

INTEGRATED SENIOR HOUSING: A LIVING PROTOTYPE
FOR PROMOTING THE INTERACTION
OF ALL GENERATIONS

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ABSTRACT

Integrated Senior Housing: A Living Prototype for Promoting the Interaction of all generations

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It is difficult to have an integrated population throughout all age strata in a society. Especially if one considers the growing percentage of the aged population and their feeling alienated in their current physical surroundings. In order to solve imminent problems with the growing elderly population, a primary task should be considering how to improve the housing of senior citizens.

Furthermore, bringing the youth and elderly together would produce a functioning self-help system. It engenders interaction strategies by employing the strengths of one generation to serve another generation's needs. This idea was introduced by the systemic family therapist Gerhard Schiele. He indicates that current care facilities, nursing homes and assisted living facilities are not socially sustainable over the long term. This system also fosters a symbiotic relationship within a living complex, where residents and local communities interact in a mutually beneficial living arrangement.

An improvement in the design of senior living community, combined with programs that promote a multi-generational interaction, can provide a holistic solution for the entire population. This cross generational solution will focus on the best practice of intergenerational living as it aims to allow all age groups to commingle.

The ultimate goal of this study is to show an optimal type of residence within a mixed use building complex that accommodates the aging process with a full life perspective. A focus on age-related issues not only provides great promise for those as they mature, but also greatly improves the quality of life for everyone, regardless of age.

Keywords: Intergeneration, Senior-Friendly Living, Demographic Changes, Co-Housing, Universal Design, Community-Oriented, Inter-Activities, Social Engagement, Livable Communities

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CHAPTER I. INTRODUCTION

Worldwide in the recent past, there have been many special subject conferences which have focused public attention on the growing problem of providing a comfortable living environment for senior citizens. For instance, the UN established an urban forum which has been discussing the topic of a “society for all ages” since 1996 (UN Urban Forum). However, it has mostly focused on the sociological issues including policies, and not the in-depth study of architectural elements.

The challenge seems to be finding feasible architectural solutions that consider the spectrum of housing options for accommodating senior citizens in the same complex with younger generations. Although there a number of design competitions held highlighting the issue of age blended living, very few have followed through with actual development. It is important that we now determine how to best bridge gaps between all age groups within the community by creating a livable residential complex that can be enjoyed by everyone. A focal point of commingling a whole spectrum of generations will result in better synergy that will ultimately form a sustainable living prototype.

1.1.Statement of Problem

Webster, Ajrouch and Antonucci (2013) indicated that social isolation is a lack of interaction or community, “linked to an absence of close social relationships, particularly those facilitating integration and emotional intimacy. New research suggests that environmental factors directly affect social isolation and a sense of community.” (p. 28). Social isolation, especially in later years, can be detrimental to the health of elders. But the overall health and well-being in older adults starts with being engaged in meaningful roles in the community and connecting through social participation.

Segregation easily occurs when creating a living complex or neighborhoods of similar age groups. Such stratification of ages groups results in the lack of direct interaction between the different stages of life. However, there is a tendency to interact between people not only within their peer group, but also with those of different life stages. Because, by society evolving, many significant aspects are also transformed. This signals the need for changes in the different segments of our population. Indeed, the concept of segmentation/ individualism is probably no longer valued. Such strong individualism brought a social disconnectedness and perceived isolation in the United States. Many different experts are aware of the risk factors of social isolation in our society and are trying to re-link dissimilar age groups to motivate each other; one’s strengths respond the other’s needs.

1.2. Purpose of Study

The goal of the research is defined as follows:

- 1.) Develop programs that eventually bring win-win strategies encouraging inter-generational interaction. Interactions are important to perform mutually beneficial tasks because each generation has a set of unique needs based on their age and circumstances. Often, the strengths of one generation can respond to, and fulfill, the needs of another; and
- 2.) Define the characteristics of living complex's that will allow residents to live as long as possible, regardless of age or age related physical deficiency; and
- 3.) Develop an approach to design that incorporates architectural spatial strategy to accommodate those activities more efficiently and employs the principles of universal design and other elements.

Again, this research is focused on finding what type of living environment best promotes intergenerational interaction while responding to problems of a growing aging population. It will mainly determine how to integrate all generations into a comfortable atmosphere and to examine what architectural design allows for this intergenerational living. The ultimate goal for this thesis is to provide a physical living environment that allows people to remain in an unassisted living setting for as long as possible. This also contributes to facilitating an active and healthy life style of senior citizens and improving living conditions for all generations. Moreover, it will create a new wave of living environments.

1.3. Justification of the Study

Architecture should respond to what society needs. A shift in architectural form is required and will occur throughout the development of the industry, society changes, and human life style changes. All these elements directly impact our living environment. As social scientist, Janice Blanchard (2014), succinctly put it, “one thing is certain, the circumstances of where, how, and with whom we grow old are changing” (p.11)

1.3.1. Demographic Shifts

According to the U.S. Bureau of the Census, preliminary estimates of the population of the United States indicate that there are more than 35 million Americans age 65 or older—a tenfold increase since 1900. Over the next 25 years, that number will double; one in every five Americans will be age 65 or older. Fig.1 illustrates the proportion of the world population older than 60 years from 2000 to 2050.

As the elderly population grows, advances in health care provide a healthier and more active life for seniors. Luckily, as economic security and the delivery of support services have grown, they have promoted better infrastructures for senior life in general.

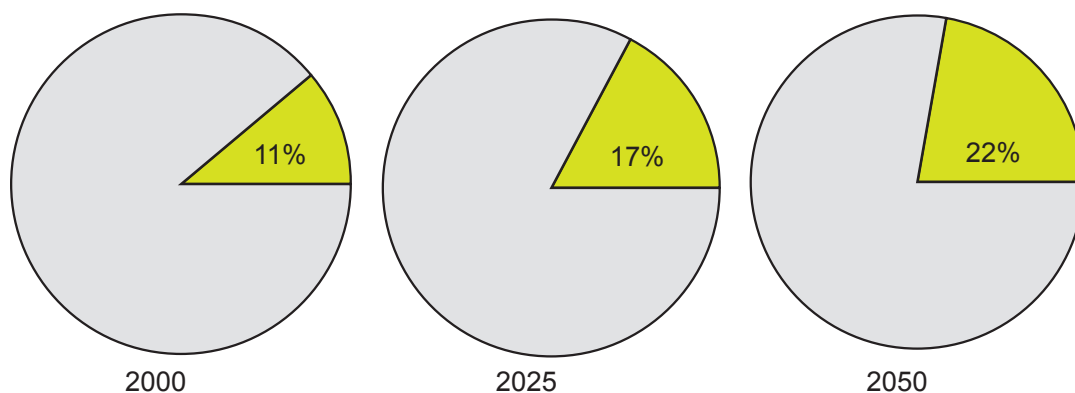


Fig 1. Proportion of Population Older than 60 Years : World, 2000-2050

1.3.2. Generation Changes : Cohort Effect and 3rd Age

The dramatic improvements of social, economic, and socio-economic status for older Americans have created both new challenges and new opportunities for communities. Additionally, increasing life expectancies, accompanied by a drop on births has led to a drastic shift in the age structure. At the same time, the aging of the population will call for continued innovations in those areas traditionally associated with aging (e.g. health care and supportive services).

Appropriately, recent generations of senior citizens have different thoughts about living environments than those in the past; in their youth and adulthood, they had different social conditions than their parents' generation. The different life experience of generations make it necessary to research the approach that differentiates the effects of aging and the effects when comparing age groups. (Hopflinger, 1990).

Fig. 2 Ave. Annual Growth Rate of Total vs. Population Aged 60 + : US, 1950-2050

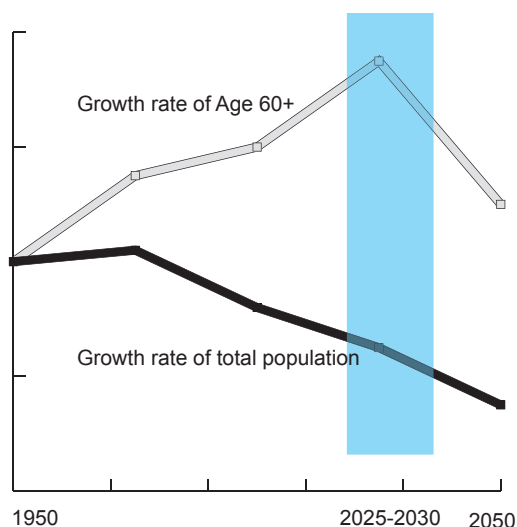
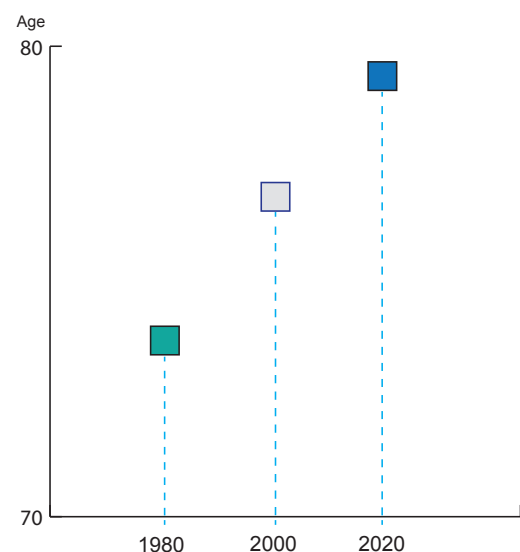


Fig. 3 Ave. Life Expectancies : US, 1980-2020



An English sociologist, Peter Laslett, redefined the term “3rd age” in his book *A Fresh Map of Life* in 1989. He indicated the 3rd quarter of life as 50 to 75 year old, and “minimize the perception of the years after retirement as years of inactivity and decrepitude.” (Population and Development Review Vol16. No. 2 (June 1990), p363). How to reside during the 3rd age of their life is a significant matter in order to reduce or minimize the time period of the 4th age, where they may be dependent on others.

Additionally, as explained in “Building Livable Communities for All Ages, A Blue Print for Action”, developing a livable community for all ages, has created another layer of challenges, as well as opportunities for communities. Now there is a call for ways to stabilize the costs of governing, and providing better services. In order to create new opportunities / livable communities that promote a healthier and more active “3rd age”.

Again, the baby boom generation is reaching late adulthood with a highly active lifestyle. It is now time to consider designing solutions for senior housing developments which involve an array of new programs and living models that can adapt to the needs of a rapidly growing aging population and meet the expectancy of living environment by those new cohorts.

CHAPTER II. LITERATURE REVIEW

2.1. Community Oriented Living Complex : Co-Housing

Today, co-housing is regarded as an alternative housing complex that enhances social interactions despite the more prevalent condition of non-interaction found in modern society as a whole. The main merits of co-housing are that it combines the autonomy of private dwellings with the advantage of community living. Each household has a private residence while sharing multiple common facilities (e.g. kitchen, dining hall, children's playrooms, and guest rooms).

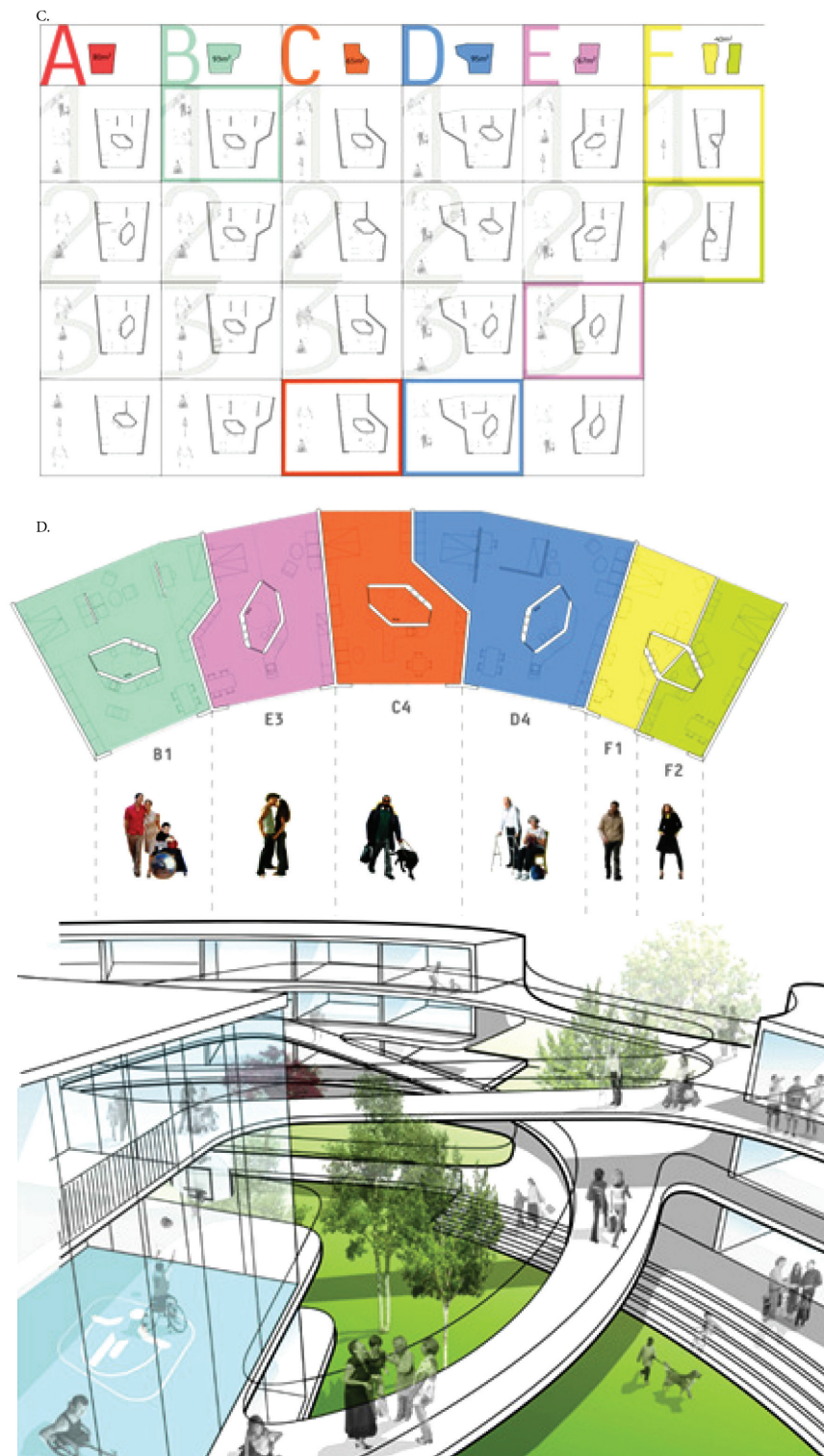
In contemplation of this statement, "In 2050, 70% of the population will live in the cities and more than 40% people will have specific needs in terms of accessibility"(Urban Population Growth), this research is focused on the study of intergenerational clusters in the urban core rather than in the suburbs where most co-housing is now being developed in the U.S. However, by investigating co-housing in general, the future of enhancing people's lives by commingling age groups shall be determined to be the best form for the community. Also, by studying the pros and cons of current co-housing systems and looking at existing forms, information can define an optimal type of intergenerational living complex applicable for the future. By learning what inspires and stimulates people who live in co-Housing, especially young adults, it shall then be determined how to pursue the best form for the future of community living programs for interaction with senior citizens in a new housing complex.

According to the Report of Survey of Co-housing Communities in 2011, there are three significant strengths of living in an intergenerational community

- 1) Sense of community; 2) active neighboring and mutual assistance; and
- 3) Children-friendly environments.

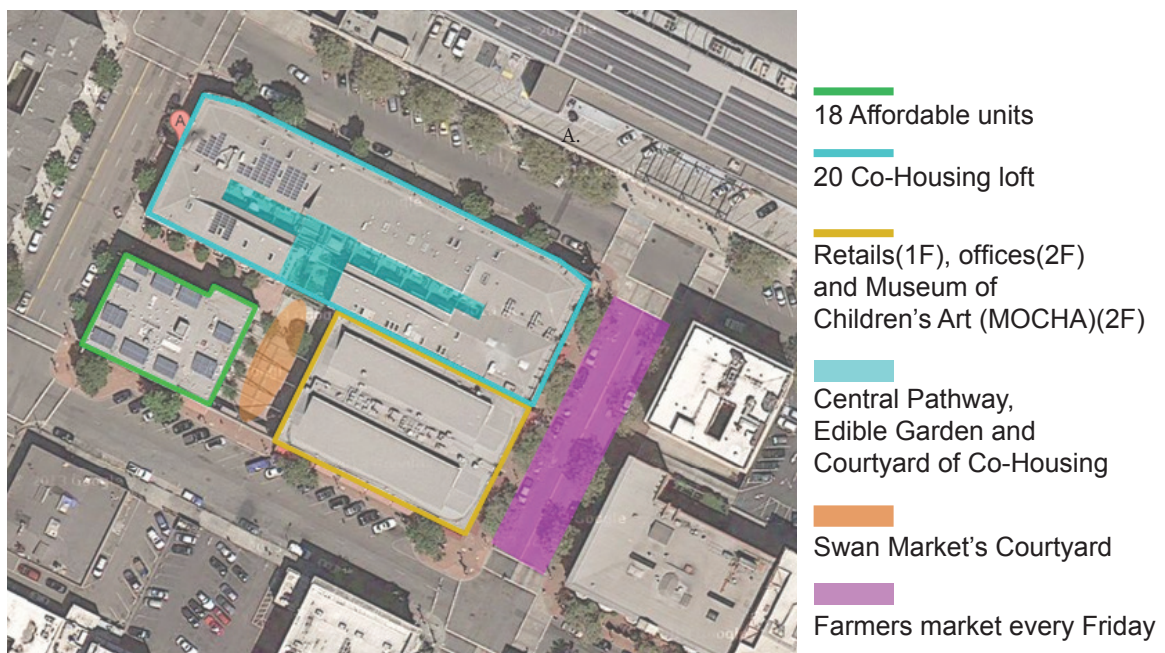
Most co-housers appreciate the sense of community created by sharing meals and participating in group activities. Indeed, James Cole, who lives in a co-housing complex in Paso Robles, CA, said that communal dinners are an important aspect of community life for both social and practical reasons. Caring for neighbors and watching out for each other allows for a sense of well-being and benefit for all. Residents interact through childcare exchange cooperatives, meal support for new parents, care and support of the sick or injured, long term care of the elderly neighbors, exchange or sharing of equipment, skill sharing or training, and hosting events to benefit the larger community. These specific activities should offer a sense of social interaction and meaningful time sharing for all generations.

In Denmark and northern Europe, some emerging architects are currently focusing on developing accessible forms and living accommodations, although it is not classified as co-housing with more active approaches. BFA, Denmark project is designed to provide ease of use, promote functional flexibility and invite social interaction. The focal point of this type of housing is a broad range of floor plans that accommodate diverse family patterns over the whole spectrum of generations and all different family patterns (Fig 4). There are a multitude of spaces for social activities for residents. A strategic architectural spacing topology offers more frequent opportunity to commingle between the residents



Swan Market Co-housing, which was renovated from a historic public market in Oakland, California in 2000, is one of the best models of a rehabilitation project and one of the most community friendly designs. First, the design retained 75% of existing truss structure including all of the terra-cotta and brick facade, but peeled away the roof portion to bring sunlight into the interior of the open loft co-housing units. Architect Peter Waller describes the design of the units to be face to face with a central corridor (pathway). This encourages all the residents to have spontaneous meetings more frequently. As shown in the site plan below, a series of public and private outdoor spaces along with the retail components link the diverse, vibrant, and unique urban community. Longer open pathways are used for socializing, playing and promoting more random meeting between residents. The corridor is used by all and is therefore a prime location for casual encounters.

Fig 5. Swan Market Co-housing © Pyatok Architects



- A. Site Plan
- B. View of Co-Housing Pathway
- C. Unit: Living Room
- D. Community Room
- E. View of Swan Court
- F. Farmers Market
- G. View of Swan Court
- H. Edible Garden



2.2. Advantages of Multi-generational Living

According to the U.S. Census Bureau, there are about 5.1 million multi-generational households in the United States. This is not a completely new phenomenon, but that number will grow significantly in the future due to more young people living at home longer, retiring Baby Boomers, and longer life expectancies. An aging population is not only living longer but also working longer and electing to preserve its independence later into life as well.

Thus, it is predicted that age integrated living is one of the possible responses to this challenge. Integrated housing facilities as multiple-generation homes will offer older people a social environment that encourages their integration into society, much more than specialized senior facilities or age specific living situations could.

It is certain that these intergenerational elements offer all generations, including seniors, a stronger sense of social interaction. Therefore, a flexible space to allow these activities for cross-generational interaction is very important.

Furthermore, there are enormous benefits for children living in a community. Child-friendly environments are pedestrian-oriented sites that provide space to run without danger from passing cars. The community serves as a large, extended family where children have more than just parents to look after them and to whom they can turn for assistance or just for a chat. Children also learn from belonging to a cross generational community. The cognitive abilities of young children are developed through interaction with role models from all age groups. Likewise, children derive a sense of community through shared meals and afternoon tea and group activities.

The Moldaw Family Residences at the Taube Koret Campus for Jewish Life, Palo Alto, CA (Fig. 6) is a great role model for this inter-generational living community. It not only provides senior residences, but also is a resource for the greater community, with a publically accessed civic center, fitness facilities, a school for young children and on-site childcare where seniors are invited to participate in activities and volunteering or just to watch the children at play. These incredible multi-layer programs are conducted to promote inter activities between youth and seniors. The entire complex is very actively used by young and old individuals, precisely what the architect Robert Steinberg intended. “By being walkable and open, Taube Koret creates and sustains linkages between generations.” Be it meeting in the multiple courtyards for a snack with a friend or family members to grandparents enjoying a day at the pool with their grandchildren, the design of the campus provides a pedestrian-friendly environment and where people of all ages come to gather spontaneously.

Fig 6. Taube Koret Campus for Jewish Life © Steinberg Architects



Am Bahnhof “Living Spaces”, one of the initial models of multi-generational living complex in Europe, is a residential complex with a deliberate mix of residents. This is a community oriented development based on a self-help system. The desired composition of residents consists of two-thirds older people and one-third younger. Gerhard Schiele, the initiator of the idea, explains that the balanced composition of the residents is very important to maintain the “self help system” and a “community oriented living environment”. If one component dominates, then this system would be capsized. Thus, the occupancy of the apartments is intentionally controlled by a community organizer. It helps to keep the residents between the average ages of 53-56 years, per a report dated 2005.

Moreover, equally important are the exchanges and collaboration among the community members. The seniors participate as care-givers to young children, or garden work for the on-site community gardens, and/or many other tasks. This approach is based on the idea that the elderly should feel that they are still needed. These are similar tasks sharing strategies on showing at the Taube Koret campus. They are integrated into a social network to motivate him or her to do something and contribute to the community. Meanwhile, older children and teens tutor younger youths to bring collaboration.

On the ground level of each building is a common room or central meeting place for the residents’ joint activity or communal event with their guests. Also, offices and a physiotherapy practice occupy each level. It is a barrier-free design concept, and all units are accessible by ramp and no thresholds.

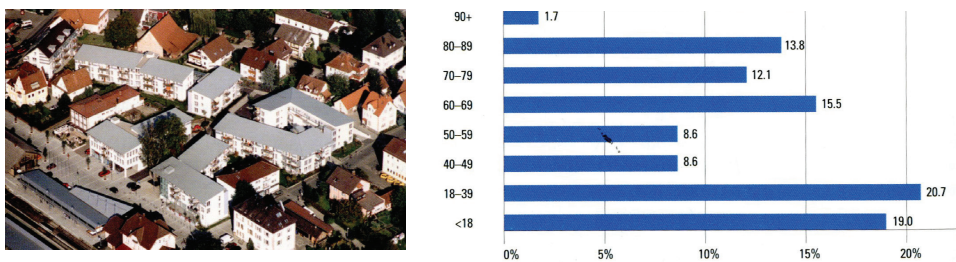


Fig 7. Am Bahnhof “Living Spaces” : Population of Each Age Group

201 Turk & 111 Jones Apt. San Francisco, CA, is regarded as one of the most vibrant communities because the courtyard areas are well used by the residents. As shown on the Fig. 8, the two multi-family apartments are adjacent to one another including the individual courtyards of each unit. This courtyard brought a prosperous community network among the residents in each of the apartment buildings.

