The Mobile Senior University

—— — Bringing Seniors into the Digital Age

Applied Thesis Book
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The Mobile Senior University
——Bringing Seniors into the Digital Age

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Table of Contents

Abstract 9
Thesis Statement 10
Motivation 11
Research 12
History of Senior Universities 14
Aging as Global Issue 16
Courses of the Senior Universities 16
New Media and Seniors 17
Precedent Study 18
User Group 22
Users’ Location: Shanghai 24
Regional Distribution of the Elderly Population 26
The Elderly Population & the Old Buildings 28
Service For The Elderly 29
Site 30
A: Fixed Site 32
Site History and Context 34
Site Today 36
Site drawings 38
B: Mobile Site 42
Precedent Study 44
Proposed Program 46
Making Connections 48
Conclusion 49
Program Process 50
Schemes 52
Concept 54
Generation Process 55
Colors and Materials 56
Final Program 58
A: Fixed Site 60
B: Mobile Site 71
Storyboard 82
Physical Model 86
Bibliography 90
Image Credits 92
Abstract

With the rapid development of technology, social networking is no longer just a face-to-face connection between people and traditional methods of contact are becoming less and less dominant. During the COVID-19 pandemic, isolation pushed us further apart, but connection through new media has also brought us closer together. Compared with the young, the elderly are generally less familiar with how to use this connection to strengthen each other’s social interaction and enjoy the convenience of contact over space. This thesis proposes an architectural approach to bridge this gap and design a mobile university for seniors, focusing on new media and technologies that would help them keep pace with a changing society.

Shanghai was the first city in China to enter the aging process, and it is also the city with the highest aging rate in China. In order to be able to provide services more evenly across as much space as possible in the city, I propose combining fixed stations with mobile transportation facilities, in order to provide services to a larger area of seniors. This system will allow seniors to travel and learn freely around the city. Seniors can take the bus to the fixed site, be taken by bus to travel to the suburbs, or be brought back to their starting station, in which case the bus is their classroom and the whole city is their campus. They can learn and socialize on the bus, becoming familiar with connection through new media while the mobile university provides a venue and participants for traditional socializing.

The fixed site is set on the Huangpu Riverfront in an adapted 1920s sugar factory, which is not only a terminus for the mobile bus system, but also a place to provide further services for the senior university. This scheme retains only the skeleton of the original sugar factory, allowing a high degree of freedom in design. Circular modules are inserted within the skeleton with different functions to provide services for the elderly, such as classrooms, lounge areas, medical service, restrooms, cafe, office and so on. The modular and adaptable design concept used for the mobile and fixed sites complement each other, providing enhanced services to senior citizens in the city. This senior university can serve as a prototype for replication in other cities, helping seniors enter the digital age.
In today's rapidly evolving technology and after the turmoil of the pandemic, connections by new media is an integral part of people's lives. Compared with younger people, the elderly groups are generally unfamiliar with how to use this connection to enhance socialization to each other and gain convenience in their lives.

Thus I would like to use architectural method to design a decentralized and mobile university for the elderly in Shanghai, with a focus on new media and technology that can help them keep pace with the changing society.

This senior university created for the elderly aims to create community and familiarity of the digital world to this group. Starting with the architecture and how there is the need to move toward broader access as personify by decentralization.

I want to be able to provide services more evenly across as much space as possible in the city. So instead of only using a fixed single site, I would like to combine the fixed site with mobile transportation facilities that can create more links to the points that the elderly population living. And this system can allow seniors to travel and learn freely in the city.

Population aging is a global issue, older adults face the dual difficulties of deteriorating physical functions and the psychological challenges of changing social identities. In order to improve the quality of life and mental state of the elderly and to increase their social participation, universities for the elderly have been organized in various ways since the 1970s. At the same time, there are many policies that provide subsidies and concessions on public transportation and other social resources to encourage them to get out of their homes and maintain their connection with the outside world. But nowadays, traditional ways of connecting are becoming less and less dominant, especially when it comes to connecting with new things. I hope to use this mobile and decentralized senior university as a medium to help specific groups of people, the elderly, enter the digital age.
Research

Senior universities
History of Senior Universities

UNIVERSITY OF THE THIRD AGE

France

U3A started in France at the Faculty of Social Sciences in Toulouse in 1973. In France, each University of the Third Age University group is mostly associated with a local university. This academic model is used in many other countries, in particular in continental Europe.

