



Value of Gender Equality in Family and Community: A Study of Space Syntax in Women and Family Facility Complex

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Abstract

Space syntax is an approach to relating to spatial configurations of a building. This study aims to identify and analyze the level of permeability and wayfinding, determining the user's experiences. The research study investigates women and facility complexes concerning space syntax analysis. The case study selected for analysis was the 'Space Salim' Women and Family Facility Complex in Seoul, a cultural center that aims to revive the relationship between family members and female households. Justified graphs and Likert scale numbering are conducted, and the resulting graphs are compared and summarised based on the level of permeability and wayfinding for each user's category. The finding shows that 51% of the whole building spaces are semi-public and easy wayfinding. Visitors have straightforward and clear wayfinding in the case study. The study concludes that the level of permeability and wayfinding in the case study is clear and precise in public and semi-public spaces and has represented a public facility that accommodates gender equality for it has exact, open layouts for all users.

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1 Introduction

This paper studies the space syntax in the 'Space Salim' Women and Family Facility Complex. Based on Hillier (1999), space syntax describes and analyses the relationship between urban areas and buildings. Li et al. (2009) conclude that the spatial characteristics' analysis using space syntax methods provided a finding that spatial configuration and level of permeability and wayfinding are all related to one another. Space syntax's underlying assumption is that an urban street network's spatial organization and spatial configuration affect how people perceive space or use it (Penn, 2003; Hillier and Lida, 2005; Karimi, 2012). Therefore, it shapes movement patterns within it (Hillier, 2009). Kevin Lynch once defined wayfinding as 'an organization of definite sensory cues from the external environment, measured by how users experience and the ease of facilitating getting from space to space. (Lynch, 1986).

The case study is a cultural centre, that aims to revive the relationship among family members and female households. It is located in the Dongjak-gu Daebang Station district, the U.S. Army base, 'Camp Gray', and the 'Seoul Women's Shelter' that accommodates prostituted women, the runaway and demented elderly, and vagrants were located for 55 (TA.R.I Architects, 2016). It is where the division, poverty, and women's tough life are accumulated, and it can feel the pain of our modern and contemporary history. Concern about healthcare in the family has always been emphasized. Hence, health is commonly associated with comfort level (Hassan, 2010). There are increases in a single-person household in this facility, the disintegration of social relationship networks, increased communication among family members, higher female labor market participation, gender inference, and everything with exciting ways. The case study has an idea of welcoming the community and fixing its problems and TA.R.I. Architect, the case study designer, has won second place in the competition for a Woman's and Family Facility Complex 2016 in Seoul, South Korea.

This study will identify and analyze the case study's permeability and wayfinding level through building layouts. The study will also further discuss the inclusive facility design for gender equality in the case study.

2 Literature Review

2.1 Gender Equality

Public facilities provision needs to consider the different community's characteristics such as gender, age, and cultural background (Umaña-Barrios & Gil, 2017). These characteristics shape further space use. Hence, public space development can adopt a gender perspective that is precise in comfort and safety aspects. Public space gives a sense of security and comfort, enhancing community expression and their role in cultural life. Moreover, providing public facilities based on gender equality can be seen as an education process, particularly for men interacting and facing women and children in public spaces. In Korea, the women's movement for women's overall rights and interests has lasted for more than 100 years (Yoon, 2019). Still, detailed discussion on creating

and using public urban spaces from gender equality perspectives began only in the 2000s (Kim, 2010).

2.2 Space Syntax

Space syntax was originated by Bill Hillier and Julienne Hanson from University College London (UCL) during the 1970s. Space syntax measures the quality of integration and connectivity of spaces within a building and represents it in formalized graph-based accounts of spatial layout configuration in the architectural analysis (Li et al., 2009). Moreover, the method used in the treatment and the locating of the internal spaces, as stated by FA. Mustafa and Hassan, A.S., it will affect the nature of spatial relationships, which in turn affects the degree of the functional efficiency of these spaces (Hassan, 2010). A building achieves its function not through its built form but mainly within its house layout spaces (Hassan, 2001). The morphological characteristics of a plan layout are analyzed with graphs called "justified access graphs." The transition spaces and connectivity often come across during the analysis process, and space syntax analysis is often represented by the level of permeability within building design (Hassan, 2020).

2.3 Building Typology

'Space Salim' Women and Family Facility Complex is a cultural center and a commercial building for the public, promoting the development of Seoul, South Korea. Tylor provided the most famous definition of culture as "the complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society" (Verhelst, 1990; Arnold, 1960). Further, culture also has been called "the way of life for an entire society." It includes codes of manners, dress, language, religion, rituals, norms of behavior, and belief systems (Jary, 1991; Bauman, 2001).

3 Case Study: 'Space Salim' Women and Family Facility Complex

The case study selected, the 'Space Salim' Women and Family Facility Complex (Figure 1) can be categorized as a semi-public design. It will enhance the relationship between families and households of women. A 5-story-cultural center with a total area of 20,900.00 m², seeks to be "the starting point of a new urban and social consciousness," and a way to fill the community with passion, emotion, and creativity in the district of Dongjak-gu Daebang Station. Understanding the culture of an organization, that is, shared beliefs, values, and behaviors (Helman, 2000), helps us appreciate the meaning that the community attributes to life experiences. The case study aims to become a piece of the city, not a single stand building, where socialization would be possible in the public spaces, enhancing relational network, achieving gender equality, and welcoming vulnerable minor social groups. The case study comprises a hybrid mixed-used program that contains family space, handwork activities, growing space, conference spaces, a learning center, and communal spaces (TA.R.I Architects, 2016).

