

***Residential Farming: A Strategy on the Regeneration of Existing Chinese  
Residential Area Concerning Aged Caring Issue***

Yu Chen Han, Southeast University, China  
Li Bao, Southeast University, China

The Asian Conference on Sustainability, Energy & the Environment 2016  
Official Conference Proceedings

**Abstract**

Residential farming, as an exploration of neighborhood aged care strategy in China, advocated a mode of participatory residential regeneration concerning the aging issue. Taking the regeneration project of Xiangpuying Residential Area in Nanjing as a case, the investigation on existing community showed that both high quality public space and humanistic concerning activities for the elderly in their living neighborhood were in desperate need. Under such circumstances, the proposal of “Residential farming” put forward by architects were conducted in three stages, namely establishing farming system, reconstructing farming space and recreating farming tools, aimed to reshape the neighborhood life of the elderly without radically changing their existing living space but giving them proper, gentle and practical transformation. By injecting the vibrant activity of farming as a minimal state variable in the existing residential area, not only the monotonous mental life of the elderly was enriched, favorable environment for the neighborhood aged care was provided, communication between the elderly was promoted, the interaction between space, activities and users was achieved, but also a promising proposal for sustainable community renovation concerning aging issue was practised.

Keywords: Residential farming, community renovating, aging issue, community aged care

**iafor**

The International Academic Forum  
[www.iafor.org](http://www.iafor.org)

## 1. Urban Community Aged Care Situation

### 1.1 An Aging World

A growing elderly population is posing a global challenge. The world's over-65 population now numbers more than 342 million, and that figure is expected to more than double by the year 2020, to 722 million according to *US census Bureau*, which means one in five people will be elderly all over the world. In recognition of this fact, the UN General Assembly has adopted a set of Principles for Older Persons that recognizes the elderly's need for independence, participation in community life, care, self-fulfillment, and dignity.

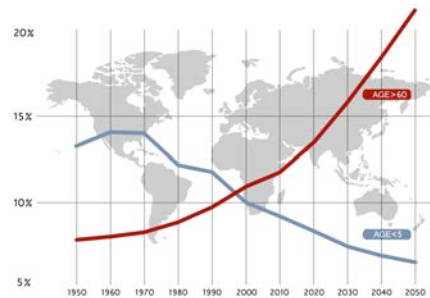


Figure 1: More elderly than children in the world

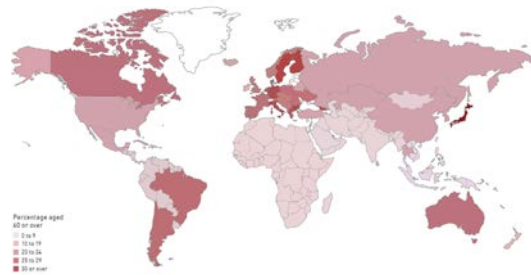


Figure 2: percentage of aged population all over the world

### 1.2 An Aging China

The developed countries such as Japan, Italy, Germany, Sweden etc. seem to suffer more from the aging issue, however, China, as the world's most populous country with the largest aging population, its provision of affordable and accessible social care services to older people has already become an urgent issue for the government to address. The aging issue in China has its own unique features. Firstly, China has a huge quantity of aging population than any country in the world. Secondly, China is experiencing very high growth in elder population owing to the one child policy 30 years ago. Thirdly, both the nation and its individual people get old before getting rich. Looking into the future, the local government of a few developed area has adopted the aged care mode of "9073" which means community-based housing aged care for 90%, senior-housing care for 7% and nursing institutions for 3% according to the traditional Chinese family conception and the particular feature of the nation. In hence, community-based aged care, as the most important aged care mode in China, has already been laid more stress on. However, most existing urban community did not consider the special needs of elderly with many problems to be solved. Under such circumstances, what can we architects do in this progress is an important issue.

