

CARNEGIE MELLON UNIVERSITY

MASTER THESIS

Senior Community Center Proposal and Design

Author:

Yujie XU

Supervisor:

Prof. Volker HARTKOPF

*A thesis submitted in fulfilment of the requirements
for the degree of Master of Science*

in the

Building Performance and Diagnostics
School of Architecture

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Declaration of Authorship

I, Yujie XU, declare that this thesis titled, 'Senior Community Center Proposal and Design' and the work presented in it are my own. I confirm that:

- This work was done wholly or mainly while in candidature for a research degree at this University.
- Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated.
- Where I have consulted the published work of others, this is always clearly attributed.
- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work.
- I have acknowledged all main sources of help.
- Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself.

Signed:

Date:

“My passion and great enjoyment for architecture, and the reason the older I get the more I enjoy it, is because I believe we - architects - can effect the quality of life of the people.”

Richard Rogers

CARNEGIE MELLON UNIVERSITY

Abstract

Prof. Volker Hartkopf
School of Architecture

Master of Science

Senior Community Center Proposal and Design

by Yujie XU

The project of Senior Community Center started from Fall 2014. The goal of the project is to 1) analyze the feasibility and the potential benefit of a Senior Community Center near CMU Campus, 2) conduct case review of related design with specific focus on inter-generational relationship creation.

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Abbreviations

CMU	C arnegie M ellon U niversity
OSHER	A cademy of L ifelong U niversity
SCU	S pecial C are U nity

Dedicated to my family, friends and my instructors. . .

Chapter 1

Case Study

1.1 General Design Considerations of Senior Population

Senior center is an active node in the community that supply resources to senior citizens and provide the community with aging related knowledge [1]. Main services offered at a senior center include: education on a broad range of topics including health, art, humanity, nutrition etc., volunteering opportunities, intergeneration programs, meal plans, health screening, physical training etc.

There are several main categories of housing choices for the elderly: independent living communities, assisted living facilities, Continuing Care Retirement Communities (CCRC), nursing homes, and special care facilities as Alzheimer's care facilities. The main difference are the degree of care provided. Residents of independent living communities differ from normal communities mainly in the demographic sense, i.e. the residents are limited to senior citizens. Assisted living had 24 hour staff and provide living services such as meal, laundry and bathing. It is meant for seniors that are not capable of living independently but are not in need of heavy medical care. Nursing home are more like hospitals with on site physicians and nurses that provide high degree of medical care in addition to living services. CCRC provides varied degrees of service that covers all the services provided in the housing types above and may include some dementia care [2]. Due to the awareness of the negative impact of relocation of seniors especially those with dementia, the CCRC prototype for senior living is the most suitable in the current case.

The senior community center under discussion in the current project is a combined community center and housing for senior citizens. It also integrates with the university population by providing common space to the community including university population,

some housing units for newly enrolled faculty members and space for elderly-children common activities with the children from the children's school or from the community. These makes the function different from a traditional senior center setting. The case study in this section focus more on the aspect specific to the project, such as the instances with mixed age groups, affiliated to a university, or a combined facility of living and research.

1.2 Elderly and Children Combined Facility

1.2.1 Multi-generational Neighborhood Center

In Europe, “multi-generational neighborhood centers” are alternatives to traditional senior centers that creates inter-generational connections. The services expanded from traditional senior center to include pre-school and infant care etc [3].

1.2.2 Mixed-generation Elderly Housing

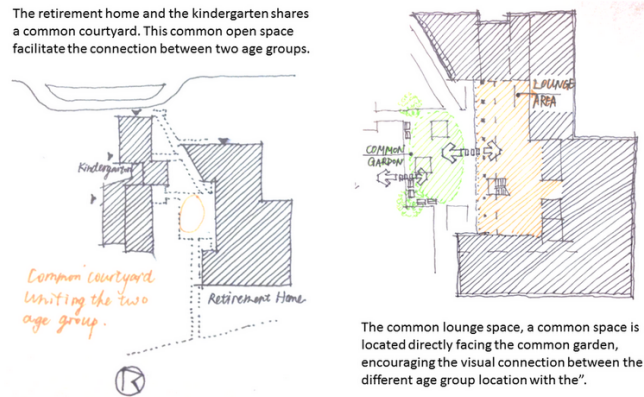
In Swabia, Germany, a housing program for elderly was created with 2/3 elderly residents and 1/3 of other age groups. The housing model aims at helping elderly age in place with helps from other generations in a “supportive environment”. The common space is extensible and can hold a variety of activities arranged by social workers and the residents themselves. The activities take place in the common space include: morning play of children, affordable lunch for both the senior residents and people from the neighborhood, informal community gatherings and rent out space for other community events [3].

1.2.3 Elderly Housing Next to Kindergarten

1.2.3.1 Altersheim Furttal, A Retirement Home in a Swiss Village

The retirement home is built near the city center with good public transportation. This connection provides the residents with a stronger connection to the society.

There is a kindergarten to the north of the facility. The connections between the two age groups are established with a common courtyard between the kindergarten and the retirement home. The interior space design strengthens this connection by arranging a two story “lounge space” adjacent to the common garden.



