical Architect: Joan Camps
Contractor: OHL
Budget: 5,200,000 € (garden included)
Area: 5,990 m² (building) + 6,200 m² (gardens)
Date of project: 2002-2005
Date of construction: 2005-2007
Capacity: 70 residents + 20 daycare center users

Figure 5.18. The site plan (Source: Google map)
spaces from initial form selection to the final construction. As a branch of modern geometry, topology mainly studies the phenomenon of that the object remains its characteristics under the deformation, and has been applied broadly in architecture design to produce free and fluid form and space. In this project, this design technique was employed for the purpose of maximizing fluid moving and appealing living experience rather than defines the form of the building, and resulted in a considerably simple horizontal topological deformation with respect to total accessibility, physical autonomy, psychical security, individual privacy, and facilitated access to visitors.

Comparing three types of possible topological deformations (a), (b) and (c) (Figure 5.19) that would result in the equivalent effective area within the original regular geometry, the plan (Figure 5.20) transformed from type (c) has obvious advantages in organically embedding the outdoor garden into the volume of building with a permeable interface while articulately and concisely defining three clusters, in which distinctive identity are further enforced by the landscaping elements.

Concretely, the architecture design starts from the units of room to other public areas. All the rooms fulfill the rigid requirements for assisted living and have double circulations. They are connected smoothly as a curve to enclose an organic shape garden, where is also the principle and direct access to every room (Figure 5.21). The plants with different colors of flowers are planned to in three lobes of the garden responsive to three care clusters. An open, interconnected, fluid, flat and unusual space is formed between the residential area and the polygonal perimeter for accommodating the different program and circulation. Going over the building means traversing a space without doors and corridors, and establishing paths with more than one solution. It is a unique space, where it is possible going from A to B without following necessarily the same route (Figure 5.22).
Figure 5.20. The plan: Fluid clusters (Source: Manuel Ocaña Arquitectos)

Figure 5.21. Typical unit of room (Photos by Miguel de Guzmán)

Figure 5.22. The interior gardens (Photos by Miguel de Guzmán)
Poly-atmospheric experiences for the users

The most remarkable characteristic of this project is that the atmosphere for the elderly users gets improved from a centrifuge sense of architecture, which means that an architecture is where the users perform as an actor and even director, not a mere spectator. A series of events that can stimulate the senses and ease the disorientation and spatial tedium can be experienced in the “poly-atmospheric” circulation space.

The introverted circulation is a continue weatherproof porch parallel to the belt of private units, which is a transitional space between the indoor and outdoor spaces; hence, every inhabitant have direct and respective access from his/her private room to the inner yard, where is gardening with flowering plants of distinct color respective to each cluster to strengthen the identification and orientation for the inhabitants, such to encourage them to broaden their movement and activities without fear of lost.

The extroverted circulation is a free shape loop stringing the spatial sequence of all functional cells, such as medical care and service center (haircut, pedicure, bathrooms, social assistance office, medical office, nursing coordinator office, pharmacy, kitchen, laundry), physical therapy/rehabilitation center, social-cultural space, lounge room, occupational workshop, nursing control units, adapted toilets (Figure 5.23).

Figure 5.23. The functional cells (Photo by Miguel de Guzmán)
**Functional aesthetics of material application**

Proper material application can economically realize usability and aesthetic effect of the materials at the same time, and directly respond to the elderly people specific physiological characteristics and psychological needs in relation to the physical living environment.

Comparing with other material such as glass, acrylic and other plastic panel for the enclosure wall, polycarbonate panel is exceedingly tough and virtually unbreakable, resistant to ultraviolet rays and harsh weather environment, flexible in color and transparency, much lighter and easy for transportation and installation, modular prefabrication and assembly. The application of two-layer cellular polycarbonate for both exterior skin and interior partitions of the functional cells in this project definitely maximizes the brightness and comfort level of natural light illumination during the daytime, meanwhile realizes the high efficiency and low cost in construction and in operation as being a passive energy-saving design solution.

Moreover, some colored panels are carefully applied for interior skin with regard to the proportion of coverage and location, and therefore participate in the color-coding system of the identification of functional zoning and the geographical orientation inside of the building, while creating several meeting points with changing atmospheres because of different densities and intensities of light. The north facade strengthens the cold light through the use of blue and greenish plastics, whereas the south and west one favors warmer atmospheres using yellow plastics. During the night with illumination, the orientation also can be distinguishable by the sign of the colors of the panels. Moreover, the public activities, the movement of the inhabitants and staff is more visible when the outside people see through, in turn the identity of inside a geriatric center is much more strongly highlighted by such an exterior interface solution (Figure 5.24).

The bare concrete roof slab was used as the most important canvas for illustrating this coding system of identification and orientation as a whole with help of both colors and continued lines. The pattern of the lines is the projection of the topographical surface of the quarries upon which the foundations were laid (Figure 5.25). The architect uses this symbolic way to make logic thinking in consistency of the original site information and post functional layout become visible and expressive. Meanwhile, various types of skylight not only optimize the interior light environment, but also break the monotone of being a huge cover and entitle the spaces with more aesthetic interest by playing with the casting sunlight and shadow. Even the small adapted toilets and storage blocks besides
these meeting points are painted with the similar color in accordance with the color-coding system, and work as the signatures for orientation (Figure 5.26).

Figure 5.24. The exterior and interior, day and night effect of polycarbonate panel wall (Photo by Miguel de Guzmán)

Figure 5.25. Site topographical drawing (Source: Manuel Ocaña Arquitectos)

Figure 5.26. The color-coding system for orientation (Photos by Miguel de Guzmán)
Case 4: Reversible Destiny Lofts, Mitaka, Japan

The building (Figure 5.27) has three floors with 9 apartment units of two unit types, type \( a - 63 \text{m}^2 \) with two bedrooms and type \( b - 53 \text{m}^2 \) with one bedroom, composited by a series of modularized cubic, spherical, and cylindrical geometric elements attaching to a main cylindrical volume, which correspondingly represent different functional spaces as bedroom, study room and bathroom linked to the main living room with an open cooking station in its core (Figure 5.28). Fourteen saturated colors are applied throughout the interiors and exteriors surfaces of the lofts, calculated to offer a view of six colors at any given angle (Figure 5.29).

The interior of apartments (Figure 5.30) features in some distinct details like undulating concrete floors with bumpy points, non-regularly and ergonomically positioned power switches and outlets for people to look for and plug in by stretching up or bend down the body, a only 70cm high exit for drilling out to the service balcony, an open cylindrical bath room with a transparent shower tube only fit to one persona on the front and 50cm wide path on its both sides leading to the toilet and the washstand behind, irregularly sub-gridded windows, no storage shelves but hooks fixed on the ceiling to hang the belongings, etc. All these features are tactically posted to force inhabitants to use their balancing system, physical strength and cognitive imagination much harder than any accustomed residential environment to recalibrate their perceptual and motor functions for accomplishing their daily life inside (Figure 5.31).
Figure 5.28. Functional compositions of type a_63m2 (2 bedrooms) and type b_53m2 (1 bedroom) apartment (Source: Reversible Destiny Foundation)

Figure 5.29. Exterior view

Figure 5.30. Interior view of typical apartment

Figure 5.31. Challenging living environment (Photos by Masataka Nakano)
Japanese artist Shusaku Arakawa (1936-2010) and American artist Madeline Gins (1941-2014), the designers of this project, founded their website of “Reversible Destiny Foundation” (www.reversibledestiny.org) since 1987. As Arakawa and Gin explained in their book *Reversible Destiny: We have decided not to die*, “reversible destiny means reverse the usual obligatory downhill course of every individual human life”. The emergence for their design theories can be stemmed from Marshall Segal’s study in cross-cultural variation in the perception in the 1960s, which questioned on a mostly recognized opinion among the sociologists about that a human being’s basic cognitive functions often thought to be universally hardwired and impermeable to environmental influence. Arakawa and Gin were thus motivated to initiate a new study on the relationship between human body and environment aiming to combat this inadequacy for apprehending the complexities of human agency, and started to create and test the hypotheses for their research and experiment focusing on architectural environment, wherein the hypothesis of “Procedural Architecture” is the most essential foundation for all their exploration in architecture.

The term of *procedural architecture* was defined by Arakawa and Gins as “a tactically posed surround, where a person moving through will be led to perform kind of complex architectural procedures” (www.reversibledestiny.org) and “a new scientific device that you can use for reconfiguring yourself so that can come to grasp with what goes on and learn how to stay alive ongoingly” (Lambert, 2010). As far as their approach of producing such procedural architecture, it’s observed that all the boundaries and objects shall be designed as intensive stimuli against human’s tendency of pursuing comfort, and thus to drill human body and mind.

Arakawa and Gins have three constructed projects in which their philosophy of “Reversible Destiny” and approach of “Procedural Architecture” were materialized. Yoro Park in Gifu of Japan opened in 1995 is a city public space and landscaping setting (Figure 5.32); Reversible Destiny Lofts inaugurated in Mitaka in 2005 is the first prototype of assembly residential building; and the Biocleave House in Long Island completed in 2008 is a private villa based on the same prototype but with a bigger scale and more extreme methods (Figure 5.33).

The constructed projects arouse more widespread interest and concern from the society. There were three multi-disciplinary conferences held in 2005, 2008, and 2010 for discussing the research and practice of Arakawa and Gins with respect to philosophy of
From left to right
Figure 5.32. Yoro Park, Gifu, Japan (Photo by Arakawa+Gins)
Figure 5.33. Biocleave House, Long Island, U.S. (Photo by Eric Striffler©New York Times)

However, there is no systematic study or scientific experiment conducted yet until now for testing either relative or reversible change along the biological ageing process that would happen while living with this project as the designers assumed. Only some subjectively tentative reports from the residents can be referred to detect some psychological effectiveness. One positive example that Gins mentioned in an interview (Lambert, 2011) is the first-hand living experience of a filmmaker Nobu Yamaoka and his families.

Nobu Yamaoka lived in one of the apartments with his wife and children for four years from November of 2006 to October of 2010. His son grew up in this physical domestic environment from two years’ old, and his daughter was born in 2008. During their stay in the Lofts, Yamaoka accomplished two Arakawa’s documentary films, “Children Who Won’t Die” and “We” as director. The growth of his two children in Reversible Destiny Lofts was recorded and edited into the documentary film. Good adaption of these two children to such an unusual living environment was observed, and Yamaoka himself also reflected that he has found a certain convenience to live and work at this sensory-stimulating home. In an interview with the Brunei Times (Matsumoto, 2007), he described that the life in this apartment gives the same experience as camping in the low-tech abode with its openness and rolling floor.

Another example that we can refer to is Shingo Tsuji’s self-report. He is a Japanese architect who also have lived and worked in one apartment of the Lofts for four years and is determined to continue his tentative experience to challenge the traditional view of
livability. According to his own interaction with every functional space, Tsuji truly feels the fusion between this domestic environment and his own of being an integrated Architectural Body. He is excited by the strong sensory stimulations every day and endorses a joyful lifestyle in such posed architectural environment that is particularly defined and suggested by the designers (Tsuji, 2013).

In general, the artistic theories and approaches of Arakawa and Gins still remain to be explored scientifically. On one hand, the psychologists, neurologists, and biomedical scientists could use as laboratory device to execute certain controllable studies on human subjects in place, measure their physiological and psychological changes in variables and verify if physiologically the functioning mechanism assumed in Procedural Architecture Hypothesis could be substantiated. Stanley Shostak, a professor in the Department of Biological Sciences at the University of Pittsburgh ever suggested to Gins a plan of scientific experiment on human subjects with a gradual extension on both horizontal and longitudinal dimensions respective to the Biocleave House (Shostak, 2013), but haven’t gotten the chance to start. On the other hand, architects and design researchers could take this prototype as reference to explore the interaction mechanisms between the designed environment and its users in their own projects with more reasonable cost and effectiveness control.

