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Articulation of Apartment Design to Reduce Potential Criminality

Kevin Widyanto[1] Rudy Trisno[2] Fermanto Lianto[3]

[1]Master Program of Architecture, Faculty of Engineering, Universitas Tarumanagara, Jakarta 11440, Indonesia
[2]Master Program of Architecture, Faculty of Engineering, Universitas Tarumanagara, Jakarta 11440, Indonesia
[3]Master Program of Architecture, Faculty of Engineering, Universitas Tarumanagara, Jakarta 11440, Indonesia
Email: fermantol@ft.untar.ac.id

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ABSTRACT

When architecture is articulated, the response to the existing problem or context becomes the part that influences it; therefore, human activities could occur according to their suitability. The downtown area already has a high density, the construction of apartments is a strategy that continues to be used to meet the need for housing in the middle of the city. Currently, the research sees the need for a safe living space in the face of potential security problems in urban areas against criminal behaviour due to residents' lack of natural supervision. The research method would be qualitatively by collecting theories regarding the articulation and prevention of crime in living spaces and confirmed by the case study method. With qualitative research, the case study carried out was by direct observation and interviews with the residents at the Kalibata City Apartment in South Jakarta. The design method was the development of CPTED and Architectural Articulation. The findings obtained were the importance of the separation zone between the zone intended for residents in an apartment and the zone provided for the public to provide supervision activities and moderate meetings, Differentiation of space functions, access, and facilities for residents and the public, Social control on the ground floor could be created from a variety of active shops on the ground floor, the strength, and concern of the community of apartment residents in protecting their environment.

Keywords: *Articulation, Apartment, Security, Control, Surveillance*

1. PREFACE

When the architecture is articulated, the response to the existing problem or context becomes a part that influences itself; therefore, human activities inside could occur according to their suitability. A residence among the urban activity centre may be in row houses or houses arranged with shops on the ground floor. These houses allow city dwellers to live among their urban activities such as going to school, work, doing business, and other urban activities [1].

Since the downtown area already has had a high density, the construction of multi-family housing or what we often know as apartments is a strategy that continues to be used to meet the need for housing in the middle of the city and has become a preferred way for developers to provide houses that are distributed to buyers [2]. In its development, linear spatial articulation and other similar developments are often considered a strategy to maximize the building capacity and are usually complemented with facilities [3]. It could be sold to buyers with a large amount and could be built using methods that are more profitable in terms of time and economy. But have we ever discussed that this architectural articulation had provided good security potential for a residential neighbourhood in the middle of the city?

Oscar Newman, an architect, observed the Pruit Igoe at the height of its failure and found a link between social health and its design [4]. His findings provide the view that a high-rise settlement for the middle to lower economic class people with interior public spaces, used by many people, would provide a blind spot and reduce social control by the residents. Therefore, the desire to protect the environment by its inhabitants tends to be gone. Pruit Igoe was articulated with corridors and a Skip step lift system placed in every multiple of 3 floors from the ground floor. These corridors were dominantly used for public areas and could be passed by residents by going up or down one level from the floor they live in. This configuration has created many blind

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spots, and an environment is too free for anyone to enter [5]. This building was demolished in 1972 because it was considered unsuccessful and accommodated various crimes.
The research saw there were similarities in social problems that occur in the context of Jakarta, Indonesia. One example is the Kalibata City Apartment. This apartment was ready for use in 2012, and so far, several crimes have been reported, ranging from child prostitution cases, narcotics, suicide cases, and various types of murders in this apartment [6]. Then how could architecture in the city centre be articulated and communicate its need for privatization and provide the potential for environmental security, connectivity, and social control by its occupants? The research tried to design and articulate an apartment to communicate the need for a place to live that could provide the potential for a safer environment.

2. RESEARCH METHOD

Architectural Articulation Theory
Pierre Von Meiss stated that articulation between elements distinguishes the autonomous or independent nature. Its function is to strengthen its role from the elements of a building element [7].
From Umberto Eco's theory, articulation of architecture is the language code [8]. The architectural code is as follows:

1. Technical Code: Articulations formed by architectural engineering as beams floor systems.
2. Syntax Code: This is exemplified by the typological code of articulation into spatial types such as circular plans, Greek cross plans, open plans, mazes.
3. Semantic Code: The relationship that is built between the introduction of architectural signs and their denotative and connotative meanings [8].

