Social Living Project for Chinese Elderly People without Family Support

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A Research Project submitted in partial fulfilment of the requirement for the degree of Master of Architecture (Professional) Unitec Institute of Technology, New Zealand 2018

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Abstract

Chinese is an elderly society. Traditionally Chinese people believe that filial piety is the main method for elderly care support. Chinese elderly people are usually supported by their children for elderly life. However, due to the one-child policy which has affected the generation born between 1980 and 2000, the structure of the families becomes so-called “4-2-1”, which means that in a family there are four old people with two young children and one grandchild. Thus, elderly people will lack family support and facing a challenge for their elderly care, which will be a severe social problem in the next decades of years.

Will these elderly people live a happy elderly life with little or no children support and less opportunities of companionship? How can an architectural designed project provide mental and physical health support for the elderly people and also keep them connected to local society? The purpose of this project is to focus on architectural design with social engagement to deal with these problems.

I believe that an architectural design with social engagement is a good solution to the above-mentioned problems, as it is an effective way to improve mental and physical health of elderly people. I also believe that mutual relationship with friends and neighbours will make elderly people happy, and thus is good for their brain and body health. Based on the above analysis, an architectural design with social engagement for elderly people has been created, which is a community-like residential building incorporating childcare facility, pool with public bath, canteen, roof garden and community centre. This project explores spatial arrangement to create connections between these programmes in order to enhance social engagement between elderly residents and community.
Acknowledgment

First, I would like to thank my supervisor Kerry Francis for his full support and supervision. His wisdom and enthusiasm not only provided me with knowledge and ideas, but also encouraged me to face the challenges that I found hard to deal with. Without his support and encouragement, this project would not have been completed. I also would like to thank Xia Lin and my family who are always behind me in all my endeavors, and many of my friends who have shared information and discussed ideas with me. I am also very thankful for language optimization provided by Benjamin Liao.
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It is not necessary to categorize elderly people by age. Removing restrictive social constructs can be a period of personal growth, creativity and productivity.¹

1.0 Introduction

1.1 Background

China is becoming into an elderly society. Population of China reached 1.33 billion by 2010, according to bureau statistics.\(^2\) There were 0.22 billion elderly people over 60 years old, 17.3% of total population. Due to the single child policy introduced in 1980s, every four elderly people need to be supported by 2 young generation (see figure 1).

Family is the core unit of society in Chinese community with filial piety the traditional concept for elder care support. However, with lack of sufficient young generation to support the elderly, the majority of people over 60 will suffer the care problem. Nowadays elderly people live alone or with their spouse, but not always with their children. Under the influence of single child policy, most elderly people will face a situation where they have to take care of themselves or go to elderly housing facility.

1.2 Project Outline

To design a project that provides mental and physical health support for the selected demographic group (those 60-65 and just about to enter retirement) that keeps them connected to society. Also incorporate filial piety support between young generation and elderly parents.

The objectives of this project are:
- To generate programmes and sustain social connection through the design of architectural spaces, and thus improve residents physical and mental health;
- To respond to the urban context and invite neighbourhood to the space, making the elderly living project part of the community;
- To adapt to vernacular building character to respond to context, and make residents feel at home;
- To create architectural space to enhance social activity with filial piety support, and provide amenity for elderly residents spend time with their dependents.

1.3 Research Questions

1. How can an architectural designed project for the elderly in China provide mental and physical health support but also keep them connected to society?
2. With less opportunities of companionship with their children, how can the filial piety tradition to provide a fulfilling life for the elderly in these modern times?

1.4 Methodology

This design starts from gaining experience from current situation of elderly care facility in Dalian, China, my hometown.

1.4.1 Theoretical

For writing this document I have studied literature to define the scope of project to achieve the design objectives. Through literature review and precedent studies of elderly care, I established programmes that will help to maintain social connection between residents and neighbourhood.

I also studied some journal and publications to understand the situation of a good elderly life with social support.

1.4.2 Site Analysis

To have a good understanding of the context of my selected site, I conducted a site visit and analysed the living style and background of the context.

1.4.3 Design Development

I started my design from the study of site context. With a knowledge of surrounding context, I worked on series of analytical drawing to create linkage between programmes and the site. Paper and card models were used to explore configurative layout. Diagrams drawn to help understand logical connections between element and conceptual perspective sketches drawn to understand relationships. I used computer models to review the staged design outcome.

Through critical review I developed the design from concept to developed design outcome.

Pencil sketches and computer model were used to help establish the design concept,
following design criteria learned through precedents study.

![Flow chart from research question to design outcome](image)

Figure 2: Flow chart from research question to design outcome
2.0 State of Knowledge

I searched literature in relation to my objectives for the design in the following aspects:
• Current situation in the world
• Current situation in China

And some detailed concern in relation to my project:
• Elderly people mental and physical needs
• The importance of social and relation with neighborhood for elderly living,
• Geographical character to elderly support

2.1 World Elderly Care Situation

To design an elderly care unit is not a new topic because many developed countries have recognized elder care issues for some time, and established theory and good practice. Below is a table from a journal by a Chinese scholar, who summarized the time line and points of elderly care legislation in four developed countries (Table 1).
<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Name of Legislation</th>
<th>Core points</th>
</tr>
</thead>
<tbody>
<tr>
<td>America</td>
<td>1935</td>
<td>Social security act</td>
<td>To provide general welfare</td>
</tr>
<tr>
<td></td>
<td>1965</td>
<td>Social security act of 1965</td>
<td>Public funded health care, low income family support</td>
</tr>
<tr>
<td></td>
<td>1974</td>
<td>Social welfare programme</td>
<td>Care service for elderly</td>
</tr>
<tr>
<td></td>
<td>1987</td>
<td>DBRA law</td>
<td>Set some standard of care and establishes certain rights for elderly person</td>
</tr>
<tr>
<td></td>
<td>1989</td>
<td>Older Americans law</td>
<td>Set strict standard and regulation for elderly care facility</td>
</tr>
<tr>
<td>UK</td>
<td>1601</td>
<td>The Poor Relief Act</td>
<td>Pioneer of council establish social welfare system</td>
</tr>
<tr>
<td></td>
<td>1948</td>
<td>National Assistance Act</td>
<td>Set some rules for elderly care housing</td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>Care Standards Act</td>
<td>Established a new system of national minimum standards for all residential and nursing homes and domiciliary services</td>
</tr>
<tr>
<td>Sweden</td>
<td>1913</td>
<td>National Pension Act</td>
<td>Aimed to elderly people aged over 67, Sweden becomes the first country set rules for national pension.</td>
</tr>
<tr>
<td></td>
<td>1964</td>
<td>Elderly people specialty regulation</td>
<td>Earlies elderly housing regulation in northern Europe</td>
</tr>
<tr>
<td></td>
<td>1977</td>
<td>Planning and building act</td>
<td>Amendment to accessible design regulations</td>
</tr>
<tr>
<td></td>
<td>1982</td>
<td>Social service act</td>
<td>Receiving care for independent living is the right of citizens</td>
</tr>
<tr>
<td></td>
<td>1983</td>
<td>Health and Medical Services Act</td>
<td>Basic regulation of health care</td>
</tr>
<tr>
<td>Japan</td>
<td>1963</td>
<td>Elderly care law</td>
<td>Take care of low income elderly, and provide necessary care service</td>
</tr>
<tr>
<td></td>
<td>1965</td>
<td>Standards of design regulation for elderly housing</td>
<td>Set regulations on location and facility selection for elderly housing.</td>
</tr>
<tr>
<td></td>
<td>1969</td>
<td>National pension act</td>
<td>Provide national pension welfare to all elderly people</td>
</tr>
<tr>
<td></td>
<td>1973</td>
<td>Promote “10 years free medical service”</td>
<td>Provide free medical service to elderly, but cause huge financial loss.</td>
</tr>
<tr>
<td></td>
<td>1982</td>
<td>Elderly medical care act</td>
<td>Influenced by “aging in place” concept from northern Europe, start to develop “Japan welfare society”, a welfare consisted of family unit, government and private company.</td>
</tr>
<tr>
<td></td>
<td>1994</td>
<td>Promote a law for disabled elderly people to use special building accessibly.</td>
<td>Regulate accessible design in public buildings.</td>
</tr>
<tr>
<td></td>
<td>1995</td>
<td>Public housing guidance for elderly</td>
<td>Compulsory law, promote universal design</td>
</tr>
<tr>
<td></td>
<td>1997</td>
<td>Japan protection insurance</td>
<td>Assure source of fees, and provide high quality care service to home stay elders.</td>
</tr>
</tbody>
</table>

Table 1: Timeline and points of elderly care legislation in some developed countries

This table shows that these developed countries have very good legislation to support elderly life. Most of these countries have a very long history of developing elderly care system. However, China is just at its beginning.
2.2 Current Situation in China

In Chinese society, a family is the basic unit. Filial piety is a important discipline for family and society.

