

SOCIAL INTERACTIONS IN HIGH-RISE RESIDENTIALS THROUGH THE  
ADOPTION OF KAMPUNG SUNGAI MELAYU SOCIAL INVENTIONS

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To my beloved wife and parents

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## ABSTRACT

The purpose of this study is to identify the roles of public communal spaces that could improve the social interaction of the community in high-rise residential. It is very common to see high-rise buildings erected throughout a developing city. The high-rises are like the key players of the city, and normally a driving force for the improvement of the urban infrastructure. As the people are moving from horizontal community to vertical community, the issues of social interaction arise. Therefore, communal spaces in high-rise buildings are very important and the implementation into the current industry is yet to be reinforced. Social interaction is important as it is beneficial to human health, both physically and psychologically. The idea of including communal space in high-rise is no longer a new idea as it had been incorporated during the 1980's. But it is yet to be fully implemented in the high-rise development due to the cost and plot ratio issues. The main objective of this research is to create an architectural method for encouraging social interaction in high-rise community. The research adopts the questionnaires, interviews and observation as the methodology for data collection. The data are collected from the selected village, Kampung Sungai Melayu. From the findings, it had been identified that certain characteristics that are encouraging community social interaction is found in Kampung Sungai Melayu, such as the *anjung*, typical house typology and communal spaces. The author suggested a few methods that can be incorporated into the design of future high-rise residential in order to encourage social interaction within the high-rise communities, such as incorporating the *anjung* into the unit design, offset the corridor with the individual units, create a transition space between the public corridors and private units, etc.

## ABSTRAK

Matlamat kajian ini adalah untuk mengenal pasti fungsi ruang komuniti awam yang boleh meningkatkan sosial interaksi antara komuniti di kalangan residen bangunan tinggi. Fenomena mengenai bangunan-bangunan tinggi didirikan di seluruh bandar membangun merupai sesuatu perkara yang biasa. Bangunan-bangunan tinggi merupakan pemain utama bandar dan biasanya pemangkin bagi peningkatan infrastruktur bandar. Disebabkan itu, isu sosial interaksi di antara komuniti bangunan tinggi telah muncul. Maka, ruang awam dalam bangunan tinggi adalah sangat penting dan implementasi ruang awam ke dalam seni bina bangunan tinggi belum diperkukuhkan. Sosial interaksi adalah penting kepada kesihatan manusia, dari segi fizikal dan psikologi. Idea untuk meningkatkan ruang komunal di bangunan bukan satu idea baru kerana ia telah diperbadankan pada tahun 1980-an. Tetapi ia masih belum dilaksanakan sepenuhnya dalam pembangunan bangunan tinggi disebabkan oleh isu kos. Tujuan utama penyelidikan ini dijalankan adalah untuk mencipta satu seni-bina yang dapat menggalakkan sosial interaksi dalam komuniti bangunan tinggi. Penyelidikan ini menggunakan soal selidik, temu bual dan pemerhatian sebagai kaedah pengumpulan data. Data-data ini dikumpul daripada kampung terpilih, iaitu Kampung Sungai Melayu. Daripada penemuan itu, ciri-ciri tertentu telah dikenal pasti sebagai faktor yang menggalakkan interaksi sosial masyarakat di Kampung Sungai Melayu, seperti anjung, tipologi rumah biasa dan ruang perkauman. Penulis mencadangkan beberapa kaedah yang boleh dimasukkan ke dalam seni bina rumah kediaman bangunan tinggi masa depan untuk menggalakkan interaksi sosial dalam komuniti bangunan tinggi. Antaranya termasuk menggabungkan anjung ke dalam reka bentuk unit, mengimbangi koridor dengan unit-unit individu, mencipta ruang peralihan antara koridor awam dan unit individu dan sebagainya.

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**LIST OF ABBREVIATION**

AADK	- Agensi Antidadah Kebangsaan
IRDA	- Iskandar Regional Development Authority
MPJBT	- Majlis Perbandaran Johor Bahru Tengah

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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 Introduction**

The available land for new development is becoming less, making it increasingly valuable, especially those lands located within city area. As such with the increment of global human population, the trend of building design is leaning towards high-rise and skyscrapers. These tower buildings are the leading light of a metropolitan, meanwhile in larger cities, skyscraper buildings are the foremost mainspring in relation to the urban infrastructure.