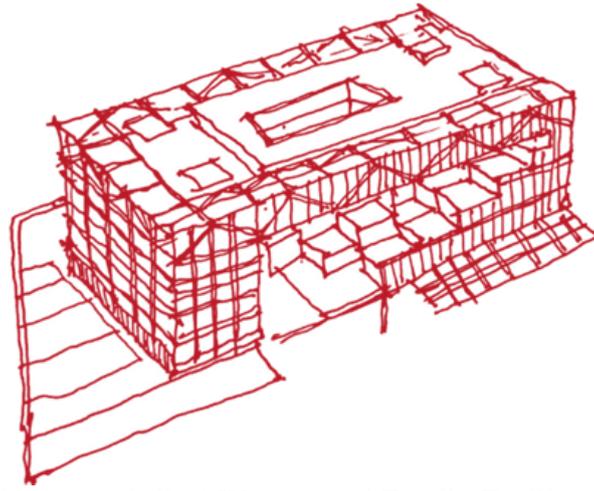


Figure 1: ‘Space Salim’ Women and Family Facility Complex.

4 Method

This study is an analytical study using quantitative analysis via graphs to identify the level of permeability and wayfinding in the case study. The study adopts the previous survey of Hillier and Hanson (1989) to indicate that permeability and wayfinding use a level of movement graph or Justified Graph. For this paper, each graph represents the level of permeability for the internal building layouts. Another author, Brandon stated that the ideal way to achieve this wayfinding task is to incorporate spatial hierarchies through leveling in the numbering graph (Brandon, 2010).

When conducting this study, the Likert scale will measure the level of permeability and wayfinding according to the public, semi-public, semi-private, and private spaces in the case study. The increasing number of shows in the graph will indicate the level of wayfinding and permeability of the room.

4.1 Method of Analysis

For this paper, a few indicators are used to differentiate the components, by four different colors. The blue color indicates entrances/ exits permeable by the public visitor; the red color indicates the vertical connectivity (stairs, and escalators); the yellow color marks the public corridors, and the pink color indicates the mechanical room. This will aid in assessing the level of permeability in the case study analysis. Entrances will be classified as E1, E2, E3, etc..., which marks the first space to enter the complex. Staircases on the ground floor will be indicated as S1a, S2a, S3a, etc. As increasing levels, the staircase on the first floor is labeled as S1b, S2b, S3b, etc. However, the transition spaces like the corridor will be indicated as (C) to understand better how people circulate in the case study.

To facilitate the level of permeability and wayfinding, the Likert scale is used to scale responses in survey research which is on a four-category scale which is (1) public; (2) semi-public; (3) semi-private; and (4) private. As the Likert scale numbering increases from 1-10 (Table 1), the permeability and wayfinding level can be concluded. Overall, the data collection was done by analyzing the case study's layout plans (basement plan, ground floor plan, mid-floor plan, and top floor plan).

Table 1: Likert Scale for Space Syntax Analysis of each Measurable Scale Graph.

Likert Scale Numbering	Level of permeability	Level of Wayfinding
0	-	-
1-2	Public	Very Easy
3-5	Semi-Public	Easy
6-8	Semi-Private	Hard
9-10	Private	Very Hard

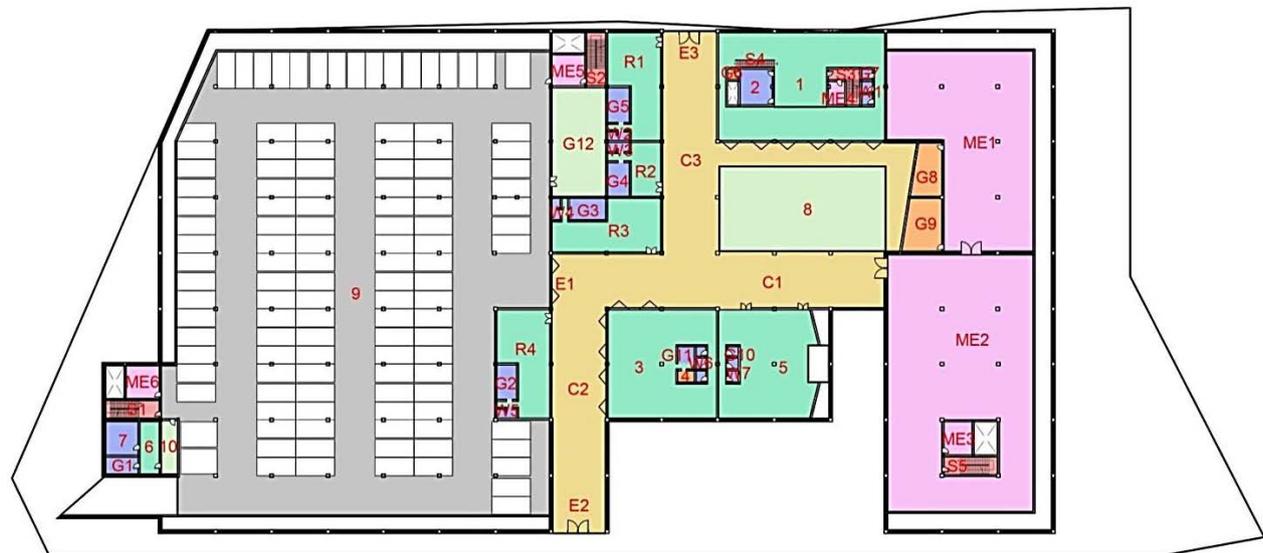
After analyzing each level of permeability according to the Likert Scale, a comparison will be made between these categories to understand each individual's depth of access to the case study spaces. For this section, the level of permeability and wayfinding will be using Hierarchy order from high to low percentages (refer to Table 2).