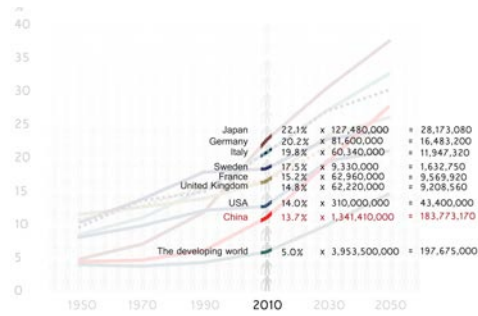


Figure 3: The most aged population in the world

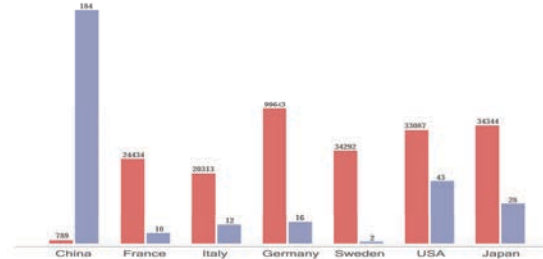


Figure 4: Comparison of GDP and aged proportion

### 1.3 An Aging Nanjing

Nanjing, the capital city of Jiangsu Province, has a typical aging population structure with more than 20 % people over 60 years old according to the previous population census, which stands out throughout the nation and even all over the world. With the most universities in China and its rich cultural deposits, besides huge quantity and high growth which shared by the whole nation, Nanjing has the most educated aging population. Therefore, psychological demand of the elderly in Nanjing is relatively more important, which means we should find something special to fulfil their monotonous life.

## 2. The existing community life of the elderly

### 2.1 Investigation on Site Zhenxiang

Located in the central area of Nanjing, Site Zhenxiang covers an area of 600,000 m<sup>2</sup> with 36 communities which are mostly constructed in 1980s. Our investigation of Zhenxiang is conducted in 3 methods, namely mapping, video observation and questionnaire.

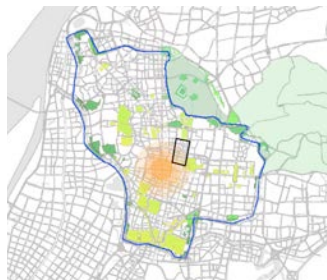


Figure 5: Location of Zhenxiang

#### 2.1.1 Mapping

We draw all the kinds of information of Zhenxiang Area on a map which is overlaid by many layers, including the basic construction information of all the 34 communities, the road structure, service structure, the public transportation information, the distribution of service facilities, the distribution of outdoor activity space for the elderly, the distribution of activities of the elderly. With all this information overlaid together, we got the research map of Zhenxiang Area on which we can check all the information we need for further study on problems and the proper proposals concerning community aged care.



Figure 6: Map of Xiangpuying Residential.



Figure 7: overlapping of outdoor public space, service facilities and activities of the elderly

### 2.1.2 Video Observation

We took two kinds of video with different aims to study the activity features of the aged. One kind is the “tracking video” which is taken by tracing a certain elderly from the moment he or she went out of home to see where he is going, what he will do and who he will talk to, through which we can get to know the routine of the elderly’s activities better. For the other kind, “fixed video”, we set video camera in several public spaces which is frequently used by the elderly and took 10-minutes-video in 8 a.m., 12 a.m. and 5 p.m.to study how the elderly use outdoor public spaces. By

accumulation of a certain quantity of video, we can get the activity routines of the elderly as follows.

- The aged strongly rely on outdoor activities. They are actually the main user of public facilities in community and thus suffered most from poor quality public spaces.
- The aged love to take part in collective activities.
- The main outdoor activities of the aged includes chatting, playing chess, exercise, basking, walking dogs, walking children, planting, reading, shopping, taking kids to school.
- Their major outdoor time is in the morning and evening.
- The aged love to stay with plants.

## 2.2 Spontaneous farming activities in community

“What’s on hell is the value of that delicate grass! Why can’t we plant!” shouted grandma Zhang, 68 years old, a resident of Xiangfuying Community during our investigation. Her little illegal “farm” which is built on original green bed attracted our attention. What she planted are not flowers but vegetables with turning a waste basin into a green container. There are spontaneous farms everywhere in community, the residents are quite love to plant vegetables themselves from small leeks to big loofahs. The “farmer” are actually the landscape created and maintained by the users rather than designers and administrators. It is actually a great way for the elderly to find something they love to kill time, to enrich their life and to keep them engaged in the public life of community. However, such activity is actually illegal because its disorder which is harm to the residential landscape in the eyes of the community administrators in China at present.