(A) Site Plan Layout of Altersheim Furtal and Kindergarten

Views of the Lounge Area



(B) Views of the Lounge Area

FIGURE 1.1: Common Garden and Interior Design in Creating Connections between Different Age Groups

1.3 University Affiliated Senior Housing

1.3.1 Ithaca College and Longview Partnership

The Longview project is a combined effort of Ithaca College, Cornell University and City of Ithaca. It started as an renovation of Tompkins County Hospital and grow to a CCRC facility providing a variety of housing choices include independent living, assisted living and enhanced assisted living.

1.3.1.1 Connections between Longview and Ithaca College

The connections between the Longview program and Ithaca College include: education opportunities, access to school facilities, volunteering opportunities and therapy programs supported by students and staff from related medical programs.

Residents are provided with education opportunities: they have access to classes taught at Ithaca College or in the Ithaca classroom in Longview. School facilities such as libraries and gyms are open to residents to use. School recreational activities are also open for Longview residents such as sports, art and music events. Students volunteers participate in the activity arrangement of the Longview program. Students in the College Physical Therapy and Occupational Therapy help the staff members give physical trainings to elderly residents at Longview. This collaboration benefits both the college students and the staff and elderly residents at Longview. Students gain practice experiences and staff and elderly gain knowledge and skills for maintaining good physical conditions.

1.3.1.2 Site Plan and Building Layout

Longview community is located to the southwestern of the main campus of Ithaca College [4].

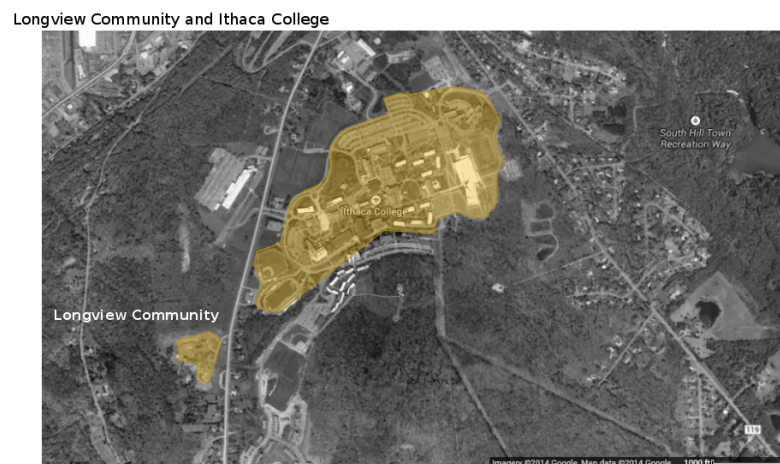


FIGURE 1.2: Site Longview [4]

1.3.1.3 Activities

Activities in Longview includes physical activities, gardening, Intergenerational Choir singing etc. As a result of the collaboration with Ithaca College, residents can take courses and have access with the college facilities such as library, gym and art performances. Recreational facilities in Longview include craft room, fitness room, game room, green house, library, hair salon, massage room and walking trail landscape design on the west of the facility.

1.3.1.4 Housing Choices and Unit Design

There are 100 units of independent living apartment units. The unit types of independent living include small studio, One-bedroom and two-bedroom unit. All three types of living units include kitchen, bathroom and a balcony. The studio has a combined living room and bedroom while the other two types have separate living room and bedroom. The size of studio, single bedroom and large bedroom are 465 sq.ft., 600 sq.ft. and 858 sq.ft. [5].

100 units of Independent Living apartments (Studios, one-bedroom and two-bedroom)

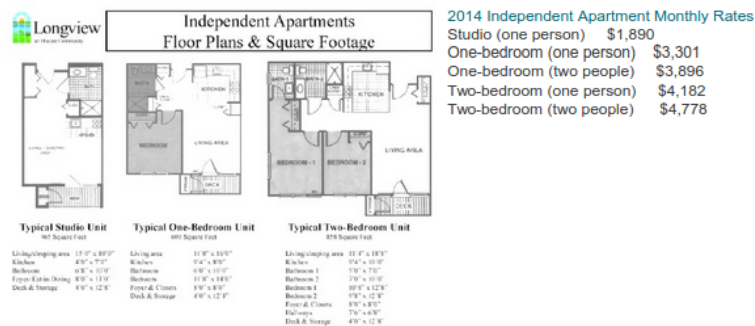


FIGURE 1.3: Independent Living Unit, Longview [5]

There are also 22 Independent living Patio Homes to the west of the main longview main apartment building providing high level of living quality. The Patio unit has a total area of 1355sq.ft. (without garage) [6]. The living unit include two bedrooms , two bathrooms, one with shower and the other with bathtub, a living room, a kitchen, a laundry room, a garage and a patio.



