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An Analysis of Consolidation Patterns of Kampung Alley Living Space in Yogyakarta, Indonesia

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Consolidation patterns of alley space use design provide opportunities for creating new patterns and diversification of collective shared space. Simulation modelling by using space syntax for exploration of the consolidation patterns of the use of kampung alley space was performed in this study. It included three interacting themes, namely the extension of space, the interaction and the defense space dealt with the transformation of living space use from landed kampungs to multistorey kampungs. Kampung alleys are not only used for circulation and as dwelling units connectors, but also as space for interactions. Social interactions occur at alleys with high integration value that created pocket space in alleys at residential clusters. The typology of organic kampung alleys are used as shared space and defense space system within the kampung setting system. Defense space system within kampung alleys will arrange, protect, and preserve the residential clusters in order to keep activities running safely and under control. The corridor in a conventional multistorey kampung merely functions as circulation space that connects the dwelling units in it. Innovative cityblock kampung on the corridor space of multistorey housing adopting the shape of vernacular settlement alleys with pocket space and defense space system, which are also cluster-shaped, can increase the corridor’s visual integration value. Raising the visual integration value inside the corridor will increase the use of the corridor as circulation and shared space. It will also keep the dwelling units’ privacy and security against the activities in the corridor.

Keywords: Kampung, Alley, Pocket Space, Visual Integration, Permeability

1. Introduction
A kampung can be defined as a village settlement, whether rural or urban. Originally, kampungs are rural or informal settlements which have expanded and coalesced under the pressure of urbanization. Most of Indonesian cities were developed naturally long before formal urban development was introduced later in the last century; through conglomeration and densification process of villages. The majority of kampungs are neither squatter nor slum settlements. On the contrary, they have developed continuously and incrementally in unplanned manner.

Generally, kampungs are located in ‘the backward’ areas of the block of settlements surrounded by roads and strategically located in all parts of the city and providing opportunities for many kinds of employment due to the easy access to the urban economic activities. Thus, a house in a kampung often consists of a working place, ranging from informal manufacturing of leather, cloth, and domestic wares, to various ready-made food and services, as well as a home. Housing constituting about two third of urban population comprises various sizes and shapes of housing, and is mostly occupied by low and low-middle income families. After improvements by KIP (Kampung Improvement Program), nowadays kampungs do not necessarily refer to poor housing areas within the cities. Though the buildings in kampungs are scattered and often dense, in general they have good houses, paved pedestrian, community/public facilities such as an ‘MCK’ (Mandi (bathing), Cuci (washing) dan Kakus (toilet)), which is used communally. It seems that several typologies of kampung housing exist with different socio-economic and physical environment characteristics.

2. The Changing Patterns of Alleys in Kampung Multi-storey Living
2.1. Alley and Pocket Space
The moment when a kampung resident steps outside of the house, he or she is in the shared space. Some of the names by which this space is known declare its functions in the form of alleys 2 and pocket open space among houses. In general, a car cannot enter a kampung, because there are only these narrow alleys and small pocket open spaces. There are board-signs for bicycles and motorbikes made by the community that read ‘harap
"Prayitno"
pelan-pelan’, means “ride slowly, please”. These alleys give the residents opportunities to meet each other because when doors and windows are open, people who pass along the alleys and pocket open spaces can easily see inside the houses. This space are, therefore, crucial in supporting the residents’ socialization activities in the living of a kampung environment. The most obvious feature of shared space in a kampung is its informal nature, i.e. the activities happen unintentionally rather than intentionally. However, it is not without hierarchy in terms of level of usage and the type of users.

The starting rung in this hierarchy is the space attached to the kampung housing itself. It constitutes an essential front part of a proper kampung housing, hence it is commonly subjected to different kinds of embellishment such as: hanging bird cages, flower pots, comfortable benches, sometimes even sofa chairs, arranged for friendly conversation. The kind of embellishments depends on the size of the veranda itself, which in turn depends on the type of the house. Thus, informal because of its openness, sometimes the veranda is nevertheless a place to receive guests. This is the space where the residents of the house meet casual visitors, usually people who pass by or whose intention is to drop by and then continue to engage in a friendly conversation. Another function of shared space along kampung alleys is as a space for daily household chores such as: laundry drying, poultry rearing, and even children caring. The children are accustomed to using this space for playing and resting. Thus, kampung alleys’ functions as both circulation space and social space concurrently give the alleys social liveliness.