United Kingdom

By the early 1980s, the concept reached the United Kingdom. Each U3A is formally structured as an independent self-financing and self-managing charity with links to the Third Age Trust, a national coordinating body.

Australia

Australia’s first U3A followed the British self-help model of teaching and learning over a wide range of subject areas, dependent upon the membership’s own expertise, knowledge and skills.

Canada

The Third Age Network (TAN) is very active in Canada.

USA

A lifelong learning institute is an organized group of people over 50 years of age who meet frequently for college-level study just for its intellectual challenge and social enjoyment. Lifelong learning institutes use two fundamentally different meeting styles: instructor-led and peer-led. The meeting style can affect many aspects of the learning and social experience in a lifelong learning institute.

Japan

People in Japan are living longer at the same time as birth rates are falling in Japan. As fewer people are active in the labour market and more people require assistance and care, the trend presents major issues for the country’s economic development, social policy and public expenditure. To tackle these challenges, the Japanese government has committed itself to the strategy of “Lifelong Learning”, which comprises two main aspects: moving beyond formal education and promoting learning at all stages of life.

China

China has a kind of special universities with an average student age of above 60 years. At those universities, students are free from academic pressure and don’t have to worry about getting a job. It is called the Senior Citizens’ University (SCU).
The world's population is ageing. Virtually every country in the world is experiencing growth in the number and proportion of older persons in their population.

Older persons are increasingly seen as contributors to development, whose abilities to act for the betterment of themselves and their societies should be woven into policies and programmes at all levels. In the coming decades, many countries are likely to face fiscal and political pressures in relation to public systems of health care, pensions and social protections for a growing older population.

Since the last century, in order to guarantee the quality of life of the elderly, many countries have developed universities of the third age, or what we often call senior universities.

Typical courses include art, classical studies, conversation, computers, crafts, debate, drama, film/theater studies, history, languages, literature, music, science, social sciences and philosophy.

There are also many less educationally focused activities such as games, health, fitness, theater/concert clubs, travel clubs, and various forms of dance.

Distance learning is also a popular topic during the covid pandemic. And in this form of teaching older people need to have some knowledge of how to use software on mobile facilities, like on phones or PCs.

Most senior university programs are designed to enrich the lives of older adults and are offered primarily offline. With the rapid development of technology today, the use of new media is also an important aspect of senior college.

First, new courses such as cell phone applications, new media devices, and technology education are very popular courses, at least in the Chinese region, according to the research and reports I have read. Many seniors voluntarily and spontaneously go for related learning.

Secondly, during the covid pandemic, senior university activities suffered a lot and had to stop or switch to online for a long time in many countries and regions. In the latter case, the use of senior universities requires learning a certain amount of computer or new media knowledge. This necessary learning is an interesting phenomenon and occurs in more than the aspect of the needs of senior universities during the new crown.

During the severe self-quarantine period of the new epidemic, activities such as purchasing supplies and checking the latest information relied heavily on electronic devices such as cell phones and computers. At the same time, people who could not meet with each other would meet remotely via the Internet. All of this requires a certain foundation of new media. In this context, learning new media is not only a hobby, but also a bridge to maintain communication and even secure of their lives.
This project is located in Fengxian District, Shanghai, where every inch of land is valuable and expensive. Therefore, the most immediate problem was the tight land use. High-rise buildings are the most economical solution. However, the design team overcame the difficulties and designed a large flat building with east-west support according to the unique laterality of the base, forming the maximum standard floor, and kept a row of large balsam fir trees that have been growing for decades as an echo to the base.

Disconnecting the main building to form the atrium and dividing the main building into two buildings, east and west, is the most informative part of the whole design in my opinion.

For the interior of the building, a smooth horizontal traffic is created by the connection of two corridors spanning the atrium, while the outdoor views and light brought by the atrium enhance the spatial experience of the building, especially meeting the needs of the elderly environment.

For the atrium itself, it naturally becomes an active public space. The elderly use this space to relax, exercise, dance, and most importantly - socialize. The presence of the atrium allows the entire building to better serve its target group.
Carsten Primdahl, architect and co-founder of CEBRA, says: “The basic idea was to design a school that doesn’t look like a school.”

The designers incorporated industrial elements taken from the rugged environment into the building, which, combined with its open and compatible spatial organization inside, truly connects the harbor and city life through this building. The building’s stark exterior contrasts sharply with the varied circular elements of the interior, creating a diverse learning environment for users.