Figure 8: spontaneous farming





Figure 9: wiping out illegal farms

### 3. Analysis of Urban Community Aged Care problems

Through all the investigation we made, several problems existing in the life of the elderly in community come forward as follows,

- Outdoor safety of the elderly is not guaranteed because of the coexistence of people and vehicles, lack of barrier free design and lighting design.
- Communities are lack of high quality nursing homes.
- The elderly lack systematic urban public space. Even though the distribution of service facilities in this area is quite convenient, what they lack most is outdoor urban activity space.
- High quality outdoor public space within community is in desperate need. Firstly, parking, clutter and even backstage of commerce occupied too much activity space for the elderly. Secondly, there are too few plants in community. Thirdly, the existing public space lacks equipment and furniture both in quantity and variety. Fourthly, the elderly has too few varieties of activities apart from daily chatting and shopping. Fifthly, the immutable form of public space and landscape lacks interaction with residents and different activities. They stay still overlooking the need various uses of the space.
- The elderly lack psychological care. Loneliness is the most difficult part for the elderly to get through. They will suddenly find that they have too much time to kill and actually nothing to do. Moreover, the death cloud is always hanging over there.

Behind the war between the community old “farmers” and the administrators, the existing planting activity indeed have a lot of problems to be solved as followed,

- The radically spontaneous planting activities destroy the order of community landscape
- The private farms invade the original public grassland.
- There is no system guidance, design, and administration of residential farming.
- There is no enough specific space for residents to plant in existing residential.
- The relationship of public landscape and private farming is hard to tell and organize.

## **4. Residential farming, a Proposal for Change and Improvement**

### **4.1 What if a farming community for the aged**

As architects, we can't help asking what if the aged can participate in the construction of their community and create landscape or public space by themselves? What if the popular computer game in China, Happy Farm, can come into reality? What if we create a legalized and systematic residential farming with proper guidance?

Before trying to answer these "what if", we firstly find several benefits from planting community which focus on participatory planting of vegetables.

- Planting community creates the mode of participatorily constructed Community, realizing interaction between the ever-changing space, activities and users. Once we inject the "planting" into a community, the space and the landscape of the community would be ever-changing in response to the new activity. Consequently, such variable public space could have an influence on its users which would enhance the unity of community and promote communication between individuals. Thus we achieve the chain reaction of activity, space and users, which means we realize the participatorily constructed community.
- Planting community brings a new kind of activity to the aged without radically changing their familiar living space. The elderly does not like to radically change their familiar living space, but at the same time they need new kind of activities. Planting is something that save them from forever talking and basking and that would occupy large amount of time.
- Planting promotes neighborhood communication and cohesion of community. Planting provide a new topic in the community. The elderly would exchange their experience on planting. They would also help each other watering, cutting, fertilizing and so on. Meanwhile, collective planting also enhances the cohesion of community.
- Planting makes the environment in community greener and more favorable. Lacking of green is the typical problem in community built before 1990s in China with limited space between buildings. "Green" has become a luxury. Planting community just make full use of every corner of community with three-dimensional planting. Planting add more green to the old community.
- Planting reduces the cost of landscape maintenance in some sense. Rather than relying on community administrator to maintain the landscape in well situation, planting community encourage every resident to participate in the daily maintenance of public landscape.
- Planting can recall the deep memory of the old days. Chinese have a unique emotion of the earth with a history of agriculture for thousands of years. Especially for this generation of the elderly nowadays, most of them are from rural area in their early days when earth and planting are everything in life.

- Embrace aging through creating life, which is psychologically healing. The elderly is usually stressed with death. Instead of having nothing to do but count down the deadline of life, planting teach them the truth of life, death is a normal part of life. They will embrace aging and not be afraid of death any more.
- Planting in community is a positive respond to food security issue in China. Pesticide abuse and additive abuse made the food we bought is no longer safe. If we eat what we plant, I will be at ease.
- Planting community provides chance of waste recycle. Everything that piled in community public space and in residents' home can be used as green container for planting.
- Planting community creates the ever-changing landscape. Different kind of vegetables will create different kind of landscape. By the circulation of sowing, growing, blossom and gains the landscape of community would change during the year.



Figure 10: participatorily community landscape



Figure 11: recycle of the waste

## 4.2 Renovating of Xiangfuying Residential via farming practice

Xiangfuying Community, designed and built during 1986-1988, as the experimental site of planting community, is one of the earliest renewal projects of the old town center to meet the urgent need of improvement of residential condition and urban development in the middle of 1980's in China. The whole residential quarter is occupied by 1226 families.