Table 2: Levels of Permeability and Wayfinding using Hierarchical Order

Hierarchical Order	Level of permeability	Level of Wayfinding	Total Number of Spaces	Percentages (%)
Primary Level	Public	Very Easy		
Secondary Level	Semi-Public	Easy		
Tertiary Level	Semi-Private	Hard		
Quaternary Level	Private	Very Hard		
TOTAL				

5 Result

The analysis will be carried out specifically to three user categories: public visitors, particular users of boarding facilities (women, and families), and staff. Their circulation throughout the case study spaces will then be translated into justified graph format to study the level of permeability and wayfinding in depth.



- Legend:
- | | |
|-------------------------|--------------------------|
| 1) Museum of Motherhood | R1 - R4) Retail Shops |
| 2) Art Work Storage | W1 - W7) Washrooms |
| 3) Large Conference | ME1 - ME6) Service Rooms |
| 4) Office | E1 - E3) Entrance |
| 5) Control Area | G1 - G12) Storage |
| 6) Office | S1 - S5) Staircases |
| 7) office | C1 - C3) Corridor |
| 8) Main Flexible Square | |
| 9) Car Parkings | |
| 10) Security Room | |

Figure 2: Basement Plan of 'Space Salim' Women and Family Facility Complex.

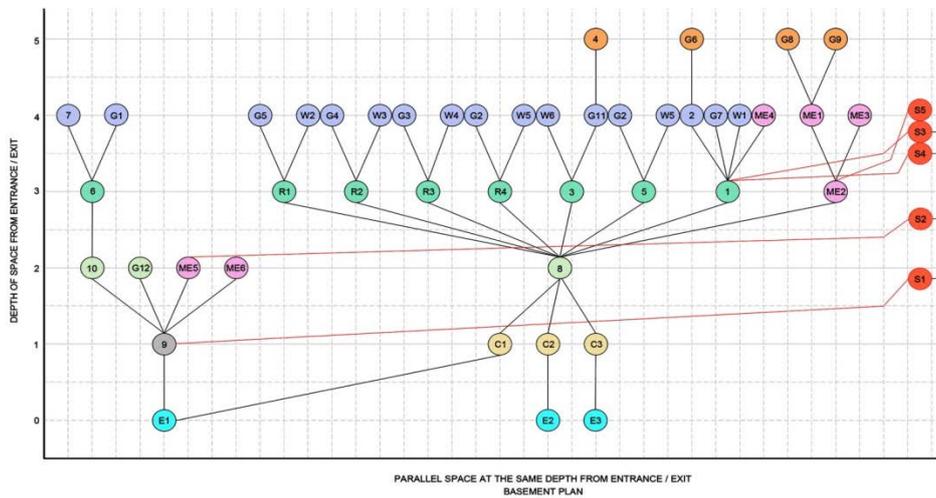


Figure 3: Justified Graph for Basement Plan of ‘Space Salim’ Women and Family Facility Complex

Based on Figures 2 and 3, the level of permeability for users in the context of the basement plan is mostly considered a public area, as most of the spaces landed on a scale of 1 to 4. Visitors are allowed access to almost all spaces except storage rooms, control rooms, and offices. Hence, wayfinding is easy since it is visible and noticeable. The two entrances/ exits on the basement (E2, and E3) are connected to the neighboring building, the Seoul Women Plaza and one entry (E1) allows visitors and staff to park at car parking (9) beforehand. Based on Table 3, office (4) and storage rooms (G6, G8, and G9) have the highest depth of space from the entrance which has landed on a scale of 5 for it is only accessible by building staff. Public visitors and staff can access the upper floor by staircases (S1, S2, S3, S4, and S5).

Table 3: Likert Scale for Space Syntax Analysis - Measurable Scale Graph for Basement 1

Area	Depth of Space from Entrance / Exit	Level of permeability	Level of Wayfinding
E1,E2,E3	0	Public	Very Easy
9,C1,C2,C3	1	Public	Very Easy
10,G12,ME5,ME6,8	2	Public	Very Easy
1,3,5,6,R1,R2,R3,R4,ME2	3	Semi-Public	Easy
7,G1,G5,W2,G4,W3,G3,W4,G2,W5,W6,G11,G2,W5,2,G7,W1,ME4,ME3,ME1	4	Semi-Public	Easy
4,G6,G8,G9	5	Semi-Public	Medium

Based on Figures 4 and 5, the level of permeability for users in context to the ground floor plan is considered a public area, as most of the spaces landed on a scale of 1 to 5. There are several entrances/ exits (E4-E12) connected with indoor corridors (C4-C13) as visitors have a generally straightforward flow from the entrance to the building. Moreover, several spaces come before entries, including café type meeting rooms, small conferences, and retail shops are landed on a scale of 0. Based on Table 4, workshops are considered a semi-public area with a depth of space of 4. These spaces are then fluidly linked to storages (G13-G34) and washrooms(W8-W32). However, washrooms (W32) and mechanical rooms (ME11, ME12) are considered semi-private areas for public visitors. It landed on a scale of 6, and the level of wayfinding for public visitors is more demanding than the others. Some staircases only lead the public visitors and staff to each workshop's mezzanine floor on the second-floor level (S6-S23).