Another space form between kampung houses is called pocket space. Due to its accessibility and openness, the pocket space is well-used not only for social activities but also for the community’s informal activities involving the kampung retails and services. Examples of this informal activities are food stalls, small kiosks for daily household needs, repairation services of kitchen wares, and occasional small markets in the morning. Usually, these facilities have some simple benches in front of the stalls or kiosks, thus providing space for friendly conversation instead of only for selling and buying activities. Another function of the pocket open space is mostly for public gathering place in kampung housings, that is a small roofed space called ‘gardu ronda’, can also be observed. ‘Gardu ronda’ is usually located near the gate/entrance of kampung alleys or at other strategic places for community night watch by male residents.

‘Gardu ronda’ also can be used interchangeably for multipurpose activities. In the morning, sometimes it is used as a morning market stall, during the day it is used by children for playing and some people also use it for taking a rest, and at night it is used for community night watch. The community sport activities can also be done in the pocket open space such as table tennis, badminton, or even volleyball if there is enough space for facilitating these activities. Communities usually plant flowers and other vegetation in small gardens, which also commonly spread out in pocket open spaces.

2.2. From Ground Living to Multistorey Living
With the transformation of kampung settlement from ground living to multi-storey living, inevitably, there is a change in the pattern of the use of shared space by kampung community. A corridor and small hall either in ground floor or in upper floor are shared spaces in a kampung multistorey housing instead of alleys.

Fig.1. Kampung Alley and Pocket Space
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Fig. 2. Innovative Kampung Cityblock

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and pocket open spaces as in a vernacular kampung. Corridors are among the most frequently used shared spaces in a kampung multistorey housing since they are both shortcuts and stopping places. Their importance as a locale to community is evident from different purposes of the residents in using the shared spaces for a variety of activities; for example, for casual gathering, running small business activities, wedding ceremonies, funerals and religious rites as well as activities organized by community-based organization ("RT and RW" meeting). The most important shared spaces in kampung multistorey housing is the corridor. The following social activities can be observed daily at the corridors: passing by/circulating through (go space), opening small business activities, playing with children, and receiving guests ("do space"), relaxing, playing cards or chess ("sit space"), storing, drying clothes, parking bicycles or motorcycles ("place space"), having meetings, wedding ceremony, funeral ceremony and religious rites ("occur space").

Due to the varied uses, interactions in corridors and small halls can give more opportunity for generating a sense of community. Furthermore, some residents build semi permanent niches on these space. Where such niches have been established, some forms of proprietary behaviors, such as the extension of the space with the benches, additional tables and chairs and, very occasionally, a table for preparing meals or kitchen-related activities can be found. All these indicate the extension of dwelling unit activity in the shared spaces for both economic and social purposes.

The shared spaces network which includes path, pocket open space, corridor, small hall and shared facilities in various types of designs are the physical skeleton, which mainly function as a symbol of life style in kampung multistorey housing. Thus, the social and economic significance of shared spaces has to be understood and given the necessary emphasis if their roles as settings and catalyst for social interaction are to be examined.

The pattern of use of shared spaces in multistorey kampung illustrates that different types of designs accommodate the various behavior of kampung residents' daily life. These spaces, therefore, assume varied socio-economic significance for the kampung community, depending on the latter type of their housing. In the daily life of the community, however, the lower end of the planning hierarchy, like the corridor, small hall, and shared facilities such as toilet or kitchen are more frequently and intimately used. These spaces would, therefore, potentially offer more opportunities for creating sense of community than the public hall or other neighborhood facilities which are at the top of planning hierarchy.

3. Research Purposes and Methods

The goal of this study is to provide an improved information base and to use it in judging the merits of conventional and innovative types of kampung with multi-storey housing as an alternative in urban redevelopment projects. This study investigated the continued living adaptability of kampung community in using shared spaces of kampung alley. A comparative study of vernacular landed kampung and conventional kampung multi-storey and innovative kampung cityblock has been observed for recapturing past qualities of the sense of kampung community and how they have compromised with the present condition.

This study examined the vernacular landed kampung alley settings to be reorganized into new pattern of space use and how the settings can be reorganized into new conceptual arrangement of space use patterns in multistorey kampung corridor.