Figure 12: exiting environment of Xiangpuying

### 4.2.1 Farming renovating strategies on residential scale



The original public space of Xiangfuying Community is somehow fragmented and isolated with very poor quality and quantity. As the main user of community facilities and outdoor public space, the elderly suffered a lot from low quality environment in Xiangfuying and other similar old residential block built in 1980s in China. Lack of systematic high quality public space, the majority of the elderly are even drifting out from the thinned out public realm which would be harmful to their physical and mental health.



Figure 13: existing form of Xiangfuying

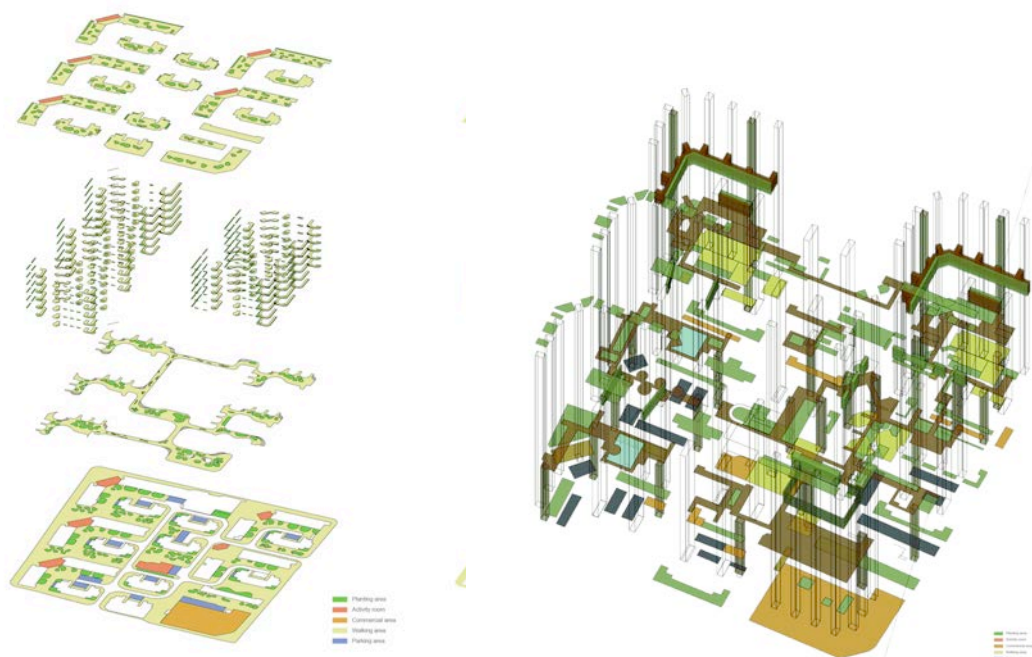


Figure 14: farming integrated public system of renovation of Xiangfuying

According to the existing use of building and the feature of the public space in community, we clear and reshape the structure of the public space in Xiangfuying Community by integrating public space and circulation in different level at different height.

Seeing from the section of this planting community, as for lower spaces, we build a second-floor level ground to increase the planting spaces, to protect the old people from the unsafe factors of motor traffic, to create more outdoor activity spaces both on the ground and second-floor spaces and spare more parking space on the ground level. Then, set functional space of public services in the indoor spaces on the first floor where the light condition is not suitable for living. As for higher spaces, we build various kinds forms of planting area, such as public planting balconies, planting corridors, Roof gardens, and so on. We hope people can share the planting space on different levels in community.

This three dimensional planting system makes full use of the existing ground, balcony, elevation and roof of the building to create farms in different level for the elderly with different demands. The farms on the ground floor and second floor are the most public ones. The elderly who are in good health can rent a farm from administrator and plant on this level. Meanwhile, they can also take part in the collective planting on the central public farm for the community. However, the floating farms on elevation and balcony are quite private for these who do not have the ability to get to the ground conveniently. What's more, the farms on floating platforms are semi-public which is shared for several families and thus those disabled elderly can also enjoy public space without much vertical movement. Additionally, the farms on the roof with the best sunlight are motivated by convenient vertical transportation with the ground.