The architect explains that one of the main concerns was to provide children and adult residents “a safe outdoor space”. The complex is located in the Tenderloin area in San Francisco where outdoor open spaces are notorious for various dangers, as expressed during a community meeting regarding recent apartment area break-ins. Strategic planning set up a well equipped playground and landscaped courtyard so that the units overlook the courtyard allow parents and other adults to supervise the children.

Additionally the 111 Jones upper units are occupied by senior citizens that allow for a co-mingling of different age groups to spend time together chatting and taking part in group outdoor activities. An independently managed childcare center is located in 201 Turk. They operate two daily sessions and serve over 100 children from the neighborhood as well as the complex.

The community room is fully utilized for cultural, recreational and educational purposes. Learning sessions and/or technical training is conducted for the local community.

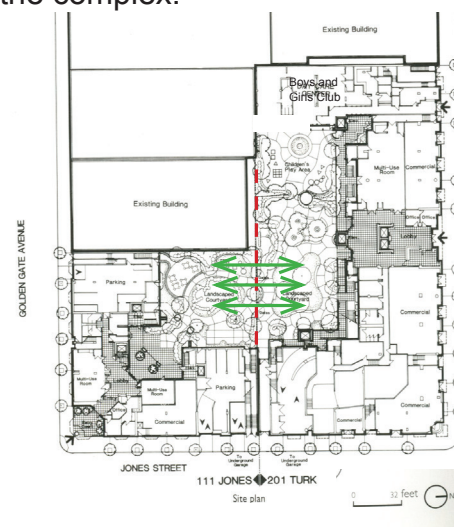


Fig 8. 201 Turk and 111 Jones Apt. Site Plan, San Francisco, CA © HKIT Architects

2.3. Aging Friendly Living Complex

In order to determine fundamental design strategies for a senior friendly environment, one should closely examine an article “Designing Senior Living Environment for Tomorrow”, written by Gray Preger who started studying and working in the area of senior housing after the death of his mother that left his older father to live alone. He describes what kind of elements need to be considered as priorities for senior living. His father preferred to keep his apartment and his independent lifestyle in the neighborhood and environment he was most familiar with. Additionally, he did not want to be a burden to his children. After looking into senior living facilities together, the father was not willing to make the move as none of them were appealing because most of the senior living facilities looked institutional. One certainly can say it is a typical type of “age specific living”. The author realized that the design of senior communities needed to be improved so as to appeal to the growing population of seniors. The situation is growing more urgent as the baby boom generation is aging and in need of senior friendly housing (Preger, 2011).

The author put himself in the place of a senior resident in need of housing. He focused on personal preferences in lifestyle that would allow for maximum independence without the burden of home ownership. In other words, he determined what could make the senior housing more home-like, less institutional, and less burdensome.

This can be classified as four different elements that must be considered as priorities for providing senior citizens with a functional and happy living environment: 1.) A social / gathering space is necessary to accommodate a broad range of social activities for residents giving them a choice to participate. 2.) Easy access to the outdoors for everyday activity is a primary importance. 3.) Design of the personal living spaces based on the type of service provided for various acuity levels. For instance, independent living units would have far more personal space than intensive care rooms for private social interaction. 4.) Less institutional, more familiar look of senior living facilities is important. Many senior housing or care facilities give the initial 'wow' factor from the outside, but it is not carried through the entire facility. An adequate space for comfortable living, multi-purpose rooms that are flexible, and exterior sidewalks/courtyards with activity nodes are recommended (Prager, 2011). Furthermore, natural or subtle interiors, design without physical barriers, adequate ventilation, and connectivity to community are essential aspects of senior living in order to provide a sustainable living environment for residents.

Another important thing is that the design team must be creative and flexible and most importantly listen to desires or needs of senior citizens rather than trying to inject their design signature into the project. All generations have unique lifestyle preferences. The design of buildings for seniors must accommodate them with choices that treat them with dignity.

The physical environment itself has a direct affect on the physical, social, cognitive and emotional well-being of seniors in late and very late adulthood. In general, almost all older adults experience “primary aging” with physical changes that are a normal part of the aging process. It is recognized that, with age, there is a slowing of physical skills such as motor responses, sensory responses, and intellectual functioning. Also, varying degree of visual/hearing loss increases during late and very late adulthood. It is most definitely “primary aging” will influence the “secondary aging” process depending on their living environment. The specific age-related changes listed below, and each change will be supported by architectural treatments (Hutchison, 2010)

- 1.) Respiratory system – There is 40% decrease in respiratory function between age 20 to age 80. This would suggest ventilation support is of primary importance within senior housing.
- 2.) Skeletal system – After age 30, bone density begins to decrease. Regular weight training would help to slow changes in bone density. Having a gym as an amenity in the living complex with a series of fitness devices would help older adults’ healthy aging. To response to this need, living complex includes a wellness center in its design, like with a ramp access to lead residents to access many different locations throughout the entire complex.
- 3.) Muscular system – There is a decline in muscle mass, strength and endurance as people age, Co-physical exercising programs with children might help to maintain the muscle mass for older adults. Additionally, the elderly fatigue more quickly. Consequently, the elderly need to conserve energy by being more selective on who they interact with and how that interaction takes place.



Fig 9. Sorenson Language and Communication Center at Gallaudet University

4.) Sensory system - Overall changes in the neurological, muscular, and skeletal systems have an impact on the sensory system and affect one's sense of balance. This contributes to the increase in accidental falls and bone fractures in older adults. Also, there is a high incidence of disability among older adults 85 and over. This should lead to a focus in design strategy on lower-level buildings with few physical barriers, if any.

Senior housing should employ the use of different materials and colors, especially of doors, windows, and elevators. Additionally, building designs using city landmarks may offer a sense of direction to seniors. This will help seniors recognize more easily their destination by being able to trigger their sensory system. As seniors become less mobile, their access to social, occupational, and religious activities becomes more difficult and challenging.

As mobility declines, community based programs become important resources for improving social interaction, thereby reducing senior isolation. Also as short term memory deteriorates, social abilities are inhibited and bring a potential hazard. Therefore, educational programs are necessary to slow down short term memory loss. This would be greatly enhanced by senior housing developments located in more urban rather than rural areas. Easy access to local amenities such as a library, a health center, a local community center, and nearby public transportation are not as challenging in urban environments.

Social spaces and outdoor gathering spaces are the most significant element for fulfilling senior housing developments and care facilities. To be successful in long term sustainability, senior facilities need the following: Exterior sidewalks; courtyards with activity nodes to encourage senior citizens to gather and share their daily life; and, well planted outdoor greenery space that provides a good mental attitude, helps maintain a healthier life, and brings comfort. Senior housing Kredsens Hus designed a great courtyard area with well equipped landscaping all where the residents can gather.

Fig 10. Kredsens Hus, Denmark © Force 4.dk



Although loss of companionship and relocation are more prevalent during this stage than at other times of life(Johnson and Barer, 1997), the AARP reports that 84% of senior citizens prefer to live in their house where they are comfortable as it is familiar to them. It also shows that older people prefer to be independent from their children when possible, as adult children serve more as managers of social support as oppose to providing direct care. Thus the best arrangement is to allow seniors to keep their independent life style as long as possible, while offering ease of access to community activities. Agencies serving older adults and children often seek opportunities for contact across generations.

These programs recognize the benefits of activities that bring older adults, young parents, teens, and /or children and infants together. Each age group has something to contribute to the other groups (Hooyman and Kiyak, 2008; Slaughter and Stampely, 2006). Interactions around teaching and learning activities, crafts, music, gardening, storytelling, and other activities that create ways of being together. These interactions have a direct impact on aging and mental state, and help maintain intellectual development.

Umeå School of Architecture student, Andreas Vestlund(2013) expects “the future history of a household where the ground floor becomes a public place for gathering as less space is needed by the users as they grow older and also to encourage or facilitate cross generational interaction.” This should be a cue for bring an active senior life while interact with dissimilar age groups.



Fig 11. Home, Umeå School of Architecture

2.4. Applications of Universal Design and Adaptive Technology

Equal opportunities for the maximum number of people are an essential goal for any society. The aging population is the most rapidly growing demographic not only in the United States but around the world. Though this older population is in better health than previous generations, declining abilities are inevitable matters for them. According to Tauke (2009), “Sensory, cognitive, physical health and mobility and dexterity changes are prevalent among older persons”(p. 9). This brings to mind questions about the ways that we think about human-environment interaction.

Architects, urban planners and landscape designers must, therefore, consider the needs of people with limitations and help them to live independent and self-reliant day to day lives. Several guidelines such as barrier free design, universal design or ADA(American Disability Act)regulations have been instilled to help young and old residents who may need assistance with design. Furthermore, these guidelines were created to benefit people in all walks of life, not just the disabled population. However, there are still a broad array of solutions that need to be studied and incorporated into the real world in order to provide a convenient daily life for everyone. All these solutions should ultimately benefit those socially marginalized by their age.



Fig 12. Concept Illustration of Universal Design

Once more, every person has the right to a living space that they can use independently, unaided and without restrictive barriers. This barrier-free living space should extend beyond their homes and include their whole living environment in every social setting. Fortunately, there are a number of cities that have moved towards establishing the barrier free design in the entire city. For instance, Fukuoka, Japan has grown as “Universal Fukuoka City” based upon Universal Design and provided an easy and convenient daily life for all. Re-appraising society’s actual needs by focusing less on wealth and luxury in society and more on bringing real needs into the foreground is the best way to move forward.

As previously indicated, needs also change throughout a person’s lifespan. Housing requirements for children and older adults differ significantly from those in their middle years. Thus, barrier-free design and Universal Design meet the present needs of users, by creating living spaces that can easily and safely be used by children, older adults or those who have restricted mobility. This is pertinent to a living complex that accommodates a multigenerational population.

Old age is not a territorial or national phenomena but a global occurrence. It is time to design and provide the appropriate design frame for this sense of well-being, not only for senior citizens, but for all ages. According to Interface Sustainability “the rights of older persons are a key component of social sustainability, which is focused on the development of programs, processes and products that promote social interaction and cultural enrichment” (n.d).

It emphasizes protecting the vulnerable, respecting social diversity and ensuring that we all prioritize social capital. Social sustainability affects the way our global community makes decisions. Most typical housing designs, nevertheless, cater to a younger population that can pose difficulties to those with “sensory, mobility or cognitive limitations”. During the past few decades, a new way of thinking about housing for older adults, that provides more options for the aging population, has been emerging. Again, “innovative ideas about living long full lives that incorporate both living arrangements (i.e. intergenerational housing, co-housing, etc.) and the redesign of housing itself to support a wide range of abilities”. These would be the best form of living arrangements that encourage all generations to interact together. Moreover, Universal Design will support a more effective environment for fully accessible and enjoyable community living for all. As shown in Fig 13. the unit plan design is an ADA compliant bathroom that allows 60” turn around space for ADA accessibility. A wide open space will allow more random choices and needs. Also sliding door designs save a certain amount of space.

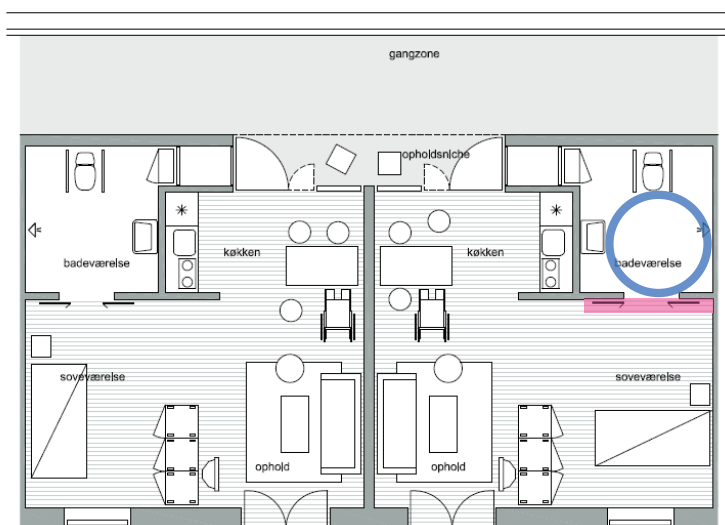


Fig 13. Præstø Multi-Centre, Senior Citizen Residents Unit Design © Force 4.dk



Fig 14. Bioscleave House

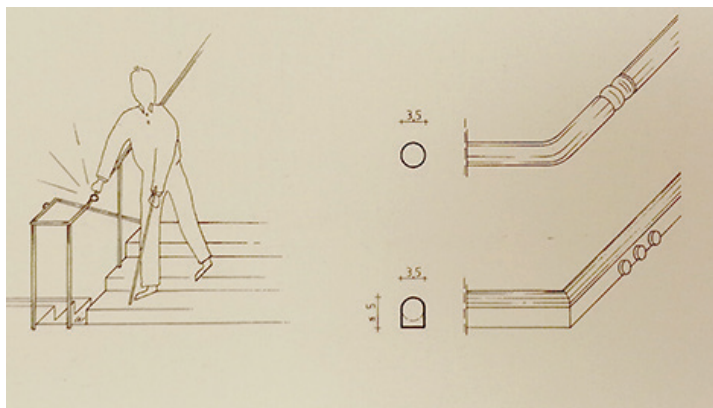


Fig 15. Detail of a Barrier Free Access

Fig 14. shows grab bars near the shower and toilet in the master suite. It is an example of “Tolerance for Error”(5th principle of Universal Design). In addition, various colors and materials are used to help people attain information more effectively and clearly.

Fig 15. demonstrates how visually impaired people are aided by using a strip four to five centimeters wide attached on the edge of the step tread. This helps people recognize it is the first or last steps of staircase. Handrails are installed on both sides as an added to provide stability for individuals that have difficulty walking.

CHAPTER III. SOCIOLOGICAL AND PSYCHOLOGICAL STUDIES

3.1. Risk and Protective Factors throughout the Life Cycle

By studying risk and protective factors, one can determine how social engagement affects people during their life cycle. Social engagement acts as a protective factor during all parts of the life-cycle and mediates potential risk factors that everyone faces. The risk and protective factors include biological, psychological, social, familial, environmental, and societal dimensions.

A general lack of social engagement is a risk factor during each stage of the life cycle(Hutchison, 2005). The author of Social Work with Older Adults, McInnis-Dittrich(2009) described social isolation as a powerful risk factor not only leading to cognitive and intellectual decline in late adulthood but also physical illness. Well supported social engagement seem to reduce risk factors and help to develop positive results. An intergenerational living complex should promote a lifestyle that offers not only programmed social activities but also spontaneous meetings between residents.

Werner & Smith(2001) indicated in their book 'Journeys from Childhood to Midlife: Risk, Resilience, and Recovery' "the availability of social support seems to buffer most risk factors for infants and toddlers"(p.133). These social support systems include informal networks, friends, community members, extended family members and neighbors.(Werner & Smith, 2001).

The interaction within the neighborhood or in the same living complex provides a positive social support. During the years of early childhood development, the social support from family and non-family relationships in the community help to enhance physical and cognitive skills, as well as social development. Also good social skills, good peer relationship and the ability to cope with social hindrances are protective factors during the middle childhood development part of the life cycle. According to Benson (1990); Blyth & Roehlkepartian (1993), high-risk behavior among children increases when they perceive declining family involvement and lack of community support.

Furthermore, U.S Dept. of Health and Human Services proposed 12 ways, including the following two, to help minimize risk factors and maximize protective factors in adolescence in the “Healthy People 2020 Campaign”.

The two factors of note are: 1.) to increase the percentage of adolescents who participate in out-of –school activities; and 2.) to increase the percentage who are connected to a parent or other positive adult caregiver.

Throughout the risk and protective factor of each life cycle, it clearly shows that lack of social interaction is one of the greatest risk factors. This further supports why the community oriented inter-generational living community is a powerful new urban housing solution for future generations.

Healthy experiences early in life through an extend family, peer and caring competent adults will show positive effects and ultimately reduce risk factors. The spatial design strategy directly influences human behavior at all stages of life. Moderate social activities among people who are exposed to more community level activities with a diverse range of generations will certainly be helped by living in this sort of design complex.

3.2. Strength and Weakness(or Needs) for Each Life Cycle Stage

Strengths and weaknesses(or needs) are associated with each stage of the life cycle continuum, and one's strengths will correspond to another's needs.

In the early childhood stages, individuals need a good caregiver. Early childhood to young adulthood requires a good educational system, entertainment, and social support. Usually the young generations have a strong ability to deal with new technology and related issues. Adolescents and those in higher grades can tutor lower grade-level children in their neighborhood.

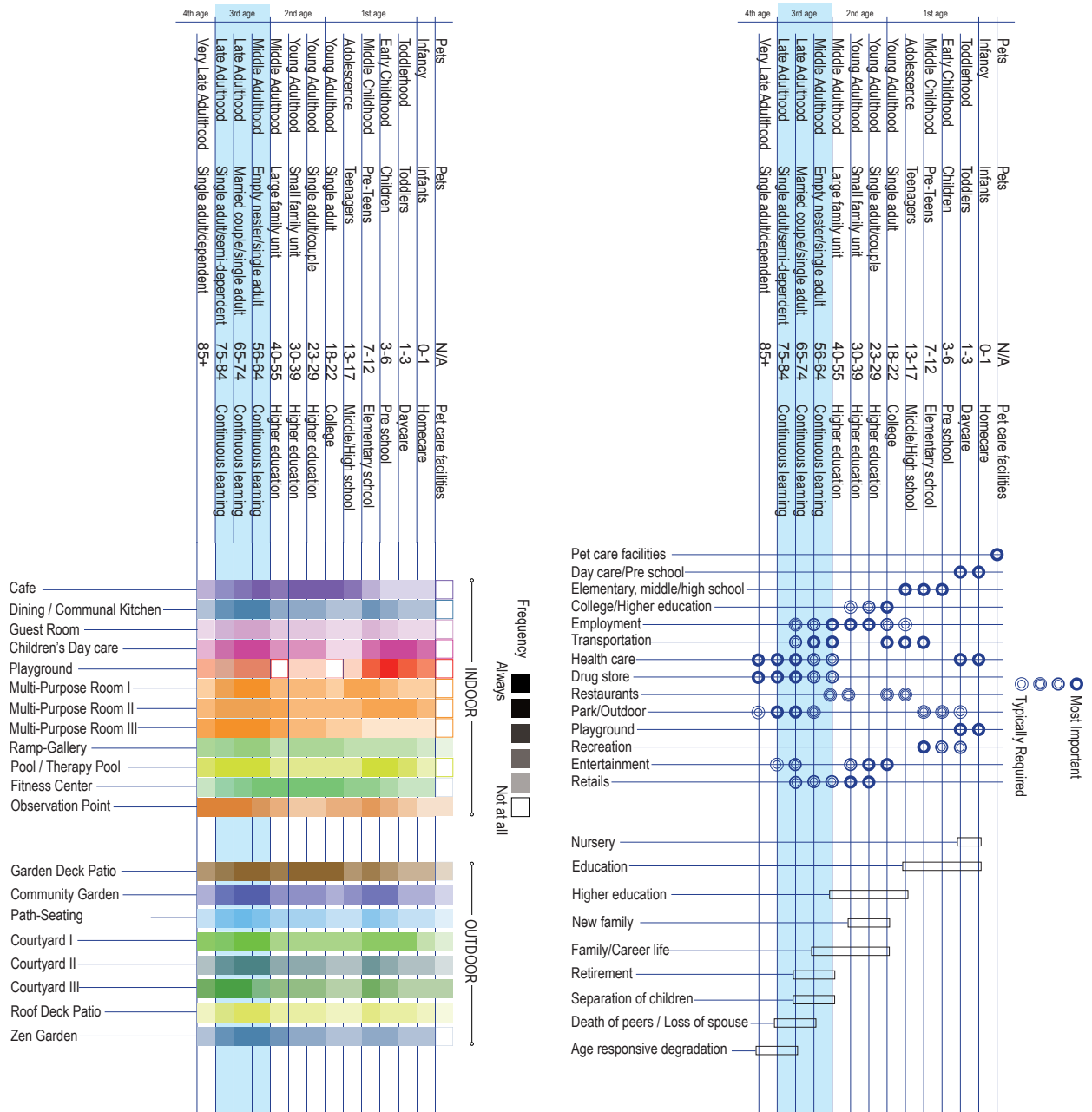
Young adulthood (18-39) and middle adulthood (40 to 64) households are more likely to need child care services. Middle adulthood is generally a period when humans are at their peak for most of their mental abilities; also they can contribute their time and money to someone in need. Also male residents can perform routine maintenance, such as replacing light-bulb etc. for some households that need those services. Middle adulthood to very late adulthood can offer their personal life experiences and wisdom to young generation in the community. Late adulthood (65-84) and very late adulthood (85+) individuals are more in need of a living environment without physical barriers for mobility. Young professional who works for IT, they easily be a tutor for higher level of computer training for local community.

Fully independent people who are in late adulthood still need to have a sense of participation in society in order to avoid having a loss of purpose. They can be a meaningful caregiver for early childhood. Simultaneously, this will support a need for companionship and social engagement by people in late and very late adulthood.

During the late adulthood period there is a need to have health care facilities in close proximity to the living complex, as well as neighborhood amenities with convenient accessibility, not only for an emergency situation, but also health care purposes.

In conclusion, the study has centered on analyzing the risk and protective factors; and their strengths and weaknesses of each segment of the life cycle in order to identify design strategies for positively enhancing and influencing everyone's life. Table 1 shows the needs per generation and life events for each life cycle. This will help to determine which program space can be used the most per age group. It eventually shows how they best can interact in each program settings.

Table 1. Life Cycle Continuum and Program Usages



3.3. Program Planning Strategies : Scenario Planning

The living complex is programmed to take into account the cross generational needs and physical abilities of the residents; designed multi-purpose rooms that contribute to a multitude of activities. A strategic programming plan is one of the foremost elements to consider for encouraging more residents to interact together. One generation's strengths serve another's needs, as defined in the previous chapter.

Areas are divided into specific spaces for peer group activities with inter-generational interaction or more private areas that support specific needs. By creating layers of programming, various topics prove to be more effective such as different scales and characteristics.

Depending on individual cognitive abilities or professional capabilities, the programs can tap into the intellectual hub of each resident or individual in the local community. Multi-purpose rooms provide areas for activities to serve as educator (giver) and student (taker), employing residents and individuals in the community, thus creating a self-help system and symbiotic relationship; these roles can change so that a student can be a teacher as the needs arise. Again, the programming should extend through multiple spectrum ensuring the utilization of the spaces. When observed by the author many times, community rooms were dark and unoccupied, however, this scenario planning will ensure that community rooms or multi-purpose rooms are frequently used by the populous.

The examples below show how to utilize the spaces and programs to encourage residents and local community members to meet more often. Also these scenarios are mainly permeated throughout the sample design model in Chapter 7.

Communal Dining :

Sharing a meal with older generations often bring people together. Although the focus is on the meal, conversations will begin as stories will be told. This is a great opportunity for younger generations to be involved with different cultures and traditions. The community garden can serve as the source for the communal dining and meals can be had effortlessly at any time, day or late night, and in small or large groups.

Cafe :

The communal dining space is adjacent to a café. The lounge area can be utilized by the local people during the day, and a part of the cafe sitting area can be shared by more residents for late night snack, gathering and casual chatting when the cafe is closed. The cafe will have a tremendous amount of potential that will bring more local community into the living complex. This will be the stimulus for making the entire site to be more vibrant and livable.