Ching stated that articulation is a method or method of unification that makes the parts that unite clear, distinct, and precise about one another. Articulations can be made by distinguishing adjacent planes based on materials, colours, textures, and patterns; corner development; and lighting on the shapes to create contrast [9].
Articulation aims to produce clarity of form and roles in architectural elements as a means of communication.

Theories Regarding Crime and Residential Space
CPTED (Crime Prevention Through Environmental Design)
The first generation of CPTED is based on the Defensible Space theory by Oscar Newman. Divided into four principles:

1. Territorial/Territorial Control. Through the design of semi-public spaces in residential areas. It may help residents take informal ownership of public spaces, making it more difficult for violators to trespass without punishment.
2. Natural surveillance. Closely related to territorial influence. This is achieved through forms of design that increase visibility to reduce crime opportunities and reduce fear.
3. Image and Milieu. This is related to urban safety, such as their perception of the surrounding area, whether they are afraid of public places, and the surrounding land use conditions.
4. Access control. Access control supports territorial influence by using architectural strategies to restrict access to the property [10].

Second Generation CPTED uses a focus on small-scale environments, namely:

1. Social cohesion. Programs include strategies such as Neighborhood Watch to reduce burglary or social groups interested in the quality of life created.

2. Community culture. Community culture programs help residents create a sense of community and form strong bonds.
3. Connectivity. Connectivity strategies can be physical (a connected pedestrian walkway) or social (such as a shared neighbourhood event).
4. Threshold Capacity. This concept proposes a wide variety of land uses in environments where residents can socialize (parks), shop for groceries (food outlets), and have recreation (sports or entertainment) [10].

Defensible Space Principles

Research that Newman has carried out on the form of housing shows that row houses still provide a tendency for environmental control, namely environmental control that expands from their respective home environment to the road and sidewalk in front of it. In the Garden Apartment / Walkups building, social control in the area outside the building has begun to decrease, but the trend is still there. The corridors on each floor of the building, which are semi-private interior spaces, are still controlled by the resident community on each floor. For High-rise Apartment Buildings with linear corridor types, social control only occurs in each unit owner. This has provided a blind spot in the interior public areas and outside the building. This condition requires the manager to employ many workers to control this environment. Thus it would be difficult to pay for this building maintenance system [11].

Moderated Space

In 1973, Andrew Baum compared two student apartments at Stony Brook University on Long Island. The first apartment type was a double-loaded row unit with direct and elongated corridors. Type 2 in every 3 units were connected to a shared living room or lounge before the corridor. Students who lived in type 1 apartments complained that they felt stressed and that unwanted social interactions often occurred. The students who lived in a shared living room could control whom they met. This study proved that we always need a space that links private and public spaces to moderate our social level, thus not isolating ourselves or overstimulating in public spaces [4].

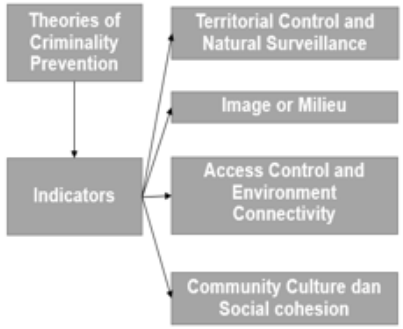
Visual Interaction in Building

According to Gehl's research, Visual interaction in humans generally occurs only up to a height of 5 floors in a building. At the following height, the dominant view is the view between other buildings or the view of the sky. The city no longer owns the people above the 5th floor. The best communication occurs at the height of up to 2 floors [12].

From the theories that the research has collected, it could be concluded that the prevention of a crime in an environment has four main parameters that would affect the need for crime prevention which is presented in Figure

Figure 1

Parameters of Preventing Crime



Source: *Authors, 2021*

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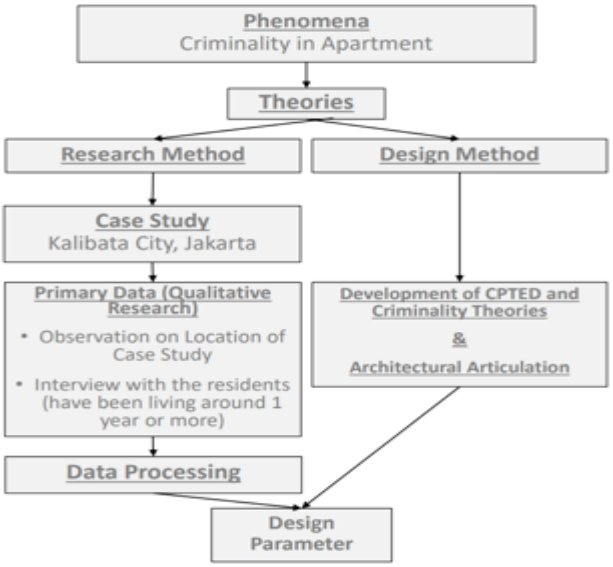
METHODS

The research would determine the analysis method and examine case studies. This case study analysis would later produce the design parameters (Figure 2).