Figure 15: three dimensional planting system

#### 4.2.2 Farming renovating strategies on building scale

According to the investigation, 20% residents in Xiangfuying are over 60 years old. As they get older, many of them may become disabled which means the existing staircase would be a barrier preventing them from going out of their home let alone joining the community activities. Considering this problem as the top obstacle for the

elderly to take part in the life in farming residential, lifts are actually necessary for the elderly. However, the elderly is scattered all around the whole building, it would cost too much to add a lift to each unit. We accumulate all the elderly in an apartment in one unit via encouraging exchange of room between the elderly who need a lift to go home and the healthy young family, thus, only one lift for an apartment would solve the problem. Such is residential replacement for the accessibility of farming activity.

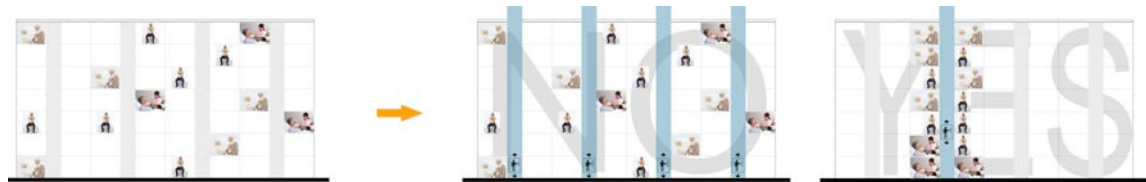


Figure 16: Residential replacement for the accessibility of farming

The platform added on the level of 1.5-story high would inevitably bring some problems such as lighting and ventilation to the rooms on the ground floor. In this case, we change the function of some rooms on ground floor from residence into parking, canteens, activity room and other service facilities for the elderly and all groups of residents in community, which would be like a big living room for each residential unit and spare more spaces for planting. Such is the function replacement strategy for farming activity.

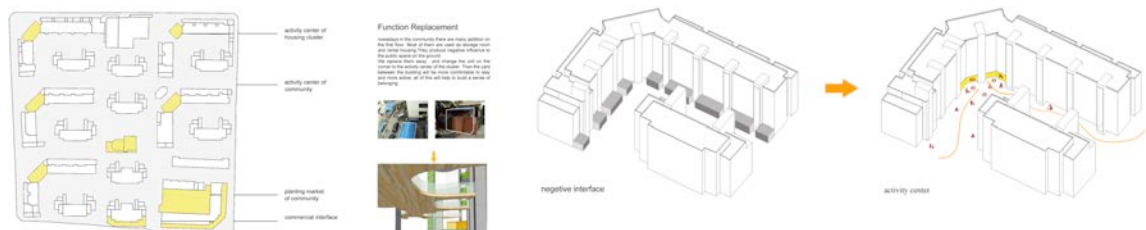


Figure 17: Function replacement strategy for farming

As it is a regulation to change the existing plat roof into sloping roof for the old residential buildings in Nanjing to avoid leakage of rain, we try to solve the same problem by transforming the original roof into roof farms, service facilities, and activity rooms and thus activate the roof into special public space with direct vertical transportation to access. Such is the roof farming activation.



Figure 18: Roof farms

As for the people on level 1-level 3, they are close to the ground and platform. As for the people living on the 7th floor, they are close to the roof. So it is easy for them to get to public area. However, for the people living on the middle part of the apartment, it is difficult for them to get neither on the platform nor the roof. We hope to create some semi-public space which is shared by a certain number of families via elevation transformation. Every 12 families would share a floating farm which can be made of different forms are more private compared with the farms on the ground and platform levels.



Figure 19: Vertical farms

#### 4.2.3 Farming renovating strategies in detail

The shading board on balcony could be curved with plants. In summer, plants grow lush which can keep resist the sunshine. In winter, when the leaves fall, more sunshine would come into rooms. We also divide the space of the balcony from the level 0.65m high by a board. The space above the board is used for farming and the space below is used for sun-cure whose position is easy to obtain for the elderly.