Garden Deck Patio-Ramp :

The garden patio is designed to be accessible from the cafe. Moreover, the surrounding ramp offer opportunities to watch children at play and to observe day to day occurrences in the local community. Walking along the ramp, residents can access different areas such as the gym, multipurpose rooms, semi enclosed sitting areas and barbecue stations. Equally, people's experiences offer a holistic approach through daily levels of exercise just by walking through the complex. This enhances the living complex's by becoming an open welcoming space which engages the community. It is the core of the design to which promotes the architectural engagement.

(Therapy)pool :

A program that is received most enthusiastically for senior citizens is a heated therapy pool. Adjacent to the regular pool the therapy pool will provide a pleasurable experience while exercising with other residents.

Gym :

Providing an array of group activities with other residents will be a part of the self-help system. A resident can serve as the trainer in areas such as weight training or yoga sessions.

Children's Daycare :

Senior residents can be invited to participate as tutors for activities such as storytelling or craft projects with the children. Spending time with children help seniors to stay engaged with the community through this sort of meaningful work.

Courtyards :

Having different courtyard or outdoor spaces can have various themes, depending on the scale or adjacent spaces. They are characterized by various themes such as a peaceful Zen garden for peaceful relaxation, or a community garden with active participation of the residents. It can also be just a simple gathering space to enjoy one another's company.

Gallery : Ramp Exhibition

Art work exhibition is always an enjoyable experience for pleasure of viewing and an avenue for the artists to display their accomplishments. A hallway of the ramp that is accessible to all will serve as an exhibition for the art work so that all may enjoy the accomplishments of the residents and local communities.

Guest room :

Residents who have out of town family or friends coming to visit will have the use of a guest room. This room will give the visitors, as well as the residents, an added benefit of privacy along with the freedom to do as they wish in their own space. This serves a need of many senior citizens who want to have their grand children or family members visit since they live by themselves.

Multi-Purpose Room :

Creating a co-mentoring system, a space can be utilized for the sole purpose of education. Not just for the sole use of the residents, but the local communities will also be encouraged to participate. A step forward strategy, the “time bank” idea could apply to people who dedicate their time now so that they can take advantage of the services offered in their later years. Also this will support a different form of learning.

Fig 16-18 show the program planning and program usage scenario diagram. It defines how frequently each space is used per age group. Base map (Fig 16.) is the planar view of program diagram from Chapter 7, Design Model.

Fig 16. Program Planning

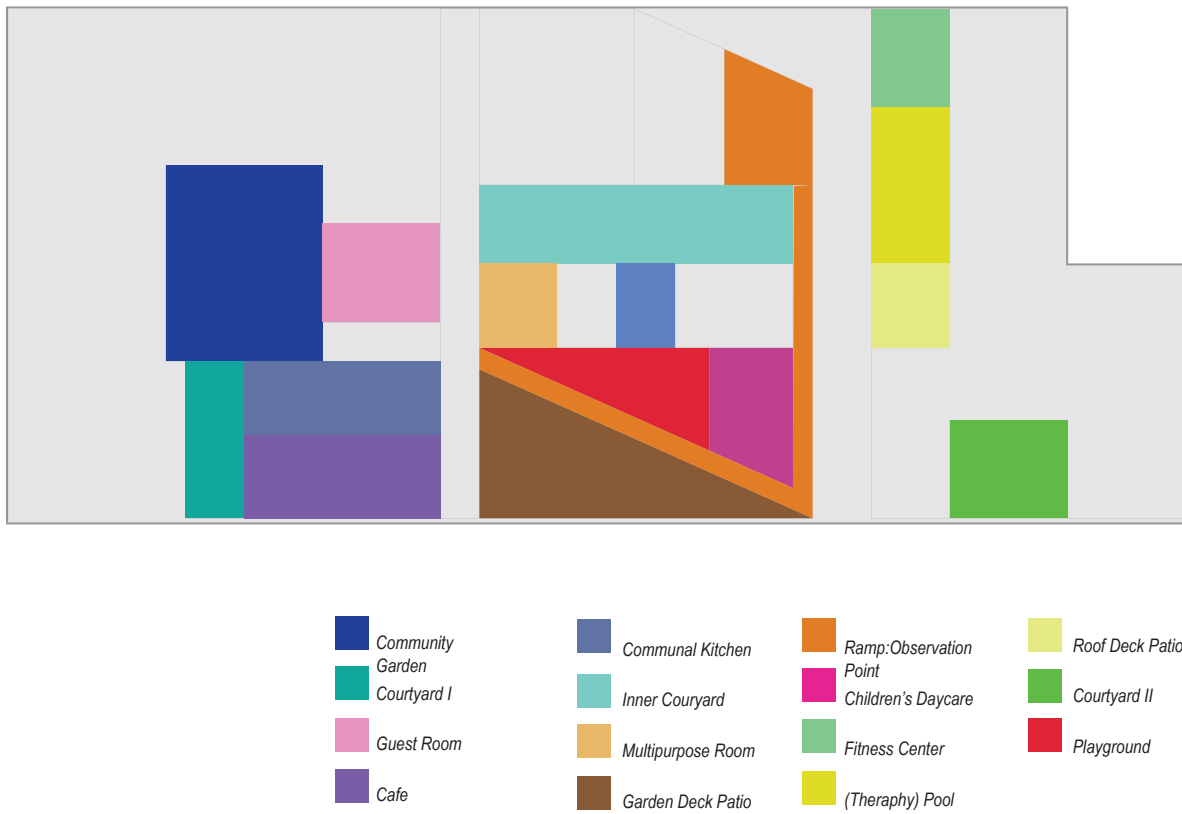
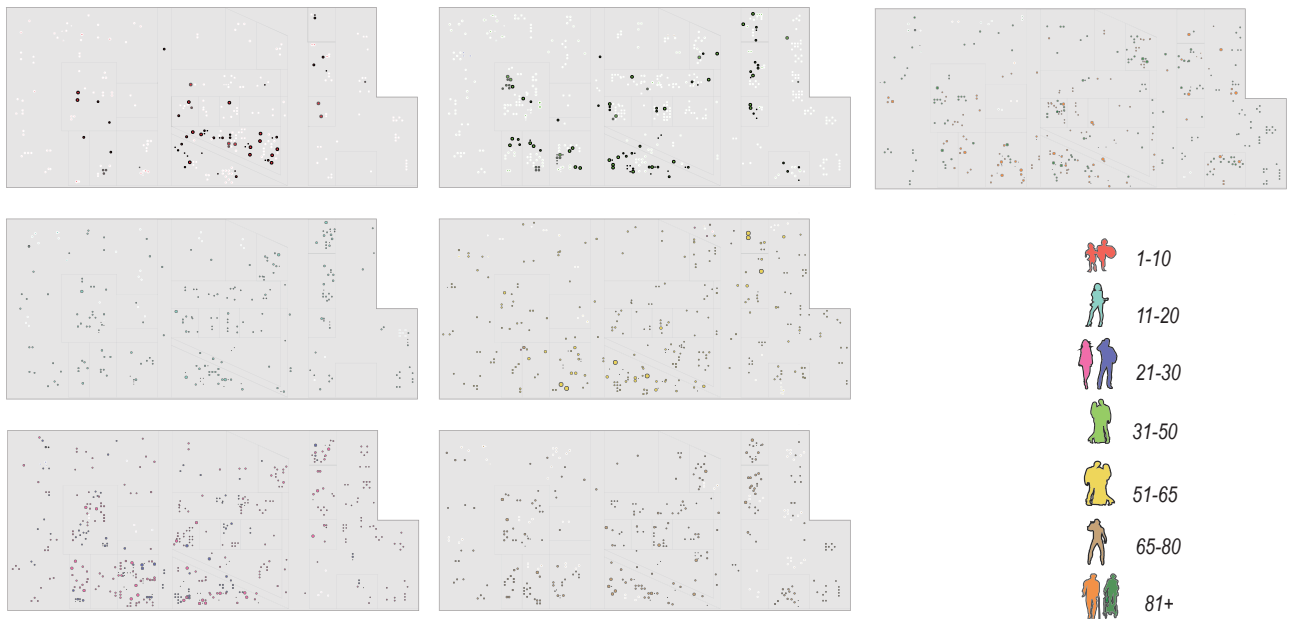


Fig 17. Program Usage Scenario Planning(a)



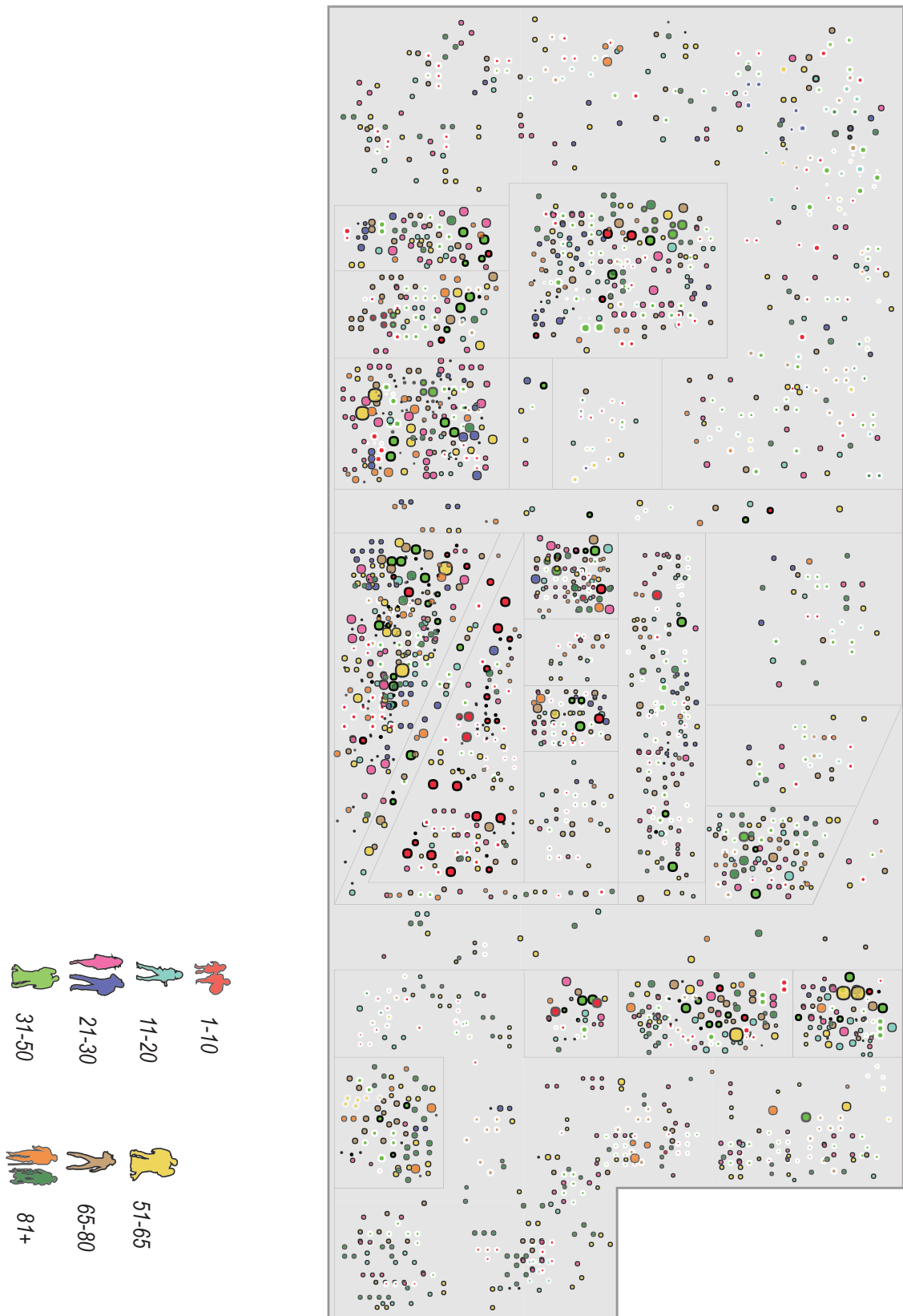


Fig 18. Program Usage Scenario Planning(b)

3.4. Residential Environmental Psychology

“A key part of the definition of home is its social function” (Gifford 2007) that can lead to the creation of a meaningful role or a valuable position within a living complex. This realization begins by understanding humans’ perception and spatial cognition of the environment. It depends on how actively older adults participate in the social or community group, and affects a major difference in their health.

Social sustainability is a focal term for people who reside in modern society. Since the development of modern society has altered the traditional form of the family, one should find the meaning in community living. Moreover, when older adults find a sense of purpose through social participation and civil engagement, including volunteering, it is an important dimension of social inclusion.

Thus, it will be an optimal arrangement. If a living complex allows not only reduced a social exclusion, but also encourages an inter-dependent relationship with one another. It provides enormous amount of benefits for older adults, but also offers a positive social relationship for all residents, regardless of age.

CHAPTER IV. AGE INTEGRATED LIVING VS. AGE SPECIFIC LIVING

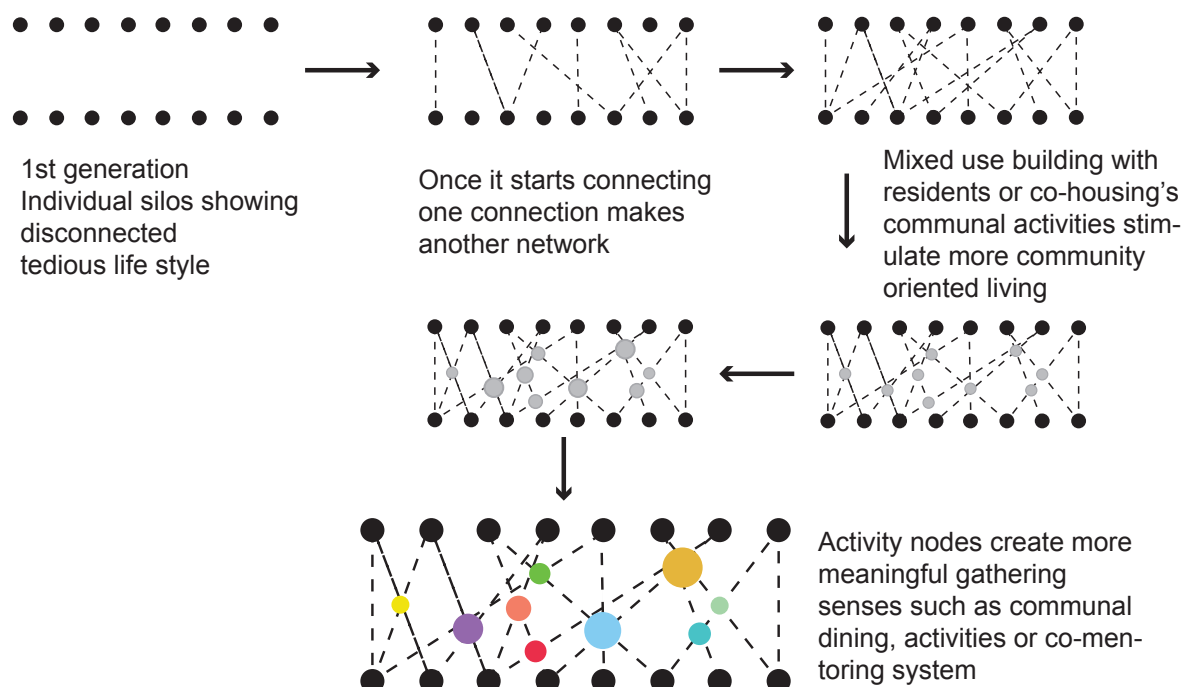
4.1. Introduction : Definition

Integrated living can mean one of two things : different group of a population living (1) in the same household; or (2) in the same living complex (Schittich 2007). Additionally, age integrated living literally defines a living complex that is accommodating to particularly different generations and different age groups. The goal of age integrated living is mutual enrichment and support in communal residences, where one generation's strengths respond to the others' needs. On the other hand, age specific living accommodates a designated age group, such as over 55, or 65 years old.

4.2. Benefits of Age Integrated Living

The 1st generation, the primary stage of development, starts with a typical type of housing for the aging population: the age specific living such as a nursing home, an assisted living facility, and an independent senior living. The next step in the progression would enhance living arrangements with co-housing and multi-functional usage that are a more vibrant and community oriented living arrangement. This study presumes the third generation will combine the primary stages with the enhancements of the 2nd generation into a more integrated use of the facilities to benefit all age groups. The author assumes that a building that integrates more than one program will make better synergy for intergenerational interaction. Fig 16 diagram shows how individual silos start connecting through other activities or programs. Additionally, they encourage people to more actively interact, and these activity nodes become a trigger for a vibrant living community.

Fig 19. Diagram : How to Integrate Individuals



4.3. Challenges of Age Integrated Living

This research is based on the hypothesis that integrated living provides seniors with a more positive living environment in various ways. In the beginning of this research it was found that a few experts' opinions and reports indicated age specific living offered higher levels of satisfaction to senior citizens. Also integrating people who are in different life stages is challenging in respect to interaction within the community space. The people in their very late adulthood stage(85+) are considerably frailer. There are several professionals whose work has been particularly helpful to define age specific senior living. Even though they realized the success of integration is difficult to achieve especially with a frail senior, they validated the potential of integrated living.

D. Jon Pynoos(1995) described in his book, *Housing Frail Elders; International Policies, Perspectives, and Prospects*, when comparing age specific vs. age integrated housing, people in age-specific housing generally report higher levels of satisfaction than those living in age integrated housing. This statement actually applies to more frail seniors. In responding to this issue, he explained that age specific housing options have been developed to meet the needs of frail older persons more efficiently. They have been designed as open to the community to prevent social isolation of senior citizens and frail older persons while living in age specific living complex in many European countries.

For instance, Pynoos (1995) describes to help in preventing the senior's social isolation, "Denmark's service houses are designed to meet the needs of their frail older residents for a supportive physical environment and on-site services ... In addition, many service houses restaurants, recreation facilities, and meeting rooms open to the entire community" (p.11).

Gray Prager, who is an experienced architect of 36 years, has a primary focus in designing senior housing and care facilities. He pointed out that multi-generational housing doesn't generally work well when it comes to addressing health care needs of the residents. However, he conducted research on intergenerational community in which some specific senior living complexes have linked children's day care centers. They realized that providing an intergenerational community associated with CCRC's [Continuing Care Retirement Communities] should not be planned mainly due to the frailty of older adults. Because many frail seniors do not associate with young families, they have a hard time interacting with them. This leads me to believe that healthy and active seniors interact better in integrated community.

Daniel Levi is a professor at Cal Poly and an expert in environmental psychology. In his view, multi-generational living complexes are not adequate living form for frail seniors because those who are 85+ years old experience sensory decline. These people in the "very late adulthood" stage are disturbed easily by their surroundings. Therefore, as children play and young adults interact with their peers, the noise causes stress to the senior citizens. This also leads the author to believe that some active seniors are more appropriate for integrated living community.

Sara Bartlett, a Sociology professor at Cal Poly, is an expert in gerontology and geriatric studies and teaches the sociology of the life cycle. In her opinion, a multi-generational housing complex would be best designed for seniors based on level of “mental functional ability” rather than relying “strictly on chronological age”. She also demonstrated a need for nursing homes for those who require more intensive care. Usually these nursing homes would be located on site but separate from independent living.

These supportive ideas have caused this research to reflect on what seniors actually think about age specific living versus age integrated living. Firstly, informal interviews with a few senior citizens who offered opinions about their living circumstances and their preferences were helpful in obtaining ideas of reality. The interview responses are summarized below.

	Age	Gender	Living Type	Preference	Comment
A	85	Female	Affordable senior living	Age-specific	Perfectly happy with age-specific living
B	68	Male	Affordable senior living	Age-integrated	Willing to live more age integrated living and interact with different generations
C	58	Female	Affordable apartment -Senior wing	Age-integrated	Prefer to have an intermixed neighbors similar as she lives now.
D	72	Female	Co-housing	Age-integrated	She appreciates the living environment that she currently lives.
E	60	Female	Condominium	Age-integrated	Expects a positive living environment in age integrated living rather than senior housing
F	82	Female	Co-housing	Age-integrated	She finds rewards from living in a multigenerational co-housing every day
G	80	Male	Townhouse	Age-specific	He has a negative opinion to live in an age-integrated living complex(too noisy?)

Table 2. Informal Interview Results from a Few Seniors about Preference of Living

4.4. Survey : Living Arrangement Preference of Persons 55+ Years

Several statements were found that demonstrated a considerable number of older adults prefer to live in an age specific living arrangement. Surveys conducted in the 55+ age group asked about the individuals current living arrangement and their preferred living arrangement if money was not an issue. This survey also asked if interesting activities would encourage interactions between residents and local communities in order to reduce social isolation.

The subjects are members of the Senior Center in San Luis Obispo, the Jewish Community Center in San Francisco, and the residents of Menorah Park Senior Housing in San Francisco.

The survey forms were left on a table at each of the community rooms. Once the survey was completed each subject was asked to place it in a (locked) secure box. This protected the privacy of all subjects who participated in the survey. The survey helped to :

- 1) Determine what type of programs should be designed and built for intergenerational interaction
- 2) Define what kind of social spaces would encourage residents to stay and interact the most
- 3) Specify how, taking strategic planning into consideration, these various generations are grouped in proximity to one another.
- 4) Define tangible sources for making better synergy in an age of integrated living.

4.5. Survey : Results

The total number of subjects surveyed were 102 people. Age groups were 55-64 : 12 people, 65-74 : 36 people, 75-84 : 31 people, and 85+ : 23 people (Fig 20), 65 female and 37 male subjects (Fig 21).

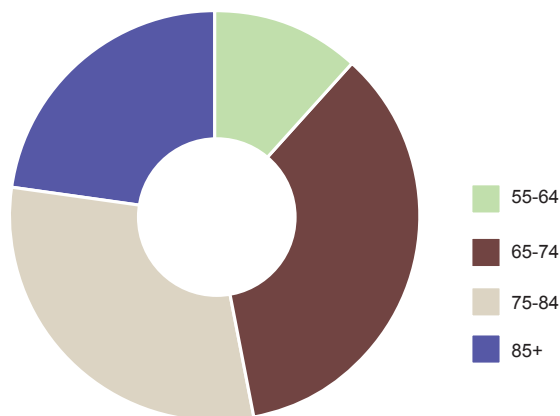


Fig 20 : Subject's Age Group

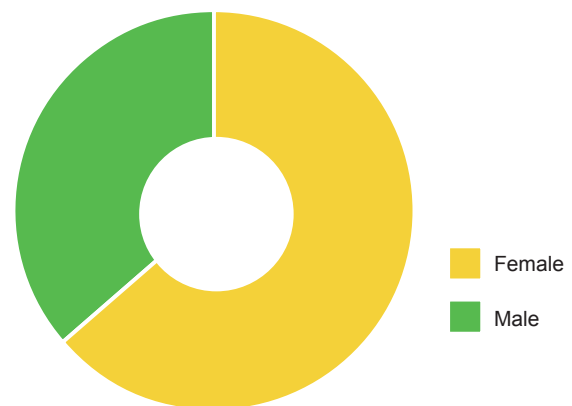


Fig 21 : Subject's Gender

Many people's responses showed a preference for an age integrated living. They would like to see the benefits of interaction through a cross generational living system. Results of preference illustrated on Fig 22: 10 people out of 12 among 55-64 age group, 24 people out of 36 among 65-74 age group, 16 people out of 31 among 75-84 age group and 4 people out of 23 from the 85+ age group responded that they prefer to live in a multi generational housing complex.

There is a tendency: that 56-65 age group to prefer to live in age integrated living more than the 85+ age group, although chronological age is not a significant issue. The survey shows that frail older adults prefer to live in age specific environments that offer a more calm and peaceful atmosphere. However, the more active older adults prefer to live in an integrated living complex with cross-generational interactions.