Generally, Chinese elderly people have the highest authority in a family unit, and they are the people respected by daughters and sons. Before the single child policy took effect, nobody had concern about elderly care, it is a Chinese tradition that the adult children support the elderly people in the family.

2.2.1 Filial Piety

Filial piety, part of Confucian philosophy, requires people to respect and be good to their parents, elders, and ancestors. Hierarchy, obligation and obedience are basic principles that the value of filial piety is based on. Filial piety is the foundation of hierarchical structure of a Chinese family and society.

The family is socially and legally expected to take care of their older relatives. Without family support, Chinese elder people who live alone may be more likely to feel loneliness in the Chinese cultural context. Filial piety can be expressed in spiritual level that people who behave well and their parents will be proud of them, or in material level, that people who take care of elderly parents in life.

Filial piety is a moral notion that is not easily changed with its long line cultural and change of society structure. At traditional events, adult children will usually bring their own family members to celebrate the festival with their elderly parents. Younger generations who do not live in the city same as their parents' will travel by train or plane to get together with their elderly parents. As long as elderly parents are proud of their young generation and live a happy elderly life, it is a good expression of filial piety virtue to the family and society.

However, today, due to family converting to 4-2-1 structure (see Fig. 1), elderly people are less like to live with their young generation. The situation where many elderly people lack of family support will increase. By 2040, it is assumed over 50 percent elderly people don’t live with their dependents and will need to take care of their elderly life themselves.

Traditionally, most grandchildren were raised up by grand parents until they at pre-school age, some grandchildren even live with their grandparents until they become adult.

In this project, filial piety is supported through incorporation of childcare and temporary accommodation for visiting young generations.

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2.2.2 Elderly Living Compared Between New Zealand and China

Cultural background is a significant reason that distinguishes the elderly living style from New Zealand to China. Filial piety creates bond between elderly parents and their dependents, so Chinese people tend to expect more elderly care from dependents than New Zealanders do.

In New Zealand, some elderly care facilities, often called retirement village, accept elderly people over 70 years old. Residents can make new friends in the village and keep a social relationship with other residents. “It also seems that living in these places (retirement village)... encouraging people to remain relatively independent and actively engaged in a lifestyle of their choice.” The residents find comfort knowing that in a retirement village they can depend on others who share similar values as well as be depended on.

Western countries legally require parents to raise up children, but do not legally require children to take care of elder parents when they are old. However, in China, children are legally required to take care of elderly parents. Also with the moral requirement of filial piety, children feel it an obligation to take care of elderly parents as well.

2.2.3 Elderly Support Situation in Dalian, China

Elderly care facility is in its development stage to meet high elderly care quantity demand and be suitable for the Chinese cultural background. There are some built residential projects for elderly care development in areas far from urban area, with limited resource to health care and away from social life. There are also a lot of small scale community care facility like day care or home running elderly care facilities. Some of these projects are renovated from existing residential buildings or commercial offices.

In Dalian area, the total registered population at the end of year 2014 was 5.943 million. There are 267 elderly care facilities (including nursing house, day care or elderly housing facility) 22K beds capacity, but the number can only provide 2.2% elderly people in Dalian area.

Lots of current elderly care facilities are most hospital-like facilities, or privately run elderly care nursing home, or day cares. These projects provide limited service to elderly people. Most elderly people are not willing to go to elderly care facility, because they hold a belief that elderly care should be provided by family. There are some elderly people who go to care facilities when they cannot live independently. Usually these people’s children live in another city or overseas so family support is not easily provided.

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10 Xiaona Ban, Dongyang Li, “Demand on Elderly Care, Affordability, and Industry Development- Research Based on Dalian Area”, Dalian Research, no.4, (2013):49-52
2.3 Literature Review Response to Design Objectives

2.3.1 Physical Support

To know the demand of physical support for elderly people involves a complex human behaviors study. Powell Lawton\textsuperscript{11} established a procedure to measure extent of physical support a person needs by assessing the person in completing varieties of tasks. He set levels of behavior indicating the functioning of the behaviour(figure 1). This procedure is usually used by elderly care institutions to determine levels of physical support for elderly people. For my project, as independently living is a pre-requisite for the residents to enjoy elderly life, elderly people's behaviour is supported at the social level.

The Ecology of aging perspective posits old age as a critical phase in the life course that is profoundly influenced by the physical environment.\textsuperscript{12}

Figure 3: Human Behavior hierarchy diagram

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Implication:
The architectural programme should establish connection between environment and
\textsuperscript{12} Hans-Werner Wahl, PhD, Susanne Iwarsson, PhD, and Frank Oswald, PhD, “Aging Well and The Environment: Towards An Intergrative Model and Research Agenda for The Future,” The Gerontologist, vol.52 no.3 (2012):307
elderly people that facilitate residents to engage in physical activity.

2.3.2 Mental Support

In Chinese society, the current issue is lack of family support for most elderly people. As a result, elderly people tend to feel lonely. A scholar argued the enemy to mental happiness for elderly people is loneliness and lack of care from other people. Other researchers have established several social and demographic risk factors for depression in the elderly. Single status, lack of social support, ..., are risk factors or indicators of depression in the elderly. Elderly people make numerous social and economic contributions to their families, communities and society such as assisting friends and neighbours, mentoring peers and younger people. Enabling the participation of older people in society may help to reduce depression feeling and improve mental health condition.

Research shows “the satisfaction of elderly living is affected by the mental health a lot.”

People who are happy, are usually mentally healthy. A research by Harvard university, Robert Waldinger carried out over seventy years conclude: 1) Social connections are good for people. People who are socially connected to family, to friend, to community are happier than those who are not; 2) quality of close relationship accout for the happiness; 3) good relationships don’t just protect human bodies, they protect brains as well.”

Based on the conclusion of this research, it is a good attempt to create a space that help to establish relationships between residents and neighbours. A space with social engagement purpose will be likely to improve elderly people's mental health. In this project, mental support is explored through the social engagement between residents and wider community. It is encouraged for elderly people to enjoy community life and establish good relationship between neighbours.

Beside some housing projects designed specifically for elderly, most multi-generation housing projects aims to provide a social environment for elderly residents as well. These projects tend to encourage residents to take part into the society. And these projects tend to be more advantageous than traditional care facilities in terms of social engagement.  

Architectural space that facilitate elderly people to take part in the social activity may be beneficial for elderly people mental health. In terms of the essence of architecture, the space itself acts to generate a social activity, the inherent character of architecture is a power to gather people.  

2.3.3 Living Independently

Autonomy has been repeatedly identified by older adults as a core component of their well-being and has a powerful influence on their dignity, integrity, freedom and independence.  

Autonomy is shaped by many factors, the environments they inhabit; the personal resources (such as relationships with children and other family members, friends, neighbours and broader social networks).  

Some long-live elderly people over a hundred years encourage people to be as independent as possible and maintain good relationship with other people.  

Environments that are age-friendly help to foster Healthy Ageing, ... by enabling greater functional ability so that people with varying levels of capacity can do the things they value.  

2.3.4 Casbah Concept

The casbah concept was important to my design exploration. I know about the casbah concept as a result of studying Ian Athfield's community house in Khandallah, Wellington.

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19 Christian Schittich, Housing for People of All Ages, 10.  
20 World Health Organization, "Global strategy and action plan on ageing and health", 11.  
21 World Health Organization, "Global strategy and action plan on ageing and health", 12.  
The Casbah concept can be described as a study of configurative pattern in vernacular settlement. In late 1950s, a group of Dutch architects formulated a vision of collective forms as the highest imperative of the architectural act, and as a way of defining a spatial medium for social content in architecture.\textsuperscript{24} Aldo van Eyck was the intellectual catalyst of the group. His Essay “Steps towards a configurative discipline” had a great influence. Knowledge of configurative patterns and complex three dimensional orders was to become essential domain knowledge as well as the source material of the design process. In addition to the visual intricacy of the formal compositions, the tight integration of built and open space characterizing these settlements was considered a potential source of social enhancement.\textsuperscript{25}

The subsequent influence of casbah concept to architectural design is profound. There are many architectural masterpieces that shows the influence of Casbah concept including: Married student housing(1960) in Yale University, USA, by Paul Rudolph; the Centraal Beheer Office(1968-72) in Apeldoorn, Netherlands by Herman Hertzberger; and Habitat 67 (1967) in Montreal, Canada by Moshe Safdie. All these precedents were studied for spatial configuration and social engagement through the organization of spaces.