**Livability and domestic aesthetics**

Parallel to its remarkable experimental value to broaden the design theory and approach for matching up and interacting people and architectural environment at sensory and behavioral level, the Reversible Destiny Lofts as an architectural phenomenon also has aroused controversy among the architectural professionals and the publics in terms of its practical livability and effectiveness. Also, as a private estate development, the Lofts always have difficulty attracting tenants since its birth. Most of the visitors (potential tenants, tourists or media audience) commented its uniqueness in aesthetic sense whereas draw on a negative judgment to its livability and refuse it as their own domesticity. The high rental, ¥220,000 (around US$1,800) per month, twice than surrounding residence with similar scale and functions in Mitaka is regarded as an important reason, (Matsumoto, the Brunei Times, May 6, 2007); however, the psychological conflict with domestic aesthetics might be more substantive to explain the polemic situation of this project.

In fact, the philosophy of reversible destiny is not a new idea in the realm of oriental philosophical system as it is often represented in ethical, aesthetic and literature sense and a kind of lifestyle. For Arakawa, this lifestyle recalled the physical form of a traditional
Japanese farmland, where the people’s vitality comes from constant physical work close to the nature and exploration in their own potential to overcome the challenge of difficulties and disasters. While based on the reality of city living, the design of the Reversible Destiny Lofts conforms to the typology of “Loft”, characterized with smaller scale around 60 square meters, fluidity and flexibility in division of functional spaces including open kitchen, bathroom, bedroom, and multifunctional room (studying/working/playing), while its unique layout of kitchen and living room-centered streamline even appears more suitable for this loft lifestyle. So, the Reversible Destiny Lofts is objectively livable for the majority of sound people regardless of any age.

However, the underlying problem is its absolute limit for accessibility yielded to the priority of artistic interest. Although we could totally agree with what Arakawa ever advocated in an interview, “People, particularly the elderly, should not always keep in a relaxed status and rest until getting older and older. They should live in an environment encouraging, vibrant and in which their senses will be stimulated” (Itoi, 2005), deliberately preset stimuli in such a daily living environment become overwhelming physical and cognitive barriers that are impossible for the people with physical and mental frailty and impairment to live independently.

Moreover, there are some obvious deficiencies in basic functional performance with respect to luminous, acoustic, and thermal effects, which cannot be compensated or redressed by extra adaption and effort of the residents. For example, due to the ambient light rejection characteristics, if interior surfaces are covered with excessively diverse and intensive colors, it will disturb heavily the distribution of brightness, contrast and color rendering of light environment, hence it become much difficult for the viewer to attain the proper visual attributes of the targeted object, such as its color, form and depth to some extent, and long term exposure to the intensive visual stimulation could lead to recurring fatigue of visual organic system. The complexity of acoustic defects of sound focus and multi-echo is all the consequence of geometric shapes and hard enclosure surfaces of the spaces. The forced concrete plus cement mortar flooring is reported to be very cold for touching during the winter as we know that the forced concrete and cement mortar are all construction materials with relatively high thermal conductivity and poor heat storage performance. These deficiencies reflect that the designers didn’t go through a thorough consideration of performance and comfortableness in building physics, as an architectural design must involve.
**Prospect of “Architecture of Joy”**

Gins repositioned and reinterpreted their design theory and approach of “Procedural Architecture” in a more rational scope of “Architecture of Joy”, which would urge people to play in a physically challenging architectural space instead of the previous manifestation against death and comfort (Lambert, 2011). This theoretical development is helpful to offset the inadequacy in aspect of scientific testimony and psychological resonance, and practically delimit better their applicable field for architecture design. For example, by incorporating aesthetic approaches such as the contours of a terrain or other tentative art forms into lasting architectural structures as part of functional program of architectural project, such as indoor or outdoor playground in a kindergarten or school, a public park in the community or city, landscaping or a cognitive/physical training center for assisted living, etc., “Architecture of Joy” would function as aesthetic physiotherapy and psychomotor for everyone, and contribute to create an enriched living environment from an universal level and in a synergic way.

**Economic feasibility**

The last but not the least facet that would require a clear positioning between artwork and architectural design is the budget to realize, operate and maintain. The construction cost of the Lofts is around 10,000 USD per square meter, which is much higher than a rationally designed residential building with similar scale in the same area. The complexity of its construction, including the irregular structure system, special flooring treatment, all custom components, etc., all result in such an unreasonable cost for residential, but could be totally reasonable for a unique artwork creation. Considering counting this extra aesthetic value in accordingly, we would not be surprised of why the rental is that high. Obviously, the budget for creation and market value of an artwork-targeted project could not be appropriately compatible with the identity and functionality of an apartment building in aspects of economic facet of price/performance ratio and the development scale.
Summary

The precedent case studies show that two main design strategies in favor of enhancing the emotional performance of architecture for senior living have been respectively approached by the following architectural design principles.

A. Identify the meaning of Time, Place and People

(1) Use contemporary architectural language, construction technology and materials.

(2) Minimize the site formation and environmental disturbances.

(3) Take advantage of specific geographical conditions of the site (climate, topography and vegetation, etc.) to produce architectural features.

(4) Concise and abstract expression of cultural traditions, memories and lifestyles of people. (Colors, patterns, compositions, texture, etc. of material applications)

(5) Maintain the visual, spatial and functional connection with the neighborhoods.

B. Strengthen aesthetic effects aimed to activate sensory/cognitive/behavioral functioning and promote pleasant emotions

(1) Optimize building orientation to get the best natural light/ventilation and good views from regular interaction with external environment.

(2) Aesthetically and precisely fulfil the utilitarian and ergonomic requirements to make the occupants feel easier and pleasant to accomplish their daily activities.

(3) Smooth the circulations and enrich the experience of promenade to motivate physical activities.

(4) Endow the public spaces with enriched and variable, and challenging (to some extent) sensory and spatial experience.

(5) Soften the physical boundaries between the living/care clusters to encourage an autonomous lifestyle and free movement.

(6) Separate living units from the public area and keep enough privacy for every resident.

(7) Facilitate the accessibility to the safe and appealing outdoor landscaping spaces.
(8) Use color-coding system to create specific atmosphere as well as emphasize the signature for identification and orientation.

(9) Play the Sunlight and Shadow in a poetic way.

(10) Humanize the architectural body by the elements with local aesthetic interests and handicraft details.

In short, the advantage of emotional architecture to improve the quality of life and emotional satisfaction for the elderly is remarkably addressed in these precedent cases. However, emotional architectural design has not been acknowledged as a common approach in the field of architecture design for senior living yet, and the design methods listed above are only evident to be effective in a limited number of architects’ practices. Hopefully, the outcomes of this study can be further tested in more systematic research and practical projects.
Although it has been a common belief that physical environment significantly influences a range of human behaviors and emotions, emotional input and output of architecture design remains as an intangible myth that has too long been used as an excuse for the avoidance of research and the concomitant reliance on unspecified but supposedly powerful forces of creativity and professional authority (RIBA-Edinburgh College of Art, 2004). Based on a better understanding on the psychological base that causes the gap between architects’ design thinking and the users’ perception to their living environment, this chapter aims to further generate a holistic architectural vision and a new interdisciplinary knowledge system to define the appropriate built environment in accordance to the goal of social and individual well-being in the contemporary and predictable future context, testify the concept and methodological model of so coined Emotional Architecture for Everyday Life as an effective and efficient architectural approach for integrating the ethical, environmental, functional, aesthetic, technical and economic dimensions of architecture, and facilitate the application of emotional architecture design for senior living from macro-social level to micro-individual level, which is one of the most important but also problematic architectural domain for constituting an inclusive physical and social environment.
6.1 A New Theoretical Framework to Define the Appropriate Built Environment

All the knowledge reviewed from multidisciplinary perspectives in Chapter 1 has provided us a theoretical and empirical base to recognize the crucial role and functioning mechanism of emotions to drive effective design to the users, which in turn can be employed to form a new theoretical framework as well as an inherent logic to define the appropriate built environment from the following aspects.

**Common values of human society & built environment**

Tracing back to the original interpretations about the ethical and aesthetic meaning of an ideal human society and built environment in different ancient civilizations, it can be found that there was common pursuit of balance in human-environment relationship; such as that it was interpreted philosophically as an integration of moderate human emotions and behaviors in “City”, a place not just aimed to avoid injustice or for economic stability, but rather to allow at least some citizens the possibility to live a good life and to perform beautiful acts (Aristotle, *Politics VII*) in Ancient Greek Civilization, or an emotional state of harmony with universe in Chinese Civilization. Physically, such integrated value was all expressed in some kind of spatial order and a certain relationship with geographical conditions that is evolved out of the dynamics between needs (shelter, security, worship, etc.) and means (available building materials and attendant skills), although formally Western cultures preferred to stand out of nature with more abstract geometries whereas Eastern cultures appreciated more to adapt to nature through construction activities.

More likely only if built environment contributes to the balance of human-(social and natural) environment, the different formal languages of architecture would find their respective reasonable places, and are not necessarily controversial to the others; and moreover, cultural differences would be the resources for innovations instead of the reasons for conflictions. Anyhow, the restauration of such common values does not mean a compromise to the existing paradoxes in architectural theories and practices, but rather, stresses a filter to justify the appropriate direction of urban planning, architectural design and construction in contemporary context.

*A new perspective to understand aesthetic appreciation of architecture*

It is critical to see that it has become problematic to assess the phenomena of built environment and everyday life in contemporary social contexts as various types of rationale have been formulated and imposed by humans as instrumental norms or value/beliefs. The most common arguments in both ethical and aesthetic nature of
architecture have been the mutual exclusiveness between rationality and emotionality, functionality and form, aesthetic experience of art and of nature, being architecture and being building, for social and for economic benefits. These arguments are regarded in this research as ill-founded because of cognitive limitations or subjective bias in relation to the domination of analytic aesthetics by an interest in art in the first half of the twentieth century, which inherited from Hegel's philosophy about art was the highest expression of “Absolute Spirit”, and was destined to become the favored subject of philosophical aesthetics. The position on the one hand held that aesthetic appreciation necessarily involves aesthetic judgments, which entail judging the object of appreciation as the achievement of a designing intellect; and on the other hand, it required seeing nature to some extent as if it were a series of two-dimensional scenes and focusing either on formal aesthetic qualities or on artistic qualities dependent upon the kind of romantic images associated with the idea of the picturesque (Carlson, 2007, 2015), and likewise judging building as architecture only if it look like painting or sculpture. Such art-oriented models of the aesthetic appreciation are witnessed still influential among architectural academics and professionals. This research hence has identified that the current problem about aesthetics of architecture is to acknowledge the importance of aesthetically appreciating architecture based on the understanding on the psychological mechanism and essential needs for achieving the well-being of the users of architecture.