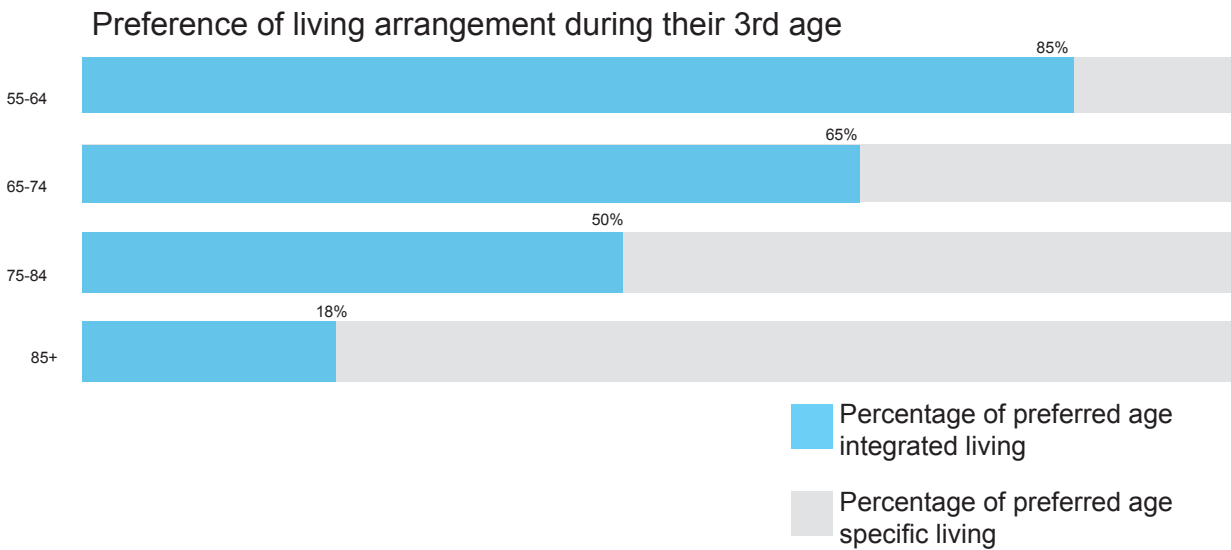


Fig 22. Survey Results : Living Arrangement Preference Each Age Groups

Specific questions:

No. 8: “to see any potential problems or issues with living in proximity to younger residents that are including infants, toddlers... and teenagers” and

No. 9: “to see any potential benefits with living in proximity to younger residents that are including infants, toddlers”.. 65% of people responded “No” for question 8, and “Yes” for question 9. This result shows that many senior citizens have a positive opinion for age integrated living and see many benefits of inter-generational living.

When asking participants to explain their answers, people typically responded with “keep me young”, “obtaining new ideas”, “interactions” , “energy and excitement of the younger to encourage the older” and “motivation”.

However, some people “see some problem” and were mostly concerned about “noise”; older adults have a low threshold for noise. Interestingly enough, quite a few people answered that they see benefits and positive aspects of age integrated living, although they indicated “noise” as a concern for the integrated living.

The activities that seem intriguing for seniors are shown in Figure 20. One thing is certain, many of the older adults who are in the 3rd age group highly desire to live in a stimulating positive life through continuous education and learning sessions. Unexpectedly, cooking and gardening work showed as least favorite activities.

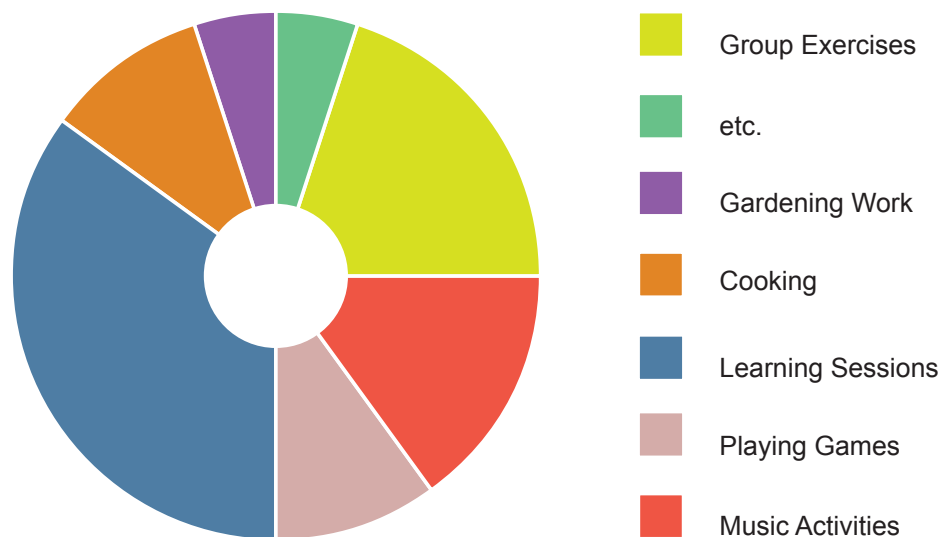


Fig. 23. Survey Results : Intriguing Activities to Participate in the Living Complex

Moreover, almost everyone indicated that they still prefer to have a private patio, based on a question that asked “Normally, our residents have access to communal patios or courtyards because we seek to encourage social interactions among residents, would you be comfortable with this?” More than 85% of people checked “Not at all” for that question. This shows that many people, especially in the United States, are looking forward to having more community level of interactions but still desire to have a personal relaxation area.

Regarding the common gathering space, the least amount of respondents checked “Roof deck” and “Semi-Enclosed Courtyard”. “Outdoor Courtyard” space was checked most as an enjoyable common area for spending time.

There is also a tendency that the individuals in their very late adulthood stage(85+) still look forward to having some interaction with others, because many people responded that they prefer to live in age specific living such as senior housing or assisted living. However, they look forward to having visitors i.e friends, grand children, and family members frequently, which supports statements that the author was found.

CHAPTER V. METHODOLOGY

5.1. Literature Review and Social Psychological Study

This research intends to determine how to improve residential buildings to include all age segments and uncover how multi-generational programs can be used to respond to the problem of a growing senior population.

The following two methods were used to determine the research topic.

A) A broad range of case studies by a variety of different competitions and projects 1) Study what kind of methods can be used to enrich a predictable demand on current housing systems in our society, and; 2) Investigate what tools are available to an architect to implement successful strategies and initiatives for intergenerational reactions.

B) Through sociological studies of the life cycle and interviews with not only the senior population but also young adults, they will determine the needs and ideal tools that can encourage all generations to amalgamate and influence each other.

5.2. Survey

Based on studying varying articles and papers, there is no clear-cut preference among senior citizens for their living arrangement. Thus, by conducting surveys of 55+ age groups, the author tried to determine what are the actual preferences of senior citizens for living arrangements, and whether multi-generational living is required or not.

5.3. Design Application

Eighteen features apply a design model and create a living prototype for promoting a healthier and more active senior life.

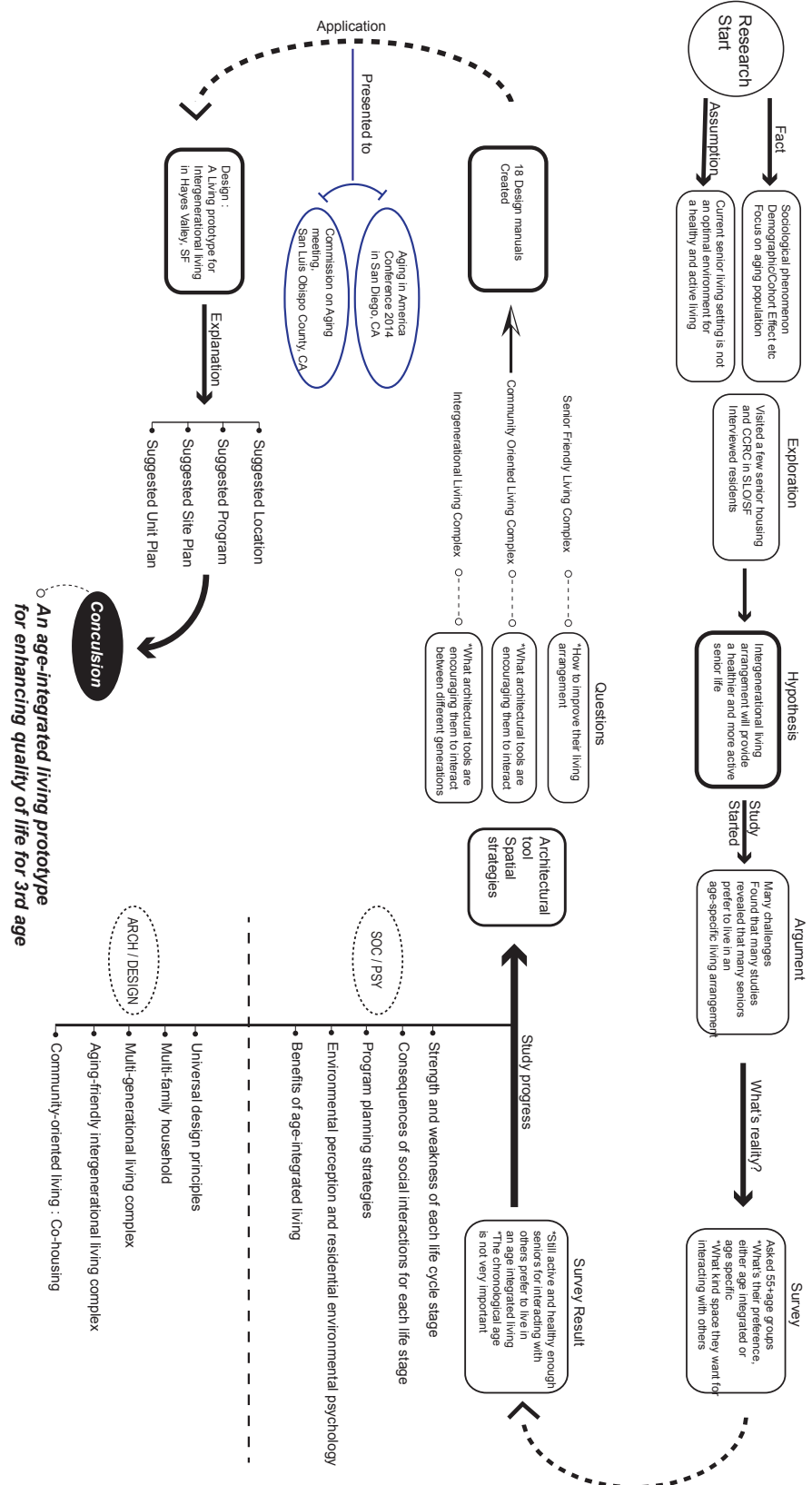


Fig 24. Research Progress Diagram

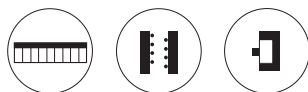
CHAPTER VI. STRATEGIC DESIGN MANUALS

This research includes design manuals to demonstrate how strategic architectural planning will help to solve the requirements of three different elements which ultimately bring a healthier and more active 3rd age:

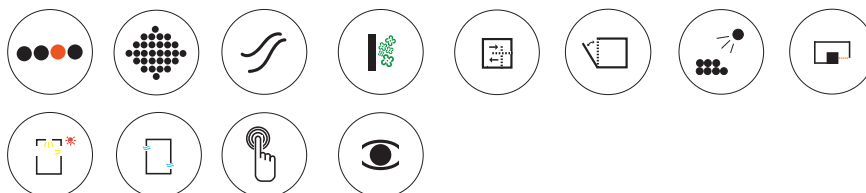
The first of the three elements is the frequent interaction between residents and the local community. Secondly, it shows which of the elements will bring a positive aspect for a senior friendly living complex. The third will highlight those elements that will encourage a social interaction between different generations and different resident groups in many ways.

This will ultimately show how to improve residential / living environments to promote all age segments through co-mingling. This will also establish a self-help internal system within the living complex, thus establishing local communities that are a vibrant and livable community. These eighteen design manuals are categorized as community oriented living complex, senior friendly living complex and intergenerational living complex in the paper(Fig. 25 Design Manual(a)). But it also can be characterized as unit specific, site specific and program specific. (Fig. 26 Design Manual(b))

Community Oriented Living Complex



Senior Friendly Living Complex



Intergenerational Living Complex



Fig. 25. Design Manual(a)

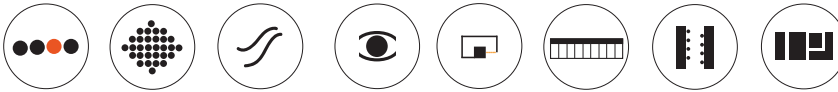
Unit Specific**Site Specific****Program Specific**

Fig. 26. Design Manual(b)

6.1. Community Oriented Living Complex**6.1.1. Longer Pathway**

Horizontal circulation is recommended. Indeed, this is a design strategy that is most frequently used in co-housing design and is typical for living in community oriented complexes. This interaction happens naturally when people pass each other as they come and go. According to an article [Co-housing development] these spontaneous interactions considerably reduce the social isolation experienced by most seniors. A typical design in apartment complexes in the United States uses a vertical stair case with access to two units facing each other. It usually offers direct, quick and easy access to each unit. In other words, it deprives the occupant of any opportunity to meet other residents spontaneously.

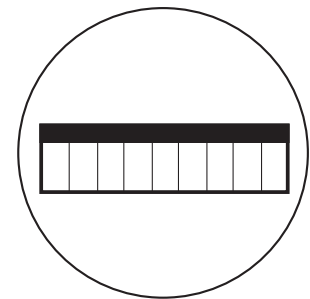




Fig 27. Swan Market Co-housing
© Pyatok Architects



Fig 28. Multi-generational Housing in Vienna
© Franziska Ullmann and Peter Ebner

6.1.2. Face to Face Unit Arrangement

An alternative design idea to the longer pathway. This orientation of each unit helps residents feel closer by allowing more opportunities to meet and converse. While responding to requirements for a more social interaction oriented floor plan, offset entrances are recommended to keep some privacy. To enhance both privacy of residents and opportunities to interact, this is a great compromise point.

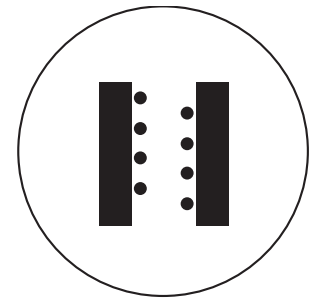


Fig 29. Swan Market Co-housing
© Pyatok Architects



Fig 30. Multengut Seniors' Residence near Bern
© Burkhalter Sumi Architects

6.1.3. Series of Gathering Spaces

The gathering spaces have a mix of private, semi-public, and public open spaces. Each gathering space could have a focus on different activities and relaxation. They could be used for a variety of different purposes. This supports a diverse atmosphere; some will be more vibrant and active while other spaces would serve as areas for peace and tranquility. The opportunity will be given to residents to choose common activity spaces depending on their mood.

This encourages people interacting. It promotes an atmosphere that common gathering spaces cannot achieve, as they may become too crowded or too deserted. People will have the choice of interacting with one another; meditating, reading books, or enjoying their own time alone, all while being in proximity to each other.

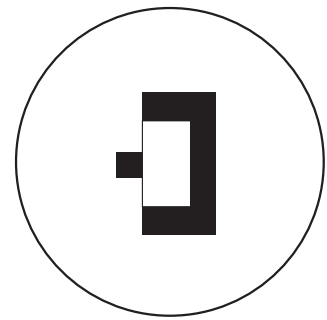


Fig 31. Præstø Multi-Centre, Denmark



Fig 32. Armstrong Senior in San Francisco
© David Baker Architects

6.2. Senior Friendly Living Complex

6.2.1. Contrasting Colors

Designing with distinctive colors benefits the visually impaired; it also makes design more appealing for everyone. For instance, color coded elevators, garage doors, and entrances of each unit make it easy for all occupants to orient themselves throughout the community. Likewise, as indicated on the fourth principle of universal design, “Perceptible Information”, provides appropriate color contrast between essential information. Its surroundings through a well-designed typography is also an efficient way to transfer certain information for all, not only those who are visually impaired. This will be one of the simplest tools to create a more intuitive and equality accessible building for everyone.

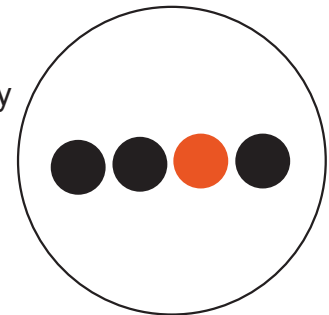


Fig 33. Armstrong Place in San Francisco
© David Baker Architects



Fig 34. Orientation System, Munich Airport
by Wangler/Adele



Fig 35. Apartment Building in Vienna
© PPAG Architects

6.2.2. Distinctive Texture

Using different materials provides distinctive texture that will help age respective physical or cognitive deficiencies. A tactile architecture is used to design a building and or space to accommodate the visually and hearing impaired. However, it is becoming more widely used in a multitude of ways, because it allows all residents to more easily find their way. It is even used for aesthetic architecture design through the use of various materials.



Fig 36. Steinacker Residential Complex

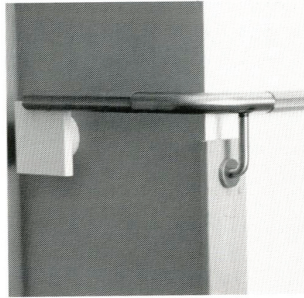
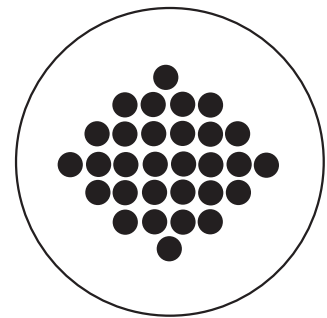


Fig 37. Handrail with Different Materials



6.2.3. Barrier Free Design

A basic concept of Universal Design. Since the Americans with Disability Act(ADA) was announced in 1990, it is a fundamental element for designing cities and communities, including parks and housing. However, many private buildings and spaces are still not fully ADA compliant. Barrier free design is an important design method that benefits someone who has limited mobility, but it also has merit for everyone, including children. Likewise, it helps accommodate varying abilities of residents; even temporarily disabled, or people who have inevitable chronic degradation or people with a minor mobility deficit. This eventually supports unassisted living for the many people who wish to stay in their unit as long as possible. Many seniors are forced to move out from their homes and integrate into specialized care facilities or age specific living arrangements.

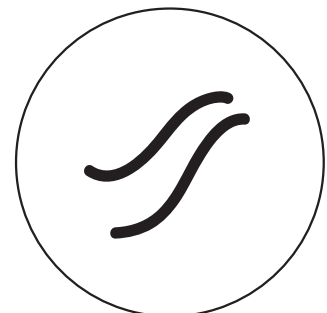




Fig 38. House Entrance without Threshold



Fig 39. Steinacker Residential Complex

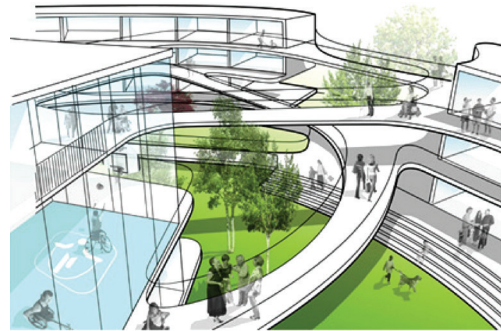


Fig 40. BFA, Denmark

6.2.4. Green Space

Well landscaped outdoor spaces provide a more pleasurable and healthier time for all the residents. An on-site community garden contributes some activities between residents like gardening work and also offers edible vegetables and fruits for communal dining. Experiencing different types of gardening spaces, enjoying various colors of vegetation each season, and different times of the year in a wide array of gathering spaces with different species would be great entertainment for older adults and young adults who are interested in sustainability approaches. Moreover, this helps to relieve stress levels and helps the healing of physical ailments in older adults. By utilizing green elements and mutually benefiting the environment, a community is built on social interactions, where everyone can enjoy a healthy lifestyle.

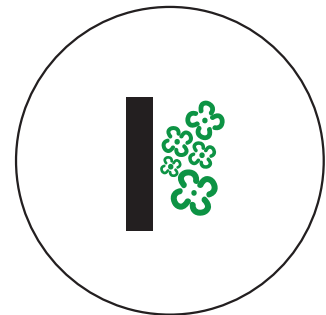


Fig 41. Redsens Hus, Denmark © Force 4.dk

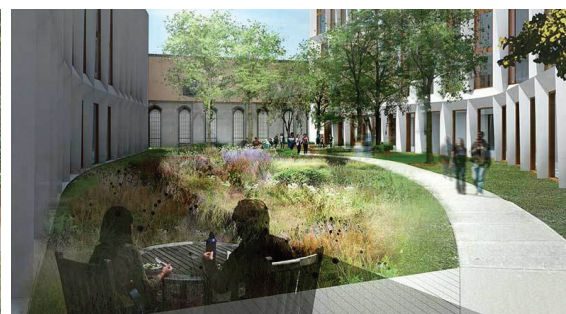


Fig 42. UChicago Residence Hall and Dining Commons © Studio Gang Architects

6.2.5. Flexible Unit Plan

Wide-open spaces can easily be reconfigured to allow flexibility as the need arises in various stages of life. This allows ease of movement for those in their later years. According to Chapman and Resenfeld (2011) “home will be the nerve center for ageless aging”. Even after retirement, baby boomers continue to participate in their communities, social activities and professional work. Therefore, they need spaces for both living and work. The many arrangements of living spaces, through a flexible floor plan, provide the possibilities of larger living rooms and larger eating areas. The different configurations can change as the older adults need and desire different activities.

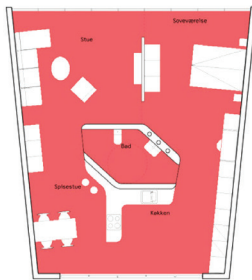


Fig 43. BFA, Denmark

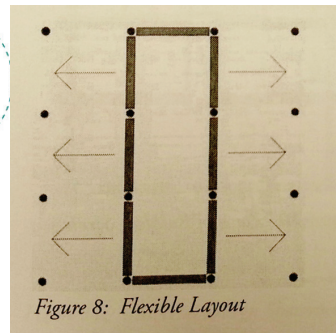
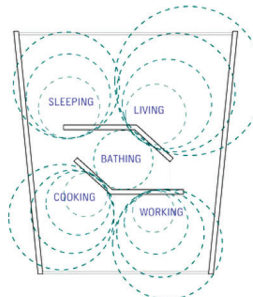
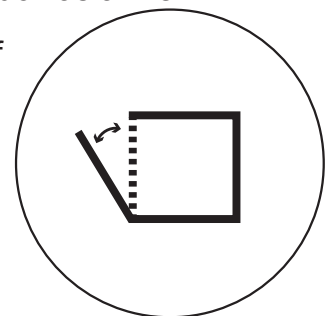


Figure 8: Flexible Layout

Fig 44. Housing in Response to the Human Life Cycle

6.2.6. Attachable / Detachable Units

Units that have the capability to use movable walls, or vertical accessibility, functionally connect secondary, smaller stand-alone apartments (studios) into one large unit. This capability responds to various needs such as a live-in caregiver for a semi-dependent older adult, or the return of older children to the nest. Major advantages of this type of living arrangement is the insurance of privacy as needed but also access to the demands in certain cases.



6.2.7. Observation Point

A layer of spaces works as observation points that can offer a more enjoyable experience for older adults. According to various articles as well as psychologist Dr. Levi's comment, older adults enjoy observing others actions more than actually participating in activities themselves sometimes.

Such simple activities as watching children playing or neighbors walking down the street; vehicles passing by or even just observing other residents' actions are satisfying and delightful moments for many older adults.