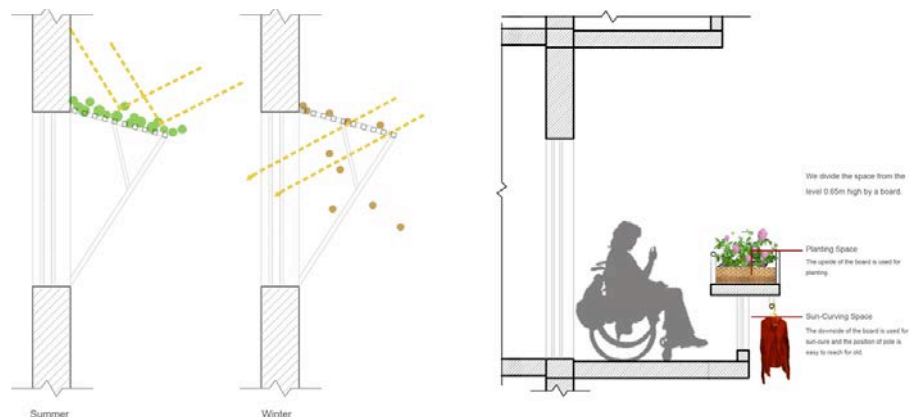


Figure 20: Balcony farms





Figure 21: Guidelines of distribution of vegetables

According to different lighting condition in different place of the planting community, we gave a recommended list on what and where to plant to the community “farmers”.

On the Public Balcony we create the recycle green container supporting system, it consists of serious sizes of container holders where people can put their farming pot in them. Meanwhile people can take the farming pots to everywhere with the holders. We encourage them to use containers made of waste cats and dogs instead of buying new flower pots.

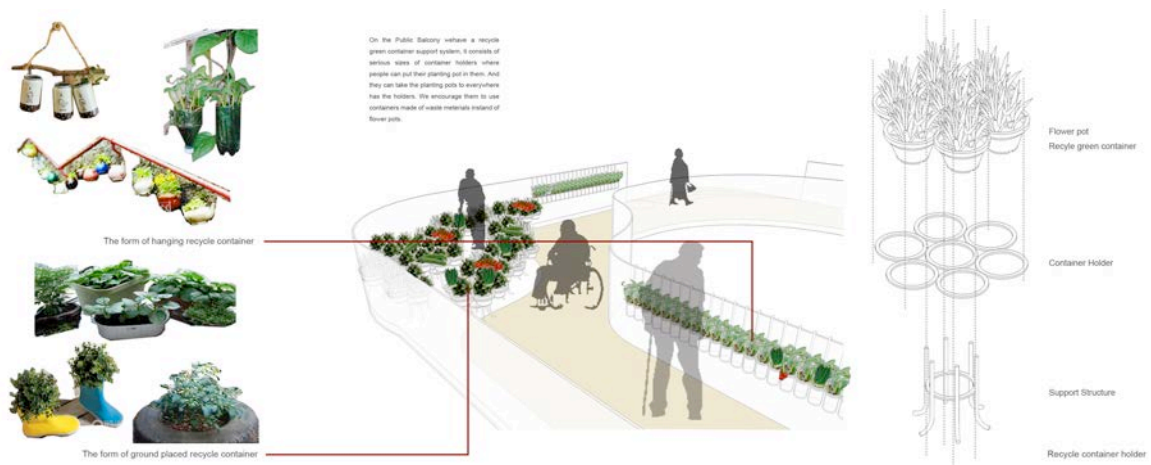


Figure 22: Recycled farming containers

As walking dogs are too tiring and walking kids are too stressing for the elderly, in planting community elderly can walk vegetables they planted with the tools we designed for such activity such as carts, hand pallet trucks, multi-story carts and so on. In case of the bad weather and the midnight theft, the elderly can just drive their beloved vegetables home, however in sunny days they can drive it out for a walk. The mobile farm also provides a new kind of daily topic in community for the elderly farmers to communicate with each other by exchanging their farming experiences and thus promote the cohesion of community.