Figure 2

The Big Picture of the Method

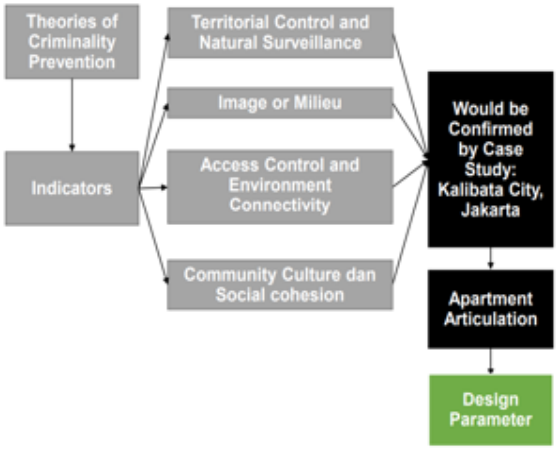


Source: *Authors, 2021*

The research would be qualitative. With qualitative research, data collection was obtained by direct observation and open interviews to collect and explore existing phenomena [13]. Interviews were done with residents of the apartment that became the research case study, namely the Kalibata City Apartment in South Jakarta. The qualitative research was based on the indicators the research obtained from studying the theories that have been collected regarding the prevention of environmental crime and architectural articulation. The scheme of the relationship between these indicators is presented in Figure 3.

Figure 3

Research Method



Source: *Authors, 2021*

Because of the COVID-19 pandemic, the research arranged the interviews with online meetings via zoom. Observation data collection was done by surveying directly on the location.

Design Method

The design method would use the CPTED Method Development and Architectural Articulation. The development of this CPTED method was enriched by theories regarding the intermediate space to moderate meetings [14], visual interactions in high-rise buildings [12], as well as the form and nature of social control of the types of housing [11] that previously tested directly through the case study, therefore, researchers could ensure its suitability to the local context in Jakarta, Indonesia.

3. FINDINGS AND DISCUSSIONS

Case Study Findings

Data collection using interviews was conducted from 5 Kalibata City Apartment Area residents who are also considered to represent their respective families in their residences. The 5 resource persons have residences in different towers in the Kalibata Residence, Kalibata Regency, and Green Palace areas. Interview data were collected from April to May 2021. The profiles of these resource persons can be seen in Table 1.

Table 1

Resource Person Profile

Profile	A	K	J	KK	D
Age	27 years old	36 years old	28 years old	22 years old	35 years old
Gender	Female	Male	Male	Male	Male
Education	Bachelor Degree	Master Degree	Bachelor Degree	Senior High School	Bachelor Degree
Family Member	Wife	Wife	Alone	3 Brothers, and Parents	Wife
Occupation	BUMN Staff	Architect	Architect Staff	Student	Entrepreneur
Income	4,5-7 Million	>10 Million	>10 Million	>10 Million (Family)	>10 Million
Tower Location	Damar (Kalibata Residence)	Nusa Indah (Green Palace)	Eboni (Kalibata Residence)	Previously Borneo (Kalibata Residence), Now in Raffles (Green Palace)	Eboni
Long of Occupancy	2 Yeras (2019)	6 Years (2015)	6 Months (2020), 7 Months for Rent	8 Years (2013)	4 Years
Occupancy Status	Owner	Owner	Owner	Owner	Owner
Unit Type	1 Bedroom	2 Bedrooms	2 Bedrooms	3 Bedrooms	2 Bedrooms

Source: *Authors, 2021*

The divided zone between the zone intended for residents in an apartment and the public is essential for surveillance activities. In the Kalibata Residence and Regency areas (2 areas in the earlier stages of Kalibata City development), this limitation was not found in the ground floor area, and there was no room to filter guests (Proper Lobby).