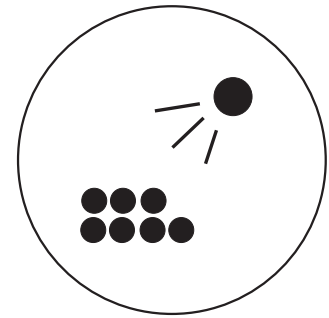


Fig 45. Taube Koret Campus for Jewish Life

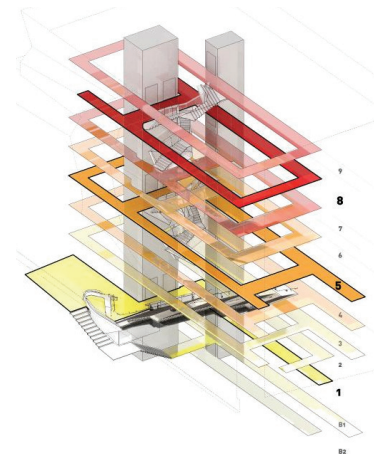
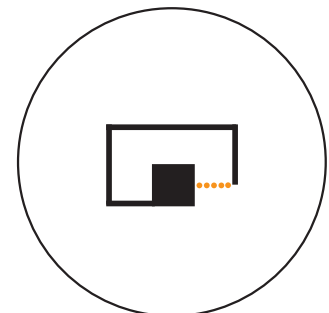


Fig 46. Vertical Circulation

6.2.8. A Short Cut: Vertical Circulation

Community oriented living complexes intentionally designed with longer pathways will encourage more horizontal circulation and promote spontaneous meetings. However, a short cut or vertical circulation will be needed in response to some situations. All the circulation should be designed in a direct manner so that residents can walk with minimum effort and intuitively find exits without confusion. Additionally it helps to reduce the possibility of accidents due to congested circulation.



6.2.9. Maximum Daylight

Daylight is one of the most essential elements in architectural design not only in senior housing but in any type of building. According to a recent study that was done by scientist Mirjam Muench, “Compared to the afternoon, people who had DL (Daylight) were significantly more alert at the beginning of the evening, and subjects who were exposed to AL (Artificial light) were significantly sleepier at the end of the evening.” With regard to office buildings in particular, the daylight increases productivity approximately 10%. This provides a pleasurable atmosphere within a living space. A decent amount of day light will support and maintain a healthy lifestyle. Even without the use of electricity, a bright indoor space provides a livable and comfortable environment.

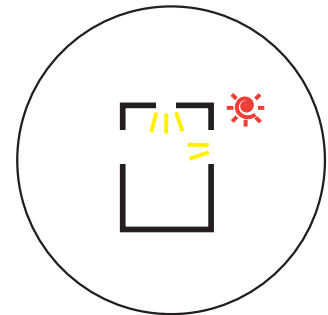


Fig 47. The Hollywood : Public Space



Fig 48. Sargfabrik in Vienna 1996

6.2.10. Adequate Ventilation

A good ventilation strategy is very important, especially units for senior and young children as it keeps a good indoor air quality and reduces unpleasant odor. Good ventilation is especially significant elements for people who do not have a good immune system. This supports 40% decrease in respiratory function between age 20 to 80.

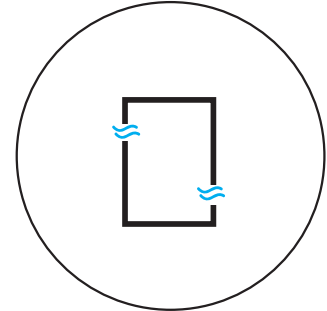


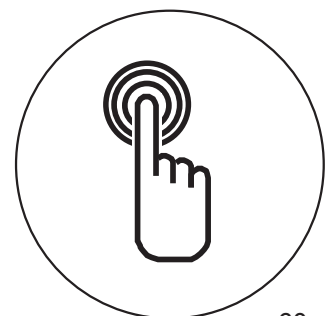
Fig 49. Multi-generational House in Stuttgart



Fig 50. Sparkling White Tower © arons en gelauff architecten

6.2.11. Adaptive Technology

With technological advances, assistive technology is a great benefit for our current or future generations. Assistive technology has the potential to increase independence and enhance the quality of life for individuals with disabilities. Additionally, this is a great benefit for everyone to enjoy an accommodating and safe environment. Environmental controls such as adaptive telephones, TVs, and lighting give people a more convenient and safe life style. Augmentative and alternative communication (AAC) can be used at the front desk of the lobby or reception station on each floor to help navigate residents and visitors to their final destinations. Video magnifier and personal amplifier can be used for someone who is visually impaired or hard of hearing, respectively.



For instance, those can be supplied at the front desk, or shared at the multi-purpose room and community library. E/V can give auditory signal and verbal feedback to let people know what floor they are or if it is going up or down.



Fig 51. An Example of Video Magnifier



Fig 49. An Example of Personal Amplifier
(Called the Pocketalker Ultra)

6.2.12. Visual Connectivity

With the visibility of pathways and common spaces, these features provide residents with many opportunities to encounter each other more often throughout the complex. Residents are more socially engaged through visibility, thus reducing the risk of feeling isolated. This strategic design manual aims to incorporate awareness and sensitivity and encourages communication between residents in the more open spaces and decreases the chances of being blocked by solid walls. To design a space with more translucent materials aids having all senses heightened and better enables the meeting of expectations.

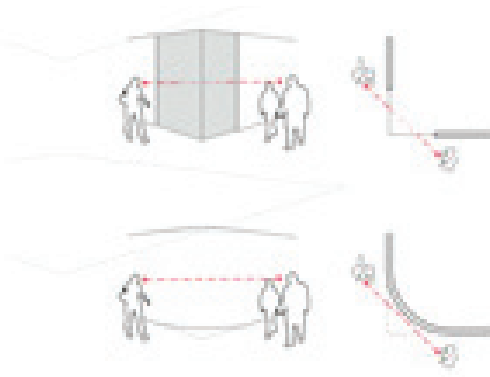
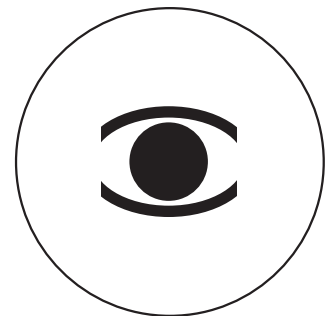


Fig 53. Deaf Space
© Dangermond Keane Architecture



Fig 54. Gallaudet University's
Dormitory © LTL Architects



6.3. Intergenerational Living Complex

6.3.1. Accommodating Various Unit Plans on Each Floor

Different types of floor plans (size of square footage) accommodate diverse groups and different family types. This strategic planning is a logical form of multi-generational living complexes. An extended idea from the various unit plans designed on the same floor, a few living complexes are actually being designed an age specific living and multi-generational proximity or sometimes located at the same site and share some common spaces. This will be a “step forward strategy”, in order to encourage all type of residents to connect with one another.

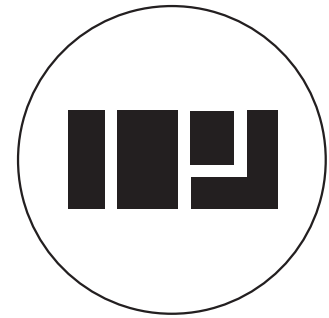


Fig 55. BFA, Denmark

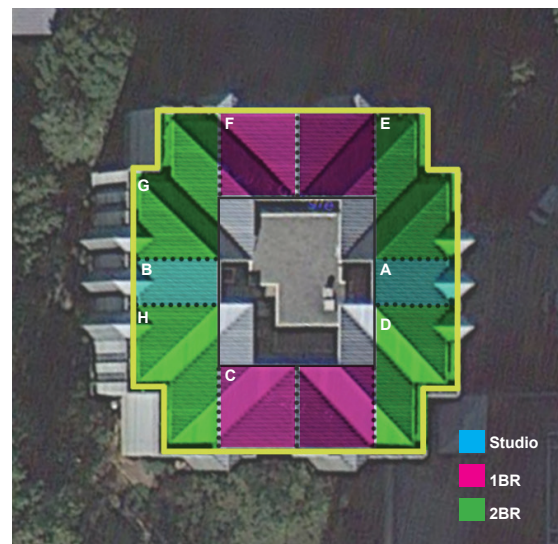


Fig 56. The Concorde, Atlanta, GA

6.3.2. Activities Exchangeable Space

The program space is intentionally designed for enhancing inter-connectivity between residents. It is centrally located in the complex and easily accessible. Strategic planning has various generations grouped in proximity to one another, in response to one generation's unique needs. For instance, one age group can tutor the other group using their strengths. Residents who share many activities together tend to motivate each other. This kind of space is required within the living complex for those older adults to match the desires of this active generation. Participating as a community leader, or helping other people becomes a chance to find a stronger sense of purpose. To create a continuous activity space with multi-purpose activities space stimulates one generation to ultimately convey purpose to another generation.

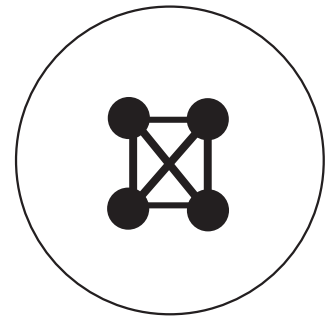


Fig 57. Præstø Multi-Centre : Living Room Space



Fig 58. Swan Market Co-Housing Community Room

6.3.3. Proper Scale / Proper Ratio

Finding out what is the most adequate ratio of each age group or generation is a foremost matter in designing a vibrant intergenerational living complex. According to systemic family therapist Gerhard Schiele, who brought the multi-generational housing concept first to Europe, it is more effective to establish the internal self-help system when accommodating each family pattern and when the generations are most likely equally divided. When there are too many of one generation or a certain type of family pattern dominates, the self-help system is easily capsized. In terms of maintaining a good self-help system, while accommodating a decent amount of older adults, it should be important to intentionally control each group of residents for a more balanced blending of families. Co-mingling with different generations can easily create a more socially sustainable community.

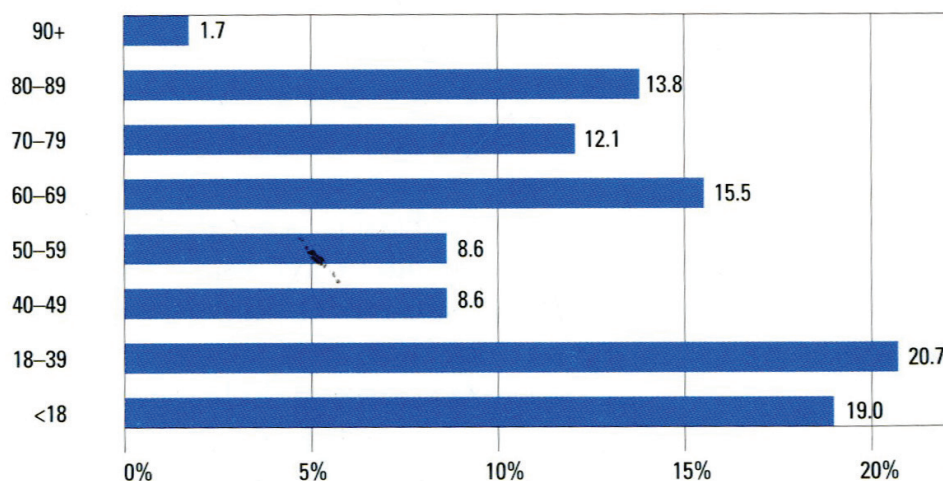
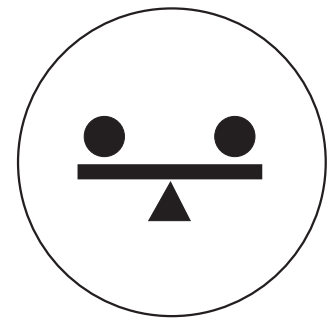


Fig 59. Am Bahnhof "Living Spaces", Meckenbeuren

CHAPTER VII. DESIGN MODEL

Based on the research, findings of 18 different manuals introduced in chapter 6. This sample design model incorporates those eighteen strategies under three categories. All the facilities and programs aim to create a lively cultural magnet and a vibrant social engagement hub.

7.1. Suggested Location

Security, safety, pedestrian friendly and easy access to public transportation are the most significant elements for a livable community design, especially for a senior friendly design.

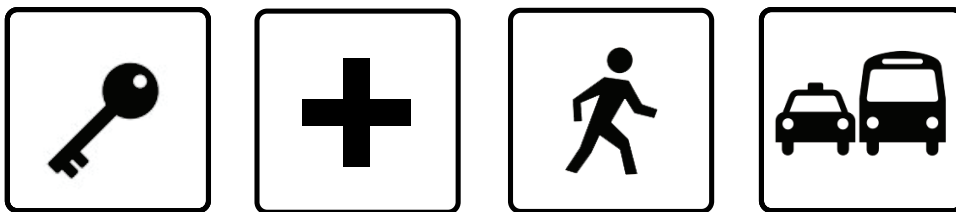


Fig 60. Four Elements that are Required for Senior Friendly Living Design

In order to accommodate these senior friendly living environment elements, the project site was selected in an urban setting located in Hayes Valley, San Francisco. This location creates an establishment that enriches residents' independence and connectivity to the greater community through its ground floor retail, and is adjacent to the city's mass transit bus routes. Hayes Valley is a vibrant area that provides opportunities for people to shop, go to restaurants as well as various types of entertainment. This local setting allows residents to spontaneously meet other people who visit Hayes Valley creating another layer of social connectivity.

Moreover, living in a neighborhood where an array of amenities are provided is a great benefit for senior citizens who cannot drive but are still mobile can walk around the neighborhood. This will offer easy of access to various activities, basically bringing an active community living.

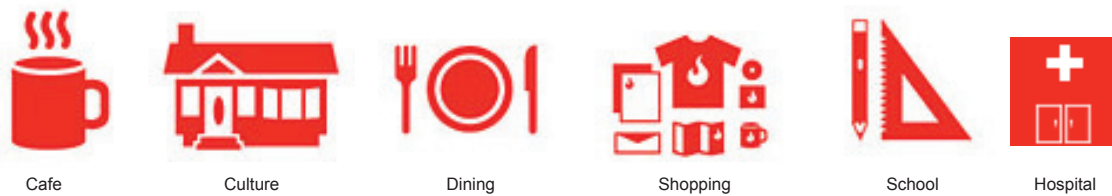


Fig 61. Amenities that should be Accessible within Walking Distance

Site

Parcel "O", Hayes Valley, San Francisco, CA (450 Laguna St. SF, CA 94102 at Fell St.)

Site Area

About 0.8 acre

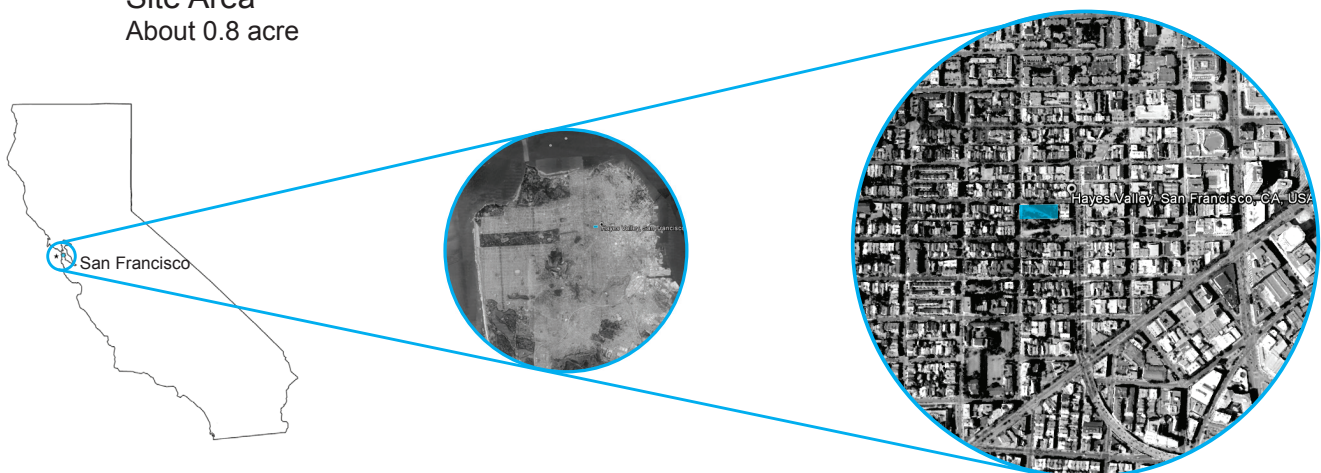


Fig 62. Selected Site Location



█ Project Site : Parcel "O"

○ Walking Distance <1/2 mile

● A. Police Office

● B. Post Office

● C. Main Public Library

● D. School

● E. South Market Library

● F. St. Mary's Medical Center 1.5mile away

█ Green Space

..... Major Routes for Vehicular Circulation

█ Primary Routes to/from Freeways

--- Secondary Routes to/from Freeways

→ Direction of Travel

● Public Transportation Stops

Muni 5/21/31/22/71/19 and Muni N/L/M/J are near by

Fig 63. Site Analysis Showing the Amenities within Walking Distance

7.2. Suggested Program

Programs

About 98units (0-3 bedrooms altered to up to 4 bedrooms)	Community garden(s) Cafe Three multi purpose room	Children's day care Children's playground Fitness center
Guest room	*Community library	Therapy pool
Courtyard(s)	*Study room	Laundry room
Roof deck	*Computer lab	Parking
Communal kitchen	*Learning Space	Secured bicycle parking
Exhibition hall(Ramp access)		

The site area is 39,000sq ft, and the total area for the project (is this the building area?) is near 136,500sq'. The building at the 40' height level is 19,500 sq' and the 50' maximum height level has 19,500 sq'.

The common areas designed for interaction between the residents and the local communities will be allowed 19,925 sq'. Fig 64 illustrates the circulation pattern to show interconnectivity for the common area on the ground and upper levels.

(A) shows interconnectivity between the programs accessible from the Fell St. side of the complex and to the Hickory Alley side on the ground level, and (B) shows program connectivity on the upper level.

The main use of the ramp links all the programs on ground level to the upper level. People led to the site throughout the complex and experience variety of activities in a holistic way.

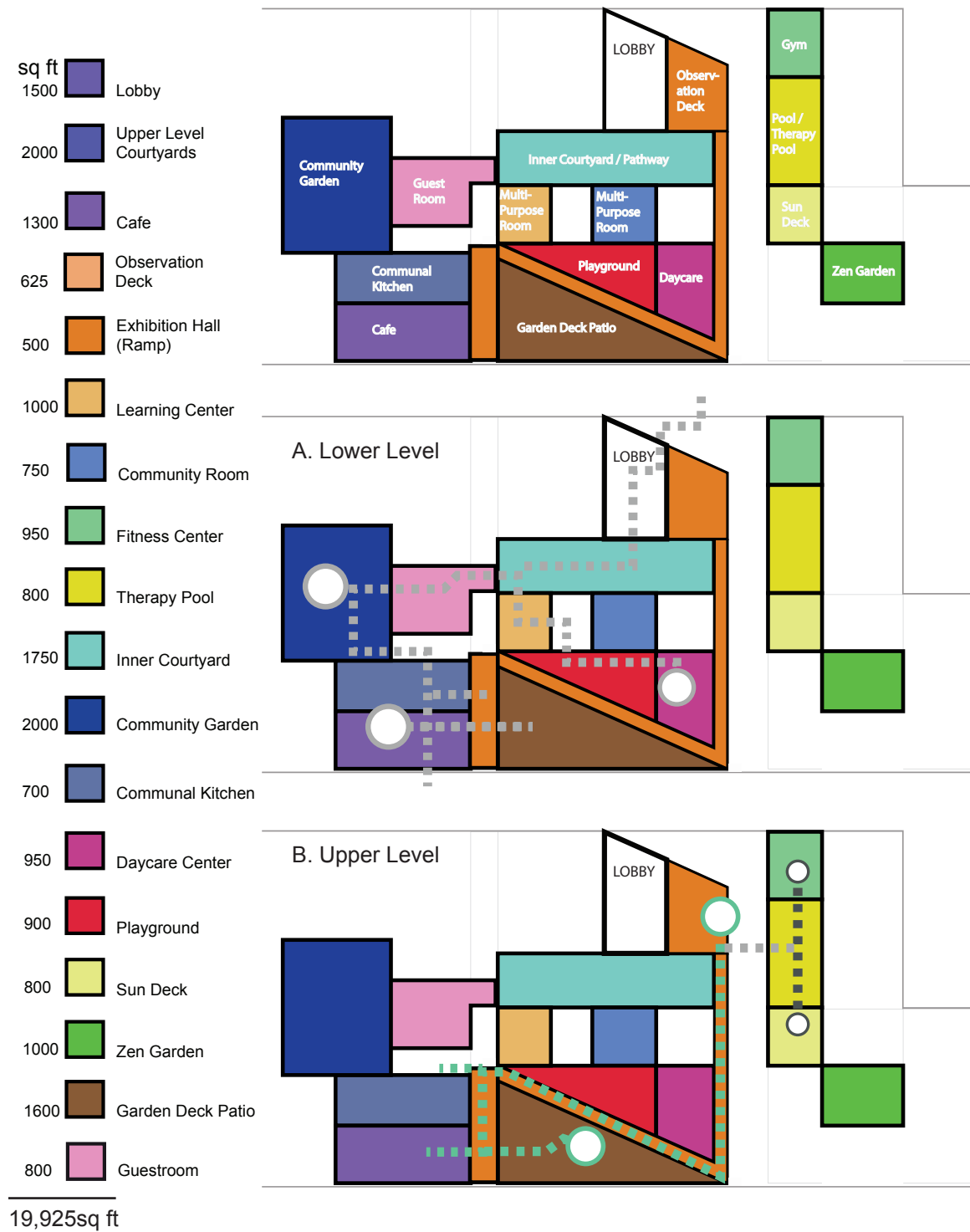


Fig 64. Common Area Program Area Size and Connectivity Diagram

Fig 65. Program Diagram : Indoor

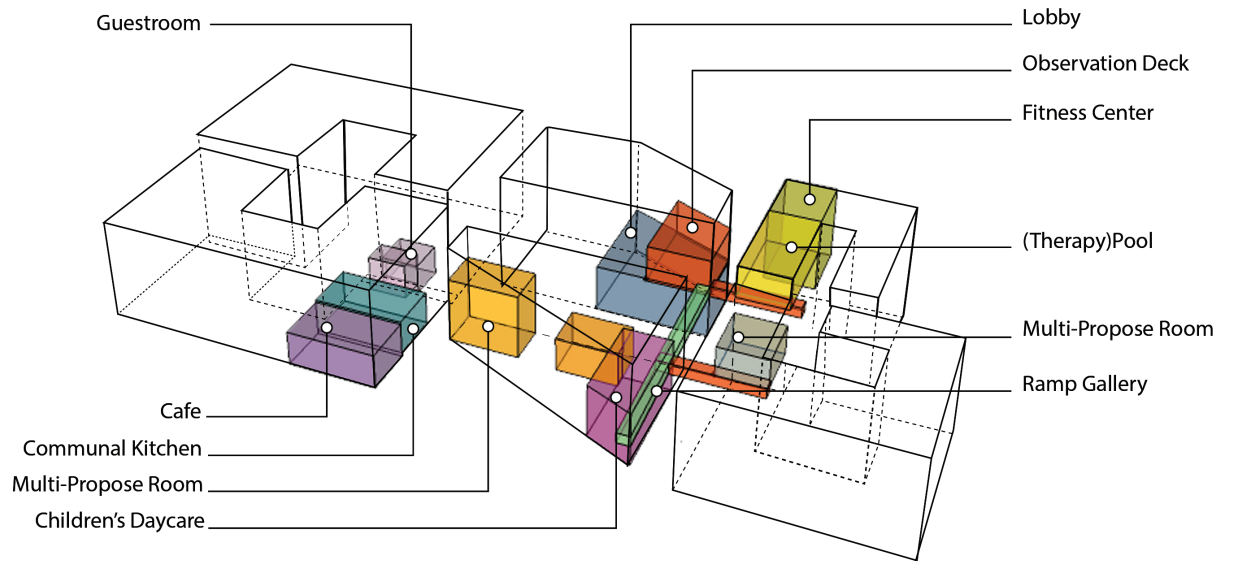
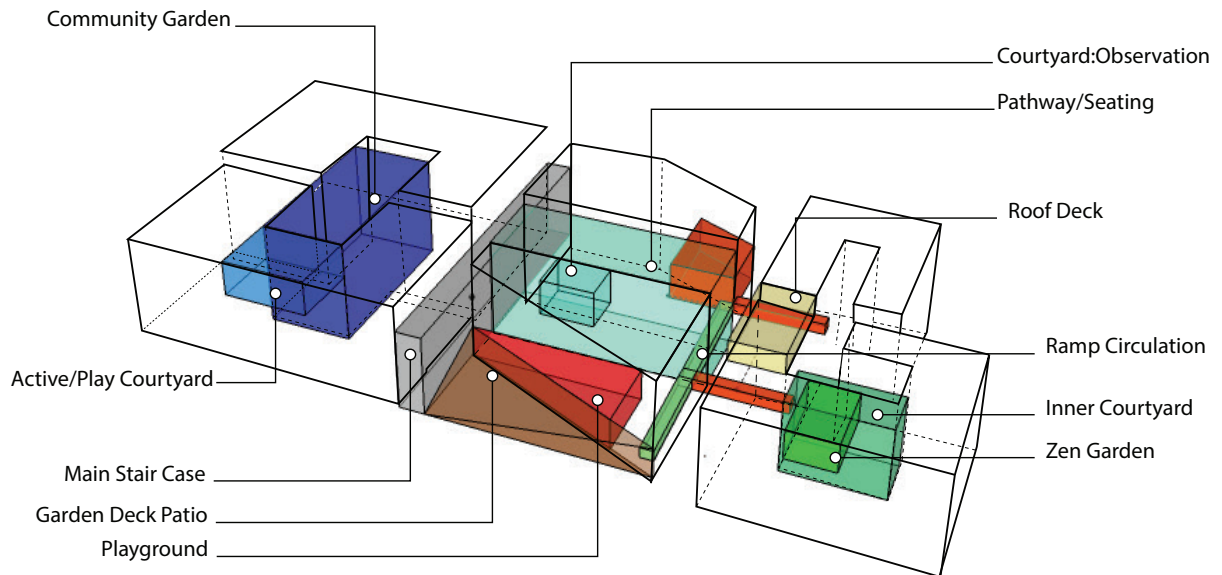


Fig 66. Program Diagram : Outdoor



7.3. Design Process

The design starts with examination to define the context of the site and local infrastructure. Moreover, it studies the connectivity of the local community and an adjacent site parcel “P”. The next level of examination specifies the program and attempts to place it in the spatial topology with massing study. The programs for indoor and outdoor activities take into account the circulation patterns for promoting a spontaneous meeting between residents and bringing the local community into the site to share activities. In addition, the area site plan of 39,000 square feet, which consists of 18 features, is applied in various levels and are specific to units, sites, and program. This ultimately provides a vibrant living environment which is community oriented, senior friendly, and intergenerational living environment.