### 2.3.5 Connection with Context

Engaging elderly people without family support will require them to be part of the society composition,

“Elderly care is a comprehensive, systematic project that encompasses, ... humanistic concerns and living. The living environment of the elderly design is not simply issues of space design. Rather it is a complex social project that involves a wide range of issue from the design of miniscule spatial detail to the planning of entire communities or urban areas.”\textsuperscript{26} For this project, establish in connection between project and existing context is an important aim.

Research shows that most elderly people prefer to live in the same community with their dependents.\textsuperscript{27} Establishing an intimate connection with existing community context can consolidate the filial piety support from young generation to elderly people.

Therefore, community and grassroots social organizations should pay special attention to the elderly people’s cultural and spiritual needs, encourage them to take part in social activities, strengthening interpersonal communication and raise life interests. In addition, we should also take active measures for empty-nest elderly (Elderly without adult children support) to extricate them from the emotional loss in time.\textsuperscript{28}

\textsuperscript{25} Oxman, Shadar and Belferman, “Casbah: a brief history of a design concept,” 324.
\textsuperscript{26} Wenjun Zhi, “Editorial: Study of living conditions and care facilities of the elderly in china,” Time + Architecture no.6 (2012): 1.
\textsuperscript{27} Ban and Li, “Demand on elderly care facility, affordability and development of elderly housing industry,” 49-52.
2.3.6 Traditional Pursuit of Rural Life After Retirement

In ancient China, many poetries described a life in pursuits of rural living after retirement from work. As of today, this is still a pursuit of lifestyle that many elderly people wish to have. A Chinese painting drawn an imagined scene from poetry. The picture described a pursuit of country life after retirement. (Figure 6)

**Back to Country Life**

**Part I**

By Yuanming Tao

I've loathed the madding crowd since I was a boy
While hills and mountains have filled me with joy.
By mistake I sought mundane careers
And got entrapped in them for thirty years.

Birds in the cage would long for wooded hills;
Fish in the pond would yearn for flowing rills.
So I reclaim the land in southern fields
To suit my bent for reaping farmland yields.

My farm contains a dozen mu of ground;
My cottage has eight or nine rooms around.
The elm and willow screen the backside eaves
While peach and plum trees shade my yard with leaves.

The distant village dimly looms somewhere.
With smoke from chimneys drifting in the air.
In silent country lanes a stray dog barks;
Amid the mulberry trees cocks crow with larks.

My house escapes from worldly toil or gloom
While ease and quiet permeates my private room.
When I escape from bitter strife with men,
I live a free and easy life again.”

It is interesting to find out that in urban areas, some residents who live at the lower level of a townhouse building will occupy a piece of landscape area for private farming use. (Figure 7)

Rural life in New Zealand is similar to the lifestyle traditional Chinese in pursuit of after retirement. The private house development in Khandallah by Ian Athfield create a vision for community living. Ian Athfield argued in an interview that “The most important things are..., and some personal privacy... Also, the ability to meet other people by accident rather than by design. You provide big and small spaces, and sometimes the big spaces will be used by people, and sometimes the small. Spaces left over are always as important as the spaces you do build.”

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In my understanding, the spaces that provide ability to meet people by accident are those small space Ian mentioned in that interview. Such as an irregular shaped roof terrace, or a setback hidden behind a wall connected to a long wide staircase.

![Figure 7: Public landscape area was re-organized for farming land, a residential community in Dalian, China.](image)

![Figure 8: Ian Athfield house in Khandallah, Wellington](image)

### 2.3.7 Programmes in Respect to Habitat of Northern China

Elderly housing development in China needs to have distinctive vernacular character. Elderly housing in different part of China has its unique typology. Geographical difference contributes to different living habits. The factors include climate, food, the way people make a living differentiates from places to places. Also political difference. All these should make elderly care design different in different places.

In northern part of China, it is very cold in winter, public bath are crowded with people of all ages. Elderly people bring grand children to public bath, or a family go there together. It is cultural and climate difference that make this habitat particular to people from northern part of China.

### 2.4 Conclusion from Literature Review

1. Programmes to encourage elderly people to live independently can improve their mental health.
2. Connection to the physical environment can be helpful to improve physical health for elderly people living independently
3. Social connection to neighbour and community can be beneficial to mental health. Connect the project into context will be helpful to establish social connection between residents and community.
4. Casbah concept can be instructive in exploring spatial elements to enhance social engagement
5. Architectural programmes including public bath and spaces that enable retired elderly do some garden work can be helpful for physical and mental health.

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3.0 Precedents Study

3.1 Centraal Beheer Office Building
By Herman Hertzberger, Netherlands 1961

This project came to my attention when I studied the casbah concept. Based on that concept, the space designed in this projects create a connection between multi levels, the space itself is a social medium, where people are engaged accidentally.

The courtyard in this project plays the key role as the medium of connection. The configurative layout of modular box create a positive space for work area and negative space as courtyard. People at work area can establish visual connection with other people sitting around courtyard, or people from different levels as well.

Figure 9 showed that the perception of space is enhanced through internal courtyard. People at the bottom of courtyard feel the elevated space as it extends vertically, while people sitting around the courtyard can perceive space in three dimensions. Either at ground level or around the courtyard, social connection between people is greatly enhanced through the configurative arrangement of spatial elements.

Figure 9: View to th central courtyard, Central Baheer Office, Herman Hertzberger, 1961
Herman Hertzberger stated in an interview, “In the modern days, you cannot presume, that buildings will remain the way they’ve been made. Everything changes... How to make buildings that don’t have a definite form but can change over time... Architecture should also fit human need in a changing background. The office block unit is divided by circulation into 4 similar space. Each of them can be reorganized into new layout and without changing the structure and not affect circulation. it could be the “right size” for a work space.

Implication:
Through configurative arrangement of spatial elements and the incorporation of the courtyard will enhance social engagement between people. Spaces will need to meet different requirements, so design space without a definite form but in a modular size, so user can decide the use of the space when the needs change.
Figure 11: Analytical drawing assess the directional form and social connection.
LITERATURE REVIEW
3.2 Married Student Housing
Paul Rudolph, Yale University, USA 1960

Here is another project influenced by casbah concept by Paul Rudolph. The objective was to enable the revival of the art of community living through the re-creation, without formal imitation, of certain spatial attributes of the village.33

The village-like configuration with courtyard creates many small spaces where people can meet each other by accident, and the courtyard surrounded by pathway acts as a social point. (Figure 12)

Married Student housing shows us a low, densely configurative layout of village living. This project consists of single and double room units, with loose configurative layout of residential units on a slope site (figure 13 and 14). Each unit has a roof terrace or ground courtyard. Some horizontal circulation passes through roof terrace which encourage social connection between residents. In the middle of the site, there is a long pathway with stairs across the site connecting north and south. There are also courtyards arranged along the pathway. Residents can socialise around the courtyard and enjoy the shade provided by tree.

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33 Oxman, Shadar and Belferman, “Casbah: a brief history of a design concept,” 327.
Figure 13: Function and circulation analysis of Marries student housing.

Figure 14: Street elevation (west), Married student housing, by Paul Rudolph, in USA 1960
3.3 Habitat 67
Moshe Safdie, Montreal, Canada, 1960s

Safdie’s proposal with stacked boxes, breaks the traditional form of orthogonal high rises, locating each box a step back from its immediate neighbor. This ingenious method provided each apartment with a roof garden, a constant flow of fresh air and a maximum of natural lights...  

This visual perception of the modular boxes are reminiscent of Paul Rudolph’s Married students housing. It is evident that these projects are all influenced by Casbah concept. Configurative spatial elements create strong visual attraction. As a result of the carefully stacked box, the corridor connect each unit and was designed externally to follow the shape of the stacked box. The corridor itself I think is a great place for social engagement. (Figure 16) stacked units were connected by a horizontal exposed sky walk path and three vertical stairs, two in the end and one in the middle.

Through the study of these two projects, I have concluded that a configurative spatial arrangement for residential unit can facilitate design criteria such as sun and wind and privacy/public design first, and then connect each space with path to finish the circulation. It is a layout derived from arrangement of primitive villages.