The curved forms and circular elements within the space break with the prevailing rational spatial forms, thus creating a multi-faceted spatial layout. The diverse spatial design meets the functional requirements of the school building on different levels, whether it is education and learning, or the work and meeting of different user groups that will take place in all corners of the building.

User Group

The elderly population in Shanghai as the main user group.
Shanghai was the first city in China to enter the aging process, as early as 1979. And has the highest degree of aging among all the major cities in China.

I lived in Shanghai for two and a half years, and I am familiar with the local environment and people of the city, especially during my internship in the first half of 2022.

For these reasons above, I chose Shanghai as the applied city for my project.

Comparison of Aging Degrees in First-tier Cities in China

- Shanghai
- Beijing
- Guangzhou
- Shenzhen
Regional Distribution of the Elderly Population

Regional Distribution of the Elderly Population

Changes in the proportion of the elderly population to the total population by region in Shanghai

<table>
<thead>
<tr>
<th>Area</th>
<th>≥60 years old</th>
<th>≥65 years old</th>
<th>≥80 years old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central District</td>
<td>0.46</td>
<td>0.49</td>
<td>0.53</td>
</tr>
<tr>
<td>Suburban areas</td>
<td>0.19</td>
<td>0.22</td>
<td>0.26</td>
</tr>
<tr>
<td>Pudong New Area</td>
<td>0.17</td>
<td>0.26</td>
<td>0.39</td>
</tr>
<tr>
<td>Remote Suburbs</td>
<td>0.71</td>
<td>0.45</td>
<td>0.37</td>
</tr>
<tr>
<td>Chongming County</td>
<td>0.96</td>
<td>0.67</td>
<td>0.32</td>
</tr>
</tbody>
</table>

Aging in Shanghai by District
(Proportion of household population aged 60 and above)

- **Hongkou District**: 41.70%
- **Huangpu District**: 41.00%
- **Putuo District**: 40.10%
- **Jing'an District**: 39.10%
- **Changning District**: 38.80%
- **Yangpu District**: 37.50%
- **Chongming District**: 37.10%
- **Baoshan District**: 33.90%
- **Xuhui District**: 34.00%
- **Jiading District**: 33.90%
- **Fengxian District**: 32.90%
- **Jinshan District**: 31.80%
- **Pudong New District**: 29.40%
- **Qingpu District**: 29.40%
- **Minhang District**: 29.40%
- **Songjiang District**: 29.40%

There are also differences in the degree of population aging in different regions of Shanghai. The following points can be summarized based on the graphs on the right-hand data studies.

First, the elderly population is mainly concentrated in the central area of Shanghai, but there is a tendency to spread outward. The household population in the central area accounts for 45% of the city's household population, but 46.7% of the elderly population aged 60 and above, 48.5% of the elderly population aged 65 and above, and 51.2% of the elderly population aged 80 and above are in the central area.

In addition to the districts in the center, Chongming County also has a high level of aging. The proportion of elderly population in each age group in both the central district and Chongming County is greater than the proportion of the household population in that area, while the opposite is true in the other districts.

Finally, compared with the central district, Chongming County has a higher percentage of seniors greater than or equal to 60 years old, while the central district has a higher percentage of seniors greater than or equal to 80 years old.
The elderly population also circulates between the various regions in Shanghai. The commercial and educational resources of downtown Shanghai are not the main needs of the elderly after they retire. Some seniors prefer to replace their small and old homes in non-central areas with larger and newer homes to spend their old age in a better environment.

The top three areas for seniors moving into Shanghai are: Songjiang, Baoshan and Jiading, while the top three areas moving out are: Xuhui, Pudong and Hongkou.

Shanghai has some policies to protect the quality of life of the elderly population.

According to the survey and the corresponding government report, firstly, the scale of elderly service providers in Shanghai is expanding and standardizing throughout the city. Secondly, senior education in Shanghai is developing rapidly, and more senior universities have been established in several districts to provide better spiritual and cultural life for the elderly. In addition, purely elderly families are being taken care of on a community basis, and the basic needs of the elderly, such as food and medical care, are being taken care of and protected. Also, recreational activities such as square dancing are organized within the community or senior citizen groups to provide socialization and exercise opportunities for the elderly.