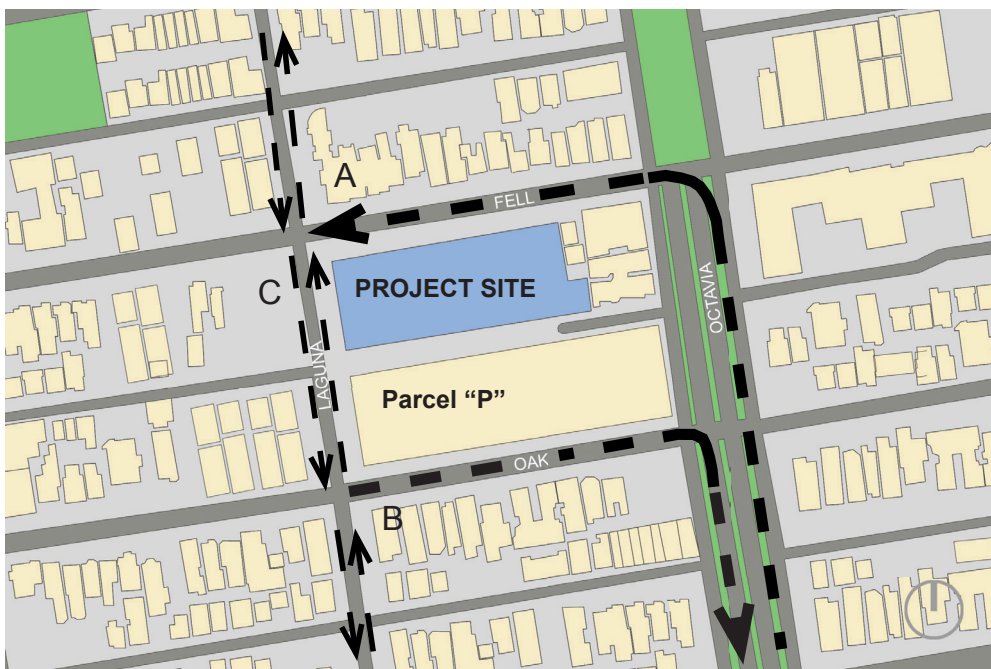
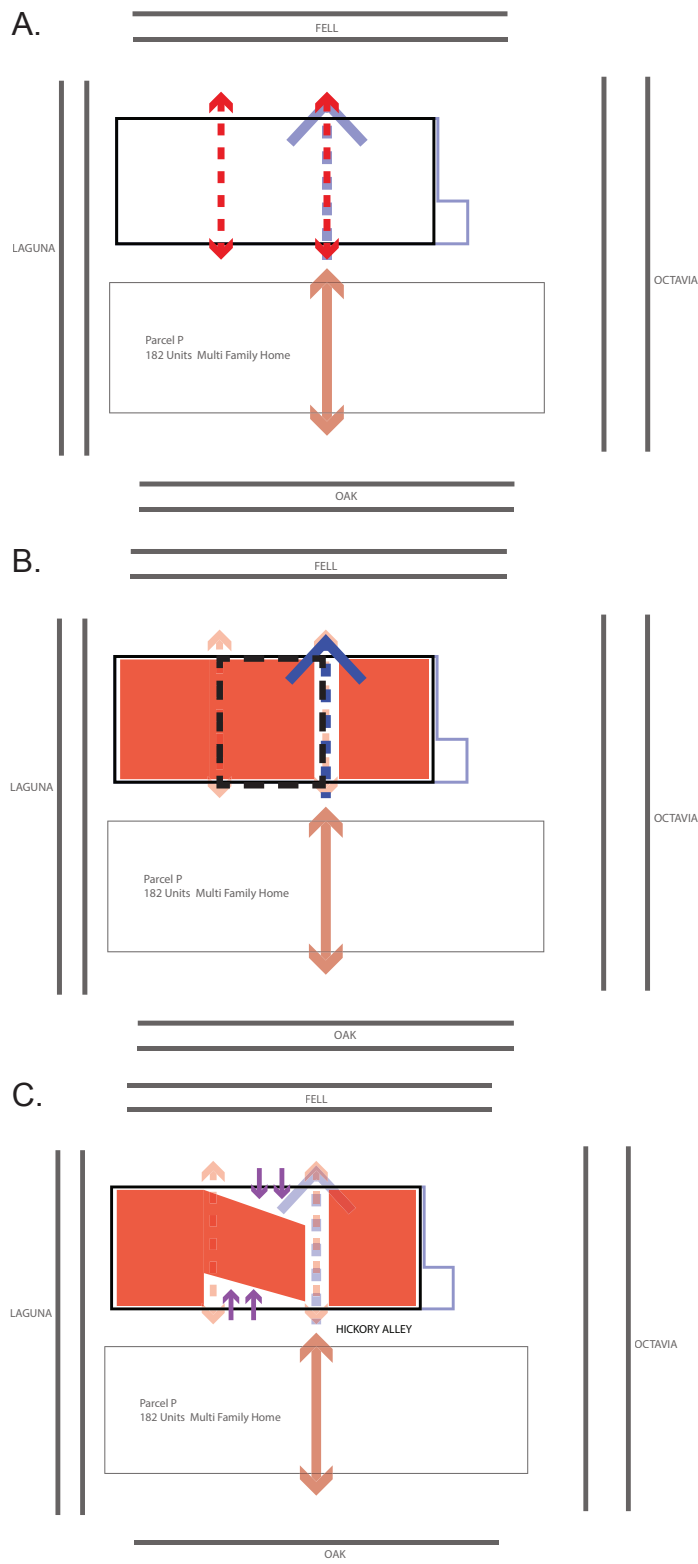


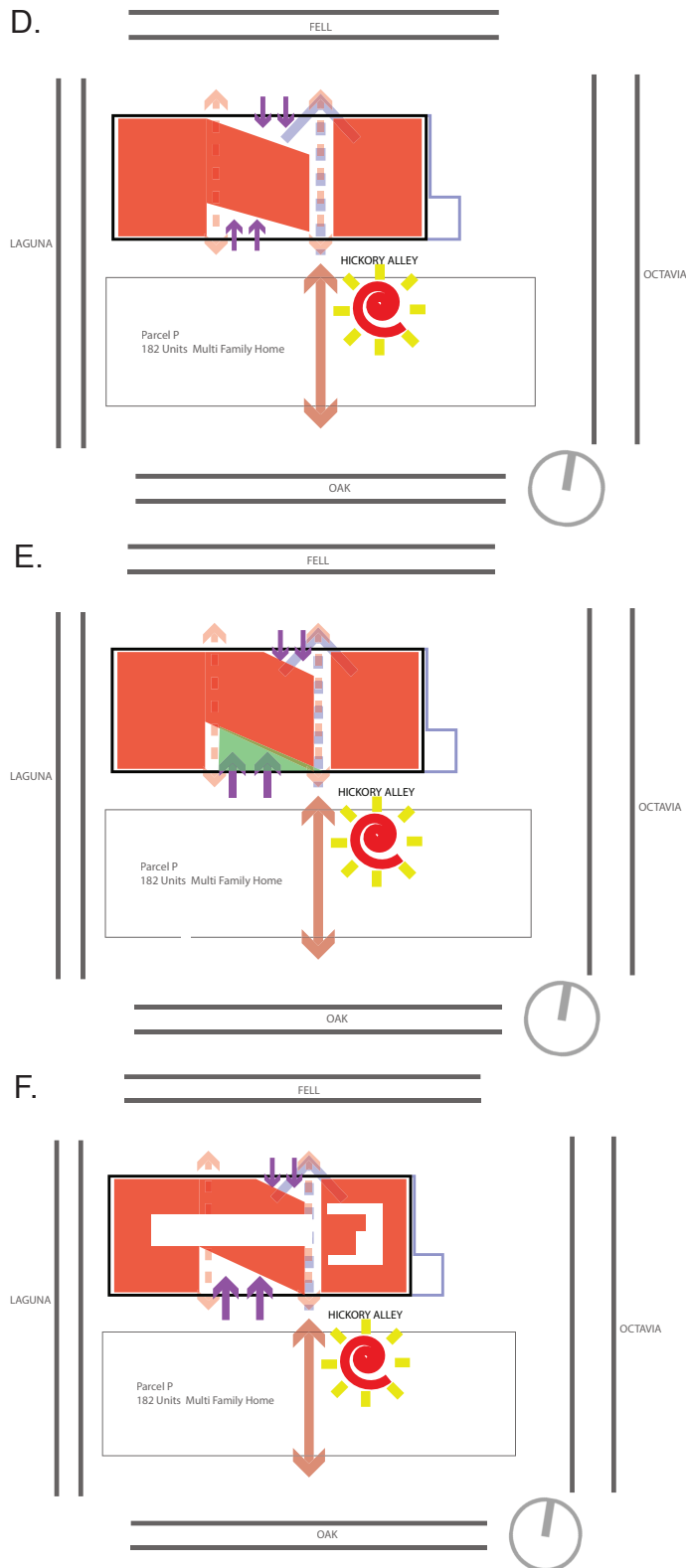
Fig 67. Site Location and Traffic

“A” shows a primary route from the freeway to the city; “B” indicates a primary route from the city to the freeway entrance; and “C” illustrates the main traffic pattern which connects north and south San Francisco.

Fig 68. Massing Process Diagram

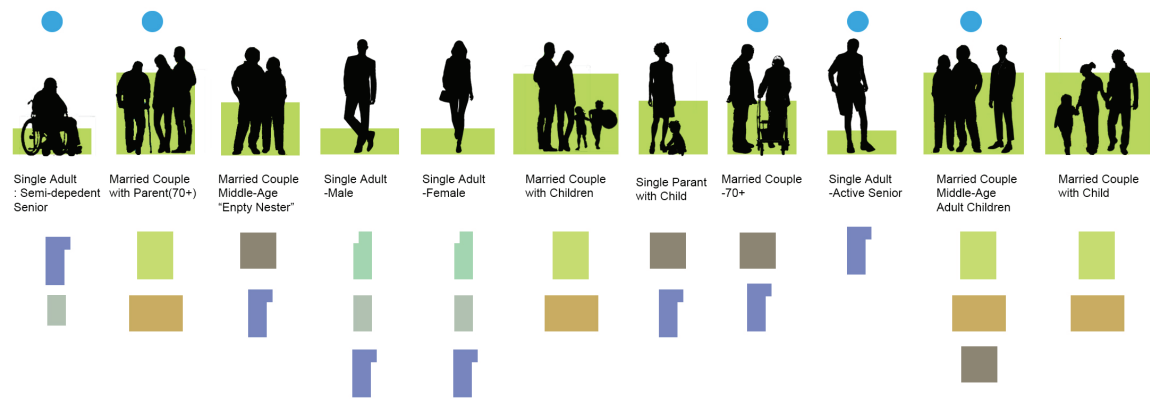


The mass is divided into three, and is intended to connect the main pathway of a new apartment complex at Parcel “P”(A). The center piece functions as a bridge to connect to both sides of the mass(B), creating void spaces on both Fell St., and Hickory Alley sides(C).



taking into account the southern exposure(D), fostering a larger void space and creating a garden patio deck to allow residents and local community meet each other(E), and shows void spaces(F).

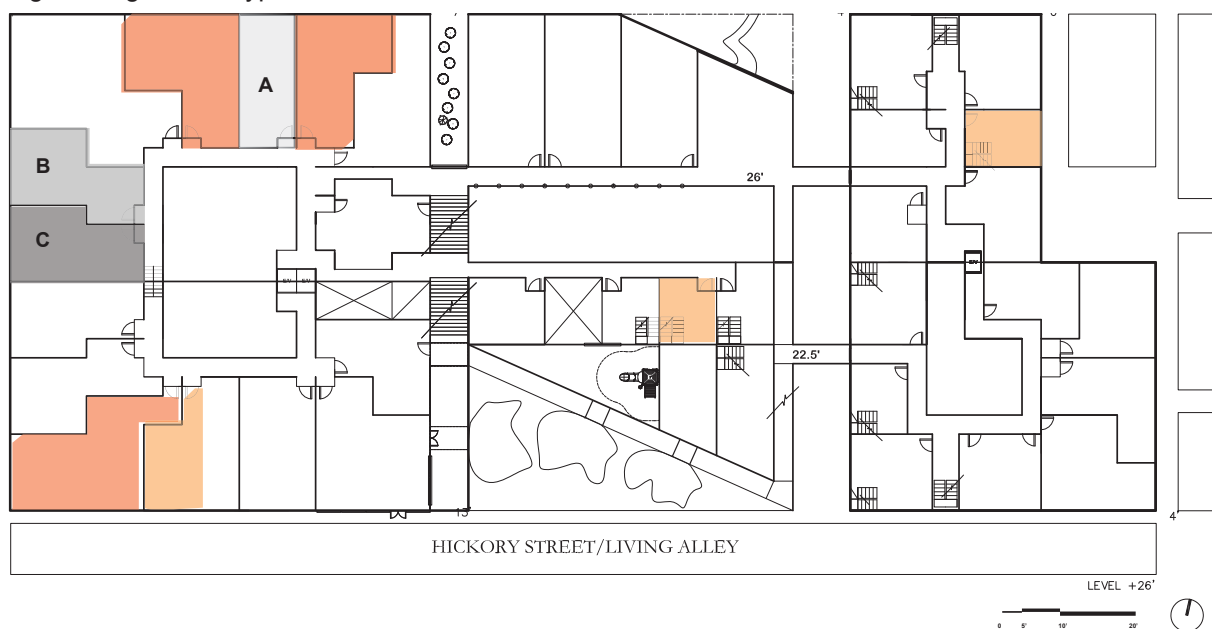
Fig 69. Household Arrangement of the Human Life Cycle



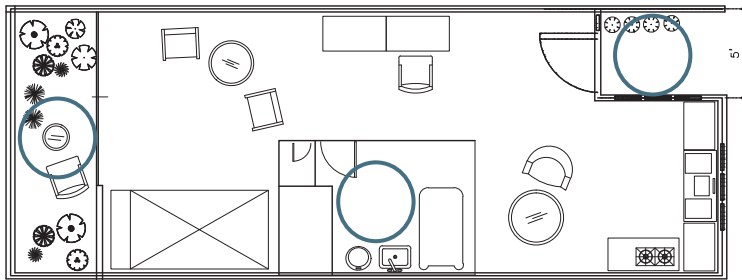
As shown in Fig 69, various unit plans have more opportunities to accommodate a diverse family pattern; in other words, this strategy will bring together many different age groups of the residents naturally. Blue dots show the population group that may be interested in a unit design that is flexible and has the ability to connect smaller stand-alone(studio) apartments into one larger unit. (Fig 70)

Detail unit plans are suggested in Fig 69. Typical studio, 1 bed room, and 2 bedrooms are illustrated.

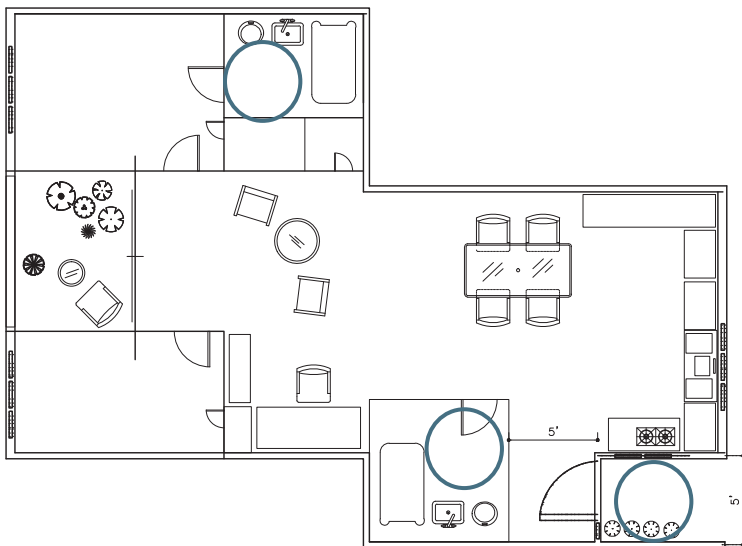
Fig 70. Legend for Typical Unit Plans and Convertible Units



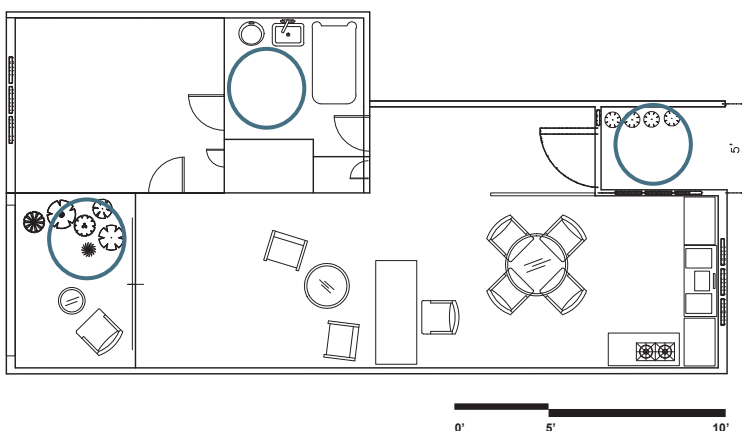
A. Typical Studio Unit Plan



B. Typical 2Bedroom Unit Plan



C. Typical 1Bedroom Unit Plan



0' 5' 10'

An offset entrance point, bathroom, and private patio space are suggested for 5' turn-around space in order to be ADA compliant.

Each unit's 5'X5' entrance is offset to offer more privacy, since most of the units face towards courtyards along long pathways.

Also, it is intended to offer a private indoor patio area. Although there are common outdoor courtyards, many subjects who responded to the survey preferred to have their own patio inside of the unit.