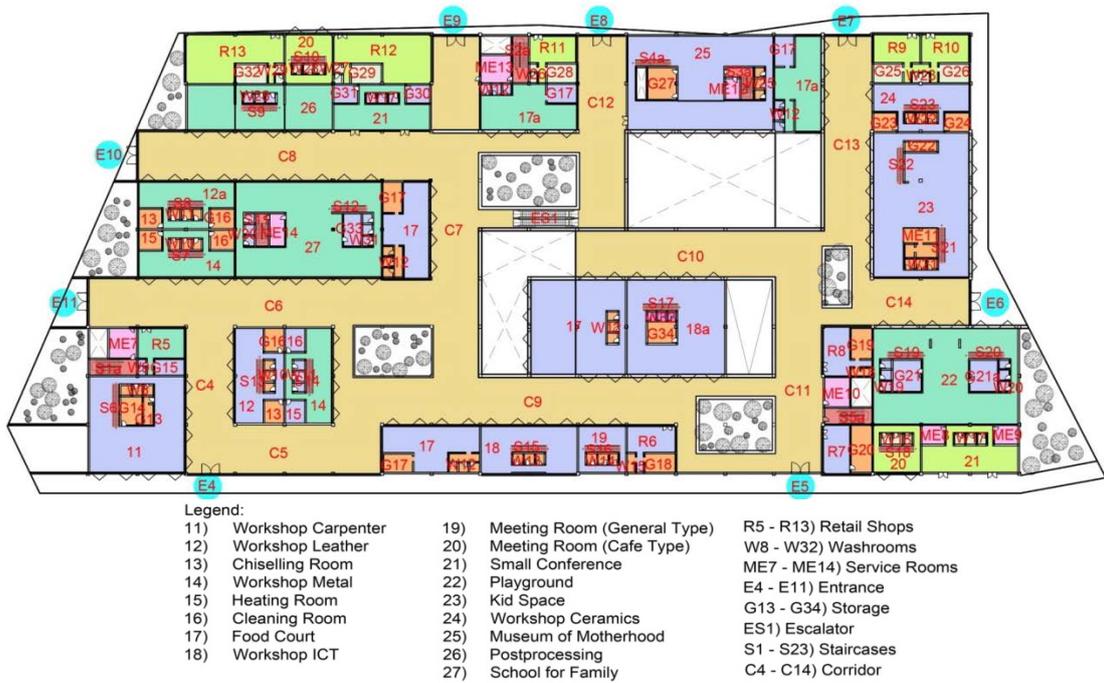


Figure 4: Ground Floor Plan of 'Space Salim' Women and Family Facility Complex.

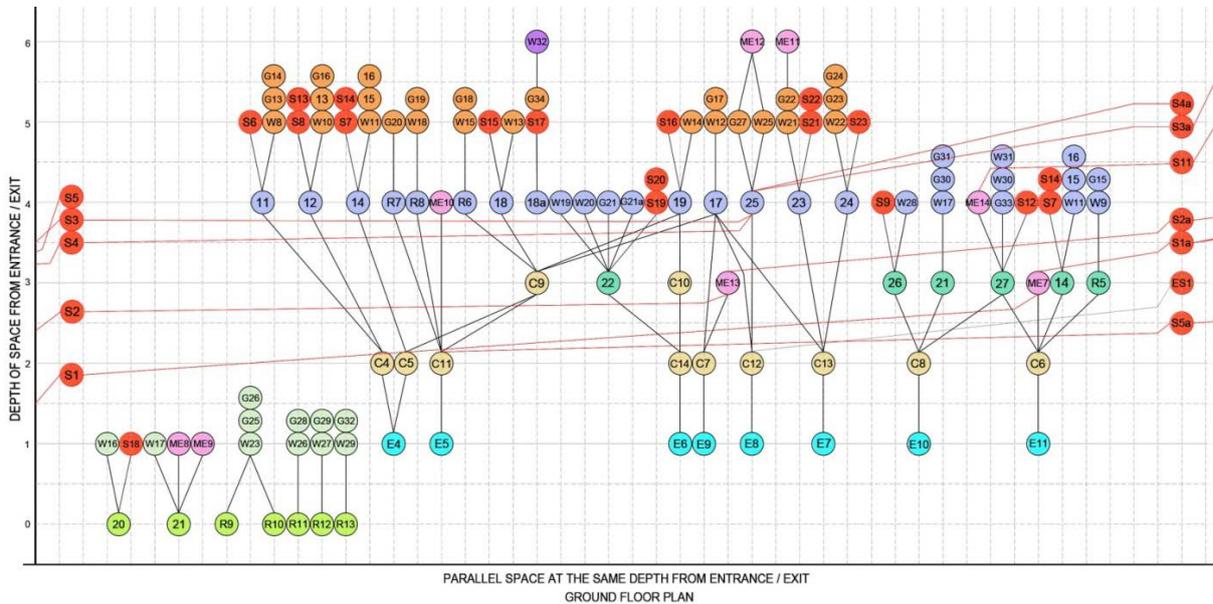
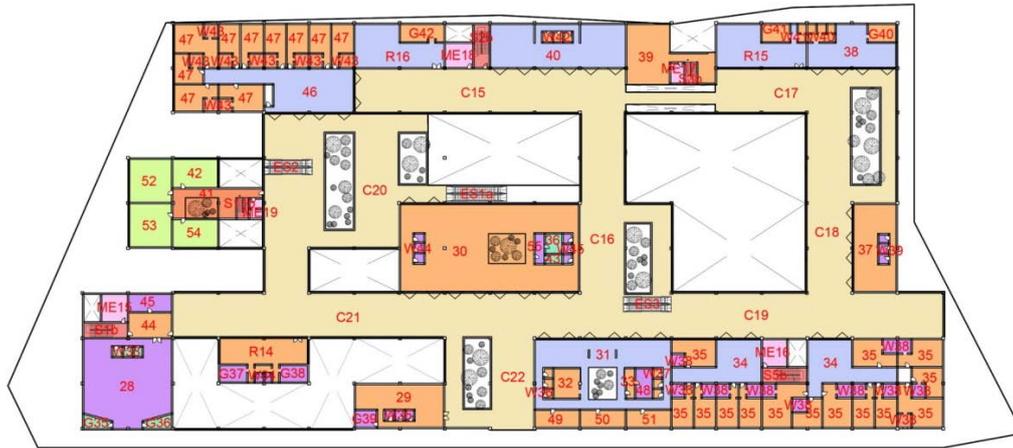