Active shops that were always bright and actively used by residents or visitors enhance natural surveillance. This condition could help the ground floor of the residential area as not vulnerable to be filled by activities that tended to lead to criminal acts. But some Towers and areas of Kalibata City were blocked from each other. The research still found some darker areas and was not often used by the users.

Natural surveillance in the corridor would exist only in capacities exceeding 4 to 6 families on one floor. The scale of high-rise residential buildings would already depend on many special security officers [11]. Each Residential floor in the Tower of Kalibata Residence areas and Kalibata Regency areas had 40 to 50 units that used the same corridors that continue to connect linearly and shaped “U”. Meanwhile, the towers in the Green Palace (3rd Phase of Kalibata City development) area had 29 units on each floor. It was divided into 3 parts like the letter “T”, with

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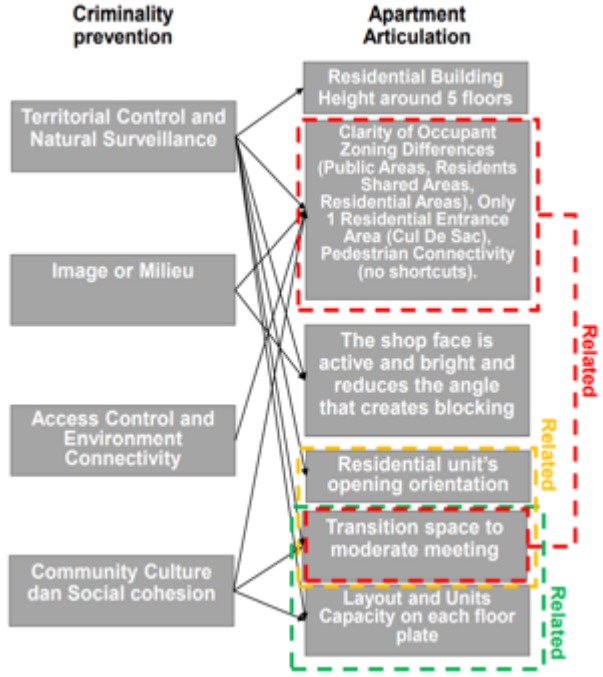
each corridor having 10 directly connected units. Each tower in Kalibata City used one shaft lift area.

With theories and then confirmed through case studies, a relationship was found between architectural articulation for designing an apartment and prevention of crime therefore that it could provide a safe potential for the living environment. This relationship is illustrated in Figure 4.

Figure 4

Relationship between the Developed CPTED Method and Apartment Articulation



Source: *Authors*

By studying the theories and case study that have been done, the indicators in this design were as follows:

1. Height of building around 5 levels
2. Clarity of differences in occupant zoning (public areas, shared areas with residents, residential areas), only one residential entrance area, and pedestrian connectivity.
3. Active and bright shop fronts and reduce blocking in the ground floor environment.
4. Orientation of residential openings.
5. Layout and unit capacity per floor.
6. Transition room to moderate the meeting.

Site Data

The site location for the design was on Jalan Hayam Wuruk, North Jakarta. This location was considered to represent the city centre in Jakarta (Figure 5).

Figure 5

The Site

Source: *Processed by Authors from Google Earth, Accessed on 13 November 2022*

Notes: KDB = 75 (The percentage of the ground floor building area that is allowed), KLB = 3 (The percentage comparison between the total floor area of the building that can be built with the existing land area), KB = 10 (The number of building levels that are allowed). KDH = 30 (The percentage of minimal vegetation area that must be added). KTB = 55 (The percentage of first-level basement area allowed compared with the total land area). The building allowed on this site is the single type and mixed programs type [14].

Design Discussion

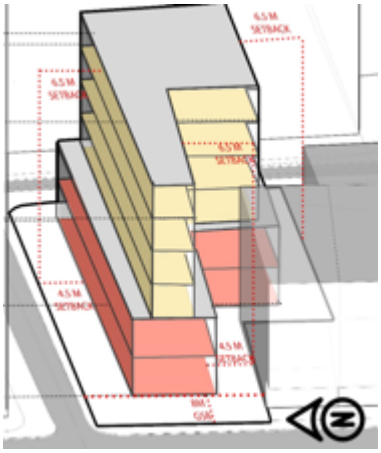
The analysis would be discussed according to the following points:

Height of The Building

The first and second floors were commercial floors and residential facilities. Meanwhile, the third to sixth were programmed to be residential. As in the regulation, Floors 1 to 2 had a setback of 4.5 meters while the floors above had a setback of 6.5 meters taken from the allowable setback on the top floor (see Figure 6). Because of it, the front face of the building only had a width of 17 meters long, 30 meters to the rear from Jalan Hayam Wuruk. If the building fully complied with the setback determined by the city planning regulations, the smallest building width was only about 4 meters on a typical floor (3rd to 6th floor). A strategy was needed to increase the width of the building; thus, the building could remain functional (Figure 6).