Overall, Shanghai is at the forefront of the implementation of livelihood security for the elderly population in China. And after the implementation of material security, people will naturally pursue a higher quality of spiritual life, like keeping up with the development of the times and getting in touch with new
Site
A: Fixed Site
B: Mobile Site
In Shanghai’s Yangpu District, a large number of old factories built in the last century are clustered along a nearly one-km stretch from Dandong Road to Weinan South Road, with the Yangshupu Port as the core. Nowadays, they are basically converted to other uses.
Site History and Context

The site was formerly known as the Minghua Sugar Factory, which was opened by Japanese merchants in 1924 and designed by the Japanese architectural firm Okano, and went through several construction and renovation projects in the 1930s through the 1980s until it was moved out in 2010. In the latest renovation of the site, the 2-story building added to the south of the refined sugar warehouse was preserved - the existing factory building at 1500 Yang Shupu Road. It stands quietly on the bank of the Huangpu River with the traces of time and the thickness of history of nearly one hundred years.

- 1924: The original factory.
- 1980: The original roof was demolished, and the upper two floors and a new roof were added.
- 2010: The existing east and north facades are the partition walls between the original buildings.
- 2016: Remove the upper two floors, and regenerate the east and north facades.

Yanhshupu Road

Huangpu River
Huangpu District is located in the center of Shanghai. It is a densely populated area with many elderly people and convenient transportation. Huangpu Riverside has also become a leisure belt in the city under the strong support and transformation of the municipal government. It is the most suitable place for the base of this project.
The latest renovation of this building demolished the original building envelope and reduced part of the original building volume, and built a stepped landscape platform and green rope net climbing vines on the facade; discrete metal cabins and completely public roaming paths were installed, transforming the original closed warehouse building into an open and shared space. The converted space is mainly used for rental office use, and the original column network structure is only retained inside, without any division and design. I hope to further design the building on the basis of the last renovation, especially the use of internal space.
Riding the bus around the city with no destination is an important way for some Chinese seniors to pass their time and eliminate the feeling of loneliness, while the mobile bus enables my project to expand its service area and serve every part of the city equally. Therefore, I chose the buses as my project's mobile sites.

Buses are one of the main means of transportation in Shanghai and have a long history of operation in the city. In 1996 alone, there were 1,058 bus routes. The total number of bus lines, length of operation and vehicle fleet in Shanghai is the highest in the world for urban public transportation. The bus systems in different districts of Shanghai are managed by different companies, and the buses have different paint jobs. My mobile site B—-the Bus, will also use a unique paint job.
Precedent Study
Imparmanent Movable Projects

The concept of this project is to place buildings that can move along the tracks according to the seasons. The tracks link the different functional spaces together, while the different functions can be freely combined and separated.

The purpose of this temporary pavilion is to provide a stylish showcase for materials sales, construction techniques and architectural design. It can be said to be a total design space in this kind of small movable space.

Flying Nest: nomadic concept hotel by Ora-ïto France

Greenroof Bus Spain

Flying Nest is a mobile hotel that can be placed in any attraction, changed the existing rules of the industry upon its launch in 2017: let hotels chase their customers.

In some of Spain’s major cities, buses have been fitted with green roofs. The designers hope it will be a precedent for the future transformation of vehicles into mobile gardens, thus contributing to the health of dense cities.
Proposed Program

The mobile senior university
Making Connections

The elderly live scattered in the city, it is always unfair for them visiting a same fixed place, and many people may give up because of the inconvenience. I want to be able to provide services more evenly across as much space as possible in the city. So instead of only using a fixed single site, I would like to combine the fixed site with mobile transportation facilities that can create more links to the points that the elderly population living. And this system can allow seniors to travel and learn freely in the city or transport them equally to the fixed site.

The user group can simply learn and socialize on site B: the moving bus and enjoy the scenery along the bus route. Site A: the fixed sites are for more in-depth learning and organized more activities. Seniors can be exposed to technologies such as VR/AR there, and other technologies that require larger venues for demonstration. It also serves as a staging and service station for the mobile bus. The renovation for the fixed site is likely to be done mainly interior.

Conclusion

The elderly live scattered in the city, it is always unfair for them visiting a same fixed place, and many people may give up because of the inconvenience. I want to be able to provide services more evenly across as much space as possible in the city. So instead of only using a fixed single site, I would like to combine the fixed site with mobile transportation facilities that can create more links to the points that the elderly population living. And this system can allow seniors to travel and learn freely in the city or transport them equally to the fixed site.