Figure 5: Justified Graph for Ground Floor Plan of 'Space Salim' Women and Family Facility Complex

Table 4: Likert Scale for Space Syntax Analysis - Measurable Scale Graph for Ground Floor Plan

Area	Depth of Space from Entrance / Exit	Level of permeability	Level of Wayfinding
20,21,R9,R10,R11,R12,R13	0	-	Very Easy
W16,S18,W17,ME8,ME9,W23,G25,G26, W26,G28,W27, G29,W29,G32,E4,E5,E6,E7,E8,E9,E10,E11	1	Public	Very Easy
C4,C5,C11,C14,C7,C12,C13,C8,C6	2	Public	Very Easy
C9,22,C10,ME13,26,21,27,ME7,12,R5	3	Semi-Public	Easy
11,12,14,R7,R8,ME10,R6,18,18a,W19,W20, G21,G21a,S19,S20,19,17,25,23,24,S9,W28, W17,G30,G31,ME14,G33,W30,W31,S12, S7,S14,W11,15,16,W9,G15	4	Semi-Public	Easy
S6,W8,G13,G14,S8,S13,W10,13,G16,S7,S14, W11,15,16,G20,W18,G19,W15,G18,S15,W13, S17,G34,S16,W14,W12,G17,G27,W25,W21, S21,S22,W22,G23,G24,S23	5	Semi-Public	Easy
W32,ME12,ME11	6	Semi-Private	Hard



- Legend:
- | | | |
|---------------------------|--------------------------|----------------------------|
| 28) Large Conference | 39) Museum of Motherhood | 50) Counseling Room 2 |
| 29) Small Conference | 40) Postprocessing Room | 51) Counseling Room 3 |
| 30) Youth Community Space | 41) School for Family | 52) Classroom 2 |
| 31) Medical Supporting | 42) Classrooms 1 | 53) Classroom 3 |
| 32) Pharmacy | 43) Office | 54) Classroom 4 |
| 33) Counter | 44) Control Room | 55) Counter |
| 34) Boarding Facilities | 45) Office | R14 - R16) Retail Shops |
| 35) Rooms | 46) Boarding Facilities | W33 - W45) Washrooms |
| 36) Offices | 47) Rooms | ME15 - ME19) Service Rooms |
| 37) Meeting Rooms | 48) Office | G35 - G42) Storage |
| 38) Food Court | 49) Counseling Room 1 | C15 - C22) Corridor |

Figure 6: Third Floor Plan of 'Space Salim' Women and Family Facility Complex

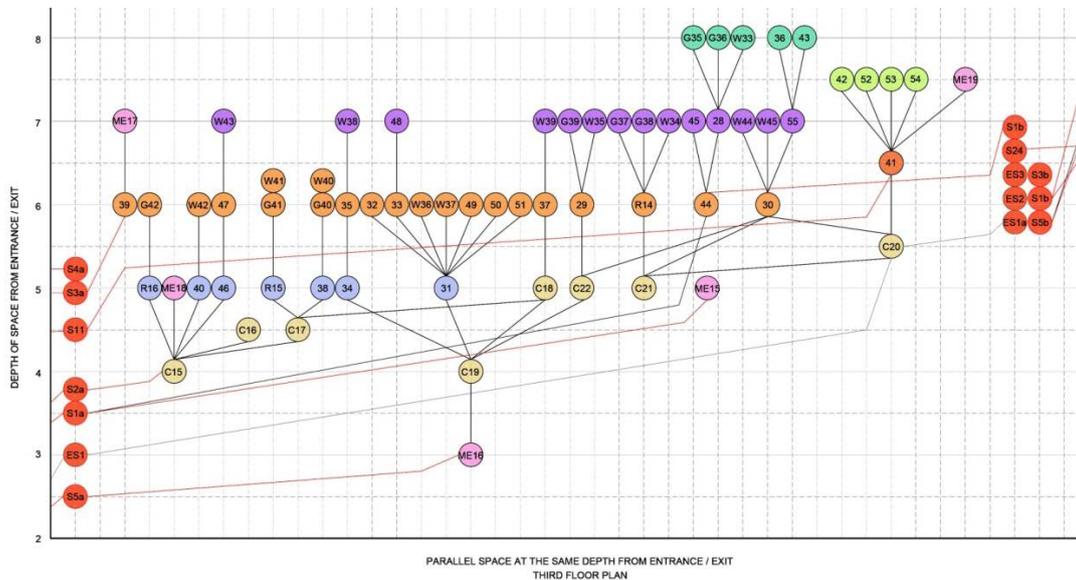


Figure 7: Justified Graph for Third Floor Plan of 'Space Salim' Women and Family Facility Complex

Based on Figures 6 and 7, the users' level of permeability in the third-floor plan has become semi-public and semi-private. It is intended to make it less accessible to all public visitors. Specific users like women and their families and building staff can travel vertically to the third floor of the building by staircases (S1a, S2a, S3a, S4a, S5a, and S11).

