Design Strategies of Life Outside and Life Inside for Livable Multi-family Housing Environment

Meissy Clarissa, Susinety Prakoso¹ and Julia Dewi¹

¹Architecture Department, Faculty of Design, Universitas Pelita Harapan, Jl. M.H. Thamrin Boulevard, Lippo Karawaci 15811, Tangerang, Banten, Indonesia

E-mail: susinety.prakoso@uph.edu

Abstract. This paper discusses the issue related to social life within the context of a neighbourhood. It takes on the case study of multi-family housing, which its urban forms are generally monofunctional, stand-alone, large scale, spread out and car dependency. This type of urban form may cause inclusivity and isolation to its context and problems in social interactions within its neighbourhood. This study examined the concept of life outside and life inside in multi-family housing design to create a more livable housing environment. The life outside concept aims to create a human-oriented neighbourhood by directing daily human activity towards outdoor space, through the integration of proximity, density, and diversity. While the life inside concept aims to allow, residents to socialize with others through the design of a high probability of encounter zones in the building. Based on the observation at a multi-family housing complex at Rainbow Springs, Tangerang, this study proposed design criteria and strategies for a livable multi-family housing environment within the neighbourhood and inside the building itself. This study implies that integration between site planning and building design should be taken into consideration to form a livable neighbourhood.

1. Introduction

Multi-family housing is one of the desired living units by the new young couples. Most young couples seek efficiency in the neighbourhood they live, which provides social life and their basic daily needs [1]. In general, the multi-family housings in Jakarta are commonly zoned as a monofunctional building within site and depends on a car to travel between sites. The morphology tends to be a stand-alone and large scale. The design of most multi-family housing prioritizes the number of living units over the communal area, which limits the social relation between users that leads to an individual life [2]. The designs of multi-family buildings are stacked into a multi-level which limits the interaction that may occur in the vertical circulation, corridor and units. Thus, it leads to social distancing between users, buildings, and neighbours [3].

In response to the low quality of social life in the current multi-family housing, the concept of life outside and life inside inspired by David Sim's book "Soft City" (2019) are explored in this paper. This concept aims to create a livable housing neighbourhood (Figure 1), which provides human's basic needs, public facilities, shared spaces, interactive space, safety, security [4], as well as stability, stewardship, simplicity and identity at medium to high-density housing [5]. Increased density, variety of facilities like school, work, shops, and services and compact, walkable neighbourhood become important in a livable environment [6]. The livable quality of human social interaction can be achieved by designing the interaction between multi-family housing with its surroundings and the interaction within the
building [7]. This concept orients to human activity from the inside to the outside of the building within the neighbourhood.

Based on a case study of multi-family housing in Tangerang, this paper intends to investigate the design criteria and strategies that form a mutual interaction between humans from the building's surroundings and inside the multi-family housing.

1.1. The concept of Life Outside in a multi-family housing neighbourhood

The concept of life outside discusses a neighbourhood that integrates density, proximity, and diversity [8]. This concept sets nine criteria to evaluate the quality of the neighbourhood. They are a diversity of built form, diversity of outdoor space, flexibility, building to human scale, walkability, sense of control, microclimate, carbon footprint, and greater biodiversity [8]. Strategies to achieve a livable living neighbourhood based on the concept of life outside are [8]:

- Arrange an enclosed block typology that forms diversity of open spaces with outdoor activity.
- Design an enclosed block within walking distance with buildings proportion to the human scale.
- Create permeability in ground floor area that connects between buildings and the building itself.
- Arrange a joined-up building with variants of different programs to gather the diverse community.
- Distribution of programs horizontally and vertically to increase interaction.
- Take advantages of the potential of ground floor level as a public program to reduce social barrier by increasing the interaction between human and the building.
- Control the balance of human proportion to the environment to create an engagement between the building, space, and human.
- Create mobility of people from building to the outside neighbourhood by creating an arcade and continuous pedestrian that integrates with public transport.

1.2. The concept of Life Inside in a multi-family housing

The concept of life inside discusses the quality of spaces inside the multi-family housing. Type of spaces inside multi-family housing can be distinguished according to the ownership, accessibility, visibility, and responsibility. There are three types of spaces, i.e. private, semi-private, and semi-public. These spaces form different kinds of interactions [9]. Units are the most private spaces. Inside the private space, residents should have the possibility to form a more intimate relationship with each other [10]. Semi-private spaces are limited to owners of units, such as the unit front terrace, corridors, and vertical access. These spaces have the highest possibility of encounter zone between unit owners. These spaces also have the potential to meet neighbours as they enter or exit their units. Communal activity may also happen in these areas as it is physically and visibly permeable to the users. The semi-public space is the main entrance and exit from the building [9]. Strategies to create a livable multi-family housing within the building are [9]:

![Figure 1. Livable neighbourhood](Image)

Source: Sim (2019)
Semi-public spaces cover the housing’s public facility, lobby, and building perimeters. In these zones, spaces are owned by the building and can be accessed by anyone. The facility should provide a communal activity for the community. The lobby should provide accessibility as well as space to meet up. The building perimeter with spaces in between should be designed with integrated public programs to form interest for pedestrians.