This research used the configuration space approach, due to the fact that alleys are a collection of linear-shaped space connected to each other in a settlement
system. The data in this research which collected during three months (from February 2012 to April 2012) was divided into three parts, namely the activities data taken by direct observations, the data containing kampung space structure used to determine the kampung alley typology, and space connection data taken by using the space syntax method that is in nature quantitative with visual integration value, depth value, and permeability map. The aforementioned three types of data were compared in order to find a new model for multistorey housing designs that adopt the shape of a kampung.

4. Conceptual Model of Neighborly Shared Territory and Behavior
The model of neighborly shared territory illustrates the dynamic nature of territorial behavior and the strong interrelationship of social, economic, and physical influences. It also poses many questions about the way in which changes are introduced into the system, and about the effects of intervention. When they are stored in the consciousness, they should be traced back to the origin for getting the possibilities in creating and discovering space appropriation with much diversification and new images in shared territorial spaces. According to Wolch (2010), alleys create unstructured setting for local community interaction and functions as pathways that connect nodes.

Alleys also function as shared spaces dan intermediary spaces between the inside dan the outside, therefore the alleys sometimes viewed as “the interiorization” of the exterior space (Madge, 2006). Therefore, they do not only function as narrow traffic paths, but also as shared occupancy with potential community interactions.

Through territorial behavior observations, shared spaces in the forms of alleys were also considered as an extension of the house, creating community occupancy (Brower, 1980). Observation on the relation between territorial behavior and threat simulation of setting system had also been done by Altman, Taylor, and Wheeler (1971), who discovered the existence of space appropriation concept in a territorial behavior model.

Prayitno (1997), out of his study using the space appropriation concept approach, discovered the continued living adaptability patterns from an alteration of a setting system, that is from the neighborly shared territory of a single-storey/ground living kampung to multistorey living. There are three elements that contribute to the space appropriation: occupancy, attachment too place and defense that creates a sense of community.

According to Hiller (1996), human behavior is not

Fig. 3 Research Spot Observations in Kampung Jogoyudan, Yogyakarta
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This study aims to identify the sensitivity of the model in responding to an addition or reduction in the level of control, whether similar forms of behavior respond to similar conditions, and whether similar design strategies are likely to have similar effects, to what extent sense of kampung community provides a context for shared territorial behavior that brings about changes in living style. Design improvements caused by the effect changing living style related to the process of kampung improvement or development, by themselves, give the opportunities creating diversification and new images in neighborly shared territorial spaces for emerging sense of kampung community. With the transformation from ground living to multistorey living, there is inevitably a change in the design and the pattern of use of alley shared spaces. As the patterns are constitutive to the sense of kampung community, there is a corresponding transformation of the spatial organization of the community itself.

5. Space Use Patterns of Kampung Alley

Alley typology of Jogoyudan kampung settlement is influenced by the staircase-shaped tread with an approximately 15 – 30 degrees slope. Jogoyudan kampung alleys have a relatively narrow space characteristic (1m-1.5 m) with the organic shape of many branches. The kampung's alleys are divided into 4 parts: the kampung's gates, outer alley, inner alley, and the riverside outer alley.

The gate to the kampung has several typologies:

![Alley Typology of Kampung Jogoyudan in the Code Riverfront Area](image)
a pocket-shaped gate (pocket space) that connects the kampung with neighboring kampungs, and a linear gate connecting the kampung with the outside world. The typology of outer alley is linear in shape and located on the side in which the slope of 30 degrees. The typology of winding inner alley with many branches is on the 15 degrees slope and on average they have pockets (pocket space). The riverside outer alley is the alley located on the riverside and linear in shape. This alley also has pockets (pocket space) serving as shared space. The number of dwelling units/houses in an alley ranges between 3 and 10 houses on average, with the alley as the building orientation.

5.1. Extension Space

Limitation of space and typology pattern of winding alley within a kampung creates a direct space connection characteristic between the dwelling units and alley. Figure 5 displays the space connection of every type of alley, whether it is the outer alley, inner alley, or riverside outer alley that is direct in nature, without any space in between. Every dwelling unit faces the alley directly. The figure of space connection diagram proves this point. The permeability map on each segment of alley spot and dwelling spot does not have any in-between space and massive limit. Every dwelling unit is directly connected to the alley.