Environmental Aesthetics has started to study the aesthetic experiences beyond the art world since the last third of the twentieth century. Though it is a newly founded philosophical research area, it appears to have captured the right way to walk out of the narrow confines of traditional aesthetic philosophy and advanced with the times by absorbing scientific knowledge on aesthetic experience. Within its theoretical structure, Architecture becomes a model for the aesthetic appreciation of not simply the aesthetic qualities of its physical settings and spaces, but also of nature and art that it can house and every other aspect of day to day experience, such as the “arts” of sport, cuisine, gardening, etc. Most importantly, architecture not only can be appreciated from cognitive, conceptual or narrative view that involves knowledge of architectural history and criticism, and its functional, historical, cultural and natural correlations to particular people and place, but also allow for applying non-cognitive, non-conceptual, or ambient approaches that does not require any specific knowledge, such as engagement that stresses the contextual dimensions of place and our multi-sensory experiences of it, emotional arousal, mystery model, and imaginations that metaphysical insights such as the meaning of life, the human condition can be interpreted (Carlson, 2015). What is often called a sense of place, together with ideas and images from folklore, mythology,
and religion, frequently plays a significant role in individuals' aesthetic experience of their own home landscapes (Saito, 1985; Sepänmaa, 1993; Carlson, 2000; Firth 2008).

The cognitive and non-cognitive approaches for aesthetic appreciation to both natural and built environments have likewise provided a converse thinking pattern for architects and designers, in which possible emotional responses, cognitive judgments and expected behaviors of appreciators with knowledge of art and architecture or not, all can be simulated in the design stage. This new understanding on different aesthetic approaches and especially the application of non-cognitive approach are intriguing to bridge the gap of the perception to architecture between architecture professionals and non-professional users from the root of design, and change the design notion of interpreting human-environment relationship from abstract formulas to dynamic interactions, from art-centered to person-centered. Nevertheless, the users of architecture as the major cohort of appreciators need to be further specified in user-product experience to look at the gap of judgment to usability, accessibility and affective affiliation of an architectural environment.

Human needs, motivations & emotions – An inclusive mechanism towards personal satisfaction

In the discipline of architecture, there is a powerful and long-standing tradition to reduce the profile of users of architecture as an abstract and behavior-oriented model in architectural design, such as dining room is just for eat, and office is just for work. Until now, little research can be found to study human-built environment relationship from the perspective of optimizing the users’ internal strength, mental health and subjective well-being in their everyday living, working and playing experience. This research therefore has accessed to the realm of psychological studies in order to find a vigorous profile of the end-users.

Apart from the basic physiological needs for people to survive, Maslow’s theory about hierarchy of needs stressed the importance of the psychological needs of love, belonging and esteem as basic for people to thrive. Needs, motivations and emotions can be found working as a full circle towards personal satisfaction in psychological and neurobiological experiments (Maslow, 1943, 1954; Schultz, Dayan & Montague, 1997; Lövheim, 2011; etc.). First, personal needs drive people to form a hypothetical state (motivation) that activates behavior and propels one towards goals through incentives, which could be objects, persons, or situation that is perceived as being capable of satisfying a need/ drive. Once needs are fulfilled, positive emotions emerge and cause a specific situation to be tied to feelings of reward, altering future decision making related
to that situation or at least giving an understanding that such a situation was a “good” one. Finally, reward or reinforcement becomes an objective way to describe the positive value that an individual ascribes to an object, behavioral act or an internal physical state. This inclusive mechanism working for all human beings implies that the most essential way to meet people’s needs through design can be understood as a task to providing design product as kind of incentives that could make the users cognitively feel useful, beneficial, and emotionally appealed, and thus lead to form diverse reward circuits. As a return, an affective affiliation, and even addiction to design product also could be reinforced.

**A reality-based and future-oriented architectonic vision**

Although the early humanistic psychological theories had founded and enforced the awareness of individual and the application of person-centered approach, they are not able to discern the dual effects of free will and personal satisfaction for people’s long-term mental, physical and social well-being, and can do little to handle the problem of hedonic treadmill in the consumerist society, where manipulated information for stimulating consumption is ubiquitous. The seemingly simple question of what is for the good and happiness of human individuals and whole society become most arguable for now. The research area of Positive Psychology has been rising since 1980s exactly for responding to these ethical concerns on human well-being in a more convincing way by involving more quantitative methodologies with rigorous experimental and/or statistic techniques with positivistic, nomological objectives to understand general principles of human psychological functioning that are applicable across people or at least across broad categories of people.

An important contribution of positive psychology to this research has been functioning as a microscope to see more precisely individual’s inner strength and weakness for pursuing one’s own life satisfaction, and the penetrable interfaces for external interventions. The ethical dimension of built environment thus can be understood as an optimistic architectonic vision for human well-being, and its realization is up to decision-makers’ rational resolution. In particular, the relationships between people’s subjective well-being and several important objective factors such as wealth, health, age and cultural variations are useful for clarifying the premises and objectives of environmental policy and intervention approach, for example, for shifting individuals’ values from extrinsic, materialistic aims to intrinsic aims, helping individuals live voluntarily simple lifestyles, and supporting people’s desires for “time affluence” (Kasser, 2009).
In addition, some intervention techniques to promote higher subject well-being in positive psychology are also enlightening for more detailed considerations in architectural conceptualization, such as positive affect set point to promote human tendencies of sociability, exploration, creativity and a strong immune response to infections for motivational reasons (Diener, 1996), interpersonal relationship (Diener et al., 1999; 2008; Seligman, 2007; Myers, 2004), the timing dimension of happiness and engagement (“flow” or full immersion) in activities (Lyubomirsky, 2001), subtle variations of emotional experience (Schimmack, 2008), surprise and variety approaches to thwart or slow down hedonic adaption (Lyubomirsky, 2010), etc.

The potentiality to pursue an intrinsic coherence of the aesthetic and ethical values of built environment through emotional design

Before the Industrial Age, design was the spontaneous result of artisan’s intuition and expertise skills. The handicraft things from a small usable object to a big vernacular house appear emotional because the empathetic thinking was inherent in their production and usage. However, as the level of rational organization become higher and higher in industrial production, almost all consumer products have been designed with the aim of raising sale. Especially, little design resource can be used for mass and cheap products because many professional designers, as well as deliberately designed products are preferably delivered to the market of luxurious fashion and merchandise.

In order to eliminate this divergence of the ethical and aesthetic values of design, the diffusion of Universal Design Principles (Mace, Center for Universal Design, NCSU) in North America and the rising interest to develop Inclusive Design methods in the developed European countries have been the fruitful moves since the 1980s to stress the ethical dimension of product and environmental design. However, the progresses appear to be mostly subject to governmental investment and organizational policy, and inclined to use social methodologies and (ergonomic, adaptive, assistive) engineering technologies at the macro-social level, which hardly can be applicable in the most of less developed regions and countries because of political and/or economic constraints.

Rather than simply ascribe such phenomena to the conflict between social and economic benefits, this research has explored the feasibility to reconcile the both through a new approach of transferring the masterful designers’ individual emotional design thinking and skill to generalizable and learnable knowledge in the realm of design. The findings in neuropsychological studies on the mechanism of aesthetic experience to artwork and design product have been a supportive tool for this knowledge transformation. Also, because the neuroscientific approach of aesthetic experience (Leder
et al., 2004) can more precisely locate the points of emotional input and output during a process of user-product interaction, more cost-effective solution to care about both user’s needs/motivations/aspirations and designer’s personal aesthetic pursuit could be expected.

During the past decades, some design researches regarding general design principles (Norman, 2005; Maiocchi, 2015) and approaches in the applied areas of product design and media design for communication (Krippendorff & Butter, 1984; Jordan, 1998; Alessi, 1998) have confirmed the capability of emotional design to impact consumers’ choice and improve user-experience through engaging the “Core Affects” of the users (Russell, 1980; Desmet, 2002; 2007) and the properties associated with products, such as good usability, aesthetics, performance and reliability, appropriate size, convenience, low cost, etc.

Here is the key to see a radical change on the implication of aesthetic design. The traditional notion of aesthetic design is often related to the nice looking shape of a product, a trendy color scheme, or a pleasant surface texture; it is also commonly viewed as a way to express a socio-cultural message, e.g., a specific lifestyle, through the use of form and material (Muller, 1997). In contrast, contemporary products are becoming ever more networked, adaptive, context-aware and pro-active as envisioned (Aarts & Marzano, 2003) and we increasingly integrate such intelligent technologies into our everyday lives (Ross & Venswee, 2010).

As far as everyday architecture is concerned in this research, is believed to work in the similar mechanism like product and media design; but considering its long-term impact to general well-being and deep affects rather than intensive appeal for a moment, emotional architectural design is much more complex in the following timing and spatial dimensions of human-environment interactions in and of everyday architecture.

Firstly, people living in and with everyday architecture stably for a long time could make aesthetic experience repeatable with a certain frequency, such as in cuisine and eating, bathing, gardening, festival celebrating, etc. Secondly, the spatial dimension of architecture make it a container of rich aesthetic experiences that could be stimulated by its inherent aesthetic attributes as well as by adding other artworks, daily activities, hobbies and special events that it could be housed in its physical settings. Thirdly, all these diverse aesthetic experiences could involve all the sensory systems as vision, hearing, touch, taste, smell, balance and movement, and substantively relevant to personal traits of the occupants or users, such as personality, cognitive knowledge, memory, values and meanings of life. Lastly, architectural skin and spaces could be the medium for people to appreciate the dynamic beauty of nature.
Moreover, even based on the general model of aesthetic experience, an ideal user-built environment experience would most likely happen according to such a footprint. First, aesthetic experience is aroused by the sensory stimuli, then, there is a basic but complete reward circuit starting from the stage of implicit memory integration, go to affective satisfaction and cognitive evaluation through emotional evaluation, and back to stored memory through personal tasty. Thus, no matter if one person could aesthetically evaluate this architecture or not, positive emotional experiences occur without difficulty, and it is noteworthy that dealing with implicit memory integration is dispensable for repeatedly processing aesthetic experiences in an everyday architecture.

Such kind of aesthetic experience could be voluntarily or involuntarily emotional for the users of architecture and allow them to autonomously arrange it as they wish; but for architects, it should be a conscious choreography somehow like what artistic directors of drama or even performance art do regarding the creativity of promoting aesthetic experiences and the intention to some extent of challenging the conformist of life. In this sense, creativity is not optional but mandatory in architecture design in order to break the indifferent and boring monotone of daily life, and substantially has no conflict with the strategy of using repeatable technologies and standards in terms of structural and material application to achieve high efficiency relative to its cost.

6.2 Theoretical Implication and Methodological Model of “Emotional Architecture for Everyday Life”

The evolution of modern architecture is a mirror of continuing social changes and regionally different ideologies on ethical and aesthetic ideal of modern life. In Chapter 2, this architectural history has been reviewed from three perspectives, including influential architectural movements from the 1880s to 1980s, two contradictory design trends in contemporary architectural practice, and regional architectural practice in Nordic welfare countries. This is a theoretical filtering process to discern the exemplars of emotional architecture for everyday life focusing on the social background and actual effectiveness of these architectural practices to social and individual well-being.

This part of research found that in most circumstances, architectural historians and critics preferred to vaguely use the word of “emotional architecture” for describing an extraordinary and intensive emotional impact of architectural experience associated with strong stylistic attributes of architecture, which were believed to be the outcome of architect’s personal intuition and talent. However, according to the psychological mechanism of aesthetic appreciation, a spectator feels deeply moved in this kind of architectural environment only because the peak aesthetic experience happened during the short visits, and this kind of emotional effect can be stored in the lasting memory with
some scenarios and might be recalled occasionally, but not corresponds to the experience of everyday life.

Also due to the different social-political contexts and ethical views, while the priority of functional considerations for average people has become a tradition of mainstreamed architectural practice in Europe, American and British academics still focus more on the artistic and technological transcendence of architecture. This contradictory situation makes it confusing to assess the value of architecture within architectural realm. Such a basic fact is hidden behind the abuse of user-centered design principle that architectural professionals and the users just use different approach of aesthetic appreciation. For the user, the value of architecture is evidently assessed through emotional judgment about their own ordinary living experience in this architectural ambient, not the form of architecture. Fundamentally, this psychological mechanism indicates only after the basic physio-psychological needs for everyday life can be fulfilled and human individuals have achieved a positive baseline of emotional status, they might be motivated to pursue extraordinary emotional experience.