It is very obvious that the trend for development is now moving from expanding horizontally to vertically. A higher building eventually becomes a landmark that represents its country. The Petronas Twin Towers that was completed in year 1998 and being the world tallest building on the day it is completed, had introduced Malaysia to the world. A video introducing the Burj Khalifa had mentioned that, the client of the tower is keen to build the world's tallest building as it shows his power and wealth.

This inclination is also to penetrate into the residential market. As the price of land is increasing, the developer has no choice but to construct high-rise strata residential, instead of landed property. But due to cost constraints, developers are trying to minimize the area that is not sell-able such as public spaces or green area. Therefore, it is very hard and rare to find public communal spaces in most high-rise developments.

The main intention of this chapter is to identify the fundamental problems that lead to the author's research topic, generate research aims and objectives, to organise the outline of this dissertation. At the same time, it establishes a brief understanding of the selected research methodology. It is envisioned that the research findings will contribute to articulate the building concepts for the Design Thesis and enhance the author's understanding on certain considerations that are necessary to be made in the future while designing a high-rise residential.

## **1.2 Problem Statement**

Due to the absence of public communal spaces in these buildings, there are no chances or proper designated areas for the community to interact with each other. Thus, it is a shame that most of the users do not know each other; even their neighbours that are living next door, let alone getting to know the rest of the community living on different levels. As the trend of converting low rise residential into high-rise is getting more common nowadays in order to solve the issues of expensive land costs and the lack of vacant lands, it also creates the social interaction problems in the high-rise communities.

The higher one lives from the ground level, the more disconnected one feels from the natural world and even from each other within a community. The demand

for a peaceful and natural environment in the urban areas has increased; people desire such green environments where they can stay, chat, and otherwise interact with their family, friends and neighbours. We need green in our everyday urban life (Ip, 2014).

Kampung Sungai Melayu is a village located within the region of Nusajaya. It consists of 148 house and 841 villagers (statistics as on January 2015). Most of the older generations are working as fishermen by breeding Green Mussel and catching fishes and selling it to the market. As the land cost for Kampung Sungai Melayu are expensive (approximately RM4 million per acre had been offered), the young generation are unable to purchase and own their own property within their origin village. Therefore designing and constructing a high-rise on the expensive land are solution for reducing the selling price of the property.

The purpose of this study is to tackle the problems of social interaction in high-rise buildings and the method to resolve them through the adoption of the positive social aspects that are found in Kampung Sungai Melayu.

### **1.3 Research Aims & Objectives**

The research aim is to create an architectural method for encouraging social interaction within a high-rise community. There are three main objectives that are targeted to be accomplished which are:-

- i. To identify the types of socio-cultural activities in Kampung Sungai Melayu.

- ii. To analyse the common characteristics of a communal space in Kampung Sungai Melayu that helps and promotes social interaction.
- iii. To discover a typical solution that is able to improve the social interaction within a high-rise community.

#### **1.4 Research Questions**

The aim of this project report is achievable by responding to the research questions below:

- i. What kind of activities exists in Kampung Sungai Melayu that helps in improving their social interaction?
- ii. What are the common characteristics of a communal space in Kampung Sungai Melayu that help to promote social interaction within the community?
- iii. How to create a high-rise residential that encourages social interactions within the community?

#### **1.5 Significance of Study**

This study is important as it will contribute to the improvement of social interaction in high-rise communities. This issue has existed for a long time since high-rise buildings became a trend in a country development. Therefore, studying the positive social aspects in Kampung Sungai Melayu and applying it into the high-rise residential will improve the community's social interactions and therefore,

contribute in the field of high-rise residential design that can be adopted by architects and designers in the future.

## **1.6 Research Methodology**

Primarily, this chapter is to decide on the research direction through the understanding of the existing research and literature reviews patterns. The overall basic research framework will be divided into four different stages; to identify the research problem, data collection, data analyse and lastly, conclusion. Discussion regarding the adopted methodology and the breakdown of the research will be further elaborated in Chapter 3. Primary data is collected through interviews and observation. Meanwhile, all data collected through existing literature reviews, journal articles, reading materials or books, internet-based articles and thesis done by alumni will be used as secondary data to support the primary data that had been collected. The overall design of this research takes a qualitative approach, meaning that a formal, objective, systematic process is used to analyse the data in order to achieve the research objectives.