Figure 15: Stacked box with roof garden.

Figure 16: Analytical drawing
Figure 17: Destruct complex form into modular unit
3.4 Elderly House

By Peter Zumthor, Chur, Switzerland 1993

This project was suggested at the first critique. From then I started to pay attention to Peter Zumthor’s thoughts on architecture. This project is proposed for elderly people who can live independently. The neighbourhood is age-friendly, with existing nursing home and hospital nearby.

Peter Zumthor stated he wanted the building to seem relaxed and informal, like a big ‘rock’ in the open expanses of a mountain landscape, expertly worked with precise, careful, perhaps even old-fashioned craftsmanship. Materials for facade and joinery for this project were chosen to share similar architectural values as existing heritage building in this city. (Figure 18) By using materials similar to the existing urban context, he recreated the touch and texture of the building materials that residents are familiar with. It helps to make the project feel like home.

Each unit is connected by a corridor through semi private lounge. The semi private lounge is visually connected to kitchen through a big window. The public space consists of semi private lounge and corridor, people are socially engaged naturally. (Figure 19)

Peter Zumthor proposed a lounge outside the residents unit, where residents can furnish the space with their own furniture and taste. The space is located between private unit and public corridor, and is regarded as a successful proposal that enhance social engagement between residents in the environment.
3.5 Honan Nichome Welfare Facility
By Rui Sekkeishitsu, Japan 2006

This project is a nursing care facility in Japan. It was selected because of its site layout in response to urban context. The openness of the site layout makes this project part of the community. Neighbours can come into the community from the path linked the context. This community consists of nursing, independents living community centre programmes in separate buildings. the proposal is different from many other projects that put everything in single building.

The site layout helps to maintain a relationship between residents and neighbourhood.

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Figure 21: Site relation to context

Figure 22: Internal street view (from open space in front of nursing house to independent house), Honan Nichome welfare facility, by Rui Sekkeishitsu, Japan 2006.
3.6 Housing for Elderly in Domat/Ems
by Dietrich Schwarz, Switzerland, 2004

The arrangement of straight stair in single direction encourages the flow of circulation. The stair creates a lot interactive social space directly adjacent to it.
3.7 Housing for All Ages

By Kohlhoff & Kohlhoff, Stuttgart, Germany, 1999-2001

This project located in the west part of Stuttgart. It is a high density urban area, and the project was proposed to encourage communication between people. This project consists of canteen, gym and consulting room as a regional community center, also it provides a childcare service with a capacity to accommodate 120 children and housing for the elderly. The multiple programmes help to increase chances to connect peoples in the neighbourhood.

The wide transparent north facade facing the main road, enhances the function of this project as a community centre for wider context. (Figure 26)
A social and roof terrace area in the upper floor is provided for elderly residents living in upper levels.

The childcare area has access to ground floor and have connection with some nursing room facility. But the circulation for childcare is independent from other programmes.

Figure 27: Analytical drawing of function and circulation
The residential units and child care area are separated by a roof terrace. The space between child care and residential units act as a buffer zone, with a visual connection but is not physically connected. The raking ceiling with various height spaces improves perception of space in an enclose area.

Figure 28: Analytical section

Figure 29: Analytical drawing
3.8 REHAB - Where Courtyard Improve Interior Quality

Herzog & de Meron, 2007

The REHAB, a nursing and care facility, designed by Herzog de Meuron in Basel, Switzerland. The courtyard is an important element for my design.

The Courtyard integrates with circulation to improve interior light environment and increase the perception of space. The improved physical environment reduces the feeling of being in a hospital. The size of this structure is about 60x90m, which is about 4 times larger than my selected site.

Entrance at ground level is open courtyard. A sense walk path is defined by the boundary over the head formed by upper cantilever floor. The boundary between inside and outside is visually permeable, with transparent glazing as the weather barrier to separate the internal from external space. This architectural treatment of openness make the entrance part of the context and vise versa, encouraging social connection with context.

Figure 30: View out from entrance, REHAB, Herzog & de Meron, 2007

Courtyard at entrance is large, the scale of this space is similar to that of a plaza, which creates a sense of openness and functionally acts as an extension of the context.

Figure 31: View to entrance, REHAB, Herzog & de Meron, 2007
The internal courtyard will improve quality of interior environment such as lighting and sense of space, but the courtyard will need to be a suitable size and location for the space it tried to improve.

**Therapy Pool**

The REHAB project involves various kind of recovery programme that help patients to get back to normal life as much as possible. The therapy pool is a good exercise facility for elderly compared to gym. Floating in the water helps to relieve pressure on joints, and improve heart and lung function. The programme will be helpful to improve physical health of elderly people.
Figure 36: Courtyard circulation diagram

Figure 37: Space perception diagram
3.9 Day Care in Kyoto

By Toshiaka Kawai, Kyoto Japan, 2002

Toshiaka, designed the daycare with courtyard as many architects do, but in this project, he made the courtyard semi enclosed, with one site opening to the urban area to let more low angle sun access to the courtyard and reduce a feeling of oppression from enclosure.

The entry connects to the urban area with a negative form, which create a feeling of welcome. The material and colour showed is in contrast to its neighbourhood, make it outstanding from surroundings. (Figure 39)
3.10 Home for The Elderly and Children Nursery
by Kada Wittfeld Architektur, Austria, 2002

This project creates connection between elderly people and children. The Buildings for elderly care and children care are different in form and material which creates contrast and identity between two programmes. The architectural variety will make this project be attractive in the context.

Childcare and Housing are located at separate buildings connected by external footpath. Due to different requirement, these two programme are physically separated.

Figure 40: Analytical drawing,
Figure 41: Distinctive form of elderly care and child care.
Figure 42: View to childcare nursing,
Figure 43: View to elderly care nursing, architect: Kada Wittfeld Architektur,
3.11 Burbreite Home for The Elderly
by Kauffmann Theilig & Partner (KTP), Germany, 2000

The outstanding tower is new extension to the existing four story elderly care housing. It connects all stories providing social space for residents. The tower is single plan duplicated, but the resulting mass makes it a new architectural feature with visual dominant character. The contrast between concrete shear wall, transparent glazing, and cantilevered deck all add details to the mass which make this tower a landmark to this project.

Figure 44: New social tower, extension for existing building, Burbreite home for the elderly, by KTP

Figure 45: Analytical floor plan of social tower

- Residential
- Social
- Circulation
3.12 Concluding Architectural Implication

Through studying these precedents, several architectural implication in response to design objectives are concluded:

1. Circulation
Integrate small social space into circulation will increase chances for social engagement

Figure 46: Analytical drawing showing circulation design implication.

2. Space private/public character
Clearly defined privacy-public hierarchy in spaces will add level to space experience

Figure 47: Analytical drawing showing public/privacy design implication.

3. Visual perception increase rich layer to the space, also help to establish connection between people

Figure 48: Analytical drawing showing visual perception design implication.

4. Courtyard and green space improve internal space physical environment

Figure 49: Analytical drawing showing visual perception design implication.
5. Natural light improves space experience and improves living quality.

![Natural light drawing](image)

6. Varied scale enriches space experience

![Varied scale drawing](image)

7. Connect to urban context to improve residents experience as if living in the community that they are familiar with. Create intimate connection between project and community

![Connection to context drawing](image)

8. Distinctive building form establishes identification in context, and can be enjoyed by residents.

![Distinctive form drawing](image)

9. Materiality, select material resemble those used in the surrounding context to establish a familiar feeling.

![Materiality drawing](image)
4.0 Research and Design

4.1 Self Experience of Some Elderly Support Projects in Dalian China

4.1.1 Qilian Shan Elderly Care Facility

This project is located in Dalian west suburban, Lu Shun. It is a boarding nursing care facility, with 250 independent living units and 80 nursing units. It is away from urban area. Courtyard layout indicates an inward living idea, but residents are not intensely connected. This project looks like a hospital. There is a reception at main entry. Wing buildings are connected by sky bridge with natural light access and courtyard view.

Advantages

- Spacious communal living courtyard,
- Outdoor living area implication
- Sky bridge enjoyed by residents as a social space.

Disadvantages

- It is traditional hospital-like, many rooms connected by long corridor without natural light.
- Designated room such as playroom are mostly vacant during the visiting time (2pm afternoon)
- Outdoor living area is not well designed in terms of its connection to residential area for elderly residents. The space has good sun and ventilation but not used by people.
Some elderly residents enjoy sun bathing in winter sun.