The pattern of direct connection with no in-between space between the dwelling units and alley and the space typology that tends to branch out with only a few dwelling units will cause the alley to have more functions not only as a circulation facility by also as a public space where residents interact.

Figure 5 shows that the addition function of the alley as public space will create more spaces used together (shared space) for activities like playing, trading (stalls), and household dinings (cooking, wedding, funeral). Due to the high demand for public space as social areas and the limited availability of space, pocket space is created. Pocket space is located the sides of the alley, among small groups of dwelling units (10 houses maximum per pocket space).

5.2. Space Interaction

Attachment to a place creates an interaction in the form of gathering concentration on certain spots that reflects a sense of community. As seen in Figure 7, visibility value influences the residents’ co-present. High Visibility Value causes the space to be easily seen and used as shared space. There are residents gathering points located in the pocket space that are divided into 2 types: house scale and neighborhood scale. House scale is the pocket space located in the alley between houses bordered by an intersection, with 3-10 units of house. Neighborhood scale is the pocket space located within the dwelling area used by all residents to gather. This area is not bordered

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Fig. 5 The Inside Space Relation and The Space Outside of The Settlement

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5.1 Space-Defense

The utilization of alley space as a space used together (shared space) for both temporary and permanent activities and circulation space will cause the alley systems and cause the change of temporary activities from the outside of the kampung with space depth value. The activities in road/alleys space will change temporarily the visibility and activities in the alley and activities.

In Figure 8, the depth value of kampung alley's space at certain points, to change in terms of utilization from the outside of the kampung with depth value. The higher the space depth value is, the easier it would be to reach the space. The change of temporary activities that cause the visibility value is.

Fig 6 a) Alley and Activities Spots b) Visibility Value and Activities Spots

Fig 7 Pocket Space Utilization Patterns in A Kampung a) Neighborhood Activities b) House Activities
6. New Patterns of Community Aligned Alley

Inaccessible Emporium

More difficult it is to reach
that of the residents living in landed housing because the social habits will not change.

From the analysis of Figure 11a, the conventional type of corridor in conventional flats is only utilized as a circulation. It is shown by the shape of the linear visibility pattern on the corridor both in single loaded and double loaded. Compared to Figure 11b that adopts the shape of kampung alley corridor with pocket space and the cluster pattern, the visual integration value of the corridor and pocket space increases. Clustered corridor and pocket space will create the space utilized as shared space, since spaces with high visual integration value will ease the way-finding in the system.

The intelligibility value of both types displays a pattern adopting the corridor with pocket space that have higher space value $R^2=0.94$, while the conventional corridor has a lower value $R^2=0.89$. It proves that pocket space in the corridor space of dwelling units clusters will emphasize that the corridor does not only function as a circulation space but also a social space, a place for gathering and playing.

In Figure 12, the typology model of kampung alley with pocket space as a shared space is restructured into the corridor's configuration and the pattern of innovative kampung cityblock units, creating a new pattern with numerous visual integration value configuration of corridors and pocket space. High visual integration value means that it would be easy to find a space in a...
spatial structure system. A corridor with a pocket space of a high visibility value will spur people to utilize it as a shared space because it is easy to reach each space in every dwelling units cluster. The openness on the corridor should be controlled with the space defense system, so that the corridors in a cityblock are safe, and despite its nature as a public space, it would still be safe and can protect each dwelling unit's privacy.

An alley is a space extension for the dwelling units that are utilized as shared space for many activities. This characteristic is transformed into cityblock model corridor. Corridors in a cityblock do not only function for circulation but are also used as shared spaces. By adopting the structure of a kampung consisted of clusters of 3-10 houses with one pocket space, the social interaction habits in the kampungs will not change in a cityblock. In Figure 13, the permeability map shows that the dwelling units, corridor, and pocket space on cityblock graph model are directly connected exactly as the alleys in a kampung.

The result of integration visual analysis shows that corridor and pocket space are strongly connected and will facilitate way-finding. An easily reached/accessed space will create activities for gathering or make it easier to arrange gatherings.