## **1.7 Expected Findings**

Towards the end of the research, the author will be able to list down the programs that will be implemented into the high-rise residential architecturally. These architectural solutions would promote social interaction within the high-rise community that can be found within the original community of Kampung Sungai Melayu. By answering to the research questions 1 and 2 above, a list of communal spaces and their characteristics is identified. These spaces are then emulated and

placed to fit into the context of a high-rise residential. Besides that, a series of characteristics of the existing typology of Kampung Sungai Melayu will be studied to see how the typology affects the social interaction within the community.

## **1.8 Structure of Thesis**

There are five main chapters included in this dissertation. Chapter 1 will deliver an overview and brief introduction of this research, including the background of study, research aim and objectives, research questions, research methodology and the expected findings. Meanwhile, Chapter 2 will be covering the literature reviews with the topics related to social interaction, lifestyles in urban and village context, where examples and case studies are also included to support the research. It will also include a section explaining on the current issues related to the typical high-rise typology that create the problems of lack of social interaction. Chapter 3 basically elaborates on the research methodology of this dissertation where data is collected mainly on the villagers of Kampung Sungai Melayu, both old and young generations. The data collected will then be recorded and analysed as findings in Chapter 4. At the end of this chapter, the analysed data will be deliberated in order to generate a potential architectural solution responding to the research aim and objectives. Lastly, Chapter 5 will conclude the discussions and proposals from Chapter 4 by responding to the research questions and further highlight the importance and significance of the overall research. Limitations, challenges and future recommendations will also be included in this chapter.



## REFERENCES

- Abu-Ghazze, T. M. (1998). Housing Layout, Social Interaction and the place of Contact in Abu-Nuseir, Jordan. In *Journal of Environmental Psychology* (pp. 41-73). Academic Press.
- APA. (2015). *Characteristics and Guidelines of Great Public Spaces*. Retrieved March 3, 2016, from American Planning Association: <https://www.planning.org>
- Arslan, G., & Sev., A. (2014). Significant Issues In and Around High-Rise Residential Environments. *Proceedings of 3rd International Environment and Design Congress*.
- Bay, J.-H. (2004). Sustainable Community and Environment in Tropical Singapore High-Rise Housing: The Case of Bedok Court Condominium. In *Architecture Research Quarterly, Volume 8, Issues 3-4* (pp. 333-343). United Kingdom: Cambridge University Press.
- Bellair, P. E. (1997). Social Interaction and Community Crime: Examining the Importance of Neighbor Networks. In *Criminology: Volume 35 Number 4* (pp. 677-703). USA: The American Society of Criminology.
- Carsten, D. Y. (1993). Site Development Patterns: The Surrounding Neighborhood and On-Site Conditions. In *Site Planning and Design for the Elderly: Issues, Guidelines and Alternatives* (pp. 29-55). New York: John Wiley & Sons.
- Chan, S. T. (2005). Communal Sky Gardens for High-Rise Residential Buildings. *The 2005 World Sustainable Building Conference* (pp. 2274-2279). Tokyo: SB05 Tokyo.

- Changnon, T. (2012). *Importance of Social Interactions*. Retrieved March 3, 2016, from Stanislaus Conty: [www.stancoe.org](http://www.stancoe.org)
- Charles, K., & Sipke, H. (1983). Sources of Assistance Among Residents of a Dutch High-Rise Development. In A. J. Psychology, *American Journal of Community Psychology* (pp. 751-755). North Carolina: Plenum Publishing Corporation.
- Coley, R. L., Sullivan, W. C., & Kuo, F. E. (1997). Where Does Community Grow?: The Social Context Created by Nature in Urban Public Housing. In *Environment and Behavior, Vol. 29 No. 4* (pp. 468-494). Sage Publications.
- Evans, G. W. (2003, December). The Built Environment and Mental Health. In *Journal of Urban Health: Bulletin of the New York Academy of Medicine, Vol. 80, No. 4* (pp. 536-555). New York: The New York Academy of Medicine.
- Freeborn, & Donna. (2016). *Older Adults and the Importance of Social Interaction*. Retrieved March 19, 2016, from University of Rochester Medical Center: Health Encyclopedia: <https://www.urmc.rochester.edu>
- Gang, J. (2015). Three Points of the Residential High Rise: Designing for Social Connectivity. *Global Interchanges: Resurgence of the Skyscraper City*. United States: Council of Tall Buildings and Urban Habitat.
- Gifford, R. (2006). The Consequences of Living in High-Rise Buildings. *Architectural Science Review 50:1*, 2-17.
- Holland, C., Clark, A., Katz, J., & Peace, S. M. (2007, April 24). *Social Interactions in Urban Public Places*. Retrieved March 19, 2016, from Joseph Rowntree Foundation: <https://www.jrf.org.uk>
- Huang, L. S. (2006). A Study of Outdoor Interactional Spaces in High-Rise Housing. In J. Nassauer, & W. Xiang, *Landscape and Urban Planning* (pp. 193-204). Amsterdam: Elsevier's B.V.