Figure 56: Courtyard in the afternoon

Outdoor living space with good sun but no people here, because it is far from the circulation path.

Figure 57: Outdoor living space not in use
Figure 58: Elderly residents get together at the corridor enjoying natural light.

Figure 59: View from courtyard to a corridor linking buildings.
4.1.2 Yikang Nursing Home

This project located in Jingshan residence, Zhongshan District, Dalian, which is two blocks away from my selected site.

This is a renovated project for elderly nursing care in the community. It is a privately run nursing home in cooperation with Japanese elderly care institute, for elderly people with ability to live independently.

**Advantage**

Public area had considered safe living environment for elderly in terms of falling, with handrails and wrapping with soft material along the corridor and stairs. Interior finishes with timber reduce the institutional feeling.

**Disadvantage**

Bad ventilation, cause a bad smell. Residents did not seem happy. People get together but were not socially engaged.

Covered Main entrance to the facility with fence enclosing the entry. It feels dark inside, and only by reading the name plate can you guess it is a nursing home.

Figure 60: Entry
Barrier wrap with soft touch material, but the overall feeling does not constitute a home like feeling. At the end of the corridor the natural light caused glare problem for residents.

Elderly residents get together at lounge. There is good natural light to the interior. But feeling in the space is very weird, people simply sitting around table doing nothing. Nobody talks.
### 4.1.3 Experience Feedback

For the Qilian Shan elderly facility, I can feel its purpose to design a sociable environment for residents. The courtyard like entry surrounded by residential blocks is a gather space enjoyed by many residents to come out and bath in the sun and talk about life. The corridor connect nursing units is very dark, because it is a traditional enclosed corridor. Even I can feel light glare from end of corridor and some times hard to see the floor clearly. The courtyard-like layout is good in terms of social activity and visual perception however the layout of the facility does not actually contribute to social engagement of residents, and the play room was left unused during the time of visit.

For the Yikang nursing home, I went to the site about half year later than I visited previous facility. It was a hot summer. The temperature is up to 35°C continuous for almost a week. Those elderly people were gathered in a large room with many fan working to feel cool. But the cross ventilation inside the building was poor, there is odor in the corridor. I feel hot inside the building.

In my project,
- I will explore spatial elements that will enhance social activity, to make space perceivable and usable.
- Also improve ventilation performance for health concern.
4.2 Site Selection

In planning and construction view, widely designed external facility, roof garden and public space cost money. So the site selection and design should make residents use them and enjoy them.\textsuperscript{36} According to research, 64\% elderly residents go out by foot. Therefore, the ideal location for an elderly care facility is within 500m accessible to shopping, health care, entertainment facilities, and social community.\textsuperscript{37} Elderly people will not be able to go far from home as they ages, the mobility restriction will be a concern to select the location of site. Having access to above programmes will attribute to quality of living.

\textsuperscript{36} Christian Schittich, "Housing for People of All Ages," 18.
\textsuperscript{37} Christian Schittich, "Housing for People of All Ages," 17.
4.2.1 Site

The selected site for my design project is located in Dalian China, my hometown. I was brought to Dalian from another city in Liaoning Province when I was 5 years old. I lived in Dalian for almost 20 years until I went to Shenyang for university study and later came to New Zealand. Now I live in New Zealand for almost 6 years, but my families are still living there. I am thinking to design this project for my family and for those families what are similar to mine.

The selected site is located at a residential community at the fringe of urban area. This community was developed in 1995, which was developed to provide affordable housing. The existing residential buildings are mostly 7-stories town house, only two buildings are high rise apartments.

The community is a well developed, with shops, school, hospital, morning market and bus terminal station. Most young generation left this community and retained the house for their elderly parents. This area is surround by mountains, with good quality natural environment.

I select the corner site, because it has “landmark” potential to demonstrate the project to the neighbourhood, and it is close to existing community amenity also within 1km to existing hospital. The neighbourhood is good for elderly care in the long run. The corner site has two boundaries connected to the main road. Other two boundaries connect to existing residential building and a private foot path shared with other residential buildings.

Figure 64: Context analysis
Figure 65: Site context analysis
Figure 66: Street view from east of site
4.2.2 Climate

Dalian has a monsoon-influenced humid continental climate, characterized by warm wet summers due to the East Asian monsoon, and cold, windy, dry winters that reflect the influence of the vast Siberian anticyclone\(^\text{38}\). The peak high temperature in summer is around 10-15 days over 30°C, while extreme low temperature in winter reach -20°C. Central heating is provided in most urban areas in winter, starting from early November to late March next year. However this year (2018) during the period I was back to China in August, there was extreme high temperature around 36°C for almost a week. This was very bad for elderly people who are weak of their immune system. Urban island effect is more severe than it was years ago, due to the continuous over-development of the urban area. To improve the physical health of elderly residents, the building design needs response to good ventilation to prevent the building being overheated.

\[\text{Figure 67: Average high and low temperature in Dalian year round}\]

\[\text{Figure 68: Average daily temperature}\]

4.2.3 Rainfall and Snow

It rains a lot in summer and the humidity needs to be controlled to provide a comfortable living environment.

Dalian snows in early December, and frozen until the melt in February the next year. Outdoor activity is restrained by freezing cold weather and slippery ground covered by snow or ice. Foot path become hazardous areas, but most elderly people will put on warm coat and hat and sit under the sun playing Chinese chess or just talking, because air in the outside is fresh and the sun is warm. Ventilation indoors is limited.

![Rainfall Graph](image)

Figure 69: Average monthly rainfall

4.2.4 Wind

Spring and summer; autumn and winter, freezing winds blow from northernwest. It is a dry cold wind because it is a peninsula surrounded on three sides by the sea. So the prevail wind in winter from northern west is from sea with relative high humidity.

![Wind Direction Map](image)

Figure 70: Wind direction
4.3 History

Dalian, as a modern city, has a history of over 100 years. Dalian was colonized by Russian and Japanese from 1890 to 1940s. Since the early 1900s, Dalian as a port city was occupied by Russian. When Russian occupied Dalian, it wanted to create Dalian like Paris, and planned the city with star-like shape plazas and arterial roads (see figure 70).

4.3.1 Vernacular architectural feature

Later, Japanese took over Dalian from Russian. They kept the planning layout, and developed infrastructure such as railway, power grid and major civil buildings. Most civil buildings were designed to follow some European architectural style such as Renaissance, Baroque or Gothic. At that time, most commercial and institute building was built by mix of masonry and reinforced concrete. (See figure 71.) In terms of residential buildings, Japanese colonial architects used drawings left by the Russians to build mass housing.

Figure 71: Colony timeline

Figure 72: Zhongshan Square, then Ōhiroba, ca. 1940. It was initially built in 1898 as Nikolayevskaya Square. (cited from wikipedia, https://en.wikipedia.org/wiki/Dalian)
4.3.2 Colonial architectural aesthetic Influence to today

A recent residential development near Jingshan community, at the valley of Mount Jingshan with architectural looking similar to European style building. (Figure 74)

With many exotic style buildings designed and constructed by colonist, Dalian accept the particular aesthetic interests and design some residential buildings follow a similar design aesthetic as its vernacular architectural feature.

Figure 74: Material palette from context buildings
Figure 75: Heritage Japanese house in Nanshan Street, (architect unknown)

Figure 76: Townhouse for Chinese in 1920s, (architect unknown)

Figure 77: A recent residential development with European style looking
4.4 Programme

As discussed previously, most Chinese people have a dream of living a country life when they get old. This project focuses on people over 60 who are entering their retirement life, but their dependents may not be able to live together with them and may not be able to regularly visit them.

Through study of the precedents, I conclude that these elements of programme are suitable for my project:

Residential Housing
Firstly is dwelling part, the group of people is assumed to be able to live independently, while provide with small amount of units for nursing care.

- Independent living elderly dwelling
- Nursing care rooms
- Temporary visiting dwellings for young generation
- Roof farm garden
- Terrace garden

Socially engagement programmes
Social space is the key to connect the dwellers to establish a neighbourhood relationship between dwellers. A public space without a clear function does not contribute to social connection. But a combination of multifunction room or lounge is successful for public area. 39

- Childcare
Elderly people get on well with small children. The time spent with children will improve brain functionality and keep it functional.
The childcare will also provide amenity for children of visiting ‘dependents’. In China many young parents spend a lot time with their children over the weekend. When the adult children visit their parents, there is a place for their children to stay, so they will have more time to spend with their parents.
  - Multifunction play room,
  - Small space with meeting points
  - Pool
Pool is a good exercise facility for elderly people, as floating in the water reduce the pressure to their joints, and swim will improve heart and lung function.
  - Canteen
Food is always welcomed by people, not only Chinese like food, everyone likes food. As people get old, they have some difficulty in preparing meals every day. A canteen / communal dining area will help. Sitting by a table, eating some good food and talking with neighbours or friends, in the sheltered internal courtyard under the winter sun is such a good time.
  - Internal courtyard
The internal courtyard brings natural light deep in the building and will improve ventilation, integrated with circulation space it will improve sense of space.