FIGURE 1.4: Patio Living Unit, Longview [7]

There are 60 assisted living units, providing 24-hour assistance, no site nurse and emergency pull cords. The assisted living unit is 250sq.ft., smaller than the independent

living units. It includes a large with a bath room, a combined living and sleeping area and a small refrigerator. No kitchen or balcony is included in the assisted living units. There are also 24 enhanced assisted living units with additional cares for residents with

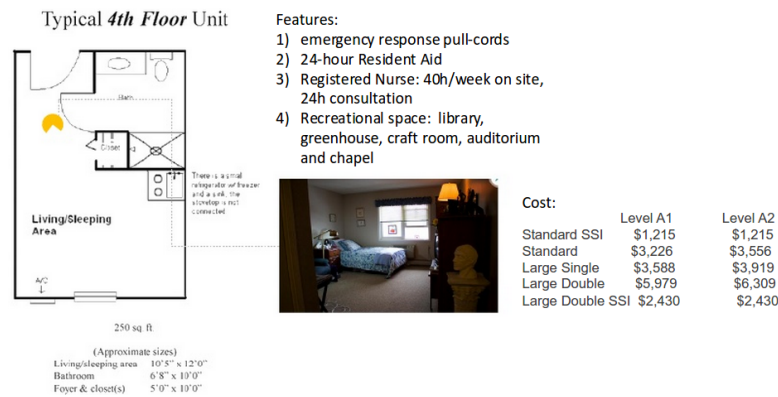


FIGURE 1.5: Independent Living Unit, Longview [8]

memory problems. These units located on the “Garden Level” with secure system that monitors exits. Residents and families also have the option to wear a bracelet sensor for closer monitoring. The enhanced assisted living units is 220 sq. ft. with the same function layout as the assisted living units.

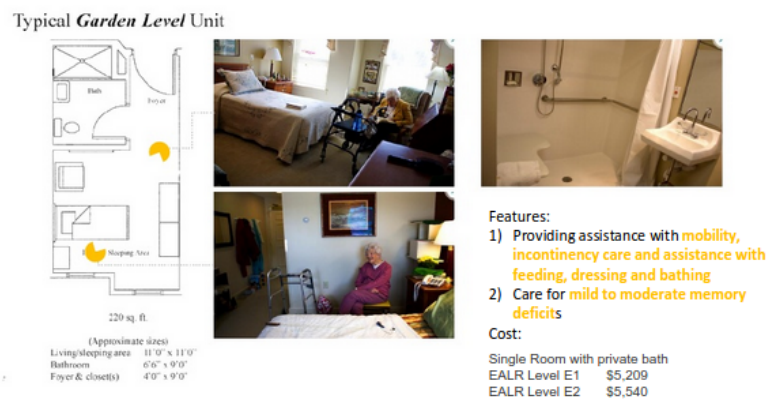


FIGURE 1.6: Independent Living Unit, Longview [9]

1.4 Dementia Assisted Living

“Dementia is an umbrella term for a group of cognitive disorders typically characterized by memory impairment, as well as marked difficulty in the domains of language, motor activity, object recognition, and disturbance of executive function – the ability to plan, organize, and abstract.” [10] Dementia, or its most common form Alzheimer is highly prone and one could not neglect its existence: there are 5 million Alzheimer victims in the U.S. and every 1 out of 3 seniors die in dementia. Women are more vulnerable to

dementia and 2/3 of the Alzheimer victims are women [11]. This section conduct some related case study on elderly caring facilities for people with Alzheimer Diseases.

The physical space acted as a “therapeutic resource” in improving the wellbeing and help reduce the seriousness of dementia [12]. Relocation of individual dementia victims to new environments can increase the possibility of depression and mortality [13]. This implies the necessity for dementia dedicated space. If there are not such spaces, when resident develops dementia, they will have to be relocated to facilities that has dementia care functions, which might cast negative impact. The living unit for cognitively impaired people are commonly referred to as Special Care Unit (SCU). The common features of SCUs include “smaller size units, fewer resident rooms and more designated private rooms with private dining rooms”. The SCU environment have positive impact on “communication, self-care, social function and mobility” status of dementia victims. It also reduce emotional strain and increase satisfactions. Separation between people with and without dementia is necessary as study showed non-dementia residents experience mental declines as a result of living near dementia victims. The typical features of a SCU unit include: less rooms, small room sizes, private rooms and dining space, access to outdoor environment etc [12]. Smaller cluster size showed positive effects on reducing agitation level, aggressiveness, anxiety and depression [12]. The positive impact of smaller cluster group setting also includes relief of stress and negative attitude of relative care-givers [12, 14]. Special acoustic feature should be added to create a balance between “sensory overstimulation” and “deprivation”, i.e. create a space that is neither too noisy nor too quiet. Since people with dementia tend to also have visual difficulties, the suggested visual environment is low glare, high contrast and increase lighting level [12]. The “bright light treatment” showed improvement on sleep patterns [15]. For enhancing way-finding, common design suggestions include: provide views to the outside environment which gives hint of location; create “landmarks”, large signs; increase lighting level of public spaces etc. Corridors are associated with less orientation and higher percentage of hallway reduces disorientation [12]

1.5 Sustainable Strategy in Senior Center

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