At semi-private spaces, encounter zones should be integrated with the communal area, where residents can gather and linger. Encounter zones are usually also integrated with the central circulation such as corridors, elevators or stairs. The elevator can take residents directly between floors; meanwhile, stairs deliver residents from floor to floor that leads to a broader range of interaction. Stairs give residents aware of the activity and conditions of the surroundings so that they would not be left out. By designing the central circulation transparent physically and visibly from different levels, the community inside the building will build a strong relationship with each other.

The living unit is part of the private spaces, where it only allows the unit owner to access. Interaction can happen in the balcony area, where it is exposed to the public. The arrangement of balcony and windows should face where the outdoor activity occurs. In this private space, openings are needed as a trigger for the unit’s user desire to interact with others. Observing other activities may be an inspiration for them. The design of the balcony provided should have a program that may differ in size and types. Besides balcony and windows, porches in front of units that connect to the corridors can be potential for the users to encounter with their neighbour units. It gives a chance for the user to show their interest that may attract each other neighbours interest. While enhancing social interaction quality between neighbours, the privacy of each unit should always be maintained.

1.3. Social Interaction in a Multi-family housing

The quality of human life can be improved by designing a livable neighbourhood [8]. The sequence of human activity from the most private to the most public spaces affects their quality of social interaction [9]. Social interaction can be formed by the awareness from their surroundings that trigger their needs to interact. The strategy of the concept of life outside and life inside aims for a balance of public and private spaces that provides communal spaces with high permeability of access that is oriented to human and space to interact [7].

Social interaction may vary its quality. People will always feel a need for contact with other people [11]. There are three types of activities: necessary activities, optional activities, and social activities. Necessary activities are the daily essential needs activity that needs to be done for a living. Optional activities are the activities done by our own will. Social activities are an activity that involves two or more people. A good neighbourhood has to provide all types of activity for the resident to have a good quality of life. These activities are differentiated into two: active and passive, where active interaction involves direct touching and talking, while passive interaction is limited to staring or listening from a distance. An excellent space to interact is formed by [11]:

- The awareness of the outside that gives inspiration from other activities.
- Possibility of observing or eye contacting others within the same or different level of space.
- Held contact that is possible for further interaction.

Social interaction can be indicated by analyzing the relation between the user and space, which are [12-14]:

- Frequency and duration of time spent by each user at the space identify the user’s interest.
- The number of users that differs within age and gender to identify the universality of the space.
- Preferred time and season of visit.
- Necessary and optional space function where the success of optional space is a social space.
- Active or passive interaction between users to identify the liveliness of space.
2. Method

2.1. Case study: Rainbow Springs Condo villas

This study chose Rainbow Springs Condo villas, a multi-family housing located in Tangerang. It was selected because it was uniquely designed with a variety of outdoor activities though still maintaining gated community due to the demand of markets around. It was a low-density housing complex that was designed with thirty-seven, five-floor height buildings arranged, forming several enclosed block typologies with the central courtyard in the middle (Figure 2). Although the case study was designed in a gated monofunctional community, the design was oriented to human activity outside the building that prioritizes the resident’s health [15].

![Figure 2. Building typology](source: Rainbow Springs (2014))  
![Figure 3. Rainbow Springs Courtyard](source: Rainbow Springs (2014))

Each building had a rectangle-shaped and was arranged in an order form to create a parallel axis to the main road. The buildings were surrounded by open spaces. Each building was elevated and had a parking space underneath it. There was a central thematic garden within the complex (Figure 3). The garden was designed with a pedestrian walkway that connects every block of building and facilities. However, the garden did not provide any communal activity. The facilities provided, such as swimming pool, basketball court, skateboard park, kids playground and others, were located at the central courtyards and lake sidetrack. The courtyards were spread out through the land but were arranged close to each other. With this typology, it formed variants of open spaces for the resident with different experience (Figure 4).

The units were facilitated with windows and balconies facing either the central courtyard or thematic garden. The distance between buildings was about fifteen meters with building heights eighteen meters and had a porch at the ground floor units, which gave direct access to the park. Inside the multi-family housing, there were three different types of units: two bedrooms, three bedrooms, and four bedrooms. The design of the rooms inside was multifunctional as it may be transformed into a semi-open room for the study room. Each unit consisted of a living area, kitchen, master bedroom, child bedroom, bathroom, service area, and maid room. Each floor had four units that were connected with a corridor that had vertical circulations such as elevator and stairs located at the opposite ends of the corridor.