Figure 23: Mobile farm

The variety of existing activities is very few owing to the poor condition. The elderly can either chat or sit for nothing in the isolated and fragmented and poor quality outdoor public space which would be harmful physically and mentally. Likewise, the invariable form and use of outdoor public space also add to the seriousness of this issue. Lack of transmutability, the existing public space cannot attract the elderly to go out of home let alone inspire them to create the new use and activity in community to enrich their life. Even though planting is a theme of the community, not every old resident in community would have the physical and mental capability for this manual labor honestly. Concerning that reality, many other activities for various conditions of health and interests are integrated with planting in different place. For example, there are small playgrounds for walking kids near the collective and public farm and continuous pavement for walking dogs and vegetables. Pergola for climbing vegetables, as well as a great place and furniture for the get-together of birds taken out for a walk while planting is set on the roof. Moreover, a large open space near the public farm is set on platform for the “farmers” to sell and exchange their gains. Activity greenhouses on the roof are for indoor activities like playing table games, movie, reading, party etc. which provide alternative for those who would not or could not go outside and for the conditions of bad weather. Along with the center farm of community on the ground, a small playground for exercise with several facilities provide residents with space for collective physical exercise with vegetables around that changes all over a year. On the floating semi-public farm, there would be relatively quiet space for individual activity such as basking and reading which would also provide outdoor space for those that can’t or are not convenient to go downstairs but also need the sun and fresh air. By injecting the new public system into the old residential quarter, we reshape and enrich the public life in community especially for its main user, the elderly. We provide different kind of activity with different kind of space. Thanks to the vegetables planted in community, the landscape and form of the public space in community would change in the repeating progress of seeding,

growing, blossoming and fruiting. Different kind of vegetables in different place of the community would create different landscape. Once the landscape changes with seasons, the activities around would change interactively. In this way, the space and landscape changes with the activity of planting which in turn would inspire new uses and activities of the space. Farming realize the interactive landscape in community.



Figure 23: scenarios of residential farming for the elderly

## **Conclusion**

The participatory farming revolution of old residential quarter realize an interactively constructed community for home based aged care in China without radically changing the existing living space but giving positive, proper, smooth and practical transformation to the elderly. By injecting the activity of farming into old residential, we not only enrich the monotonous life of the elderly, provide favorable environment for the home-based community aged care, but also achieve the interaction between space, activities and users.

Under the crisis of global aging, residential farming, as a proposal given by architects, at least, is an experimental effort made to meet specific aging issue in China.

## References

穆光宗, 张团, 北京大学人口研究所, 《我国人口老龄化的发展趋势及其战略应对》, 华中师范大学学报(人文社会科学版)

郑菲, 南京市统计局, 《南京城市人口老龄化现状及发展趋势》, 中图分类号] C924. 24(53) [文章编号]1004 - 1516(2001) 03 - 0037 - 02.

Thomas J. Schlerent, “Burnham’s Plan and Moody’s Manual: City Planning as Progressive Reform,” *Journal of the American Planning Association* 47, 1 (1983), 70-82.

Scott Greer, *Urban Renewal and American Cities: The Dilemma of Democratic Intervention*, (New York: Bobbs-Merrill Company, Inc., 1965), 89-91.

Sherry R. Arnstein, “A Ladder of Citizen Participation,” *Journal of the American Institute of Planners*, July 1969.

John David Hulchanski, *Citizen Participation in Urban and Regional Planning: A Comprehensive Bibliography*, Council of Planning Libraries, Exchange Bibliography #1297, June 1977, 2, 55-61.

James L. Creighton, *The Public Participation Handbook: Making Better Decisions Through Citizen Involvement*, (San Francisco: Jossey-Bass, 2005), 9.

Samuel D. Brody, David R. Godschalk, Raymond J. Burby, “Mandating Citizen Participation in Plan Making: Six Strategic Planning Choices,” *Journal of the American Planning Association*, Vol. 69 (2003), 248.

Kathy Kem, BRR Architecture, “Citizen Participation Model Ordinances,” 2005 American Planning Association National Conference Poster.

Judith E. Innes and David E. Booher, “Reframing Public Participation: Strategies for the 21st Century,” *Planning Theory and Practice*, Vol. 5, No. 4, (December 2004) 419.

Diane Day, “Citizen Participation in the Planning Process: An Essentially Contested Concept ?” *Journal of Planning Literature*, Vol. 11, No. 3 (February 1997), 421-434.  
Peggy Robin, *Saving the Neighborhood: You Can Fight Developers and Win!* (Rockville, Md.: Woodbine House, copyright Adler and Robin Books, Inc., 1990).

Bao li, *Experiment of housing refurbishment with the concept of levels initiative case study on Ruyi residential quarter in Nanjing*, 2003

**Contact email:** austin890608@163.com