“Emotional Architecture for Everyday Life” is termed as such an architectural model that functions as a motivation generator for increasing positive human-environment interactions as well as an affective environment for enriching and regulating human emotional state on a basis of everyday life. Methodologically, emotional architecture should be conceptualized as a tangible medium for human individuals to contact with natural and social environment as well as a whole of physical and spatial settings composed of comprehensive sensory stimuli, personal emotional experiences and cognitive meanings of life. The value of such a kind of built environment is not only a sufficient material condition for people’s everyday life, but also a positive environmental intervention to benefit people’s physical, mental and social well-being at various levels of architectural space from private housing, community to city public facilities and spaces.

This is a more complicated task to design emotional architecture with the user-centered principle than free expression of architects’ personal vision. First of all, it would call for a more effective user study method in order to reveal both visible and invisible human factors that would influence the well-being status of people. It is also important to understand that as a physical basis for the users to maintain a positive emotional baseline, emotional architecture for everyday life is expected to break the boredom of ordinary life without arousing excessive emotions. Architectural design creativity is particularly necessary for stimulating and regulating the perceiver’s emotions to an appropriate degree through architectural language. As such, two architectural design methods as follows must be avoided as they may cause poor or over-design for everyday architecture.
The normative architecture follows a standardized functional configuration and separate aesthetic design as an optional decoration work that only could be done at the last stage. This architectural design method has been usually applied to everyday architecture for the excuse of low budget. As a result, not only such designed architecture suffers aesthetic invalidity and indifference to the users, but also aesthetic design is pushed to a position of little value or interest because of some architects’ futile works.

The formalistic architecture to another extreme configures architecture as an object to be appreciated as an artwork while ignores the essential target of everyday architecture is to serve the users in a necessary way. Some architects influenced by the design trend of avant-gardist architecture prefer applying this method to everyday architecture for highlighting the architect’s personal identity. However, the gain of an aesthetically polished object for the perfection of visual impact cannot cover the loss of emotional efficacy to engage the inherent qualities of architecture with people.

According to the theoretical framework provided in chapter 1, emotional architecture for everyday life can be interpreted as a tangible incentive to promote human-(natural/social) environment interactions as well as well as a built environment composed by comprehensive sensory stimuli, personal emotional experiences and cognitive meanings of life. It must hold specific ethical and economic attributes that might not be obligatory for pure artwork and consumer product, and be able to create more complex, frequent and lasting emotional experiences since not only its own fixed physical settings but also its combination with other dynamic natural elements, artworks and contents of everyday life can be appreciated as aesthetic objects. And, in light of some particular cases of serene architecture, such as architectural works of Finnish architect Alvar Aalto, Mexican architect Luis Barragán, Swiss architect Peter Zumthor, Portuguese architect Álvaro Siza, etc., and the group of architecture in Nordic welfare states, the creation of emotional architecture for everyday life is not necessarily subject to stylistic aesthetics and the premise of affluent capital and/or high technology, but essentially results from a local context-based design strategy and methodology.

As such a methodological model of architectural emotional design for everyday architecture has been established as the following diagram (Figure 6.1). The functional program, structural nature and emotional experiences of an architectural project should be derived from pre-considerations in various aspects of existing situation at first, and integrated to a holistic and concise concept as response. Then, such a concept needs to be expressed in detail through two main kinds of architectural qualities as spatial movement and sensory atmosphere, and finally result in an appropriate formal composition responsive to its expressive meanings and feelings. Conversely, as the potential users will perceive a built environment in an ambiguous way, the intrinsic coherence between the
preset emotional experiences and local context of people and environments is the key for driving the users to initiate their own non-cognitive aesthetic mechanism, and thus benefit from richer and moderate emotional states associated with such an architectural environment on a basis of everyday life.

Being noted that, this methodological model does not suggest a rigid design procedure or any assertive architectural form, but stands for a logical architectural design thinking pattern that can be used to evaluate and improve the architectural conceptualization from a whole to the details until get an efficient and effective architectural solution. Meanwhile, this methodology can naturally avoid standardized or inappropriate design for everyday architecture, since the particular identity of each project has been rooted in the specific circumstance of people and place, and further enhanced by architect’s creative reinterpretation in architectural language.

Figure 6.1. The Emotional Design Model of Emotional Architecture for Everyday Life (Produced by the author)
6.3 The Dynamics between Socio-Political Paradigm and Architectural Vision

From the investigations presented in Chapter 3, both challenges and opportunities for developing everyday architecture have been found in a contemporary social context, especially as the global trend of population ageing has required a synchronous move to address care needs of older person in both developed and developing countries. In order to better deal with the common financial restricts and shortage in human resources for informal and formal care while promoting active ageing, the United Nation has changed the global political direction from providing extra protection, care and services to all older people in the Vienna International Plan of Action on Ageing (United Nations, 1982) to providing supportive and enabling living environments to compensate for physical and social changes associated with ageing in the Madrid International Plan of Action on Ageing(United Nations, 2002).

This direction has been further developed by the World Health Organization (WHO) to the concept of healthy and active ageing and advocated it as a far reaching way to transfer the potential role of older persons from care burden to a sizeable “longevity dividend”. WHO suggests promoting age-friendly cities that are expected to encourage active ageing by optimizing opportunities for health, participation and security in order to enhance quality of life as people age, and even provide a checklist of the core features of an “ideal” age-friendly city based on a comprehensive social survey study in 33 cities that represent a wide range of developed and developing regions as well as the diversity in contemporary urban settings and scales (WHO, 2007).

Although it seems obvious that immediate actions from policy-makers and practitioners such as developers and designers need to be taken following these political beddings, the paradox is that the big barrier for realizing such an inclusive and optimizing built environment is how to eliminate the negative factors in our existing environment resulted from considerable amount of deficient designs and constructions done in the past few decades and still undergoing along the urbanization of some places at present; and another concomitant problem is who will be responsible for this repeated investment. The experiences of the developed countries have showed that how deep the different models of urbanization would impact the current situation of addressing elderly living and care issues even though the notion of “Ageing in Place” has been similarly nested at nationally political level.

In the United States, as most Americans are living in the suburbs where mobility is essential and public transportation is sparse, social services and health care are not
uniform, and housing options are limited (Greenberg & Schwarz, 2010), only a few American elderly are possibly beneficial from the promotion of “liveable communities” programs where care and service could be delivered to the elderly’s home with financial support; the others have to give up their home when complete independent living is not possible, and move to a care facility which is often located between city and suburbs, and suburbs to rural area in regard to reduce the land cost. Anyhow the medical and social care expenditure will not decreased by this way. Continually living the later life in a familiar area such as a continuing care retirement communities might be optional but only for the elderly with high incomings.

In Japan where the elderly even more depends on institutional care with financial assistance of long-term care security, the provision of care and service for them to ageing at their own home and community is not locally available or not sufficient. Even the financial issues are not that worrying for Japanese elderly individual, quite a lot of Japanese elderly suffers depression because of separating from their own home, family and other social connections (Matsuoka, 2009).

The most promising areas for Ageing in Place are in Western Europe countries where urban renewal most likely follows a paradigm of area-based integration of old and new as well as public and market impetus. Elderly housing and care facilities are normally embedded in the existing communities with abundant living amenities and humane atmosphere. Their geographic distribution and capacity is logically determined by the actual demand for care in relation to population density and habitual life style of the communities. As such, efficiency, quality and cost of elderly care can be simultaneously achieved.

A significant principle for the developing countries to learn from the developed countries is to set up their objectives and methodology of urbanization with long-term insights to handle both occurring and potential social issues. Otherwise, not only huge investment needs be paid to correct the mistakes, but also some harmful consequence hardly can be changed. In this sense, the practical experience of Western European cities undoubtedly is the most referable considering their methodology to program and design inclusive social and physical environment as well as their continuing efforts to identify a cost-effective societal elderly care system in which self-care, informal home care, and formal social and health care can be flexibly and economically combined without losing social cohesion.

Based on the socio-political paradigm of integrating urbanization and the strategy of “Ageing in Place”, the elderly individual with physical and cognitive frailty and disability
will need support at very micro level from their immediate environment, which may refer to their own house, or residential care facilities that can be identified as their permanent home for later life. However in many cases, although individual housing or apartment modification could be more expected, it hardly can be economically and technically realized due to the existing conditions. Instead, purpose-built or renovated senior apartments and care facilities, termed as senior living architecture in this research, more likely become a kind of more controllable environment in terms of environmental and integrated care qualities.

Since the 1960s when social interest of design for the disabled was rising in some western countries, architectural design for senior living has been mostly subject to solve the technical problems of accessibility respective to the physical disabilities. In the field of architectural design practice, standardized architectural design is predominant to produce indifferent care institutions. In the field of architectural research, since the elderly is usually recognized as a uniform pathological cohort instead of human individuals with various characters and necessities to conduct their normal life, typological features of senior living architecture have been the focuses to be repeatedly studied, whereas little research has been done on the relationship of life satisfaction with built environment from the psychological perspective.

The checklist endorsed by WHO for promoting Global Age-Friendly City Program may be the most complete and latest assembly of all the results and conclusions of these researches on built environment and public health that somehow can be traced back to the publications of the last century. In other words, almost no new knowledge or convincing evidences have been found during the recent decade. We may expect that the promotion of WHO can educate and persuade more policy-makers to integrate such a universal vision and standard into their national and local programs as the first step since such a checklist does not seem that hard to achieve; but the checklist is no more than a selection of technical regulations to avoid the neglects and errors against common sense for design. In fact, the discipline of architectural design itself fails to verify that except some regularly used accessible design measures, what architecture design can do more for elderly people.

So it turns out that there is a common illusion that design or research according to a socio-political paradigm would be automatically validated to be sufficient, efficient and effective among architectural researchers and practitioners who are used to work with given briefs or personal experience. Accordingly, once the architectural design is reduced to just be a normative and technical work, it will lose its professional potential and value
of providing creative thinking to activate and direct the perception, cognition and emotion of users.

A series of methodological questions shall be explored in both fields of architectural design research or practice such as how best to capture needs and preferences of older people and present their insights of life value, and how architecture design can effectively and economically engage with all stakeholders, and thus achieve a beneficial environment for all ages with an emphasis on older people.

In general, owing to its physical nature, senior living architecture is one of the most controllable determinants of elderly’s well-being. The core of an architectural vision responsive to the socio-political paradigm of inclusive and enabling living environments can be more specified as to enable architectural environment to produce measurable efficacy for positive changes in the status of elderly people’s well-being as well as enable policy-makers to fully acknowledge and make use of the “supportiveness” of design. This research hence has advocated a move of architectural research towards more concrete spatial interpretation of mental communication and engagement.

6.4 Spatial Interpretation of Elderly People’s Characteristics and Needs

The pioneer of humanistic psychology Abraham Maslow has provided us a basic theoretical frame to understand that the attainment of four levels of “deficiency needs”, including survival conditions, safety conditions, sense of love/belonging, and sense of self-esteem, is indispensable for general people to reach their baseline of life satisfaction, and the highest level of self-actualization may be also necessary for some of them to obtain the feeling of achievement from their lives (Maslow, 1943, 1954). So conversely, the meaning of design for people’s life satisfaction is to fill the distance between people’s actual status and all their “deficiency needs”, and the most complex part of this task is how to promote the usability of the designed objects as a systematic response to make the users feel satisfied with their lives from both material and spiritual aspects.