![Figure 4. The site planning of Rainbow Springs](source: Rainbow Springs (2014))
2.2. Instruments
Data was collected through direct observations from February to March 2020. The site was visited six times. The time of visits varied from morning to evening, weekdays and weekends. The purpose of direct observations was to identify the quality of social life at Rainbow Springs. There were three instruments used in this study. First, the nine criteria of livable urban density [7] were used to evaluate the design strategies of the life outside. Second, the three criteria of types of spaces [8] were applied to evaluate the design strategies of the life inside. Third, this study observed and mapped social interactions using four indicators, which were diversity of activity, diversity of user, time spent, and type of activity.

3. Results and Discussion
Based on the observation, the life outside and the life inside of the Rainbow Springs Condovillas was a very private living unit with facilities that were limited to the residents. The residents of Rainbow Springs were active only around morning and evening time for exercise and play. During weekends, there were more people spent time outside. Even though many of the residents were observed using the facility, they tended to interact only with their relatives, not with others. The rest of the residents mainly stayed in their units, or they exercised outside in the facilities provided.

3.1. Rainbow Springs and the concept of Life Outside
Figure 5 presented that social activities mostly happened at the courtyard facilities. It showed that an enclosed spaced typology was a useful morphology to create resident’s interest to interact outside. There were more than five variants of facilities programs outdoor that attracted a different kind of users—for example, the swimming pool area where children, adult and elders exercised. The diversity of programs was well organized. However, the programs had not integrated its facility to a broader range of age group in the neighbourhood. The open space had not flexibility. Each open space had a dedicated activity. In the other side, the thematic garden between buildings showed no interaction between residents as it did not provide any programs. The garden was used by the residents only as a connector between buildings and courtyards. The pedestrian walkway was continuous throughout the neighbourhood. However, it did not have any connection with the outside. The residents were seen using the pedestrian, as well as the vehicle lane to walk. The neighbourhood was covered with many vegetations that gave the impression of calm and comfort to spent time outside.

Figure 5. Liveliness in Rainbow Springs
Table 1 presents only part of the life outside strategies was applied in the case study, which affected the low quality of social interaction.

Table 1 The impact of life outside strategies toward social interaction in Rainbow Springs

| Criteria                      | Strategy                                           | Positive                                                                 | Negative                                                                 |
|-------------------------------|---------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|
| 1. Diversity of built form    | Enclosed block typology, Diversity of function, and layering | -                                                                        | The buildings forms are typical and monofunctional which impact to decreasing social experience |
| 2. Diversity of outdoor spaces| Enclosed block typology, spaces between buildings  | Variants of outdoor spaces at courtyards and thematic garden which leads to the highest attraction of outdoor social activity | Lack of communal activity at thematic garden between buildings that cause lacking attraction |
| 3. Flexibility                | Multifunctional neighbourhood and building        | -                                                                        | Monofunctional neighbourhood                                             |
| 4. Building to human scale    | Small enclosed space, low-rise building,           | Low-rise building and proportional space in between                       | Ground floor units that are private functions that impact on the lack of life at the thematic garden |
| 5. Walkability                | Ground floor access, permeability                 | Continuous pedestrian walkway                                            | A gated complex that did not connect with the neighbour’s property       |
| 6. Sense of control           | Enclosed space                                    | Space that belongs together but designed to be comfortable to feel included | -                                                                        |
| 7. Microclimate               | Enclosed space                                    | Space surrounded by buildings that keep outside pollution from the inside | -                                                                        |
| 8. Carbon footprint           | Low-rise building                                  | Small building with minimal building area                                | -                                                                        |
| 9. Greater biodiversity       | Diversity of outdoor spaces with vegetation       | Grown vegetations cover the parks between buildings to increase comfort  | -                                                                        |

3.2. Rainbow Springs and the concept of Life Inside

Building entrance was placed in the parking area. Every building access was privately for the residents of the building. The lobby was designed only for a waiting bay for elevator and stairs. Elevator and stairs were functioned only as a connector, where the residents were seen entering the building and going directly to their respective unit. Corridor of each floor did not allow residents to interact with residents from other levels, though it had openings that showed other building and parks outside. The units had many windows and had two balconies facing the thematic garden. The balconies oriented facing other balconies from other building to create interaction, but it was not a success. There was no integrated activity from the inside unit that would invite residents to go outside. Some of the windows were placed integrated with bedrooms which created insecurity to the resident. The design only paid attention to the quality of the private space, which lead to individual living. Table 2 presents only part of the life inside strategies was applied in the case study, which affected the low quality of social interaction.
4. Conclusion
This research concludes with the design strategy of a livable multi-family housing neighbourhood that focuses on social interaction. In order to create a liveable community, the multi-family housing neighbourhood is recommended to follow these strategies. They are:

- Multi-family housing's neighbourhood should be designed in a walking distance enclosed block typology with the diversity of programs and open spaces, integrated mobility and sense of belonging that create a pleasant microclimate.
- The design should be supported by creating arcade around the building perimeter, human-scale towards buildings and space, pedestrian walkway quality and continuity, and high biodiversity.
- The multi-family housing should focus on the openings of the living unit to the outside activity and diversity of program at the possible encounter zones in the building.
- The entrance of the building should welcome guest and residents, which includes a meeting area.