• Circular walk path
The circular walk path is an alternative exercise walk path in cold and rainy days.

• Public bath
Northern part of china is very cold in winter, taking hot bath is an habitat for all people. Nowadays, taking bath is not only to clean the body, but also social with relatives or friends. There are siting area, lounge, food and water bar for people to spend a long time in the places.

• Roof garden
China has an agriculture history, and most northern part elderly people know how to do farm, most of these people had experience in farming when they were young. And I am thinking of provide a space for framing to enrich their elderly life to establish self proud and improve mental and physical health for elderly life.
5.0 Design Development

5.1 Starting Concept - Boundary and Connection

My early design stage started with explorations of various kinds of social space and circulation connection. I think this is the core concept to create connection and to achieve social engagement.

I think social engagement is a universal design strategy that will work regardless its project location. This part will discuss some learned design principle from precedents study. Ian Athfield’s own house at Khandallah in Wellington, New Zealand, influenced my design most at early stage. He envisaged a social connection between residential and other type of buildings, it is the communal living and harmony that interests me most.

I start think the relation of space and circulation from linear arrangement, by exploring the visual permeable character through space to increase chances people meet with each other.

![Figure 79: Linear connection through spaces](image1)

Offset boundary of space, in versatile perception of space is achieved by wider view field

![Figure 80: Transformed layout](image2)
The boundary of space is abstract into line and perception of space highlighted in yellow to further explore the relation to boundary of space.

Abstract design element consists of boundary and connection, through exploration of the potential relationship between defined boundary and its connection to another space.
I select several diagram and apply them to a masterplan, which I think the visual connection inside a building can also have merit if in a wider context.

Figure 83: Conceptual drawing

Apply programme to conceptual layout

Figure 84: Conceptual drawing
5.1.1 Critique 1

In the early stages of my project, I studied precedents about elderly care facility and multi-generation housing for all ages. While making some analytical sketches regarding social connection between space and circulation. Programmes at this stage only involved residential (independent living), childcare, and community center.

Thinking Progress

I started my concept from drawing multiple sectional diagrams, by overlapping programmes and interchange with each other, to explore the spatial relation between social programme and residence. Later, as influenced by Ian Athfield “small space and meet by accident” idea, I begin to think about how the circulation can enhance the meeting by accident. I started from four units with common area in the central. Through series exploration by offsetting the boundary, or adding new partitions to seek for ‘meet by accident’ character. After having multiple sketches, I wonder if the relationship generated at small scale can be applied to a big scale like a site plan.

Staged Outcome

The first draft incorporated a central courtyard to connect all spaces from a vertical stair. Social spaces and a childcare facility at ground level, provide access to the neighbour hood. Residents are located at upper level to retain privacy. The first draft was driven by “meeting by chance” design thinking. Neighbourhood is connected to site by having a path across the ground floor as a route through the site.

Critique:

The thinking process was concluded as a concept of fractal design by examiner, the exploration of design can be not only specific for the site, but the idea of the connection between space can apply to other sites as well. it seems to be an universal design strategy for particular group of people without being restricted to aspecific site.

Critics Comments:

Design exploration is limited to linear space exploration in 2D plan. Social engagement is simply expressed with programmes at ground level. There is a lack of clearly defined privacy-public relation between residents and social community. Residents needs privacy, it is as important as social connection. Layout of residential space are simply duplicates one above another. The external grey “left over” spaces are not clearly defined. A space has to be made with a purpose, otherwise it may end up with a useless area. I kept working on research some literature about social engagement for elderly living for next stage.
5.1.2 Stage 1 Design Outcome

The layout of this plan is generated through analysis of space and circulation. Internal courtyard with vertical circulation connects each spaces to increase chances to "meet by accident".

Figure 85: Stage 1 site plan

Courtyard integrates with vertical circulation.

Figure 86: Stage 1 ground floor plan
Childcare center is connected to residents via internal atrium.

Social space is part of the dwelling area.
5.2 Develop The Definition of Spatial Contents to Enhance Social Engagement

By study of Athfield work, I found the 'Casbah concept' and many good precedents interpreting spatial elements in 3D dimensional thinking and configuration of architectural space and its contribution to social enhancement.

In order to get context connection with the site, I drew series of site public-privacy diagrams.

Figure 89: Site private-public analysis
5.2.1 Site Specific Privacy-Public Study

Learned from precedents study (Peter Zumthor’s elderly housing in Chur), the privacy-public analysis will help define programme relationship help to make decisions where the programme should be located at the site. Clearly defined relation of programmes will help residents engage with social life. The result of site specific privacy-public relation study will be used to determine the location of programmes.

Combination A+C, light shaded area indicate some private programme such as childcare and housing.
Combination A+B, indicates the location of social activity in relation to context.
Combination B+D, indicates the location of social activity in relation to site.
Combination C+D, indicates the location of residential programme in relation to site,
Combination A+D, indicates the site response to context.
From previous site specific study, I decide upon two access points A and B to site which provide the best result in terms of context engagement and site privacy-public hierarchy. (Figure 88)

Inspired by Casbah concept, I abstract layout from three projects. First column at left, is abstracted from “Paul Rudolph” Married Student dormitory, second column in the middle is abstracted from “Herman Hertzberg” Centraal Beheer Office. Last column at right is abstracted from Moshe Safdie “habitat 67”. Development of this conceptual scheme is driven by incorporating the scale of circulation route and offset boundary from the idea of “meeting by chance” to generate a developed layout appropriate for this project.
5.2.2 Assessment of The Outcome

Residential area needs access to sunlight and wind, while social zones focus on spatial complexity between programmes to enhance social engagement.

The layout of first column and third column is suitable for residential levels, while column in the middle with various sized spatial configuration will be suitable to incorporate varied kind of programmes with social engagement and be connected to urban context.

Figure 92: The developed scheme layouts
Two selected patterns were overlapped to explore spatial interests. The patterns at left column indicate space for social activity, patterns at middle column indicate space for residential activity. Column at right is the result.

Figure 93: Create complexity of spatial configuration in 3D dimensional
Sun shade analysis is conducted to compare the morning and afternoon sun access to site. Winter solstice sun study is to make sure the residents can have good natural light for daily life and social activity in the worst time of year. From precedents study, access to natural light is critical to the well being of elderly people.

Figure 94: Sun shade analysis
5.2.3 Assessing the Ventilation Performance

I made an analytical drawing to assess the ventilation performance on site in terms of building forms and arrangement.

Research showed site ventilation in urban areas can be improved by reducing ground coverage, providing greenery and reducing the ratio of building height / street width to 2 or below.\textsuperscript{40} Also the proximity to the openness area will improve ventilation as well.

During winter time, prevailing wind blows from northern west which is very dry and cold. The courtyard space needs to be protected from that wind, thus, should have the capability to stop wind from northern west in winter. This will make it possible for elderly people enjoy sun bathing at the courtyard without being disturbed by cold wind. While in summer, prevailing wind blows from southern east, openness to courtyard at south will improve site ventilation and humidity condition.

\textsuperscript{40} School of Architecture, CUHK, “Planning Department: Urban Climatic map and standards for wind environment - Feasibility Study, Executive Summary”, 2010:38-42.
5.2.4 Programmes Private-Public Character

Configurative public and private hierarchy diagram to help establish a connection between programmes and spatial layout based on privacy-public relationship. The knowledge is acquired from precedents study that clearly identified public-privacy relationships as a factor that will encourage social engagement.

Figure 97: Bubble diagram showing vertical relationship between programmes, in private/public hierarchy
5.3 Apply Programme to Selected Prototype

This stage starts with colour coding blocks indicating individual programme and overlap, then through logical review of spatial and social connection between each programme in detailed bubble diagram to refine the layout and size of space.

Critique:
The void courtyard space seems not be able to engaged for rich social activity.