Table 5: Likert Scale for Space Syntax Analysis - Measurable Scale Graph for Third Floor Plan

Area	Depth of Space from Entrance / Exit	Level of permeability	Level of Wayfinding
ME16	3	Semi-Public	Very Easy
C15,C19,C16,C17	4	Semi-Public	Easy
R16,ME18,40,46,R15,38,34,31,C18,C22,C21,ME15,C20	5	Semi-Public	Easy
39,G42,W42,47,G41,W41,G40,W40,35,32,33,W36,W37,49,50,51,37,29,R14,44,30,41	6	Semi-Private	Hard
ME12,W43,W38,48,W39,G39,W35,G37,G38,W34,45,28,W44,W45,55,42,52,53,54,ME19	7	Semi-Private	Hard
G35,G36,W33,36,43	8	Semi-Private	Hard

An escalator (ES1) and most of the spaces are linked by indoor corridors (C15-C19) as each user's category has a medium level of wayfinding on the third floor. As referred to in Table 5, offices (36, and 43) and storage rooms (G35, and G36) have the highest level of permeability and wayfinding for public visitors and specific users, with a depth of space of 8.

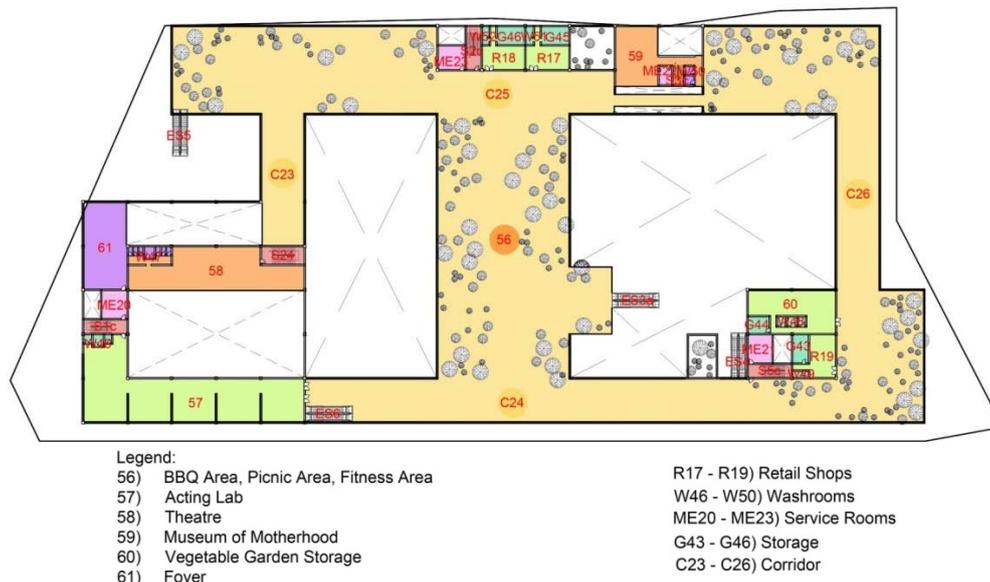


Figure 8: Fifth Floor Plan of 'Space Salim' Women and Family Facility Complex redrawn by Wi Chin Tyng

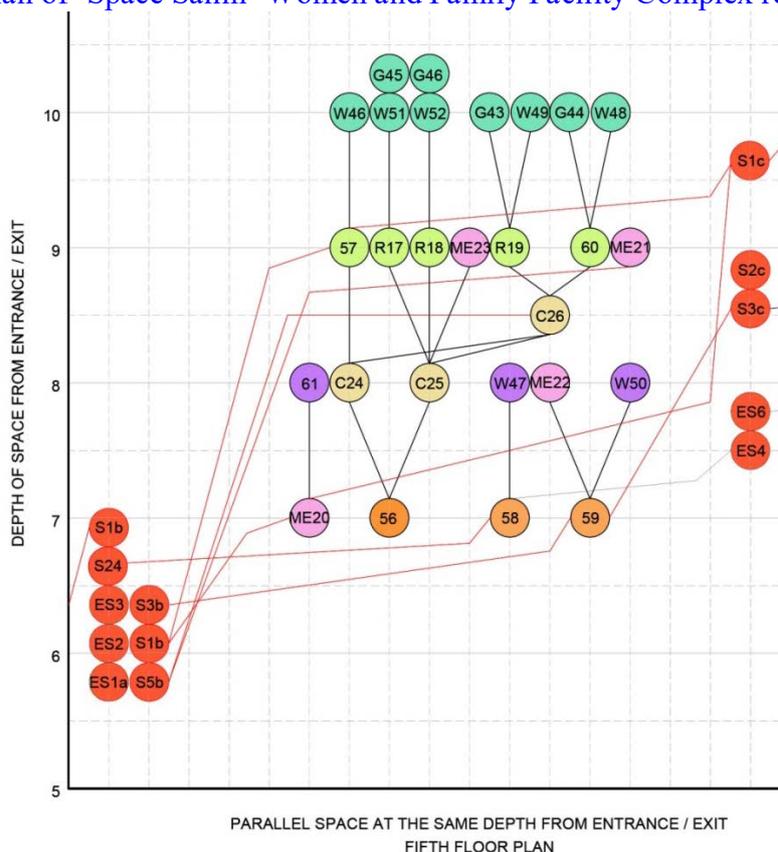


Figure 9: Justified Graph for Fifth Floor Plan of 'Space Salim' Women and Family Facility Complex

Based on Figures 8 and 9, the level of permeability for users in context to the fifth-floor plan is considered as a private area, as the spaces landed on a scale of 7 to 10. A semi-private rooftop garden accumulated with a BBQ area, picnic area, and fitness area (56) can only be used by specific users of the building's boarding facilities and staff. Users can access these areas by vertical connections: escalator (ES3) and staircases (S1b, S3b, S5b, and S24). Based on Table 6, storage

rooms (G43, G44, G45, and G46) and washrooms (W46, W48, W49, W51, and W52) have the highest level of permeability on the fifth floor as the spaces landed on scale 10 because it is restricted for specific users of boarding facilities and building staffs.