As a relatively independent discipline of design, architectural design has its own special potential on spatial interpretation responsive to any potential occupants’ characteristics and needs for life satisfaction, in which diverse and complex living experience shall be engaged and enriched. However, the potential effects of architectural spaces to the users of architecture at psychological level were rarely involved in previous architectural researches and practices; neither was regarded as an indispensable functional mechanism to achieve. So, as the user-centered design principle remains superficial in architectural design, considerable amount of architectural design practices become not
relevant to people’s life satisfaction, or even part of reason to reduce it. This exactly has been the problematic situation of architectural design for senior living architecture in those regions, where recognition on elderly people’s characteristics and needs appears scarce and arbitrary, and negative perceptions about ageing and canonic architectural knowledge about accessible design are still predominant.

The more challenging part of the field studies on elderly occupants of residential care facility and elderly users of attached day care center presented in chapter 4 is to find the effective environmental interventions to prevent hazardous situation and improve the elderly’s status of well-being when he or she is affected by many negative factors in later life, such as physical/mental frailty, disability and chronic illness, shrunk social relationship because of retirement, intensive family issues, and economic stress, etc. (Diene and Chan, 1984; Yang, 2008; Carstensen et al., 2011; etc.); and research findings in psychological ageing were taken as evidences to propose the architectural solutions as compensation to the aged-related changes in aspects of sensory, cognitive and emotional ageing, and as stimulation to promote physical, cognitive, and social activities.

Except that some physical features such as appropriate illumination and sound, air flow and temperature has been commonly suggested as direct sensory-emotional impact for elderly people, this research suggest that some psychological theories may have more complex implications for improving the long-term efficacy of environmental intervention. For example, the elderly people have a resilient baseline to maximize the use of their remaining abilities to complete the functional activities of daily life while minimizing the dependence on the other’s help for keeping their autonomy and self-esteem. In this sense, barrier-free measures for smoothing the physical movement and the supportive facilities confirmed with ergonomic design in architectural environment could play an important intervention role in reducing the artificial care and extending the independence of the elderly for the basic of daily life.

In terms of the principle to introduce appropriate emotional stimuli, the rationale of the existence of negative emotions from our life to be the components of the variety and subtlety of our most profound emotional experiences (Schimmack, 2008) indicates that physical environment not only can be designed to enhance the positive experiences, but also can address useful negative emotions, such as fear under the particular circumstance to protect elderly from close to the danger places. This will be even more meaningful for the elderly with remarkable cognitive decline or disability. Another pair of psychological phenomena - “adaption” and “comparison” (Myers, 2013) that make emotional fluctuation happen implies that while the physical attributes of built environment can become familiar and static backdrop for positive adaption, varied, dynamic, novel and
surprising experiences are best able to maintain “attention”, which is also important to thwart passivity and apathy due to adaption.

The findings from the filed user studies at La Sagrera Retirement Home and daycare center have not only largely supported the above theories, but also proven that a well-designed senior living architecture is also able to share the same principle and duty of person-centered care model as the caregivers and has direct emotional impact on elderly’s subjective well-being. This synergic effect appears workable to the elderly users and residents with distinct profiles for two common interests. First, appropriate location and formal image of building are effective to change the psychological bias of care institutions as poor refuge, or apathy hospital, or unnecessarily luxurious hotel/resort always with prohibitive costs. Second, the outdoor and indoor spatial configuration and atmosphere make the elderly feel that the living experience in such a new environment is safe, active, variable, and pleasant owing to more accessible care and social participation while it is not conflictive with the meaning of personal life such as autonomy, freedom, privacy, respect, self-esteem and self-fulfillment at all.

Based on both theoretical and practical evidences, this research suggests that either regarding residential care facilities where private and social life can be conducted in one building or elderly housing that need to use more community amenities, appropriate senior living architecture basically should have three environmental qualities as follows to support free activities beyond functional and instrumental activities of daily life (ADLs & IADLs).

(1) **Enhance sensory contacts with natural elements:** sunlight, fresh air, temperature, climatic phenomenon, water, vegetation, animals, etc.

Architecture could catch these natural elements either in existing surroundings environment or man-made landscaping as dynamic stimuli and highlight them in an aesthetic way. This kind of integration is effective to appeal all the people, but could be more significant for the elderly people who have plenty of leisure time, but live in a relatively static manner for physical, cognitive or social reasons. Close contact with nature can greatly help them to maintain body sensibility and regulation ability to the environmental changes. Also, the beauty and vitality of nature are appealing and dynamic sensory stimulations to evoke various positive emotions.

Regarding the application of natural elements, both technical and aesthetic issues are critical to be addressed. On the one hand, natural light and ventilation adjustable in an easy way is fundamental for environmental comfort and appeal in aspects of temperature,
illumination, odor, and sound; meanwhile, environmental stresses of heat and cold with respect to elderly’s declined body regulation ability shall be avoided by using mechanic solutions as compensation. On the other hand, although natural elements are ubiquitous, they might not be perceived and accessed as sensory stimuli when they are not presented in an aesthetic way. Certain aesthetic approaches must be applied to transcend the ordinary role of a building from an envelope that separates people and nature to an architectural promenade with various sceneries framed on the way.

(2) Recall the meaning and affection of home with personal experiences: Private Space

The fulfillment of life satisfaction for the elderly individual correlates with one’s personal traits and environmental factors. Moving from private home to care facility is not only a physical change of living place for the elderly, but more essentially a shift from a totally private to a collective lifestyle. The human interaction with the space can be seen as an appropriative process that aim at turning a particular place to personal needs (Lefebvre, 1985); then, the real challenge in a new daily living space is re-establishment in many important aspects of a normal life, such as safety, autonomy, dignity, identity, affinity…in short, the feeling and meaning of home.

However, this research has found that the spatial interpretation of the feeling and meaning of home is not simply equal to homelike settings in appearance and plan configuration of building, such as materials and colors, a sloping ceiling, a fireplace, an open kitchen-dinning, etc. like what some architectural researchers and designers have interpreted (Regnier & Scott, 2001; Brawley, 2005; Lee, et al., 2007; etc.). Rather, elderly residents and users in La Sagrera have shown sufficient capability to recognize and accept that a residential care home is an institutional architecture, where is a practical home for improving their health and social status as well as a working place for the care staff under cooperative relationship. Moreover, they appreciate the care staff and try to reduce their work by maximally using their own functioning abilities. What they really concern is not about if the building looks like their previous home or not; but if the balance and free choice between private and public life, in which daily living experiences initiated by personal memorials and preferences still can happen.

Hence, this research argues that it may not be a proper way to identify the desirable spatial quality of senior living architecture by the descriptive words such as home like, institutional like, hospital like or hotel like since they have conflated the administrative, functional and spatial features of an elderly care facility; and home atmosphere is not
subject to absolutely homelike setting, but the relative relationship between public and private space.

(3) Maintain Selective Interpersonal Relationship by Public Appearance and Participation: Community-based Location & Communal Space

Social participation has been proposed as a means in social science for social integration, social inclusion or social engagement since 1960s with a changing accent from political implication to the field of public health. World Health Organization defined activities and participation as one domain with respect to functioning and disability in the International Classification of Functioning, Disability and Health (ICF) in 2001. For the elderly, it is regarded as a key determinant of successful and healthy aging (Levasseur et al., 2010). The key elements of social engagement include activity (doing something), interaction (at least two people need to be involved in this activity), social exchange (the activity involves giving or receiving something from others), and lack of compulsion (there is no outside force forcing an individual to engage in the activity) (Prohaska, Anderson and Binstock, 2012).

However, it has been found by field studies that many elderly people don’t think and act social participation in the same way as what the scholars or policy-makers suppose or expect. For them, social participation is a kind of subjective experience only involving selective interpersonal relationships with the care staff, close friends and families rather than an objective condition. In other words, the elderly would not consciously increase social participation for their health, but because of personal interests. Moreover, it was observed that appearance in the communal space without participating in the activity is another important part of the elderly’s social life, and both public participation and appearance appears similarly effective to activate broad and positive psychological reactions as a consequence. The elderly would clean and dress themselves as good as possible, prepare themselves to see and be seen, to hear and be heard. This kind of psychological behavior for the elderly is related to their need of self-appraisal, autonomy, and a sense of presence while avoiding undesirable sociality rather than their functioning and disability.

Responsive to such diverse psychological pattern, physical accessibility or short circulation to the outdoor or indoor public spaces is not sufficient to motivate public appearance and participation, but the shape, scale, atmosphere, environmental conditions of such a place as well as if it can be subtly divided for successfully encompassing a random behavioral pattern at same time are crucial to encourage and keep the elderly staying in the public space without feeling disturbed or boring. In this sense, the potential
for built environment to impact the elderly’s health and emotional satisfaction depends on how well preset a balance between rest and activity as well as between solitude and social activities.

**6.5 Methodological Model of Emotional Design for Senior Living Architecture**

Five precedent cases of senior living architecture selected and analyzed in chapter 6 have shown three trends for architectural design to change the stereotypical image of senior living architecture and notably initiate multiple emotional interactions between architecture and its users. The first trend represented by Peter Zumthor’s regional modernism is to validate elderly’s natural and cultural root in place and transcend this meaning with precise and concise architectural language like a timeless and affective poetry. Serene home atmosphere is highly valued as a naturally associated emotional effect with all types of senior living architecture. Switzerland and North European countries mostly share this design notion as well, where unitary traditions and social cohesion are well preserved.

The second trend presents a creative formal and spatial interpretation of functionality against homogenization and normalization in order to keep elderly’s social image and everyday life style in contemporary fashion. The abstract meanings of modern life, such as equality, freedom and privacy are expressed with particularly high tone by compact architectural settings and abstract forms; meanwhile, technically supportive measures and care work efficiency are skillfully integrated to creative architectural and landscaping design without a need of extra statement. This trend has been more likely flourished with urbanization and industrialization program in some historic Central and South European countries such as France, Spain, Portugal, Austria, and Holland, etc., where the cultural tradition is leading humane creativity and social dynamics.

The most radical trend led by Arakawa and Gin’s reversible destiny theories is to totally replace the commonly acknowledged notion of adaptive environment to age-related diseases and disabilities by preventive activation on daily basis along the whole life span. Somehow this trend might direct a wide range of architectural revolution of architecture responsive to an ageing society, nevertheless it will take some time to be recognized and entailed with more reasonable form and budget as a whole concept.

Except the last trend mentioned above that still needs future research involving scientific evidences from multiple disciplines to prove its theoretical hypothesis, the two
trends have been ramified from the root of architectural expertise in which both integration and hierarchy of functional and aesthetic considerations are essential.

However, currently senior living architecture that can be qualified as the same design quality as analyzed precedent cases is still rare. Most of design practice for senior living architecture directly borrowed regulations, architectural models and operations from bureaucratic interpretations and decisions; herein the notions of hospital like, hotel like, home like come and go. These notions are Pseudo-propositions in themselves since hospital, hotel and housing design has been changing much radically during the past several decades with their respective impetus, and contemporarily there no exists such a static physical model or mono experience to compare. For example, a hospital designed with healing healthcare architecture concept may be more humane than a residential building; a hotel can be designed as a vessel of fantasia; and a home can be entailed with one of the countless expressive and formal options.