Figure 6

Massing Study with the Regulated Setback



Source: *Auth*

Due to the private nature of the residence, it did not require direct communication in the city's public spaces but still needed supervision of the environment; therefore, the new residential program starts on the 3rd floor. The volumes of residential functions were still planned until the 6th floor (the composition of residential floors was almost 70 percent of the overall height of the building). Because of it, this building would still communicate about itself. It still was dominated by residential functions as its primary function.

Clarity of Occupant Zoning Differences (Public Areas, Residents Shared Areas, Residential Areas), Only One Residential Entrance Area, and Pedestrian Connectivity.

On the ground floor area, the north side of the building was optimally a public space for pedestrians in the city space with shopfronts facing directly to this area (see Figure 7). Pedestrian access needs to be made with good connectivity from the beginning of housing development; therefore, people could always use it and prevent them from creating uncontrolled shortcuts to

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enter [15]. Meanwhile, the circulation of motorized vehicles was allocated on the south side of the building and went directly to the parking space and dropped off in the basement.

The residential entrance area was in the form of a lobby space on the ground floor. This space became an intermediary room, which would later become the only entry point for residences and facilities on the ground and 2nd floors. All residential areas and facilities for residents were planned only for residents who could access them using an access card system. The lobby on the ground floor would become an intermediary space to control and monitor the movement of people who would enter the residential environment. The vehicles parking only had one entry and one exit, always expected to be guarded by security officers for this apartment building (Figure 7).

Figure 7

1st Floor and 2nd Floor Scheme Floor Plan

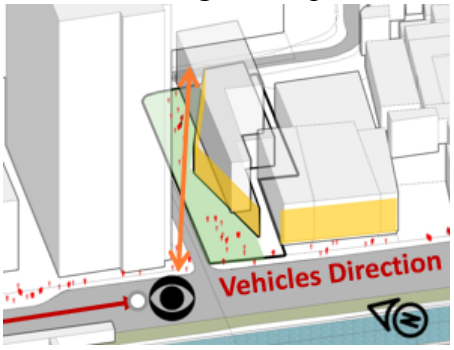
Source: *Authors*

Active and Bright Shopfronts and Reduce Blocking in the Ground Floor Environment.

The front of the podium facing the public area would be dominated by glass displays from the shops in this building, providing continuity of shops around the site (Figures 8 and 9). This corner on the ground floor was made to reduce blocking in the environment behind the site. The vertical glass dividers on the podium facade would also be emphasized. The vertical rhythm of the facade on the ground floor gives the effect of walking more pleasant and not feeling too far [12] (Figure 8).

Figure 8

Podium Massing Development



Source: *Authors*

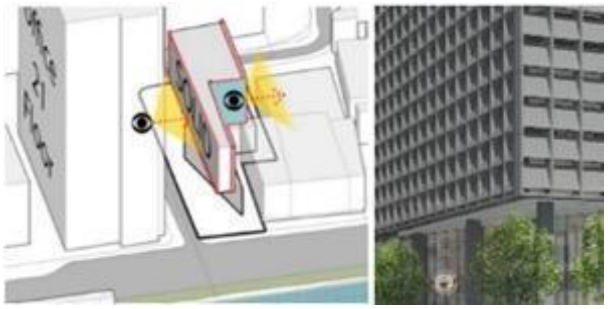
Figure 9
Podium Facade Perspective

Source: *Authors*

Orientation of Residential Openings

The orientation of the unit openings was directed towards the south. The building side directly opposite the tall building was articulated into a corridor with a solid facade but still allowed visual vision from the inside. The corridor space of each residential floor function was an interior semi-private intermediary space used for residents to monitor the spaces outside [5]. This solid side was in the form of the double-layered building skin in the form of fins that still allowed supervision to the outside but blocked visually from the direction of the tall building (Figure 10).