Table 2 The impact of life inside strategies toward social interaction in Rainbow Springs

| Criteria                  | Strategy                        | Positive                                      | Negative                                      |
|---------------------------|---------------------------------|-----------------------------------------------|------------------------------------------------|
| Quality of semi-public space | Diversity of facilities, welcoming lobby | Facilities provided only at outdoor           | The lobby is design only for lift waiting zone |
| Quality of semi-private space | Communal activity at high possible encounter zones | -                                             | Corridors and stairs design strictly for circulation leads to no interaction |
| Quality of private space  | Create openings towards the outside | Large windows and balconies provide at every room inside the units | Some windows are placed integrated with private spaces that lead to user’s insecurity. |

3.3. Rainbow Springs in relation to the concept of Life Outside and Life Inside
The overall design of Rainbow Springs had already demonstrated several criteria based on the concept of life outside and life inside, such as enclosed space typology, diversity of open spaces, the proportion of human scale with its surroundings, sense of belongings, pleasant microclimate, building orientation due to weather, and good quality of private space. However, the design was lacking in the multifunctional program and public programs at the open spaces. The design also depended on a car to travel. Inside the building, the openings of the units were arranged according to the open spaces outside. However, the corridors and the encounter zones of the buildings were not designed for social interaction.

Analyzing Rainbow Springs based on the concept of life outside and life inside generates a design recommendation for a livable neighbourhood. Enclosed block building typology was applicable to form the interaction between outside and inside of the building. The diversity of programs was not applied in this neighbourhood, where it gave a significant impact on the low quality of social interactions of its residents with its surrounding. A livable neighbourhood was found to gather different communities into one zone. The programs should be horizontally and vertically distributed. The arrangement of the buildings form spaces between buildings should have a purpose. The open spaces should be integrated with programs for communal activities which were human-oriented. With the enclosed block typology, it forms a diversity of open spaces which leads to different experiences in outdoor life. The buildings should be designed small and low rise, facing the open spaces. The inside of the building, the possible encounter zone should be designed with indoor communal activity as a meeting point for the residents within the building. The corridors can be paired with the front porch for units to integrates interaction between circulation with units. The unit design should be open toward the open spaces outside to attract the interest of the residents to live a balance outside and inside life.
Acknowledgements
This study was funded by the Center of Research and Community Development Universitas Pelita Harapan contract No. 326/LPPM-UPH/III/2020.

References
[1] Apartemen, Antara Gaya Hidup dan Kebutuhan Hunian Republika Online (ID 2020)
[2] Ini 10 Masalah Rumah Susun Versi Pemerintah, Apa Saja? Ekonomi Bisnis (ID 2020)
[3] Issues S 2014 Improving the Social Sustainability of High-Rises CTBUH Journal pp 24-31
[4] Evans, Peter B 2002 Livable Cities. Urban Struggles for Livelihood and Sustainability (California: University of California Press)
[5] Levitt D and McCafferty J 2019 The Housing Design Handbook (London: Routledge)
[6] Larco N 2014 Site Design for Multifamily Housing: Creating a Livable, Connected Neighborhoods (Washington: Island Press)
[7] Berrizbeitia A and Pollak L 2003 Inside Outside : Between Architecture and Landscape (Rockport Publishers)
[8] Sim D 2019 Soft City : Building Density for Everyday Life (Washington: Island Press)
[9] Hertzberger H 2005 Lessons For Students Of Architecture (Rotterdam: 010 Publishers)
[10] Madanipour A 2003 Public and Private Spaces of the City (London: Routledge)
[11] Gehl J 2011 Life between the buildings : using public space (Washington: Island Press)
[12] Rostami R, Lamit H, Khoshnavaz S M and Rostami R 2016 Successful Public Places: A Case Study of Historical Persian Gardens Urban Forestry and Urban Greening 15 pp 211–224
[13] Ramlee M, Omar D, Mohd Yunus R and Samadi Z 2018 Attributes of Successful Public Spaces through Users Perception. Asian Journal of Quality of Life 3(11) pp 21
[14] Gehl J 2010 Cities for People (Washington: Island Press)
[15] Rainbow Springs 2014 Where life grows pp 30