Table 6: Likert Scale for Space Syntax Analysis - Measurable Scale Graph for Fifth Floor Plan

Area	Depth of Space from Entrance / Exit	Level of permeability	Level of Wayfinding
ME20,56,58,59	7	Semi-Private	Hard
61,C24,C25,W47,ME22,W50,C26	8	Semi-Private	Hard
57,R17,R18,ME23,R19,60,ME21	9	Private	Very Hard
W46,W51,G45,W52,G46,G43,W49,G44,W48	10	Private	Very Hard

6 Discussion

The analysis shows that the depth of space from the entrance and exits shapes the level of permeability and wayfinding for users in the building. This study is focused on user wayfinding in a semi-public building, the 'Space Salim' women and family facility complex. The spaces with the highest level of permeability and wayfinding are offices, mechanical rooms, and storage rooms, considered private spaces and only accessible by staff of the building.

Table 7: Levels of Permeability and Wayfinding using Hierarchical Order for Basement Plan

Area	Depth of Space from Entrance / Exit	Hierarchical Order	Level of Permeability	Level of Wayfinding	Total Number of Spaces	Percentages (%)
E1,E2,E3	0	Primary Level	Public	Very Easy	-	-
9,C1,C2,C3	1	Primary Level	Public	Very Easy	1	2.8
10,G12,ME5,ME6,8	2	Primary Level	Public	Very Easy	5	13.9
1,3,5,6,R1,R2,R3,R4,ME2	3	Secondary Level	Semi-Public	Easy	9	25
7,G1,G5,W2,G4,W3,G3,W4,G2,W5,W6,G11,G2,W5,2,G7,W1,ME4,ME3,ME1	4	Secondary Level	Semi-Public	Easy	17	47.2
4,G6,G8,G9	5	Secondary Level	Semi-Public	Easy	4	11.1
TOTAL					36	100

Note: Analysis of the total number of spaces does not include entrances and circulation spaces (corridors, staircases, and escalators)

The degree of permeability and wayfinding on the basement level is mostly public and semi-public on the basement floor level. However, spaces like offices, mechanical rooms, and storage rooms with a higher degree of permeability and wayfinding can be classified as semi-public spaces. Table 7 shows that public spaces with a primary level of permeability make up 16.7% of the total number of rooms on the basement floor. 83.3% of the basement floor consists of semi-public spaces with a secondary level of permeability, including areas like the Museum of Motherhood, large conferences, retail shops, control rooms, offices, storage rooms, and washrooms.

Table 8: Levels of Permeability and Wayfinding using Hierarchical Order for Ground Floor Plan

Area	Depth of Space from Entrance / Exit	Hierarchical Order	Level of Permeability	Level of Wayfinding	Total Number of Spaces	Percentages (%)
20,21,R9,R10,R11,R12,R13	0	-	Public	Very Easy	7	8.2
W16,S18,W17,ME8,ME9,W23,G25,G26,W26,G28,W27,G29,W29,G32,E4,E5,E6,E7,E8,E9,E10,E11	1	Primary Level	Public	Very Easy	13	14.9
C4,C5,C11,C14,C7,C12,C13,C8,C6	2	Primary Level	Public	Very Easy	-	-
C9,22,C10,ME13,26,21,27,ME7,12, R5	3	Secondary Level	Semi-Public	Easy	8	9.2
11,12,14,R7,R8,ME10,R6,18,18a,W19,W20,G21,G21a,S19,S20,19,17,25,23,24,S9,W28,W17,G30,G31,ME14,G33,W30,W31,S12,S7,S14,W11,15,16,W9,G15	4	Secondary Level	Semi-Public	Easy	31	35.6
S6,W8,G13,G14,S8,S13,W10,13,G16,S7,S14,W11,15,16,G20,W18,G19,W15,G18,S15,W13,S17,G34,S16,W14,W12,G17,G27,W25,W21,S21,S22,W22,G23,G24,S23	5	Secondary Level	Semi-Public	Easy	25	28.7
W32,ME12,ME11	6	Tertiary Level	Semi-Private	Hard	3	3.4
TOTAL					87	100

Note: The same note as for Table 7.

Based on Table 8, 23.1% of the ground floor consists of public spaces with a primary permeability level. In comparison, 73.5% consist of semi-public areas with a secondary level of permeability including workshops, retail shops, food court, general meeting room, museum of motherhood, kid space, heating room, and cleaning room. Washroom (W32) and mechanical rooms (ME11, and ME12) on the ground floor make up 3.4% of the total number of rooms with a tertiary level of permeability restricted to building staff.