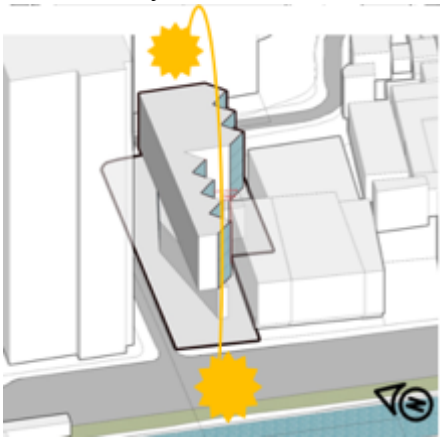
Figure 10
Building Skin Scheme



Source: *Authors*

The southern part of the front of the Residential building Facade was made into diagonal corners to increase the area and width of the building so that it is functional (see Figures 11.). The farthest distance from the corner point to the land boundary was allowed by the Jakarta Governor Regulation in 2019, which is 1/2 the distance of the regular building setback. These corners also provided additional 2 side openings for each housing unit. With this strategy, each unit could also have a sunlight source optimized on both sides (Figure 11).

Figure 11
More Areas for Units



Source: *Authors*

Layout and Unit Capacity Per Floor

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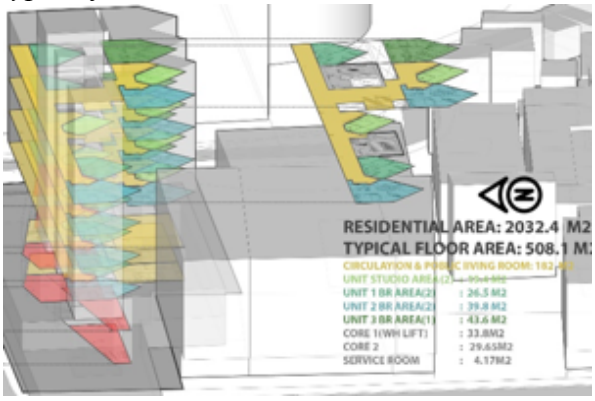
A typical unit plan was processed with the optimal capacity that the design could do but still considered the intimacy scale; therefore that natural control could work on each floor of the building. The unit corridor on the floor was typically divided into 2 parts with a single loaded form with the corridor position facing the north of the building, while the entire unit was oriented towards the south as a response to the privacy needs of high-rise office buildings facing directly to the north of the building. The corridor on the north only consists of 4 units. While the south side only serves 3 housing units (Figure 12).

Figure 12.
Types of Units



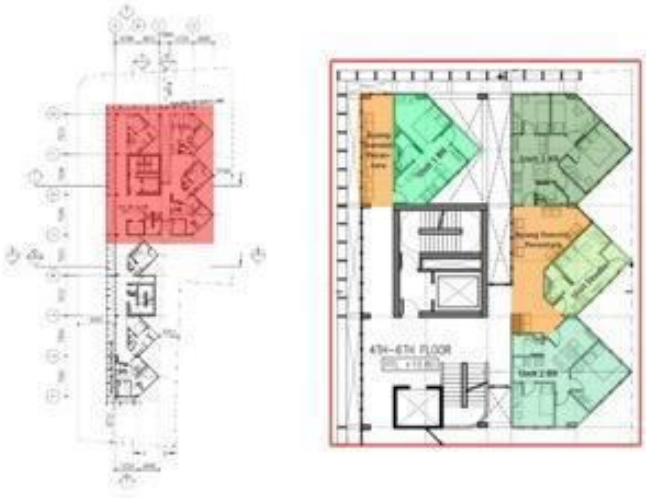
Source: *Authors*

Each typical floor would have 4 different unit types. Starting from studio units (2 in total on each floor), units with 1 bedroom (2 on each floor), units with 2 bedrooms (2 on each floor), and units with 3 bedrooms. The variety composition was expected to be formed from a match's variety in the area, type and purchasing ability. That would be a residential community that could provide social and moral support to one another [16]. People need support and confirmation from people who have different stages in the life cycle; at the same time, they also need support from people who are at the same stage as themselves. But this diversity would only work if the group is intimate enough to have modest political relations (social arrangements) internally [1].