Fig 71. Typical Unit Plans

7.4. Design Manual : Application

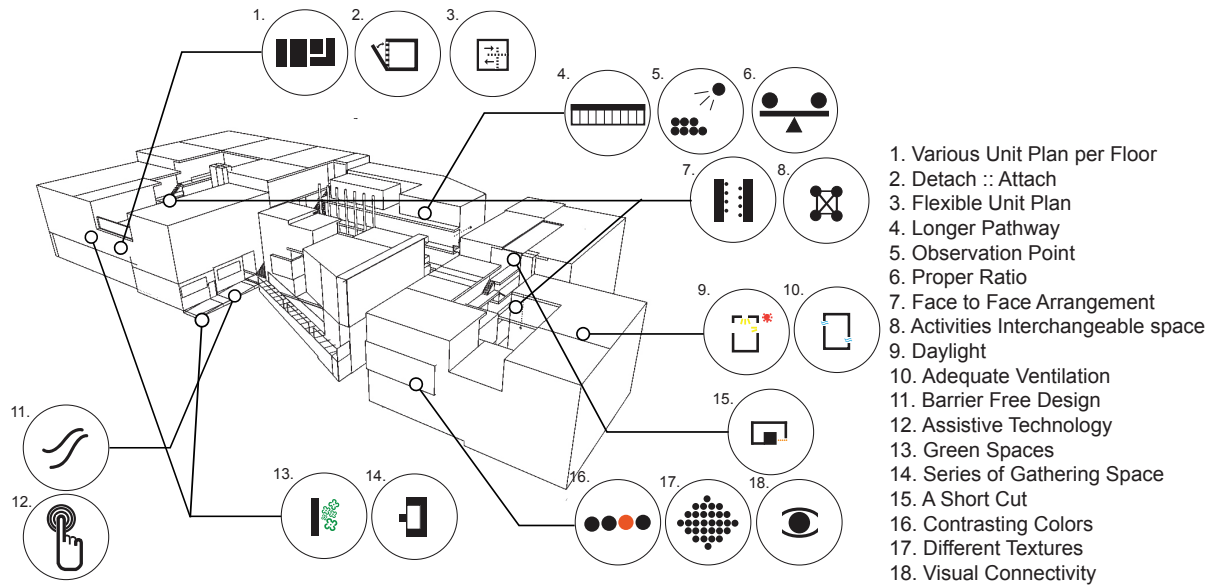


Fig 72. Design Application Diagram

Design Manual

Community Oriented Living Complex



Senior Friendly Living Complex



Intergenerational Living Complex



Unit Specific



Site Specific



Program Specific



Fig 73. Design Manual Categories

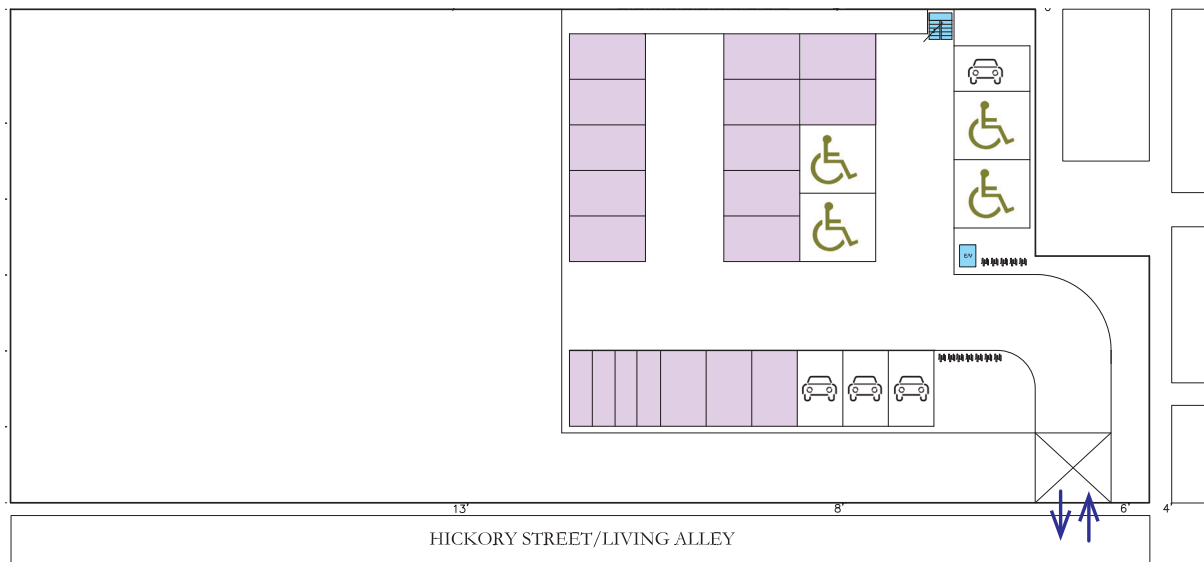


Fig 74. Plan -5'

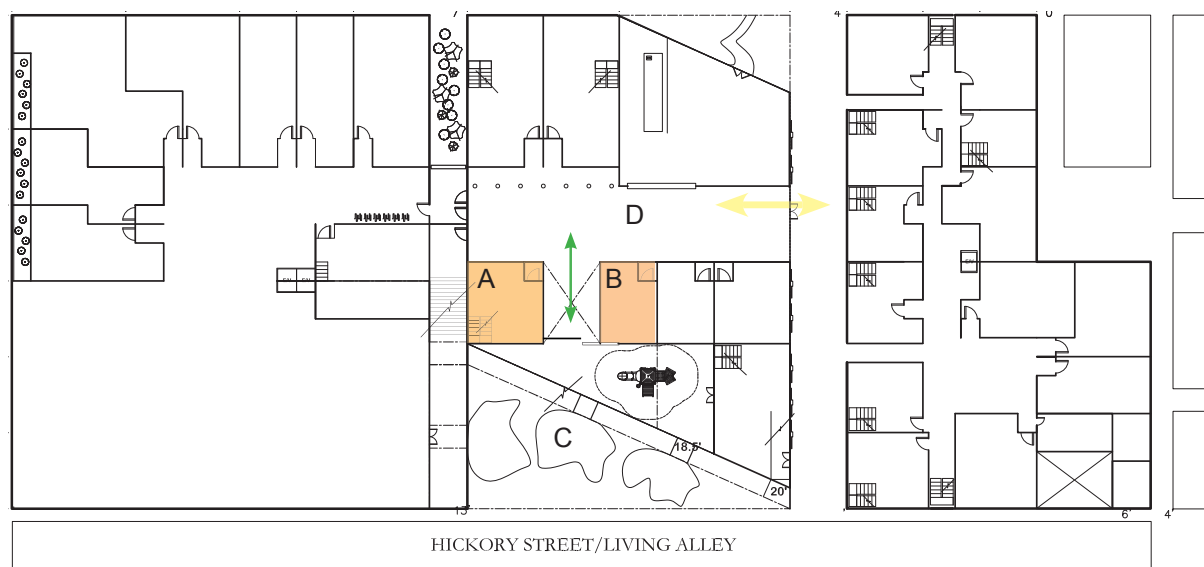


Fig 75. Plan +12'

Plan -5' shows the garage space. Only 18 standard parking spots are allowed, plus four ADA spaces and three shared parking spots (e.g. for Zip cars). This limited number of parking spaces is intended to encourage the use of public transportation or bicycle use. In plan +12', A and B indicate the multi-purpose rooms. Both are located in between the inner courtyard(D) and garden deck patio(C) so that they are strategically connected to those adjacent spaces.

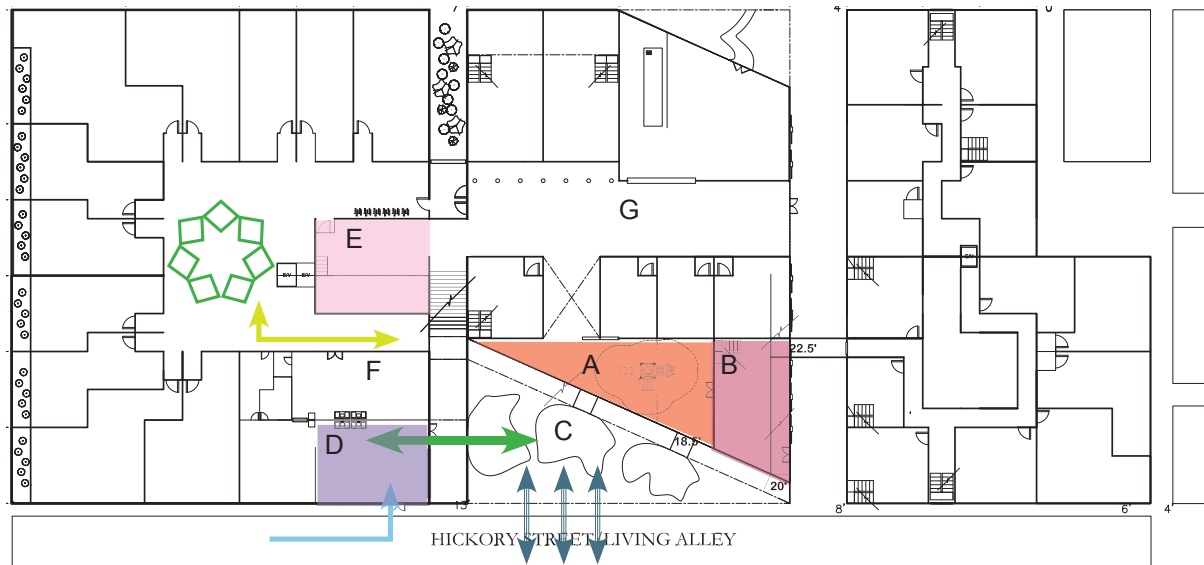


Fig 76 Plan +22'

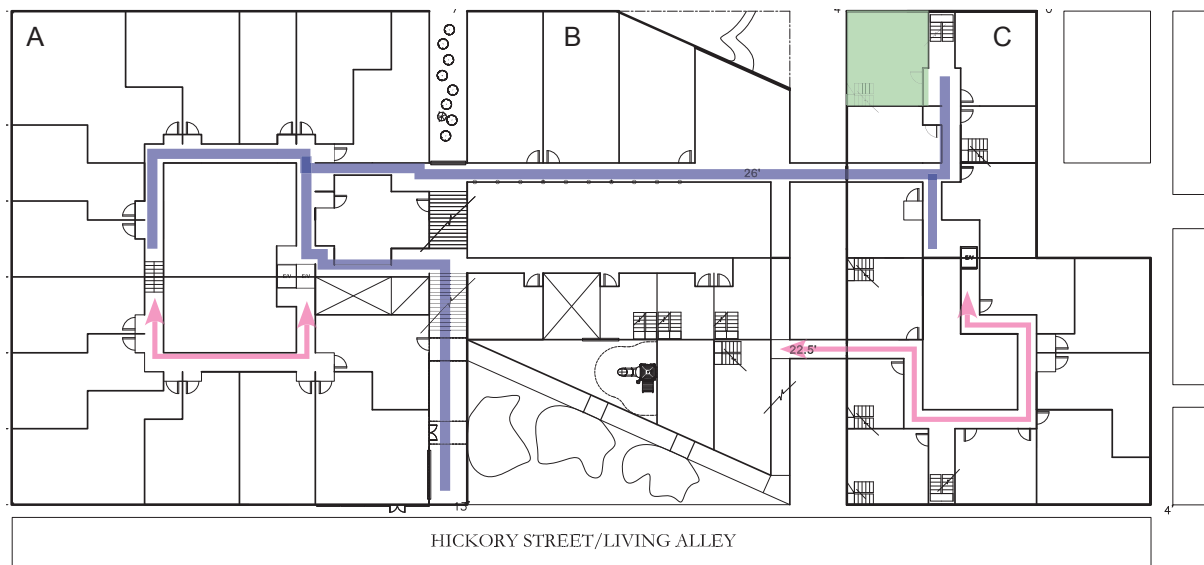


Fig 77. Plan +26'

Plan +22' shows playground(A), children's daycare(B), and garden patio deck(C) are adjacent to the ramp. People are led to the patio deck(C) from the cafe(D) area. With an extra exit from the guest room(E), there is more connectivity between the inner courtyard space(G), cafe(D) and communal dinning(F) area. Plan 26' intentionally shows the circulation from the mass (A) to mass (C) through the center mass(B).

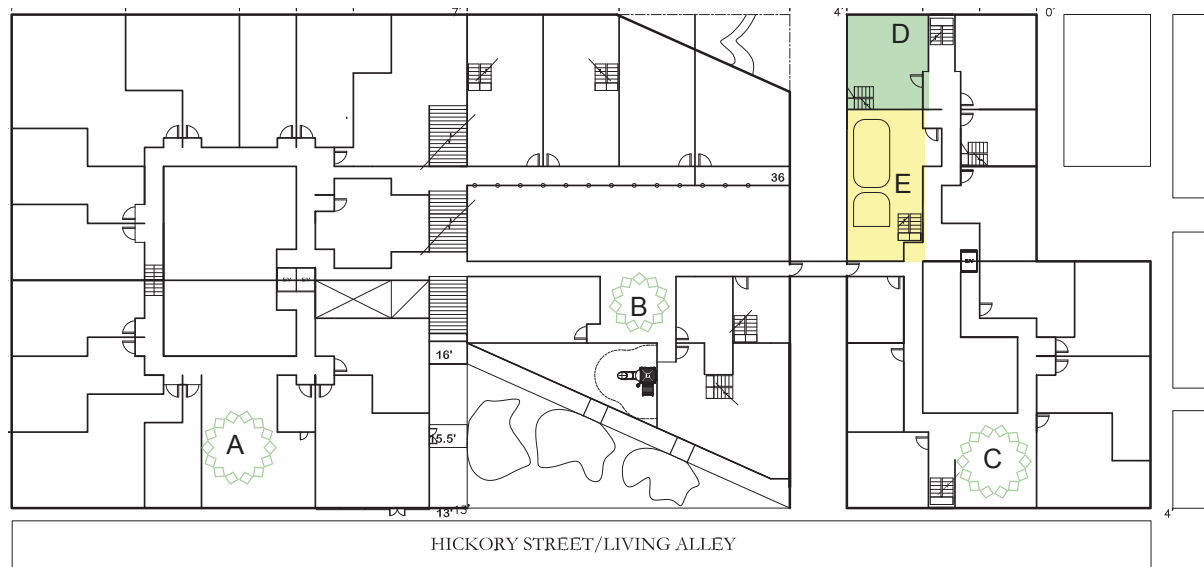


Fig 78. Plan +36'

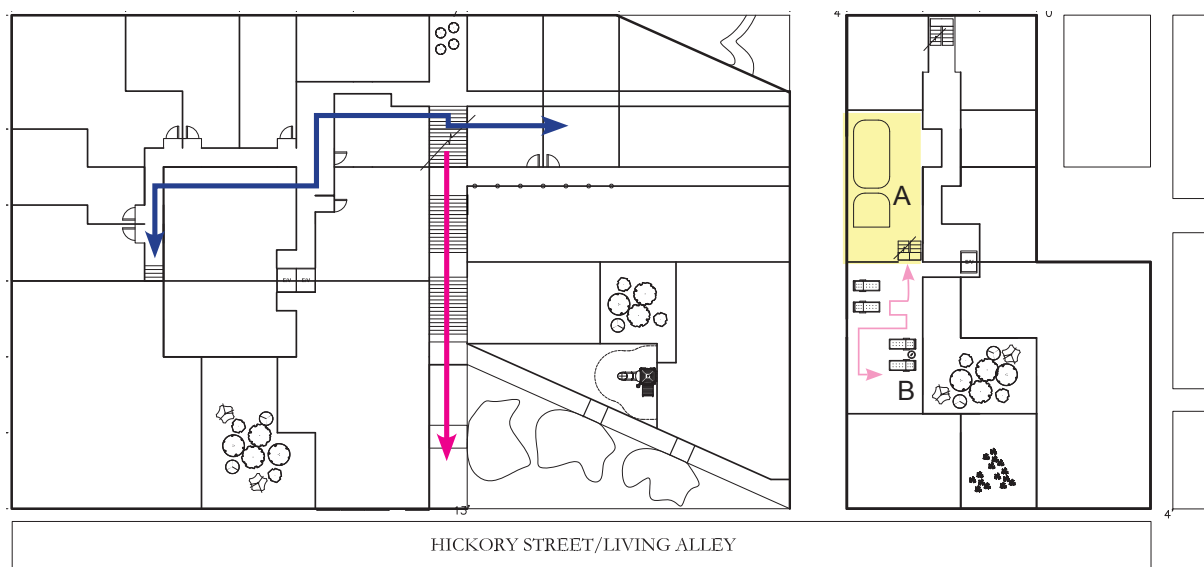


Fig 79. Plan +46'

Plan +36', there are three different upper level court yards tentatively achieving prosperous daylight and southern exposure. The 2nd floor of the fitness center(D) and pool(E) are adjacent so that residents can intensively participate in exercise. Plan +46', the roof deck(B) of Hickory Alley side of the mass is utilized as a sun-deck that people can access from the pool(A). Moreover the main stair case(C) links from Hickory Alley side to the all the way of the highest floor of the complex, which offers a good exercise path.

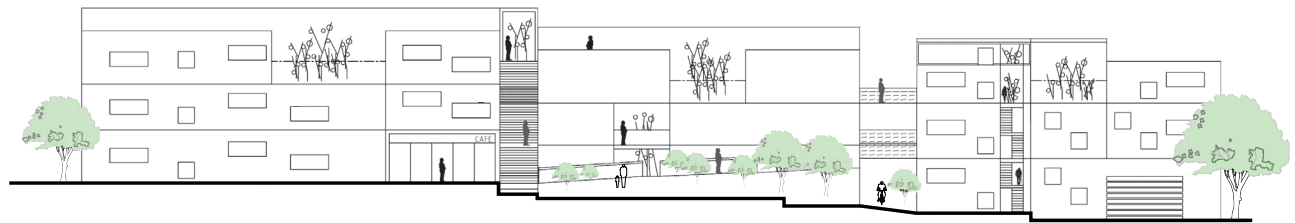
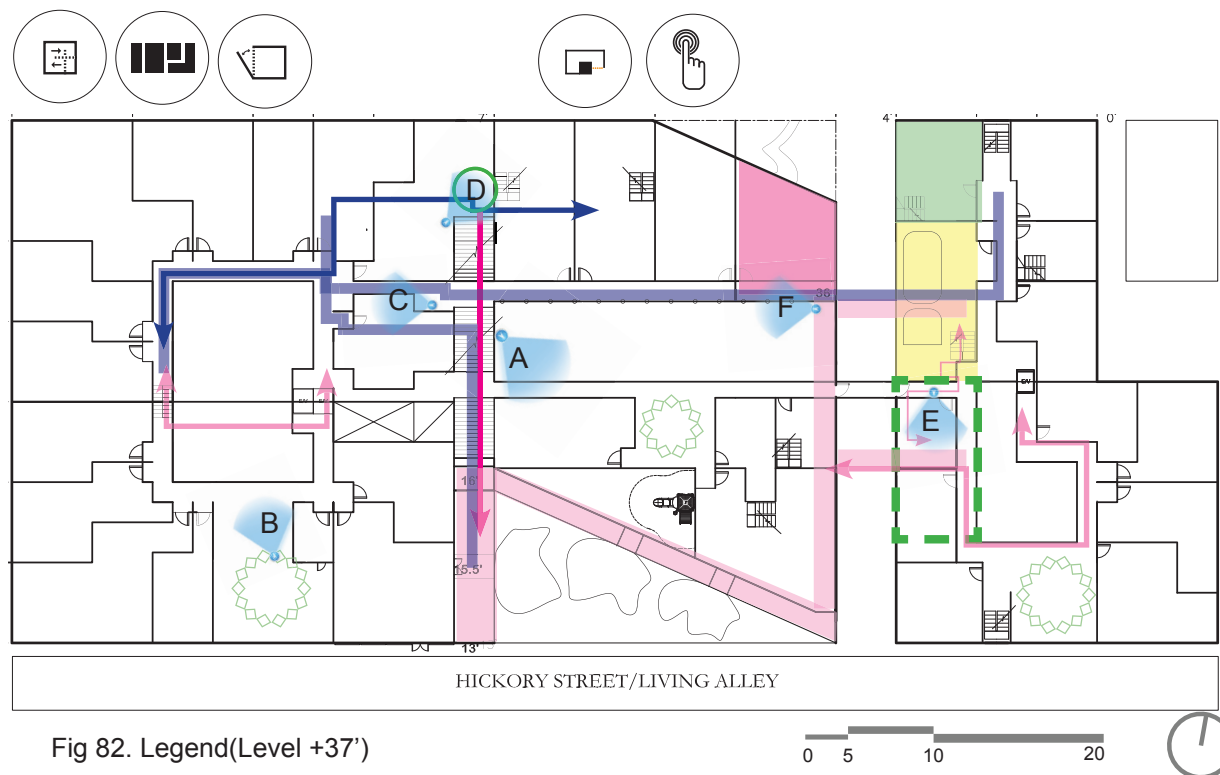


Fig 80. Elevations



Fig 81. Sections



A

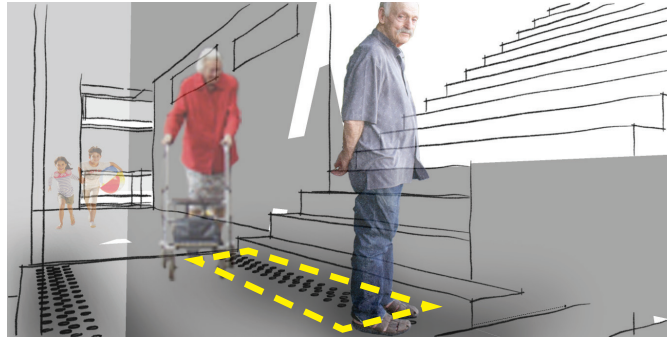


B



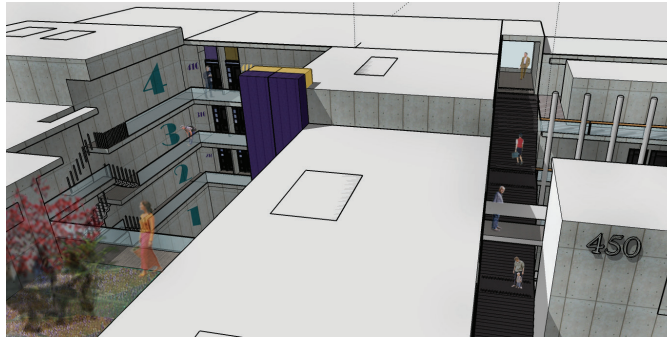
(A) illustrates multi-purpose room that is adjacent to the playground and ramp, which is separated by transparent materials for visual connectivity and promoting social engagement. It avoids socially isolating senior citizens, and encourages people to participate in community activities more often.

C



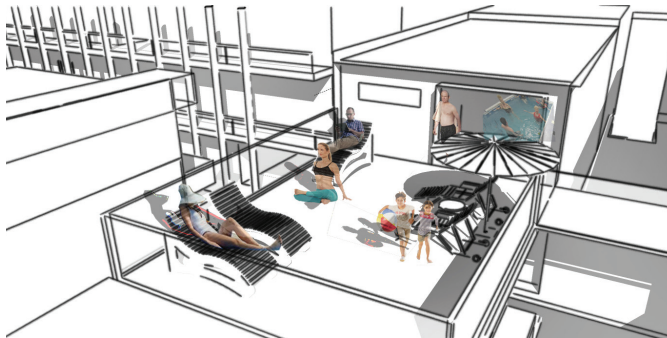
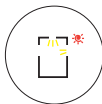
(C) Shows placement of guidance tiles to alert vision impaired individuals of imminent stair location.

D



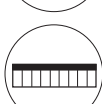
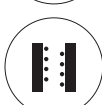
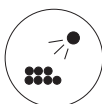
(D) shows how the distinctive colors and typography type letters are utilized in the architectural design to help residents locate their destination easily.

E



(E) The terrace patio allows young and old to share same space, sunbathes and scenery.

F



(F) Demonstrates a longer horizontal pathway that encourages spontaneous meeting. It provides a wide open greenery area on the ground level.

Fig 83. Featured Images(a)

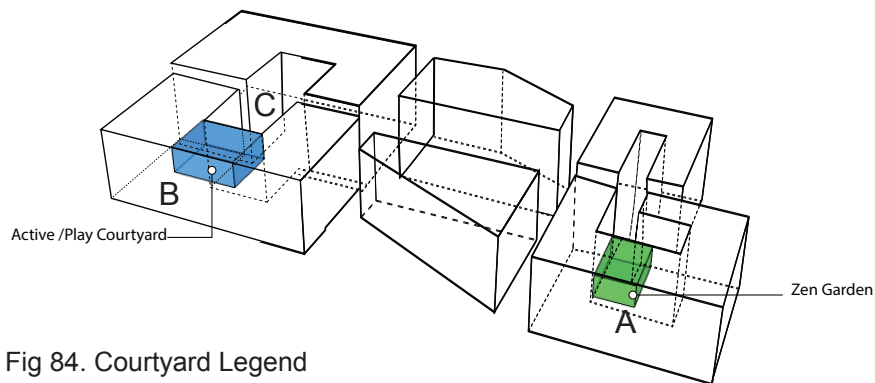


Fig 84. Courtyard Legend

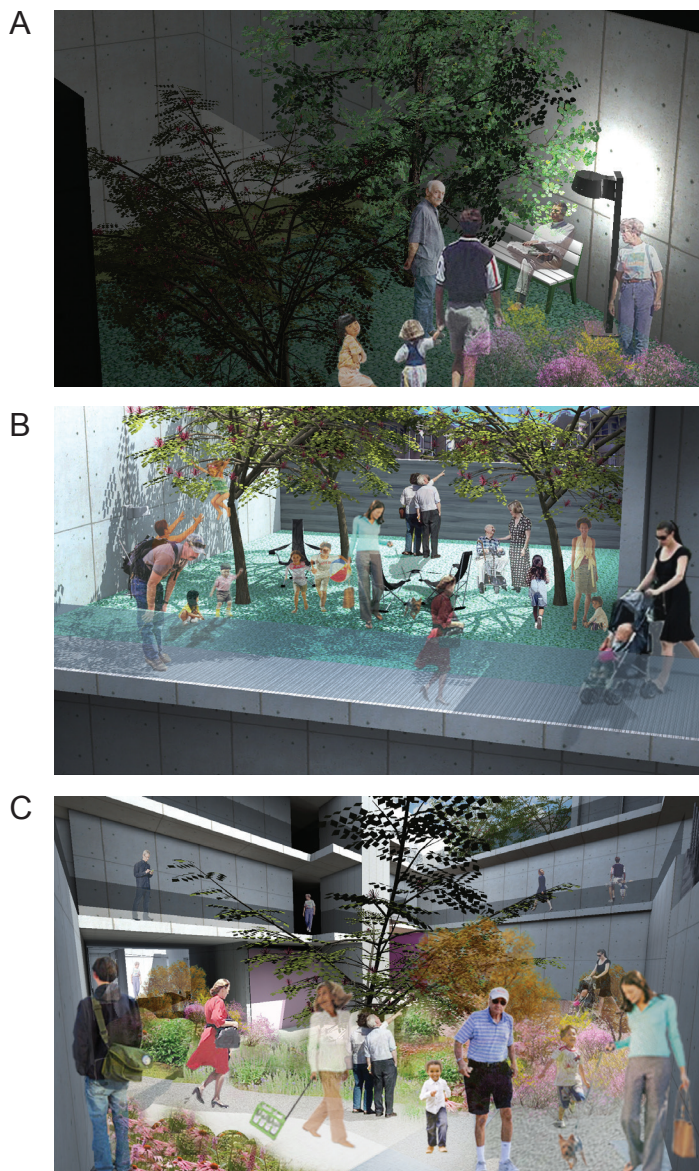


Fig 85. Featured Images(b)

Each activity node has different characteristics for its gathering space that offer residents choices that fit personal circumstances and conditions. For instance, the Zen garden (A) accommodates a more quiet and relaxing type of outdoor courtyard, whereas, the courtyard (B) located at the other side of the mass provides a more active and eventful experience. Likewise, a series of courtyards enhance more active community life while offering more opportunities to spend time outside of their own units.