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Program Process

The mobile senior university
I only kept the original concrete skeleton of the sugar factory, allowing a high degree of freedom in design.
Amidst the COVID-19 pandemic, social bubbles have emerged as a practical concept that strikes a balance between complete isolation and normal social interaction. Social bubbles encompass both physical and virtual relationships, with the latter offering more freedom and a broader range. The aim of this project is to help older adults expand their social bubbles, while also incorporating modular space that embodies the concept of social bubbles. By utilizing arc-shaped spaces instead of square ones, individuals can feel a sense of stability and softness. Additionally, curved spaces offer a safer environment for the elderly. This project emphasizes the movement and integration of bubble space, whether it’s a fixed or mobile location, aligning with the project’s overall theme.
Colors and Materials

This is an adaptive reuse project. While I currently preserve only the cement framework of the entire building, this cement structure holds the historical significance of the entire edifice. As for the renovated exterior, I intend to retain its cement texture and incorporate additional windows to enhance natural light. Furthermore, I remove a portion of the ground floor’s outer wall, transforming select interior spaces into open areas, and I’d like to allow some bubble-like structures to break through the exterior limitations.

Concerning the indoor cement column network, I will apply a simple paint treatment, while ensuring minimal contact with the bubble space, so that the newly added structure and the original structure are independent of each other to a certain extent, showing the contrast between the new and the old.

In the bubble-inspired circular space, addressing the issue of acoustics is crucial. To tackle this challenge, I opted for sound absorption using felt material. Moreover, the vibrant colors of felt material served as a great source of inspiration. I carefully selected four colors that are closely linked to this project, aiming to enhance spatial orientation and recognition.
Half of the ground floor is dedicated to temporary bus parking, providing convenient access for the elderly who can directly enter the building from the buses. Upon entering, offices and a reception area are situated to the left of the entrance, while the hall for events is to the right. In front of the right side is the bubble of stairs and elevators leading to the second floor and rooftop, with a restroom placed next to this bubble. Additionally, the ground floor has two classrooms, a chess room, and a gym.

FUNCTION:
1. Buses Arrived
2. Reception
3. Lobby
4. Office/Medical service
5. Classroom
6. Restroom
7. Chess Room
8. Gym
9. AR/VR experience room
10. Library/Reading space
11. Lounge
12. Cafe
13. Lecture hall
14. Equipment Room
On the second floor, upon entering, visitors are greeted by an information guide column that assists in navigating to specific areas. The focal point of the second floor is a centrally positioned library, featuring a circular skylight that enhances natural lighting. Along the central axis of the entire space, there is also an AR/VR experience room, and a lecture hall that overlooks the Huangpu River, providing participants with an enjoyable river view. Similar to the ground floor, restrooms are located near the elevator and stairs. Cafes and classrooms can be found on both sides of the second floor.
Renderings
The building facade still retains the original cement material and grid.
Apart from the fixed site, there are four types of mobile buses available to cater to various usage requirements. These buses are equipped with restrooms, storage facilities for food, and medical assistance, ensuring the comfort and well-being of users who spend extended periods on board.
B: Mobile Site

BUS TYPE I
- Independent Study
- Transportation

BUS TYPE II
- Group Study

BUS TYPE III
- Together Study
- Small Lecture
- Moving Cinema

BUS TYPE IV
- Together Study
- Outdoor Classroom
The buses travel through the city to pick up the users in different sites. Seniors can take the bus to the fixed site, be taken by bus to travel to the suburbs, or be brought back to their starting station, in which case the bus is their classroom and the whole city is their campus. Different bus types can cooperate with each other when forming temporary sites in suburbs or parks, with a high degree of freedom and enhancing fun. They can learn and socialize on the bus, becoming familiar with connection through new media while the mobile university provides a venue and participants for traditional socializing.
Based on the mobile sites, the elderly can freely study and socialize in the fixed site, mobile sites or a temporary site. When they achieve certain learning outcomes, they can use social networks to connect to each other's social bubbles, which is more extensive and free than the connection through this mobile senior university, and also the ultimate goal that this project hopes to achieve. This senior university can serve as a prototype for replication in other cities, helping seniors enter the digital age.
Physical Model

The Original Structure

The Final Project
Physical Model
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Page 8

Page 10

Page 14-15

Page 16-17

Page 18

Page 20
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Page 22

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Page 24

Page 25
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Page 26-29

Page 29

Page 30