Critique:
This model shows one core centre through the circulation intersection at community center, with pool, residential zone and childcare connection.
Critique:
This model shows two circulation cores. First core connects residential, community center and childcare. Second core connects residential community centre, pool and canteen. This analysis only shows potential engagement. I think this model shows merit for social engagement through mixing multiple programmes.
The two core model is selected for further study.

The ground floor layout is flipped in the next study in order to get more access to afternoon sun, as most outdoor activity in the winter would happen at the warmest time of the day which is usually during afternoon until sunset.

Stage sketches showed exploration of spatial elements to enhance social engagement.
5.3.1 Critique 2

This design incorporated more consideration of the social connection between programmes and nature engagement. Wind and solar issues were assessed to provide amenity to living.

Thinking

In this period, the design idea was highly affected by casbah configuration concept. The concept was to design a spatial medium for social content in architecture.\footnote{Oxman, Shadar and Belferman, “Casbah: a brief history of a design concept,” 321.} The casbah idea was generated by Ian Athfield’s design idea “meeting by accident”. Later I discovered that Ian was influenced by 1960 architectural movement, advocated by a group of Dutch architects including Aldo van Eyck, Herman Hertzberg and others. Through further study of those architects, I began thinking that a configurative spatial medium could be a driving force in further defining the relations of social space and elderly housing.

So in the second draft, I used a similar ground layout as first draft as it had merit in terms of social connection between programmes. It also connected with context by the walk path across the site.

I changed the upper residents layout. Elderly people spend a lot time at home. The house needs to have a long time access to sun light, so elderly residents, too old to regularly go out, can still enjoy the sun, the gift of the nature at home.

A Roof garden is considered at this stage. The roof garden is shared through corridor by all residents. The roof garden provides amenity for residents who may not able to go out due to physical issues.

Critique

the second stage draft is little different from above analysis, because I give up the upper residential layout at later design stage. there are two residential blocks in the second draft. however, due the size restriction of the selected site(40m x 32m), the legacy layout does not let enough sun into internal courtyard, the courtyard concept was further developed after this critique. that change is aimed to get good architectural spatial perception by courtyard for elderly people with better physical environment for social activity.

However, casbah concept was an innovative thinking progress for the specific background in the 1960s. Such as the married students housing by Paul Rudaulf, was designed with a background of lacking accommodation for student of Yale university. So the configurative layout of highly connected housing was designed. But the public circulation integrate courtyard, inspires me and its attribution to social connection between residents. While Peter Zumthor, and Herman Hertzburgers’s design philosophy influenced the way I am thinking of my design work as well.

Herman’s influence is the 3D dimensional thinking of social communication in architectural space, example is Central Baheer Office building.

Peter Zumthor’s idea of design elderly apartment with home like feeling, in Chur Switzerland, The break through of public and private boundary is a great thinking which enhance social engagement between residents.
5.3.2 Stage 2 Design Outcome

Figure 100: Ground floor plan

Figure 101: First floor plan
Design Development

Figure 102: Second Floor plan with two residential blocks

Figure 103: Section
5.4 Meeting Points Learned from Real Life Social Activity

To explore the connection between local social activity and its spatial construction, I drew analytical sketches from real life activities. Here are some photos of elderly social activity I took in Dalian. Some of the photos were taken a year before starting the work and some were taken in the middle of the research year, when I had a chance to spend few weeks back in China.

The wall as solid boundary is shown by a solid thick line. Steps or glazing as permeable boundary are shown by thin line.
These diagrams summarise my observations when you have a space with perceived boundary, activity is likely to happen around it. The boundary can be a solid wall or an other architectural feature.
5.5 Programme Spatial Requirement and Social Connection.

To convert the programme into the selected spatial model, detailed discussion of function is required of each programme to facilitate elderly living without family support. Their relationships are abstracted through a developed bubble diagram to clarify the logical relationship between programmes connection linked by considering potential social engagement.

5.5.1 Childcare

In management view, childcare facilities are usually independent from other programmes. However to engage social connection to the programme, the childcare is designed to have connection with residents and neighbour hood. The childcare facility creates a bond between elderly residents and the children. In China there are a lot elderly parents who will look after grand children and spend a lot time with them to relieve some burden of the middle aged generation.

In one the precedents I studied for this project, the childcare programme is together with nursing care. It showed a shared value with Chinese ethics, so I reserved a space for common use by children and elderly people with supervision by staff.
This place also provides amenity to residents, when the young generation come to visit their parents, they can bring their children to cheer up elderly parents. They send little children to childcare, and spend some private time with their elderly parents. This is the time very special for elderly parents and their dependents.

### 5.5.2 Canteen

A canteen exists in many elderly care facilities. As people age, some residents may have difficulty in preparing food everyday, so they can enjoy food at canteen with friends and neighbours. Not only elderly residents can have food at canteen with neighbour, people at the lounge in the public bath can order food as well. Childcare facility also needs a food supplier. So the canteen is a bond in the programmes, and a place where accidental meeting would happen frequently.
5.5.3 Pool
A pool is proposed as a exercise facility to provide an alternative exercise to walk.

5.5.4 Community Centre
The Community Center is public oriented, so it connects all programmes that welcome social engagement with neighbourhood.

5.5.5 Courtyard
The Courtyard is a transitional space which connects programmes, provides engagement with the natural world and improves the perception of space.
5.5.6 Residential

Kitchen

Most people will cook at home, because they think this is healthier and cheaper than eating out. However, as people get old, it is difficult to lift things up and move things from one place to another. For example, my grandma insisted on cooking food herself until she was about 80 years old, and she usually slid things from one place to another.

Figure 116: Conceptual kitchen work flow for elderly people
Living Orientation

From study of the precedents the key point for quality elder living is sun access during the day. Afternoon sun to the living area is important. Most elderly people are busy doing cooking or house cleaning early in the day. After lunch time and in afternoon they will have time to relax, sitting or lying in a western face, and enjoying the warm and beautiful sun would be great individual time.
Room Layout

Some elderly couple may need to sleep in separate rooms to get good sleep, because they wake easily if they feel any movement in the bed or hear any sound during sleep. To encourage independent living, each unit is fitted with kitchen and bathroom. Nursing unit also provided with a smaller floor area.

Figure 121: Typical double room unit A (reproduced from Married student housing, by Paul Rudolph)

Figure 122: Typical double room unit B (reproduced from Domat/Ems elderly housing, by Dietrich Schwarz)
Figure 123: Typical single room unit C. (Reproduced from Peter Zumthor's housing for elderly in Chur, Switzerland)

Figure 124: Typical single room unit D. (reproduced from multi generation house in Vienna, by Franziska Ullmann and Peter Ebner)
Configuration of Residential Units

With selected room layout for Independent living and small numbers of nursing care, I start to explore the relation between residential units. The private-public relation between residential units to public corridor contribute to the level of social engagement between residents.

Nursing and Independent living units are not located at the same level. The spatial separation respects the physical and mental needs of each group.

Figure 125: Schematic public-private spatial arrangement for residential units

Figure 126: Relation diagram between independent living and nursing care
Figure 127: Some conceptual schematic plans for residential layout
With the basic schematic plan of each program, a vertical schematic plan for arrangement in three dimensions is developed.

Figure 128: Schematic plan of all programmes in vertical configuration
5.6 Adjust Scale of Programme to Site

In this phase, I applied the programme schematic (previous page) to the site and reorganized the circulation and space location through iteration processes. Each version of the layout is reassessed by previous design criteria. The most important part of this process is to assess if configurative spatial layout has enhanced the social engagement.

Figure 129: Conceptual layout in progress
As the design develops, location of the childcare and pool have changed. Childcare has a semi public character, while pool has public character. The original layout did not make the relationship clear. The programme was reorganised to match the private-public character.

Figure 130: Developed layout
5.7 Detailed Architectural Design

The pool is designed to provide physical therapy for residents, for routine exercise or recovery after injury. In previous layout, size of the pool is not a good size for this purpose, so is revised to 25m length, similar size to a training pool.

As the pool is at a dominant location to the site. The street facing facade can be iconic.

Transparency
Make the facade transparency between inside and outside will engage visual connection between urban context and the pool.
Strengthen the Perception of Space.

The perception of space can be achieved by removing the physical boundary of a small space or extending the flooring or ceiling with similar material to adjacent space. For the boundary between courtyard and pool, I adopted both methods. I replaced the solid wall with glazing, and proposed a water pond near the pool to extend the pool water surface. Where two spaces are visually connected, residents will have a large perception of space in the small site.