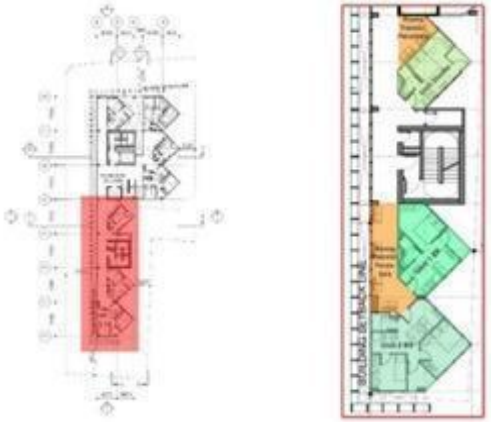
Transition Room to Moderate Meeting

The Circulation space on every residential floor was planned as a corridor and an intermediary room to moderate meetings with their neighbours. These semi-private spaces were formed by articulating each entrance door unit (Figures 13 and 14).

Figure 13
Detailed Plan of Typical Unit on East Side



Source: *Author*
Figure 14
Detailed Plan of Typical Unit on East Side



Source: *Authors*

Finally, the final building appearance was generated and can be seen in Figures 15 and Figure 16.
Figure 15
Perspective from Jalan Hayam Wuruk

Source: *Authors*
Figure 16
Perspective from Jalan Hayam Wuruk.

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Source: *Authors*

4. CONCLUSIONS AND RECOMMENDATIONS

A living environment that stimulates natural territorial control and supervision is needed for living space. This could be formed when a strong community owns the sense of ownership of a living environment. Arrangement Articulation of architectural components in the form of; 1) Building heights that still allow visual visibility; 2) Clarity of differences in occupant zoning; 3) Only one residential entrance area, good pedestrian connectivity; 4) Active shopping fronts and bright and does not provide much is blocking on the ground floor; 5) The orientation of residential openings that allows control; 6) The organization of space and unit capacity per floor with a good intimacy scale; 7) The existence of a transition room to moderate meetings, are determinants for a safer environment by stimulating control social activities that residents could do.

REFERENCES

Alexander,C (1977) A Pattern Language, New York: Oxford University Press. 2

Armitage,R, Monchuk L &Rogerson,M (2011) It Looks Good, but What is it Like to Live There? Exploring the Impact of Innovative Housing Design on Crime, European Journal on Criminal Policy and Research, vol. 17, no. 1, 29-54. 14

Ching,F.D (2007) Architecture: Form, Space, and Order, Canada: John Wiley & Sons, Inc.,. 5

Creswell,J.W (2016) Research Design, California: SAGE Publication, Inc. 9

Gehl,J (2010) Cities for People, Washington: Island Press. 8

I.C.A. ICA,(2022) The International Crime Prevention Through Environmental Design Association, 3 1 2022, https://www.cpted.net/Primer-in-CPTED. 6

Maharika, I.F (2009) Merelasikan Tipologi Permukiman dan Kriminalitas: Studi Kasus Permukiman di Sleman Yogyakarta, Merelasikan Tipologi Permukiman dan Kriminalitas: Studi Kasus Permukiman di Sleman Yogyakarta,. 1-8. 7

Marshall,C (2015) Pruitt-Igoe: the troubled high-rise that came to define urban America – a history of cities in 50 buildings, day 21, https://www.theguardian.com/cities/2015/apr/22/pruitt-igoe-high-rise-urban-america-history-cities. 3

Meiss,P.V (1990) Element of Architecture: From Form to Space, London: E & FN Spon. 13

Montgomery,C (2013) Happy City, London: Penguin Group. 4

Newman,O (1996) Creating Defensible Space, New Jersey: U.S. Department of Housing and Urban Development. 10

Perez,A, Fernandez,D & Penna, L. R. M. (2019) The Alternate Corridor Technique in the Housing Project Between 1950 and 1970, Skip-Stop, Doorstep, and L'Espace Pivot,. 1-18. 1

P.G.o.t.S.C.R.o. (2021) Jakarta, Jakarta Satu, Provincial Government of the Special Capital Region of Jakarta,

https://jakartasatu.jakarta.go.id/portal/apps/webappviewer/index.html?id=1c1bfcced2cb4852bbeaefcd968a6d04. 11

PT. Pudjadi Prestige,(2021) azaleasuites.co.id, Azalea Suites, https://azaleasuites.co.id/blog/sejarah-kondominium-apartemen-di-jakarta-indonesia.html. 12

U. Eco, "Umberto Eco,"(1997) Rethinking Architecture: A Reader in Cultural Theory, Londen, Routledge,. 173-195. 15

U. L. Institute,(2000) Multifamily Housing development Handbook, Washington: Urban Land Institute, 16