The subjective neglect to this advancing trend of contemporary architecture design in senior living industry just more clearly reflected its own lagging and conservative status. Not only policy-makers but also architectural researchers and professionals shall be responsible for the psychological bias to senior living architecture in public awareness because most efforts has been focusing on formulating the product standardized and working procedure for fast and massive production since very beginning of the emergence of purpose-built architecture for elderly care. By being encouraged to use such political and industry paradigm as shortcut to design and build for a long time, many architects have omitted the pre-studies on the specific site contexts and elderly people, and just refer to the exemplars esteemed by the governmental or professional authorities.

This experience-based design methodology not only excludes elderly people, the end-user group outside of the circle of senior living industry, but also cuts off imagination and interest to explore nature and form of senior living architecture as a creative design work. This is why indifferent functional program, basic technical mistakes, and irrelevant aesthetic design are the common deficiencies of senior living architecture after half century’s practicing. The elderly people at their generations only can accept what they were provided. So, it is not surprising that no much solid evidence about expected and promised positive impact on elderly’s health and well-being can be found in such designed projects.

Apparently, it is not a merely ideological or political question to push design research and practice of senior living architecture move forward; fundamentally, we would need a new effective and efficient working system to solve the methodological problems in the
research and design fields. Hence, a systematic working model of emotional senior living architecture (figure 6.2) has been developed and presented in this work for multidisciplinary researchers and practitioners to interact and synergize within a coherent contexture of promoting cost effective and sustainable solutions for elderly living and care. As opposed to the traditional way of tagging senior living architecture as a specialist field, this model suggests putting it back to the whole context of contemporary architecture, and searching for the inherent logic of each project step by step.

At the pre-study stage, the precedent studies on the non-paradigmatic cases are believed to be evident to speak against the common assumption that low budget projects for social welfare must involve sacrifices of inner functionality and formal beauty, and encourage more open-minded conceptualization and architectural design approaches. Self-education and regular updating of profound and comprehensive knowledge on elderly users and architecture design itself will be enhanced through every design or research project, and thus become valid expertise.

Emotional architectural design model has been embedded in schematic, detailing and construction design stages for promoting environmental qualities and emotional effects of senior living architecture, and probably provide more valuable examples and measurable variables for assessing the efficacy of built environment to improve elderly’s health and well-being. In addition, every senior living architecture project will have its distinctive presence owing to its engagement with local natural and cultural contexts that are the key resources for inspiring architect’s creativity relevant to the local people.

In general, it is arbitrary to block the functional, spatial and formal configurations of senior living architecture into some absolute diagrams or prototypes and even worse to directly use them as the concept of design. It is also a wasteful working model to overlap functional design, technical design and aesthetic design as different layers. There is no such an architectural prototype that can be ideal for any place and any people, nor is there only one architectural solution appropriate for a senior living project. In any case, a cost-effective architectural design for senior living shall be a unique progress of creation starting from precisely identifying the meaning of Time, Place and People and concisely ending in a perceivable and meaningful space and form validated by the elderly users.
Figure 6.2. A Systematic Design and Research Working Model of Creating Emotional Senior Living Architecture. (Produced by the author)
7 Conclusions

7.1 General Remarks

Since the beginning of the 20th century when the Western countries successively started to program collective housings and public buildings for general welfare goal on a political level, bureaucratic considerations on spatial implications of this kind of everyday architecture have dominated the architectural design. This top-down development strategy has resulted in inertia of designing according to the belief, normative and standard in force, which may enable a substantive transformation in aspects of organizational types and functional prototype of architectural space, but not spatial qualities that are vital for the individuals of people. The involvement of political and economic interests in architectural practices for people’s everyday life makes the role of architectural design become more ambiguous and polemic, especially when the aesthetic dimension of architecture is more frequently utilized as the visual impact and symbolic expression of propaganda for attracting people’s attention and manipulating their choice. Therefore, this research found that considerable amount of architectural practices in the past century have a big distance to its ethic goal of thriving human society because the motive forces of various ethic views are influential, and there is lack of systematic theory and evidence-based approach to evaluate and orientate appropriate architectural design for optimizing people’s long-term well-being.
Oriented by a positive environmental intervention strategy, this research chose to put focus on exploring the commonality and particularity of some individual and/or regional architectural practices that may not be in any artistic and technical trendy, but are commonly deemed to have benefited local people’s general well-being. This research therefore found the law that the architects’ familiarity and sensibility to the complexity of everyday life and regional characters of people and place was input as aspiration at the beginning of architectural design, and finally their creative architectural language was transferred to an integration of easily perceptible and enriched spatial atmosphere and experience. Although it does not mean that architects should only focus on local architectural practice, it is still meaningful to suggest that local architectural practice definitely has particular advantage in terms of increasing the emotional relevance of architecture to the end-users.

This research discerned architectural practice with this kind of emotional attributes and effects as exemplar of *Emotional Architecture for Everyday Life*, but also found the existing architectural theories are weak and confusing to explain its inherent causality between emotional attributes and emotional effects of architecture, and distinguish it from the visual art philosophy that ascribes the emotional qualities of architecture to the masterful architects’ mystical intuition, as well as the politically defined welfare architecture. Hence, this research broke through the knowledge limitations of architectural discipline, and established an interdisciplinary framework of architecture involving the other research fields of environmental aesthetics, positive psychology and emotional design to give this architectural phenomenon a generalizable concept with warranted evidences.

As such, *emotional architecture for everyday life* in this research was termed as such an architectural model that functions as a motivation generator for increasing positive human-environment interactions as well as an affective environment for enriching and regulating human emotional state on a basis of everyday life. Methodologically, emotional architecture should be conceptualized as a tangible medium for human individuals to contact with natural and social environment as well as a whole of physical and spatial settings composed of comprehensive sensory stimuli, personal emotional experiences and cognitive meanings of life.

Also oriented by this interdisciplinary framework, the inherent causality between emotional attributes and emotional effects of architecture has been revealed to follow the psychological mechanism of human-environment interactions. In particular, it is notable that whereas architects are used to employ cognitive approach of aesthetic appreciation that is deeply subject to pre-established aesthetic and technical canon of architecture, the
end-users without this kind of knowledge just use non-cognitive approach to emotionally feel architecture as a context of everyday life, and their final judgment will be expressed by the self-report of subjective well-being (SWB), which is a social-psychological indicator of life satisfaction and happiness. Therefore, an overarching conclusion of this research is that human emotions are the most direct linkage for architects to communicate with the end-users of architecture, and empathetic thinking in aesthetic of everyday life is just the crucial point to make the logic of an architectural design and the end-users’ essential needs coincide at emotional level.

In the empirical research on architectural design for senior living, the concept and methodological model of *emotional architecture for everyday life* was proven to be effective to naturally fix the most worrying problems for the elderly people, such as losing their mobility, privacy and autonomy of life as an efficient approach, and to push the political vision of “Ageing in Place” into practice as a down-top strategy. Nevertheless, the knowledge system of emotional architectural design needs to be further expanded to involve more specific understandings about the social, psychological, cognitive, and biological aspects of aging in the studies of gerontology to better understand the hierarchy of elderly people’s essential needs for a satisfying later life, which is evident to have a subtle shift along the life span. Hence, this research can evidently draw a pair of conclusions as follows.

On one side, while insufficient architectural design that is associated with the passive notions of poor relief aid and functional activities of daily life (ADL) assistance for the physical and cognitive disabilities is an important reason for having intensified the public impression about the indifference, loneliness and helplessness of architectural space for the aged people, conventional architectural design that separates the functional and aesthetic dimensions of architecture to the technical measures and the stylish decorations is not effective either to create an appropriate living environment for the elderly people. With regard to technical design measures for compensating physical/mental frailty and disabilities, they need to be fused into a humane backdrop rather than being highlighted as indifferent devices in order to play it proper role.

On the opposite side, both adaption and positive variety are necessary for the elderly’s everyday life. So, an inclusive and simulative architectural space not only has direct effect to support and evoke more autonomous/independent physical and cognitive activities that are crucial for the process of successful ageing, but also has synergic effect with person-centered care services to make the residents feel more active and satisfied even when physical and cognitive disabilities become severe. Also for the care givers, this kind of positive environmental intervention is beneficial for improving their working
efficiency and emotional status by freeing them from unnecessary accompany and supervision. After this consistent effectiveness of architecture has been basically achieved, creative and unique formal expression of architecture appears more welcome and easily accepted by the elderly as a positive and stronger identity of their own life.

An overarching conclusion of this research is that the strong potential of architecture design to comply with human well-being lies in an integration of environmental aesthetics of everyday life, a positive environmental intervention strategy, a generalizable knowledge system and evidence-based approach of emotional architectural design.

7.2 Limitations

While the vigor of this research has been stemmed from an interdisciplinary research strategy that crosses the boundaries of aesthetics, architecture and design, psychology and some specific fields of gerontology to obtain a new holistic vision and evidence-based approach for creating appropriate architectural environment for our everyday life, such an experimental quality of this research may be also the risk of objection from those conventional perspectives of architectural disciplines. Fortunately, the final outcome of this research has shown the rationality and importance of this effort to break through the disciplinary limit of architecture. But objectively, this research work also has its limitations in some respects due to the available research conditions.

Firstly, psychological studies concerning with human-environment relationship are broad, complex, and varying in specific research topic and methodology. This research was only able to consult a limited bibliography in the research areas of humanistic psychology, positive psychology, psychological mechanism of aesthetic experience, environmental psychology and psychological ageing considering the structural balance of the whole research program and rational time division. Moreover, psychological studies on this topic are also in progress, some hypothetical theories and initial research findings that were referred as enlightenment in this research could be changed. So, the final conclusion about the spatial qualities of appropriate architectural environment for human well-being inevitably has its incompleteness and uncertainty to some extent.

Secondly, it would be ideal if an interdisciplinary research could be done among a stable multidisciplinary team with funding, but this research mostly has been individual work with voluntary support from my supervisors, some researchers and practitioners in architecture, design, gerontology, and elderly care professionals. All these supports were greatly fruitful, but hardly can be planned into one strictly systematic research; neither is possible to organize any quantitative survey for user studies and post occupied evaluation
studies on architectural environment, which definitely could increase the consistency of this research.

Thirdly, distinctive socio-political contexts around the world make architectural phenomena more complicated than art of architecture itself. This research was intendedly positioned in an international context for facilitating qualitative comparative analysis rather than especially focusing on the detailed architectural practice for senior living in one country in order to avoid cultural and economic bias for judgment. However, the regional or national examples that were selected for the comparative studies are by no means fully representative of all existing circumstances among different countries, but only can convey some typical commonalities and specialties, and various causalities between socio-political context and architectural practice in these selected countries.

Finally, the concept and methodological model of emotional architecture design was expected to be applied and tested at least in one practical project of senior housing or residential care facility in China. But during the period of my joint training program in the Architecture School of Tsinghua University in Beijing (China), only pre-study and conceptual design stage work coincides with my research. So, this part of applied research only partially proved that the concept of emotional architecture appears desirable and feasible for the immediate application from cultural and economic perspectives in the present context of China, where the social-political system for promoting social elderly care is not mature yet, but the problem of validating its applicability in practice has not been completely solved in this research.

7.3 Contributions

Currently, most architectural design research concerns with artistic and technological transcendence of architecture itself rather than the effectiveness and consequence of architecture on human-environment relationship. This research is an effort to make up for this deficiency. In the light of environmental aesthetics, in which everyday life become a valid type of aesthetic object and cognitive psychology and neuroscience of aesthetic appreciation is involved as part of theoretical framework, this research discovered the psychological basis that causes the gap between the realm of architectural professionals and actual social requirements. This new perspective is believed to be especially important for architectural professionals to rationally shift the focus of architectural design research and practice to the user-centered direction. Nevertheless, this research also reminds that it is necessary to pay an extra attention on the abuse of user-centered design principle. When social and commercial benefits are not coordinated in one project, design would have its side-effect to block people’s ability of reasoning for right choice.
Fundamentally, by synthesizing both philosophical and psychological knowledge into the theory and methodological model of emotional architecture, the outcome of this research become an evidence-based and generalizable knowledge system with remarkable advantages in aspects of better understanding the essential needs of end-users based on warranted psychological explanations than ambiguous common sense and architect’s personal experience, and then, practically meeting these needs through the enhanced skill of precisely engaging the spatial and formal implications of architectural language with people’s psychological pattern.