Figure 132: Developed pool design,

Breaking the boundary between pool and internal courtyard to improve spatial perception through similar flooring treatment (pond of water and swimming pool) to connect interior and exterior visually.
Roof Garden

There is total 800m² roof area available for gardening. According to a roof farm reference of a project in northern China, every 100m² produce 3.5-4kg vegetables per day. A 800m² roof farm will produce 28-32kg per day. For 0.25kg per person per day consumption rate, the produce can feed up to 112 people, which is over the capacity of the project, and surplus can be supplied to kitchen for community consumption, which will create social-economy effect for the development. Thus, elderly people will value what they contribute to the society and be proud of themselves.
Figure 133: Roof garden platform development
5.6 Re-Thinking of The Project

I went back to China for about a month after the second critique. After I returned from China to Auckland in August, my design idea for this project was influenced by filial piety support of my grandma by my uncle, aunt, and mom. I realized the filial piety is the thing that I should consider for Chinese ethics in the design. Because the filial piety is the conventional culture for elderly care, independent living habit and idea is not yet widely formed in China. Care support from dependents is important to make the elderly live a happy and quality life.

Review to Draft 1&2

In the previous design process, I overlooked the importance of family care for happy elderly living in my design, I was only thinking about designing a project that will improve elderly people physical and mental health and make them socially engaged with neighbour and acquire support from them. But after this China visit, I changed my mind. Filial piety is cultural value of Chinese people. I think it is rooted deep in people’s hearts, deep in my heart. Parents love to have their children be with them even in their 80s. I began to respect filial piety as core concept to the design. Social connection is the method to resolve solitude issue for this generation living alone. However filial piety is the bond between elderly people and their children. The more times children visit their parents, I believe the elderly parents will be healthier mentally and physically.

New Objectives

So how will this project enhance the experience for elderly residents living occasionally visited by their adult children, or grand children?

My answer is: the child care facility will provide day care for grandchildren, so adult children will be able to spend time with their parents. In a traditional Chinese family, most attention will be given to the youngest family member. The childcare facility will change the experience with grown up children be able to give attention to elderly parents.

Developed Thinking

I began to rethink the design in the following steps:

6. I want elderly residents to be socially engaged, because evidence says, connection to society will improve their mental health, for good quality of living.

7. How to achieve social connection? Social is the communication activity between people. I think the easy and effective way is talking.

8. How to make people talk? They need a space, a trigger. People usually talk when they were doing something, for example, share a table eating, or chatting when preparing food together, My point is people are always talking when they are engaged in doing something together.

9. Places, redefine the function and connection of early stage design programme to enhance the talking activity.
10. Add some new programme to improve physical health, the pool. With the pool, the Chinese Public Bath came to mind. It is cold in winter, people usually go to public bath to clean the body and relax. Nowadays a lot more people go to public baths not only for body cleaning, but for more social purposes. After taking the shower, there are lounges for people to relax and play. That is good for social activity. Not all traditional public baths have elderly suitable design. So I am thinking to incorporate public bath design together with the pool for my project. (Herman Hertzerburger mentioned in an interview. Architecture should meet the demands of people’s changing needs. Good architectural will do that...)
11. After defining the programme, circulation is the method to connect them that will enhance social engagement, as I had early explored in first draft design.
12. Detailed design for particular spaces, aging is a progress, so the space development must meet changing demand when people are aging

Re-define Programmes
- Pool for the elderly
- Public bath
- Temporary living for visiting dependents provided
- And garden system developed.

Many elderly people like to garden. Being able to do some gardening work for retired residents not only helps them exercise the body but also increase the happiness of elderly life.

How Filial Piety Is Expressed?
Filial piety is a moral concept, the expression of filial piety is through what adults do for their elderly parents. Providing material support is a widely accepted activity. But in this project, mental support is most important. When elderly people get sick or need care, being cared for by their own children improves elderly parents’ mental fulfilment most. They tend to recover fast and be happy
The supporting programme is provided by the visiting accommodation for young adults who come to stay over the weekend. This will help to prolong the time young generation spending with their elderly parents. There are other supporting programmes, such as the canteen, where they can relax in the courtyard and talk about life experience, or the public bath, where it used to be elderly parents bringing children, now it is the grown child bring elderly parents. On the roof garden, young generation can help their elderly parents and enjoy hand grown food as the gift of nature.
The visiting accommodation is part of residential function and can be incorporated into the residential area, with provision for single or double rooms for nuclear family.
5.7 Developed Design Outcome

5.7.1 Ground Floor
The site connected contexts with 2 entries, one in the north providing access to community center and residential units, the other one in the south with courtyard providing access to childcare. The canteen was relocated to centre. There are pool, residential entry, community centre, canteen and childcare at the ground level.

Figure 134: Developed ground floor plan
5.7.2 First Floor

Community centre is connected to residential lobby from a sky-walk overlooking the common entry. A multi-generation room is provided for indoor activity between elderly people and children. A small courtyard is proposed between community centre and canteen. The public bath with lounge is connected to pool and canteen.
5.7.3 Second Floor

The second floor was proposed for nursing care units because the location was close to supporting programmes, with community support and childcare support. The layout of nursing units was developed from previous concept with varied width of corridor facilitating social activity. It intended to improve physical environment for nursing people with mobility restrictions. Roof garden adjacent to public area for easy access by residents. The roof top of the childcare provides outdoor facility with social connection between elderly people and children.

Figure 136: Developed second floor plan
5.7.4 Third Floor

For third floor and above, there are independent living units with temporary visiting accommodation for young generation to stay. The corridor with varied width and corner was proposed for social activity.

Figure 137: Developed third floor plan
The double height communal space allow light deep into internal space also facilitate residents at upper level to easily communicate with residents downstairs. Community centre at second floor is connected to upper nursing communal space with a vertical stair. Residents living in the nursing level will have more chances to socially engage with neighbours.
5.7.5 Limitation of This Project

The research method in this project is limited to literature review with little experimental data from local society in support of this research. The design project mainly focuses on community and social engagement for elderly people living without family support. But this research project had little consideration on interior layout and psychological design consideration for elderly people. The filial piety support from dependents directly is hard to organize in this project. Alternatively, to engagement with local communities and connection with children are adapted in supporting elderly people mental health.

5.7.6 Conclusion

The main purpose of this research project was (1) to explore how architecturally designed projects for Chinese elderly people without family support what will improve their physical and mental health, and (2) to respect filial piety tradition and improve residents’ elderly life.

For elderly people being able to live independently, physical environment designed to establish a social connection between people and society is suggested to improve physical and mental health. Mental support focus on elderly people who are lonely due to lack of family support. Establishing a connection between elderly people with children was approved to be an effective way to improve elderly people’s mental health.

In support of elderly people’s mental and physical health, research and design was conducted through configurative spatial elements layout and establishing connection between multiple programmes including childcare facility, canteen, roof garden, pool, public bath and social community centre. In urban planning, projects for elderly care are recommended to be incorporated into existing residential community, especially with childcare facility nearby or integrated. In terms of social engagement, it is found out that small space facilitating accidental meeting between people is as important as big space for multi-function activity. Also, space between resident’s unit and corridor imply social engagement possibility. In addition, architectural space that enhance spatial perception will also contribute to social engagement. In Addition, clearly identified private-public connection between programme and site showed significant value to social engagement.

The filial piety for elderly people in this generation is way more important than it is thought to be. Further research could expand the age spectrum of elderly people and pay attention to elderly behaviour and psychological study with support of architectural design. Additional study could be conducted on how physical environment will improve mental and physical support for elderly people who relies on nursing care. Elderly care in China needs more attention from general society member, not only politics decision maker can improve elderly care condition, people’s recognition on healthy aging is important as well.
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7.0 Final Presentation

SITE PLAN
1:500

Site Plan
600 X 600mm

Bird Eye View
500 x 400mm
Isometric Drawings
800 x 320mm
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Second Floor Plan 1:100@A1

Third Floor Plan 1:100@A1
Appendix

Perspective Southeast Entry
600x400mm

Northern Facade
700x400mm
Courtyard
430 x 340mm

Roof Top Terrace
650 x 400mm
Day Care Lounge
400 x 240mm

Public Bath
400x240mm
Roof Top Garden
650 x 400mm

Unit Balcony
400x270mm
Declaration

Name of candidate: Shiroy Zhang

This Thesis/Dissertation/Research Project entitled: How can a green energy pop Work Green

is submitted in partial fulfilment for the requirements for the Unitec degree of Master of Architecture (Professional).

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Department of Architecture

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