Table 9: Levels of Permeability and Wayfinding using Hierarchical Order for Third Floor Plan

Area	Depth of Space from Entrance / Exit	Hierarchical Order	Level of Permeability	Level of Wayfinding	Total Number of Spaces	Percentages (%)
ME16	3	Secondary Level	Semi-Public	Easy	1	1.8
C15,C19,C16,C17	4	Secondary Level	Semi-Public	Easy	-	-
R16,ME18,40,46,R15,38,34,31,C18,C22,C21,ME15,C20	5	Secondary Level	Semi-Public	Easy	9	15.8
39,G42,W42,47,G41,W41,G40,W40,35,32,33,W36,W37,49,50,51,37,29,R14,44,30,41	6	Tertiary Level	Semi-Private	Hard	22	38.5
ME12,W43,W38,48,W39,G39,W35,G37,G38,W34,45,28,W44,W45,55,42,52,53,54,ME19	7	Tertiary Level	Semi-Private	Hard	20	35.1
G35,G36,W33,36,43	8	Tertiary Level	Semi-Private	Hard	5	8.8
TOTAL					57	100

Note: The same note as for Table 7.

On the third floor level, the highest depth of space is at 8. This results in the level of permeability for users in the context of the third-floor plan, which is considered semi-public and semi-private (Table 9). 17.6% of the third floor consists of semi-public spaces with a secondary level of permeability, including the food court, boarding facilities, medical support, postprocessing rooms, and retail shops for public visitors and specific users' social activities. Offices (36, and 43), washrooms (W33), and storage rooms (G35, and G36) make up 8.8% of the total number of rooms with a tertiary level of permeability on the third floor.

Table 10: Levels of Permeability and Wayfinding using Hierarchical Order for Fifth Floor Plan

Area	Depth of Space from Entrance / Exit	Hierarchical Order	Level of Permeability	Level of Wayfinding	Total Number of Spaces	Percentages (%)
ME20,56,58,59	7	Tertiary Level	Semi-Private	Hard	4	16.7
61,C24,C25,W47,ME22,W50,C26	8	Tertiary Level	Semi-Private	Hard	4	16.7
57,R17,R18,ME23,R19,60,ME21	9	Quaternary Level	Private	Very Hard	7	29.1
W46,W51,G45,W52,G46,G43, W49,G44,W48	10	Quaternary Level	Private	Very Hard	9	37.5
TOTAL					24	100

Note: The same note as for Table 7.

At the level of five, the highest depth of spaces is at level 10 with the quaternary level of permeability and wayfinding, indicating that the accessibility for the public visitor is high (Table 10). 16.7% of the top floor consists of semi-private spaces with a tertiary level of permeability, including semi-private rooftop gardens, BBQ area, picnic area, fitness area, theatre, and museum motherhood. In contrast, another 16.7% is the foyer area (61), washrooms (W47, and W50), and mechanical room (ME22). It can be concluded that the spaces on the fifth floor are private as 66.6% of the total number of rooms with a quaternary level of permeability which are restricted for specific users of boarding facilities and building staff.

Table 11: Levels of Permeability and Wayfinding using Hierarchical Order for Overall Building

Depth of Space from Entrance / Exit	Hierarchical Order	Level of Permeability	Level of Wayfinding	Total Number of Spaces	Percentages (%)
0-2	Primary Level	Public	Very Easy	26	12.7
3-5	Secondary Level	Semi-Public	Easy	104	51.0
6-8	Tertiary Level	Semi-Private	Hard	58	28.4
9-10	Quaternary Level	Private	Very Hard	16	7.8
TOTAL				204	100

Overall, the public spaces with a primary level of permeability make up 12.7% of the total number of rooms in the whole building; 51% of semi-public areas with a secondary level of permeability; 28.4% of semi-private spaces with a tertiary level of permeability; and private rooms with a quaternary level of permeability make up 7.8% (Table11).

Table 11: Number and Percentage of Spaces Based on Connecting Spaces

Connecting Space	Area	Total Number of Spaces	Percentage (%)
Single	10,E2,E3,G11,2,C1,C2,C3,E5,E6,E9,E8,E7,E10,E11,C10,R7,G34,G27,W25,G22,ME16,R16,40,46,34,C18,47,35,33,37,ME20,58,57	34	31.8
Double	6,E1,R1,R2,R3,R4,3,5,ME1,ME2,20,R11,R12,R13,E4,C4,C5,C14,C7,C12,26,R5,R8,R6,18,18a,19,17,25,R15,38,C22,29,44,C20,55,56,59,C24,C26,R17,R18,R19,60	44	41.1
Triple	21,R9,R10,C11,C13,C8,21,C17,C21,R14,30,28	12	11.2
Multiple	8,1,C6,C9,22,14,11,12,14,23,24,27,C15,C19,31,41,C25	17	15.9
	TOTAL	107	100

Based on Table 11, there are a total of 34 single connecting spaces (31.8% of all rooms), and these single connecting spaces can also be end rooms. 44 double connecting spaces make up 41.1% of all rooms; 12 triple connecting areas make up 11.2%; and 17 multiple connecting spaces (15.9%). In the case study, indoor corridors act as the main connecting space to all rooms in the building, resulting in easy wayfinding for public visitors, specific users of boarding facilities, and building staff. There is a total of 24 staircases and 6 escalators as vertical connecting spaces in the building.

7 Conclusion

According to the justified graph of space syntax and Likert scale numbering, it showed that all of the rooms and spaces could be divided into three parts: retail shops and workshops for public visitors, boarding facilities for specific users, and offices and mechanical rooms for building staff. This is particularly helpful in building a public and inclusive facility design such as the case study. The case study has a very open layout plan on the ground floor and third-floor level with easy wayfinding and a low level of permeability for family space, handwork activities, growing space, conference spaces, a learning center, and communal spaces. This is for users to be able to socialize in public areas, enhancing relational networks, and at the same time achieving gender equality. Overall, the case study represents a public facility that accommodates gender equality for its exact, open layouts for all users.

8 Availability of Data and Material

All data is included in this article.

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