During this research, there was also a special try to increase the validity of qualitative data and analysis through a combination of triangulation and reflexivity on the part of the researcher (Guba, 1981). For example, multiple research methods of observation, experiment and interview were planned and conducted in an extended period of field study for accumulating comprehensive information from diverse perspectives of the elderly occupants, the geriatric working staff, and the architect. Such a research strategy is convincing to avoid some arbitrary conclusion that could be drawn only based on the data collected from the short field visits, and thus is recommendable for improving the rationality and reliability of empirical research in the field of architecture.

As far as the significance of this research for general architectural practice, emotional architecture design is a cost-effective design tool as inherit logic and coherence of local context and people’s experience are the key point for architecture design to achieve. This process does not allow architects to employ any decorations, materials and technologies irrelevant to the end-users, but does need their sensitivity of empathetic thinking with other people, and creativity to choreograph the appropriate spatial atmosphere and experience by maximally using the existing cultural and natural resources in an effective and efficient way.

Considering the potential contribution of this research for promoting the quality of architectural space for senior living, the application of emotional architecture design concept and methodology would promisingly make architectural design more effective to materialize the appropriate living environment for successful ageing, in which the synthetic effectiveness of immediate environmental intervention to reduce and address age-related frailty and disability at the same time is realizable. As such, the consequence of eliminating the spatial division and ideological alienation can be expected for the ageing society, which has been the present situation in many developed countries, and will be a more serious situation in the developing countries with huge older population, such as in China.
7.4 Future Researches

This research has highlighted the necessity to skip out inherited mindsets about the role of architecture and built environment and epistemological assumptions that have separated design and research for the sake of their respective authority. As architecture has been highly programmed on a political and social-economic level, architecture design in contemporary context of human society has become a more complex activity motivated with multiple purposes, and it cannot be simply regarded as making “physical objects that occupy space and have plastic or visual form” (Schon, 1987, p.41-42), but “courses of action aimed at changing existing situations into preferred ones” (Simon, 1996, p.111); herein the interest of argument has shifted from how to bring an imaginary thing into reality, to what are our preferred situations of well-being and expectation for living environment. This is a big topic that calls for more interdisciplinary research on architectural environment in the retrospective, contemporary and future-oriented context.

In order to broaden the application of emotional architecture design, the future researches can be extended to the different functional types of everyday architecture and their potential end-user cohorts, such as civic center, school, kindergarten, office, hospital, commercials, museum, etc., by following the established research structure of emotional architecture for everyday life. The future researches also can be directed to the organizational model for promoting emotional architectural design. For example, as observed in this research, public architecture competition has been widely used as a socio-political instrument to stimulate architectural design intelligence and creativity for promoting the quality of social architectural projects in Nordic welfare countries such as Finland, Denmark, Norway, Sweden, as well as in Spain, the author’s research base. Some other architectural scholars also have confirmed this phenomenon within the European Union (Biau, Degy and Rodrigues, 1998; Rönn, Kazemian and Andersson, 2010). Then, the new inquiry for future research is if this instrument could be a feasible and effective tool for other regions, where the social, political, economic regimen and cultural context might be very different.

Another direction of future research on emotional architecture can be the user-centered post occupancy evaluation (POE) respective to make up two main weaknesses of this tool. Firstly, POE is not as universally employed as some proponent initially imagined, but typically conducted in-house by the architecture firm that designed the project, or by external consultants and institutions (Groat and Wang, 2013). Secondly, those adopted tool kits of POE normally consist of a check list according to local design codes and guidelines that are either derived from case studies and professional experience (Regnier, 2002) or conform to the management process of design and development.
(Perkins, 2003). Considerable amount of case studies does not seem convincing since they have been done only based on the provided data/document and short-time site observation by architect academics, or maybe sometimes plus appointed experts of neighboring disciplines, but even that is unusual for management reasons (AIA; RIBA).

The third direction of future research on emotional architecture for senior living concerns with a new multidisciplinary cooperation with the ongoing research field of information and communication technology (ICT). It is notable that people’s lifestyle, in particular the model of physical and cognitive activity for pursuing information and communication has largely changed since computer and Internet emerged. The generations born from 1960s have been deeply affected. This means that the immediate built environment has to be able to address a series of cross-sectional variations of body and mind among different individuals as well as the generational differences in longitudinal changes along one’s life span. On the other hand, regarding the low care ratio in the near future as a demographic consequence of global population ageing, independent living as long as possible will not be an optional, but obligatory state for the majority of people at a worldwide range. Due to these foreseeable situations, this will be a challenging research topic about how to further improve the effectiveness of architectural space in alleviating the physical isolation and emotional state of loneliness that are especially harmful to the psychological and physical health of the aged people.

However, similar to the research field of architecture, studies on Ambient Assisted Living (AAL) by ICTs the current focus on in also has oriented to the physical and cognitive barriers than activation and stimulation regarding the accessibility and usability of the virtual world. For example, two research groups Fh-IGD in German and LST-UPM in Spain involved in the VAALID project of European Union have been advancing in the potential of ICT to overcome access limitations to environments and services, particularly addressing the convergence of Virtual Reality (VR), domestics and accessibility (Kamieth et al. 2010). Their approach mostly focuses on the interaction between use and an immersive environment with 3D virtual ambient, and user accessibility/experience through different interaction devices to such a designed ICT system. The implication of VR with the concept of Smart or Accessible Digital Home in this framework only refers to a new environment control modality in relation to domestic installations.

Promisingly, another state-of-art of ICTs - Augmented Reality technology has begun to show a kind of emotional effect. The recent effort of the Natural Communication Device for Assisted Living project (Sarachini, Catalina & Bordoni, 2015) has been to improve the adaptiveness of ICTs to elderly and disabled people along with carefully design Internet services and interfaces of mobile devises. In this case, the efficacy of
motivating the usage of ICTs by using a tablet and a wearable AR system that don’t need Wi-Fi or FRID triangulation in a physical environment were tested with a premise that such technology only requires the infrastructure which already exists in most residences and health-care centers. Especially, wearable AR system has been proven to be a stimulating tool for the mobility of the elderly. Hence, it can be imagined that a routine spatial experience could be upgraded to rich emotional experience through designed AR scenarios and dynamic integration of physical background and multimedia contents.

In general, architectural environment and information and communication technology (ICT) can be used respectively by the potential uses, but also can be integrated to support and enrich autonomous and independent living, which is vital for the quality of life. With a common goal to improve general and specific living environment to benefit the elderly and disabled people’s personal development and increase their sense of safety, serenity, joy and self-fulfillment beyond for compensating losses or delegate functions as an assistive tool, this potential synergy of physical and virtual world is worthy of extensive researches to exploit it.
Bibliography


Bravo, L., 1981. La morada del hombre bajo las estrellas: Un paseo por la arquitectura de Gunnar Asplund. 2C: construcción de la ciudad, 19, pp.52-71.


Carlson, A., 1999a. The aesthetic appreciation of everyday architecture. In: M.H. Mitias


Dijkstra, K., 2009. Understanding healing environments: Effects of physical environmental stimuli on patients’ health and well-being (Doctoral thesis). University of Twente, the Netherlands.


U.S. Department of Housing and Urban Development and Barrier Free Environments Inc., 1996. Residential remodeling and universal design: Making homes more comfortable and accessible. [pdf] Available at:


Appendix A Visited project list for the field case study on Nordic everyday architecture

Realized date: 4/9-18/9 2013

<table>
<thead>
<tr>
<th>Country</th>
<th>Architects</th>
<th>Selected Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>Ragnar Östberg (1866-1945)</td>
<td>1923: Stockholm City Hall</td>
</tr>
<tr>
<td>Country</td>
<td>Architect</td>
<td>Years</td>
</tr>
<tr>
<td>---------</td>
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<td>-------</td>
</tr>
<tr>
<td>Norway</td>
<td>Kjell Lund (1926–)</td>
<td>1966: St. Hallvard Church and Monastery, Oslo</td>
</tr>
<tr>
<td>Norway</td>
<td>Snøhetta</td>
<td>1999–2007: Oslo Opera House</td>
</tr>
<tr>
<td>Denmark</td>
<td>BIG</td>
<td>2006–2010: 8 House, Ørestad</td>
</tr>
<tr>
<td></td>
<td>Lundgaard &amp; Tranberg Architects</td>
<td>2006: The tietgen hall of residence, Ørestad</td>
</tr>
</tbody>
</table>
Appendix B  Interviewing guide and memo with project architect of La Sagrera Retirement Home and Day Care Center

Date: 21/9/2013
Place: Bravo & Contepomi Studio, Barcelona
Interviewer: Qin Wang
Interviewee: Luis Bravo Farré

Part I: Constrain in Architecture Design Standard and Regulation for Public Institutions

- Economic Budget
- Standardized Program Model
- Upper limitation in Dimensional Standard
- Land & Neighborhood

Part II: Strategy to achieve the best design quality under the certain constrains

- Check the essential necessities of the users
- Client’s Design Brief ≠ Final Functional Program
- Take the chance of being a free composer of spatial sequence and circulation
- Leave flexibility to compromise from the ideal to underlying scope

Part III: Underlying design issues for senior living

- Minimum environmental impact and maintenance
- Respect to local contexture (topography and minimize the site formation, surrounding buildings, public spaces, vegetation, recycled materials…)
- Passive energy-saving measures: totally natural illumination and ventilation
- Strengthened effects on sensory functioning and emotional pleasure
- Optimized climatic orientation and with spectacular views
- Sufficient illumination and ventilation
- Visual and physical connection to the neighborhood
- Way finding and identification of zoning (Flowing circulation, visual continuity from public space to private units, sign of colors…)
- Appealing materials
- Angled bay window for units to attract and control sunlight
- Autonomous control of Privacy (View corridor, private outdoor space…)

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Appendix C  Interviewing guide and memo with the geriatric working staff

Fecha realizada: 12/12/2013
Lugar: La Residencia / el centro de día, La Sagrera (L’onada), Barcelona
Entrevistadora: Qin Wang
Entrevistados: Sandra Nocete, Fran Ros, Josep Alcocer

Descripción:

Esta serie de entrevista, se lo ejecuta con el objetivo de investigar el patrón psicológico de la gente mayor. El resultado entra en a mi tesis doctoral como el base de datos de los habitantes y usuarios de la residencia geriátrica y el centro de día, con lo que intento averiguar las características y necesidades más esenciales que un ambiente arquitectónico puede apoyar e intervenir más allá de la adaptación básica que acabe en unas instalaciones técnicas, para mejorar el bien-estar de la gente mayor, sobre todo, su estado sensorial, cognitivo y emocional.

Los entrevistados son las personas profesionales que tienen el conocimiento profundo y mucha experiencia práctica en el ámbito geriátrico.

Con sus permisos, he guardado las conversaciones con cada entrevistado en una grabación de voz y abstraigo las informaciones en este esquema.

Con la psicóloga, Sandra Nocete

WQ: ¿Cuáles son las educaciones / formaciones profesionales necesarias para ejercer de psicólogos especializados en Geriatría?