- Ip, T. (2014). Typology of Sky Gardens for High-Rise Urban Living. *Sustainable Innovation 2014. 19th International Conference. Cities & Regions as Catalysts for Smart & Sustainable Innovation*. Copenhagen, Denmark: The Centre for Sustainable Design.
- Jafari, R., & Khoshnevis, A. M. (2014). Effective Factors in Promoting Social Interactions Between Residents in Residential Complexes. *Trends in Life Sciences*, 100-110.
- Kuo, F. E., Sullivan, W. C., Coley, R. L., & Brunson, L. (1998). Fertile Ground for Community: Inner-City Neighborhood Common Spaces. *American Journal of Community Psychology*, Volume 26, No. 6, 823-851.
- Lawson, B. (2010). The Social and Psychological Issues of High-Density City Space. In E. Ng, *Designing High-Density Cities: For Social and Environmental Sustainability* (pp. 285-292). London: Taylor & Francis.
- Lee, Y. S., Ahn, C. H., & Kim, D. H. (2010). Shared Space to Promote Social Health & Vertical Community in High-Rise Apartment of Korea. *3rd International Symposium on Sustainable Healthy Buildings*. Seoul, Korea: Department of Housing and Interior Design.
- Mike, J., & Colin, J. (2009). *Dimensions of the Sustainable City*. London: Springer Science & Business Media.
- Modi, S. (2014). Improving the Social Sustainability of High-Rises. *International Journal on Tall Buildings and Urban Habitat*, 24-30.
- Paddock, C. (2010, July 28). *Low Social Interaction Harms Lifespan on a Par with Obesity, Smoking, Inactivity*. Retrieved November 10, 2014, from MediLexicon International Ltd.: <http://www.medicalnewstoday.com>
- Rabinowitz, P. (2010). *Creating Good Places for Interaction*. Retrieved April 18, 2016, from Community Tool Box: <http://ctb.ku.edu>
- Scheeren, O. (2015, May 6). *The Interlace / OMA/ Ole Scheeren*. Retrieved April 27, 2016, from ArchDaily: <http://www.archdaily.com/627887/the-interlace-oma-2>

- Sow, L. L. (2015). *Social Sustainability of Urban High-Rise Community*. Malaysia.
- Stevens, P. (2014, July 17). *Gridded Residential Tower in Antwerp by C.F. Coller and Brut*. Retrieved April 27, 2016, from Designboom: <http://www.designboom.com/architecture/c-f-moller-residential-tower-in-antwerp-belgium-07-17-2014/>
- Wiggers, L. (2014, July 14). *C.F. Moller*. Retrieved April 27, 2016, from Residential Tower in Antwerp: <http://www.cfmoller.com/r/-en/residential-tower-in-antwerp-i13349.html>
- Williams, B. T. (2008, September 20). Healths Effects of Living in High-Rise Flats. *International Journal of Environmental Health Research*, pp. 123-131.
- Wolf, K., & Rozance, M. A. (2013, May 20). *Social Strengths*. Retrieved March 19, 2016, from University of Washington: Urban Forestry/Urban Greening Research: <https://depts.washington.edu>
- Zuzana. (2012, September 14). *The Importance of Social Interaction to Human Health*. Retrieved November 10, 2014, from Herts Eeg Biofeedback: <http://www.hebiofeedback.co.uk>