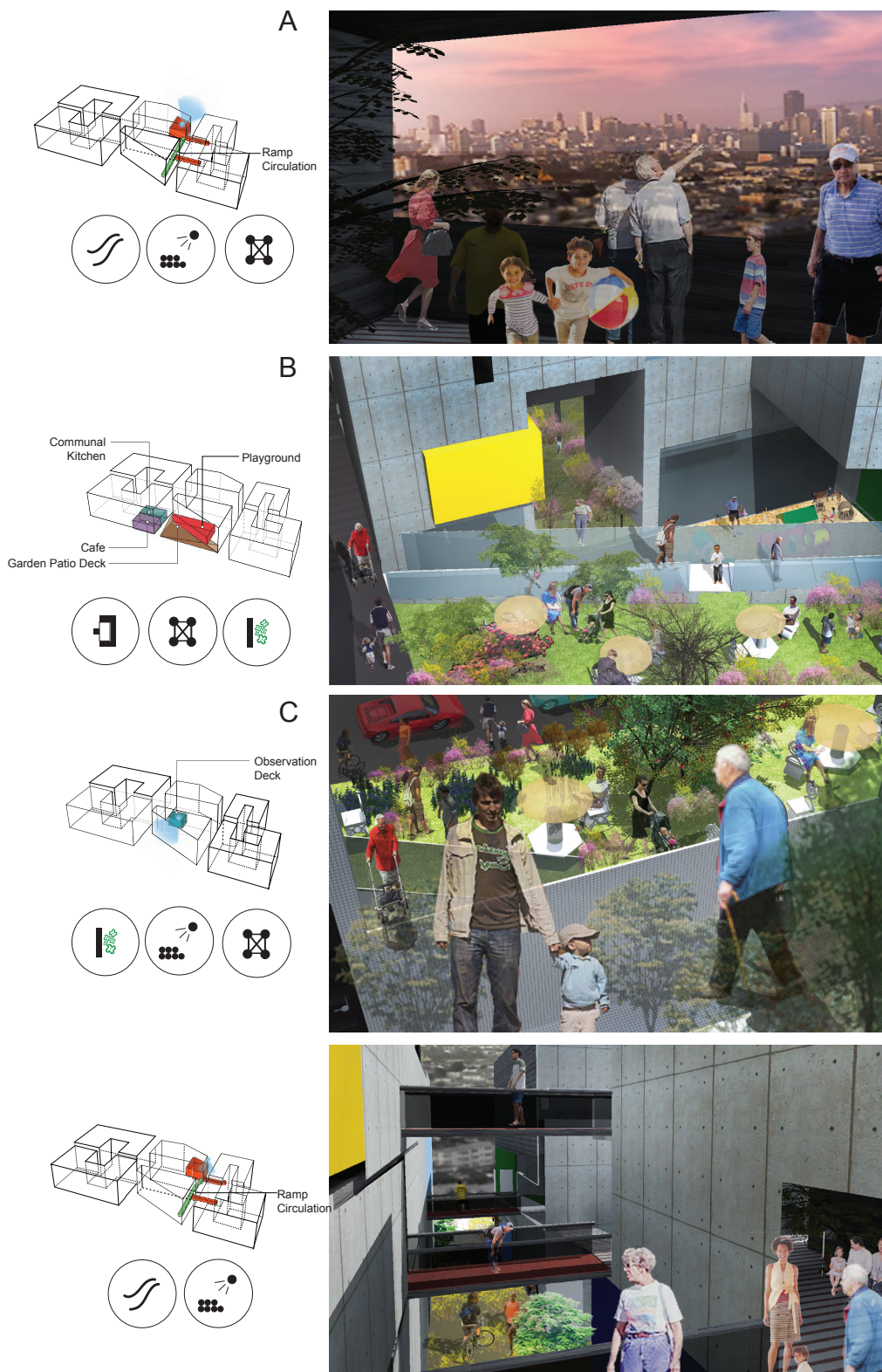


Fig 86. Featured Images(c)

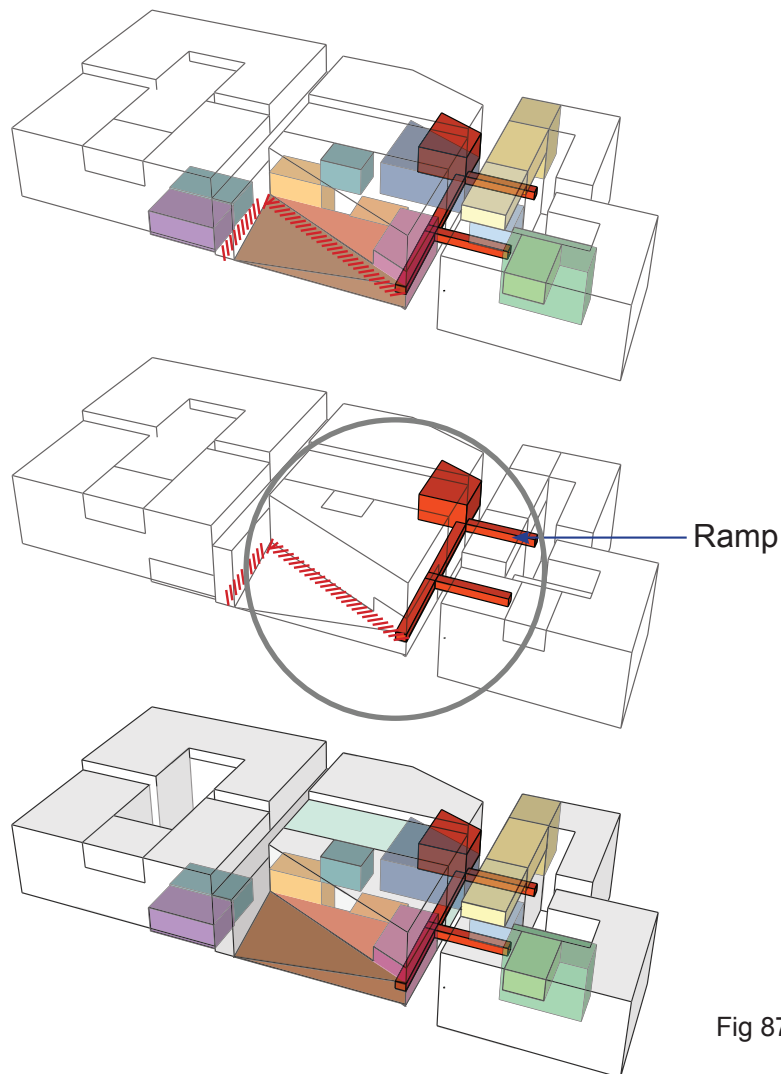


Fig 87. Diagram : Ramp

The ramp has enormous potential to encourage residents to gather more often and meet one another spontaneously. In addition, the ramp circulation is an intriguing feature that enriches the community oriented living complex. The ramp is designed to access the most common spaces throughout the site including the cafe, communal kitchen, playground, children's' daycare, multi-pose rooms, and observation deck. Accessible to all, the hallway ramp will serve as an exhibition for art work so that accomplishments of the residents and local communities can be enjoyed by all. This will be another layer of entertainment and reinforces community achievement.

CHAPTER VIII. CONCLUSION

8.1. What is the best form of a future living environment for an active 3rd age

As many experts have reported, social isolation is the highest risk factor throughout all life stages. Especially in later years, social isolation can be detrimental to the health of seniors. Moreover, an active 3rd age has higher expectations for living in more vibrant communities. In addition, technological advances in many industries have given rise to a broad range of living circumstances that have changed the social norm; it has in effect changed the nature of the family. Thus, proactive solutions for the housing form should be based in the community. With this in mind, the co-housing model is a suitable form for this type of community-oriented living. A living complex that provides spaces for sharing indoor and outdoor activity nodes is necessary. These activity spaces offer more opportunities for residents and local community members to interact. Designing the complex to be more walkable, enjoyable, and stable is one of the foremost elements for giving residents a sense of community and a pleasant living environment to interact with one another more frequently. By creating longer, horizontal circulation, a barrier free design, a series of gathering spaces, and visual connectivity, this living complex can help people to create more vibrant stories. This arrangement sets up the self help system so that one generation's strengths responds to the other's weaknesses. In a community-oriented living environment, there is an array of layers for social ties which is a crucial element for encouraging good health and a longer, more productive life.

Meanwhile, a suggested design for a flexible unit plan with a wide-open space responds to needs over time. The configuration has two separate and

distinct but adjacent units that can be transformed into one larger unit for an adult returning to the nest. It can also be transformed to allow for a caregiver room for the semi-independent older adult. These attachable units provide advantages to the older adults allowing them to stay in their homes longer. Using distinctive colors, a variety of materials, and adopting technology are all helpful to people with visual or auditory impairments. This use of resourceful design will ultimately benefit everyone through an intuitive design strategy and utilitarian information.

Various units that are in proximity to each other is another strategy that enhances diverse family patterns, covering all age strata, naturally. Age integrated living arrangements are enhanced through inter-generational activities such as co-mentoring, shared meals, and other joint community events. This type of living environment eventually offers a supportive connection between residents and provides a meaningful role for all residents. Therefore, the living complex not only serves as a one-dimensional living facility, but also responds to other layers of social interactions and will ultimately provide a healthier and more livable community. Such a community will benefit everyone while reducing risk factors associated with social isolation. Providing a senior-friendly oriented design is the community form of the future because it offers a prosperous community life.

This innovative inter-generational living prototype will be the building block of the future. Enormous potential is established within the active 3rd Age and will prevail to be a more resilient, engaging and sustainable living experience. Additionally, this engenders all age strata's residents in the local community to influence one another.

8.2. Further Research and Investigation

Social integration is a fundamental matter for a healthy life for everyone. This thesis limits the subjects of potential residences in this inter-generational living to active older adults. Perhaps the next stage of research will review the integration of frail seniors with other generations and how architectural languages can help interaction. Also reinventing conventional types of care facilities or senior housing complexes to offer a better community living space and less institutional-looking spaces will be a valuable area of study.

As shown in the drastic numbers of the aging population for the next few decades, a variety of senior care facilities and a different scale of architectural forms will contribute to a more pleasant living infrastructure for the population. Such fields are necessary to study to prepare for the future.

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APPENDICES

A. Glossary of Terms

-3rd age(Peter Laslett) : the bread-winning and child-rearing years - the period of greatest personal fulfillment, the apogee of life. Combining social history, sociology and philosophy, this book provokes new thinking on one of the crucial changes in the modern world

-Age integrated living: “Integrated living” literally defines a living complex that is accommodating to particularly different generations and different age groups, regardless of ethnic, cultural difference, gender, or social status. The opposite is age specific living, which limits residents to a certain age group

-Co-Housing : The co-housing idea originated in Denmark, and was promoted in the U.S. by architects Kathryn McCamant and Charles Durrett in the early 1980s. The Danish concept of “living community”, Co-housing is a type of intentional, collaborative housing in which residents actively participate in the design and operation of their neighborhoods. The common house is the social center and can include a large dining room and kitchen, recreational facilities, children’s spaces, and frequently, a guest room, workshop, and laundry room. Co-housing communities are usually designed as attached or single-family homes along one or more pedestrian streets or clustered around a central courtyard. Communities range in size from 7 to 67 units, the majority of them housing 20 to 40 households

Glossary of Terms(Continued)

-Cohort effect : the particular impact of a group bonded by time or common life experience

-Courtyard : It is generally defined as an enclosed outdoor space. In this paper, particularly refers to an outdoor gathering space which has especially the term used as a well equipped landscaping, a decent amount of sunlight and open air.

-Demographics : the statistical data of a population, especially those showing average age, income, education, etc.

-Symbiotic relationship : Interchangeable with “mutually beneficial”, “inter-dependent” or “self-help system”. This determines an optimal type of community life that creates a win-win situation interaction between residents and local communities.

B. Research Progress Diagram

Fig 88. Research Progress Diagram

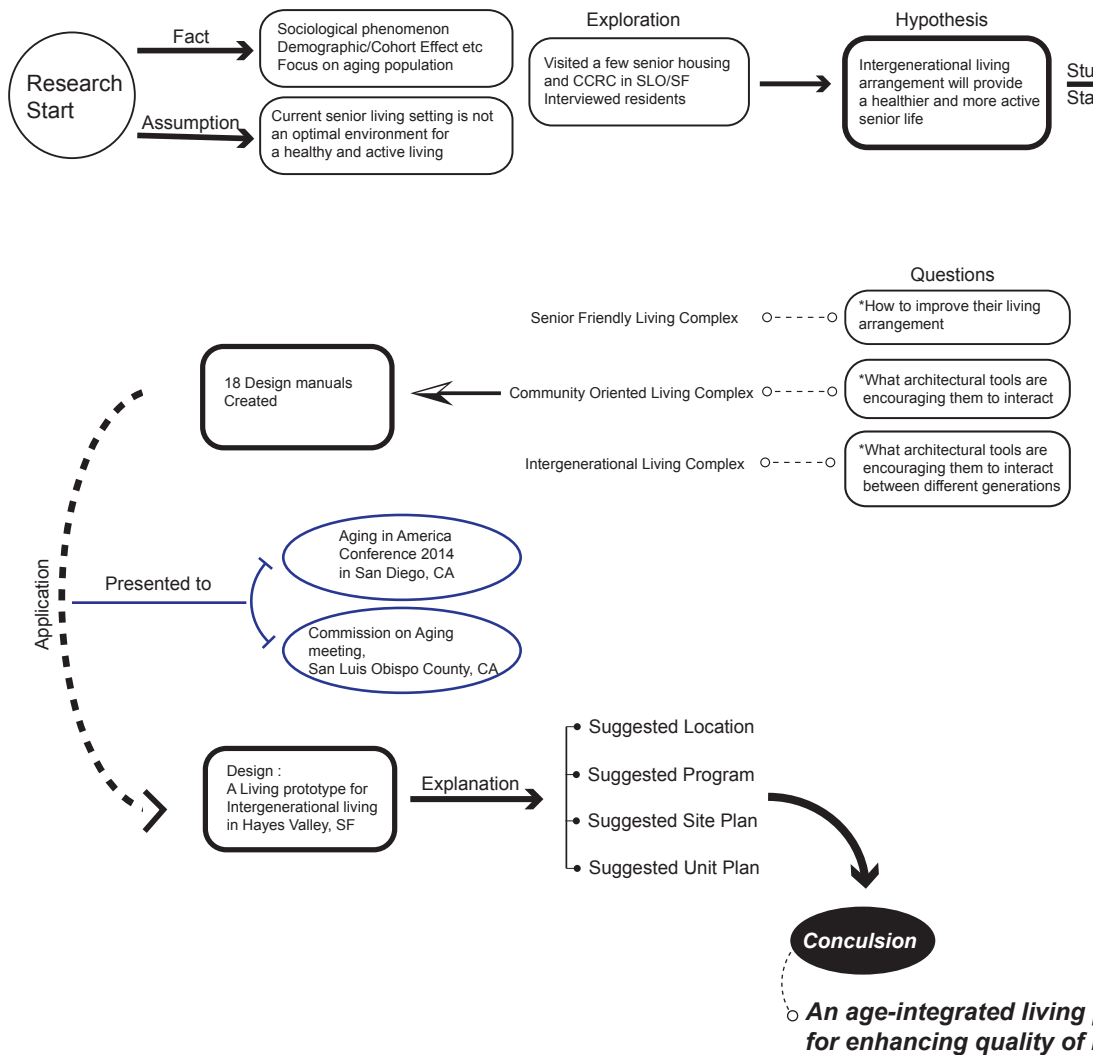
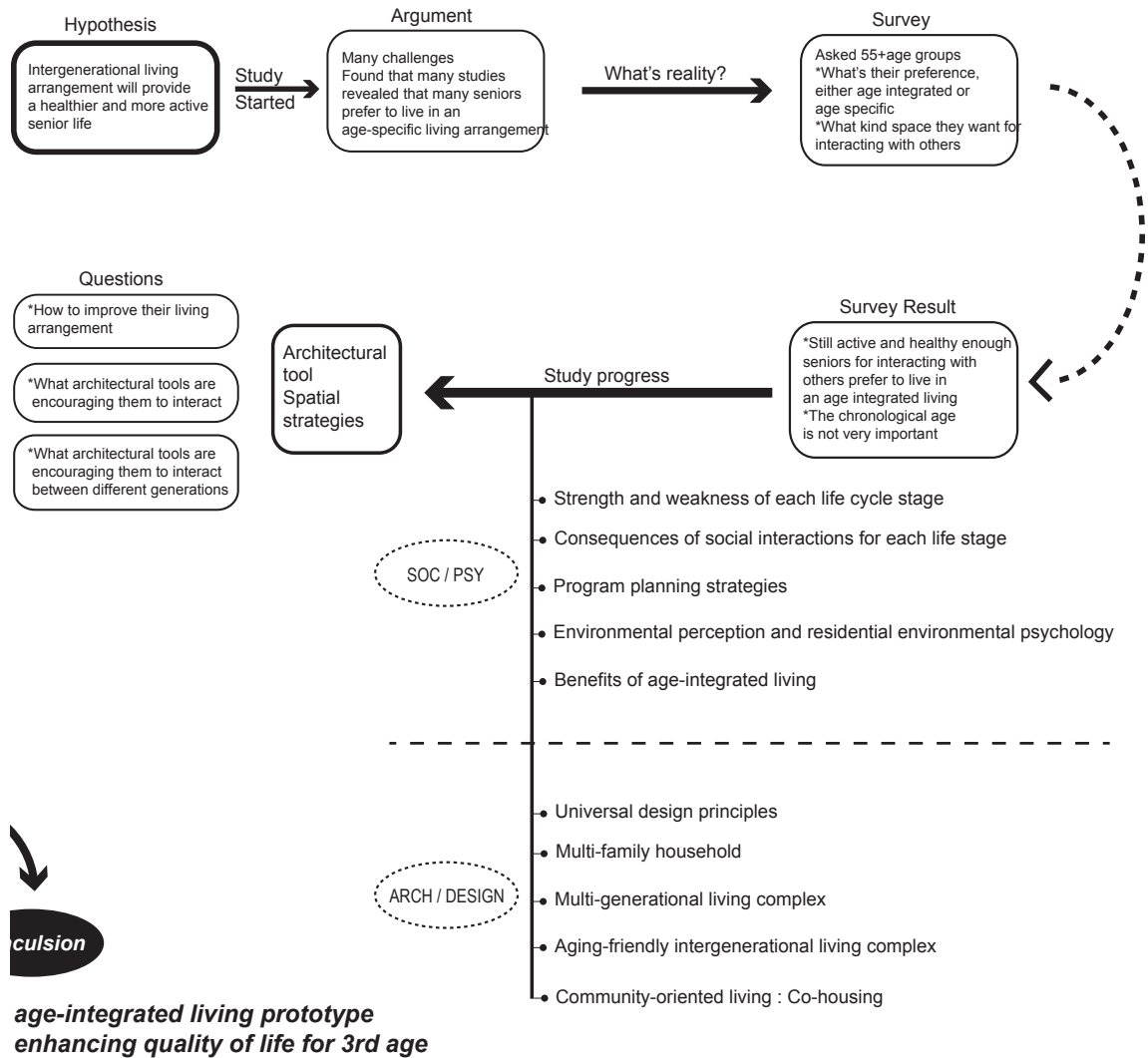


Fig 88. Research Progress Diagram(Continued)



C. The Survey Form

Fig 89. The Survey Form

Survey :

Living Arrangement Preferences for Persons 55+ Years

Gender : Male ☐

Female ☐

Age Group : 55-64 ☐

65-74 ☐

75-84 ☐

85+ ☐

1. What is your current living arrangement type :

Multi-generational apartment ☐ Senior housing/Retirement home ☐ Townhouse ☐

Assisted living ☐ Co-Housing/Communal living ☐ Single Family Home ☐

; Other, describe :

2. On average, how frequently do you interact with other residents(or neighbors)?

1	2	3	4	5
Never	Not often	Seldom	Often	Always

3. Which kind of living arrangement do you prefer :

Multi-generational apartment ☐ Senior Housing/Retirement Home ☐ Townhouse ☐

Co-Housing/Communal living ☐ Single Family Home ☐

; Other, describe :

4. How interested would you be in participating in these following activities :

	Not at all				Very much so
A. Playing game(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Learning session(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Gardening work(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Cooking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Group exercise(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Music activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Other, activities :

6. What kind of common space would you enjoy most?

Outdoor courtyard(s) ☐ Indoor courtyard(s) ☐ Semi-enclosed courtyard(s) ☐

Roof deck ☐ Community social room ☐

7. Normally, our residents have access to communal patios/courtyards because we seek to encourage social interactions among residents, would you be comfortable with this scenario?

Not at all				Very much so
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Do you see any potential problems or issues with living in proximity to younger residents that are including infants, toddlers... and teenagers?

9. Do you see any benefits with living in proximity to younger residents that are including infants, toddlers... and teenagers?

* I greatly appreciate your cooperation.

* This survey will be used for a master student's dissertation only

Fig 90. A Sample Survey Form

Survey :**Living Arrangement Preferences for Persons 55+ Years**

Gender : Male ☐ Female ☒

Age Group : 55-64 ☐ 65-74 ☐ 75-84 ☒ 85+ ☐

1. What is your current living arrangement type :

Multi-generational apartment ☐ Senior housing/Retirement home ☐ Townhouse ☒

Assisted living ☐ Co-Housing/Communal living ☐ Single Family Home ☐

; Other, describe :

2. On average, how frequently do you interact with other residents(or neighbors)?

1	2	3	4	5
Never	Not often	Seldom	Often	Always

3. Which kind of living arrangement do you prefer :

Multi-generational apartment ☐ Senior Housing/Retirement Home ☐ Townhouse ☒

Co-Housing/Communal living ☐ Single Family Home ☐

; Other, describe :

4. How interested would you be in participating in these following activities :

	Not at all				Very much so
A. Playing game(s)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Learning session(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
C. Gardening work(s)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Cooking	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Group exercise(s)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Music activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Other, activities :**6. What kind of common space would you enjoy most?**

Outdoor courtyard(s) ☒ Indoor courtyard(s) ☐ Semi-enclosed courtyard(s) ☐

Roof deck ☐ Community social room ☐

7. Normally, our residents have access to communal patios/courtyards because we seek to encourage social interactions among residents, would you be comfortable with this scenario?

Not at all				Very much so
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Do you see any potential problems or issues with living in proximity to younger residents that are including infants, toddlers... and teenagers?

O.K. if parents are responsible

9. Do you see any benefits with living in proximity to younger residents that are including infants, toddlers... and teenagers?

It's good to interact with all age groups

* I greatly appreciate your cooperation.

* This survey will be used for a master student's dissertation only