SN: Licenciatura en psicología, y conveniente tener un postgrado o máster especializado en psico-gerontología, conocer las enfermedades que se da en geriatría, por ejemplo, los aspectos neurológicos, comportamientos de la demencia; Trastornos habituales, como la depresión, ansiedad de los ancianos, perdida de su casa, familias, amigos e identidad, y necesitan una compañía en duelo.

WQ: ¿Cómo trabajas con los mayores inscritos en la Residencia y sus familiares?

SN: Al llegar un nuevo ingreso, se ha de conocer el anciano y su familia, detectar como está esta persona cognitivamente, emocionalmente, que necesita, y como están sus familias; establecer una valoración inicial (estado cognitivo, posibilidad de demencia...); informar a la familia y darle su soporte, hay grupo de ayuda mutua entre las familias;
mantener potencial y capacidad cognitiva para que sea más lento el proceso de perdida. A través de los talleres cognitivos colaborado con educación social (lenguaje, memoria, atención…) y el programa de estimulación sensorial con las personas que están más deterioradas, conexión individual por la caja que guarda los objetos que cuentan su vida, su familia, afición, en el caso que ya no puede expresarse por sí mismo.

**WQ:** ¿Cuáles son las características esenciales y especiales del patrón psicológico de la gente mayor?

**SN:** Traen el recuerdo y la rutina. Les cuesta poner las cosas nuevas, bien marcadas por generación cultural, ha de tener cuidado con el tema que toca. Es el grupo más sabio con mucha experiencia. El cerebro se vuelve lento pero sigue aprendiendo, buscando otro camino cuando una parte se muere. Tienen otro mapa en que tenemos que investigar para buscar la forma adecuada de conectar con ellos. Rechazan el ámbito que no se sienten pertenecientes, aunque sea bien decorado, y prefieren poner sus propios muebles y objetos personales, e incluso no apetece la comida nueva, sino sus platos tradicionales. Si se pone algún estímulo nuevo para romper la monotonía, ha de quedar la base de la familiaridad, alguna relación con su historia. En otra residencia de la misma empresa, se pone la unidad de convivencia, espacio recreado con los objetos (cocina, lavadero de piedra…) para simular la manera en que se solía hacer en el pasado.

**WQ:** ¿Qué aspectos psicológicos son más problemáticos a tener en cuenta para alcanzar el bien-estar de la gente mayor?

**SN:** Que el anciano siempre está en depresión y triste, negativo… es un mito viejísimo, sino cada persona tenía una vida completa, varias cargas sociales, y está adaptando.

**WQ:** ¿Cuáles son las soluciones más efectivas para aliviar o eliminar estos problemas psicológicos de la gente mayor?

**SN:** Así que trabaja según el modelo de atención centrada a persona que ayudarles a reír como lo más básico en lugar del modelo asistencial y sanitario. Están perdiendo la memoria, el lenguaje…pero el último que se pierde es la emoción, también es la primera parte que se forma una persona, vinculada con la persona incluido la que tiene la demencia.

**WQ:** ¿Estos conocimientos, los adquieres principalmente de lo que se enseñan en tu estudio anterior o tu propia experiencia en el trabajo práctico?
SN: Sensibilidad en la experiencia, la forma de trabajar es conocer al anciano para buscar más puntos de conectar, ha de explicar y orientarle lo que se le hace.

WQ: ¿Qué opinas sobre la función y la intervención del ambiente arquitectónico para la salud psicológica de la gente mayor?

SN: Zona vacía para que se pongan objetos estimulantes que cuenta su vida y conseguir unas actividades diarias (Jardín, taller...), Olores (Jabón, café, flores...), música (de ambiente según movimiento o relajante), luz natural y ajustable, habitación personal parecido a la de su casa.

WQ: ¿Algún comentario y/o sugerencia respecto al edificio, interior y exterior de la Residencia?

SN: Sobre comunicación de los residentes de una planta con otra, el modelo vertical resulta difícil reunir los residentes de diferentes plantas para hacer unas actividades comunes por desplazamiento. En cada planta, las habitaciones están en dos alas, se aisla más (privacidad) y se facilita conectar con la zona centro de comedor y ocio (camina menos), pero mientras, el comedor y espacio ocio se divide a los espacios definidos que no sea suficiente para hacer actividades de 30 personas juntas. Color rojo en la segunda planta es el color excitante que no favorece a la tranquilidad según el estudio de cromoterapia. Hay sala snoezelen en la que trabaja con el color pastel que generen la calma en lugar de estrés. La residencia que es exterior, luminoso, es genial para animar a los mayores. Se prefiere más la actividad interior que exterior porque les cuesta moverse, son frioleros, y responden a la rutina y al sentido de la propiedad, inflexible que se sienten menos seguros con los cambios. El jardín no se utiliza en invierno por el frío, y no se involucra en la rutina.

Sugiere el modelo horizontal; con espacios más marcados en cada función definida; separar totalmente la zona de descanso de la de actividades; el espacio dedicado a la demencia para caminar en un entorno seguro que tiene control de accesos; patio interior en el que pueden hacer taller de plantación; integrar los espacios exteriores a sus actividades diarias.

**Con el educador social, Fran Ros**

WQ: ¿Cuáles son las educaciones / formaciones profesionales necesarias para ejercer de educadores sociales especializados en Geriatría?
FR: Diplomado educación social por la universidad de Murcia, trabajar con distintas situaciones y distintas personas, y más formación y educación especializado en personas mayores por trabajar en las residencias. No es tener que tratar a los mayores especialmente, sino todas personas son diferentes, y necesita que se tratar individualmente. Ha de conocer a la persona, y evitar paternalismo, asistencialismo. Lo importante es saber que hacen y que es la persona.

WQ: ¿Cuál es el objetivo y el cargo de un educador social en la Residencia / el centro de día?

FR: Dinamización en ocupación y estar activo que la gente en la residencia necesita, incluido la actividad ocio relacionado con su afición, y la actividad social conectado con la realidad de la familia y el barrio.

WQ: ¿Cuántos tipos de actividades y/o estímulos podrías proponer? Y ¿Según qué criterios?

FR: Doble trabajo sensorial e individualizado. Los residentes en la primera planta tienen más autonomía que los de centro de día por tener la atención personal, estimulación, gimnasio, masaje, y cuidado sanitario al vivir en la residencia. Hasta el punto de sentirse como en casa.

WQ: ¿Cómo se tratará la gente mayor que tenga diferente nivel de la capacidad sensorial y cognitiva?

FR: Hay perfiles definidos. Las que sean válidas son más autónomas que pueden hacer el taller de costura, cortar, pintar, debate…para los asistidos, estos talleres no vale a su necesidad ni a su estado, sino poner estimulación sensorial, por ejemplo, el estímulo visual como la caja memoria que contiene objetos personales y conecta con su vida y recuerdo, la música terapia…a los semi-asistidos, se hacen unos talleres con mayor ayuda y atención.

WQ: ¿Cuáles son los estímulos más efectivos para la mayoría de la gente mayor?

FR: La música es potente, Arte y Animación

WQ: ¿Cuáles son los factores principales que influyen en su estado emocional?

FR: Factores internos como capacidad, personalidad, enfermedad, estado psicológico, y factores externos como atención que influyen los factores internos. Supervisión dos veces al día, temperatura, olor, postura, si hay gritos…
**WQ:** ¿Qué opinas sobre la función y la intervención del ambiente arquitectónico para regular mejor la emoción de la gente mayor hacia lo más positivo y agradable?

**FR:** Se necesita espacio polivalente y con la flexibilidad de dividir este espacio con cortinilla (biombo) según las necesidades. Es importante que tenga espacio en lo que pueden trabajar en forma de círculo para influir y dinamizar todos.

**WQ:** ¿Algún comentario y/o sugerencia respecto al edificio, interior y exterior de la Residencia?

**FR:** La terraza es grande, pero no se aprovechen la gente de arriba o de abajo por segmentación de planta.

**Con el fisioterapeuta, Josep Alcocer**

**WQ:** ¿Cuáles son las educaciones / formaciones profesionales necesarias para ejercer de fisioterapeutas especializados en Geriatría?

**JA:** Grado medio de fisioterapia, amplía conocimiento con curso posgrado en el ámbito geriátrico, por ejemplo medicina, y luego ejercer como un fisioterapeuta.

**WQ:** ¿Cuáles son las funciones de la fisioterapia?

**JA:** Mantenimiento de las funciones motoras, estimulación, recuperación sanitaria. En la residencia hay más recursos que un hogar normal, añaden al servicio que debería ser a cargo de la seguridad social.

**WQ:** ¿Quiénes de los mayores necesitarían y/o participarían en la fisioterapia?

**JA:** Todos, tales como los pacientes pasivos, como los activos. Hace valoración con PAI (Plan de atención individualizada) cada seis meses, y revisión según demanda. Cada residente tiene su plan personalizado. En la residencia, cada planta tiene diferente nivel de atención y distinta carga. La planta más válida es más demandante, la carga de la planta más dependiente es más física e individual.

**WQ:** ¿Qué se hace en la sección de fisioterapia en la Residencia / el centro de día?

**JA:** Depende de las necesidades de cada uno. Mantenimiento en gimnasio, normalmente 40 minutos por una sesión, trabajar en, por ejemplo, movimiento de brazos en las poleas, marcha y equilibrio en escalera y rampa; o sube a la planta a movilizar a la gente que no baja a gimnasio para que no se desorienten y se angustien. Casi todos tienen la artrosis que surge el dolor, pero lo peor es la demencia en lo que se queda rigidez, ha de trabajar...
para no darle dolor y que sea más confortable sus días. El trabajo de geriatría es más mantener que mejor para que se utilice la habilidad que le queda.

**WQ:** ¿Hay alguna relación entre el estado físico y cognitivo de la gente mayor según tu experiencia?

**JA:** Dentro la residencia normalmente quien está mejor cognitivamente está peor físicamente, también hay mal estado cognitivo con mejor estado físico, y el grupo que tienen mal ambos estados.

**WQ:** ¿Resulta algún impacto el estado emocional de la gente mayor por la fisioterapia? Y ¿Será positivo, negativo o neutral?

**JA:** Resulta un impacto positivo, alegría por la atención personal y cariño que le hace falta de sus familias. La figura del fisioterapeuta está muy bien valorada por los mayores. A unas personas, les cuesta más las actividades cognitivas aunque sean útil fundamentalmente, y no vean su función, sino lo que quieren en ese momento.

**WQ:** ¿Qué opinas sobre la función y la intervención del ambiente arquitectónico para sintetizar mejor con la fisioterapia, e incluso con todos movimientos físicos?

**JA:** Ha de ver la capacidad del gimnasio y espacio para hacer la actividad en la planta respecto al volumen de las personas.

**WQ:** ¿Algún comentario y/o sugerencia respecto al edificio, interior y exterior de la Residencia?

**JA:** El gimnasio es pequeño respecto a una residencia que hay 96 residentes y 30 mayores en el centro de día, y no puede aprovechar el espacio de al lado porque las paredes bloquea la visión. Es agradable que tienen los espacios exteriores. El Jardín les ayuda a moverse más en verano, pero hay mucha sombra hasta que su uso está limitado por el clima. La terraza recibe demasiado sol en verano, pero se usan mejor para el invierno.

Falta una sala multifuncional, o la posibilidad de unir unos espacios juntos según la necesidad, y falta espacio para guardar los trastos (silla de ruedas).

La segmentación en tres plantas les da identificación del estado, y psicológicamente, les cuesta a los mayores y sus familias reconocer esta señal que están peor cuando tiene que cambiar de planta y de habitación.
Appendix D List of other publications resulted from this research project