People who use corridors as shared spaces and circulation will create various temporary activities that will alternate both in the schedule and activities. It is necessary to control the corridor rout from the cityblock's gate to keep the circulation and activities system of the alley undisturbed. The result of step depth analysis in Figure 15 shows that every space has its own way-finding from the entrance into different dwelling units that would influence the choice of way taken to go.

Fig. 12 Configuration of Settlement with the Concept of Pocket Space as Shared Space
a).Kampung Model b) City Block Building Model c) CityBlock Settlement

Fig. 13 Diagram of Permeability Map on the Kampung Cityblock Configuration Model

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to each dwelling unit. This way, every corridor space can be controlled and it will have a space defense system that determines which space will be closed and which will be kept open in case of temporary activities.

7. Conclusion
To this day, urban kampung redevelopment has not demonstrated any good result in engineering occupancy behavior from landed housing to multistorey housing. This can be identified from the many occupancy behaviors that still do not go in accordance with their built environment design. One that stands out is the occupancy behavior in the corridors of multistorey kampung's buildings. This behavior has not been able to adopt the existing built environment within the landed housing kampung. There are inappropriations between the patterns of occupancy behavior and the setting system of corridors of conventional multistorey kampung. This system is a form of a new engineering from kampung alleys of landed housing. Because of
these inappropriations, many values of kampung style living have been lost. One of them is the very strong social interactions occurring in the life of an urban kampung.

Corridors in the conventional multistorey kampung can be in the forms of circulation paths either double loaded corridor or a single loaded corridor (corridor balcony type). These paths can only function as a circulation path ("go space"), and sometimes as a storage ("place space"). The function as an interaction space ("do space, sit space, occur space") can no longer be found in the buildings of conventional multistorey housing. As a result, the corridors become spaces with low visibility and integrity value indicated by the non-occurring of connecting space due to the absence of pocket spaces that are usually found in landed housing kampung.

Through space syntax, this study simulated a modeling of innovative cityblock kampung based on the patterns of occupancy behaviors in kampung alleys and pocket spaces. This study also learned from the failure of conventional models of multistorey housing. In this simulation it is found that:

1. Alleys in a kampung do not only function as connectors between residential units/houses but also spaces for social interaction (social shared space) in the forms of pocket spaces at the cuts of the alleys as a common space for residents gathering.

2. Through visual assessment of conventional corridor integrations (single and double loaded corridor) in multistorey kampung, these corridors are only used as circulation paths so spaces for gathering cannot be found.

3. Consolidation pattern of alleys in the model of innovative kampung cityblock tries to adopt an alley pattern with pocket spaces as an integrated system of alley space setting. The results of the simulation of space syntax show that this consolidation is able to improve the function of corridors not only as a circulation but also as a space for social interaction.

4. By regulating the closing and opening of the entrance of a building or part of a corridor, this space will have a defensible space system.
so that the common shape of the corridor can still provide private spaces. It can also provide security for residential units. These benefits go in accordance with occupancy behaviors in landed housing kampung, which in certain times the characteristics of occupancy in kampung alleys need to be changed from community occupancy to private occupancy (such as when there is a wedding, funeral ceremony, religious community meeting, etc). This regulation can also function to provide security within the residential area.

It can be deduced from the aforementioned findings that in order to create continued living adaptability performance from landed housing kampung alleys to kampung cityblock corridor, consolidation in the form of restructuring and strengthening is absolutely necessary. The consolidation is done on the use of kampung’s living space in the form of landed alley kampung patterns. Landed kampung alley patterns in the form of alley space and pocket space are a unity capable of shaping social interactions. Furthermore, defensible space arrangement has to be adopted into the new patterns of kampung corridor in innovative kampung cityblock.

Acknowledgements
The author would like to thank to Widi Cahya Yudhanta and Irwan Yudha Hadinata for their cooperation and help relating to the survey and analysis the data used in this research.

Notes
1 Kampung housed about two thirds of urban population in Indonesia, which contain various sizes and shapes of housing, and mostly occupied by the low and middle-low income families. After improvements by KIP (Kampung Improvement Program), nowadays the kampungs are not necessary a poor housing areas within the cities.
2 The word ‘alley’ is related to Old French words ‘alle-alle’ in Modern French means ‘a path, passage, way, corridor’ and ‘aler’ or ‘alare’ which are supposed to be a contraction of the Latin, ‘ambulare’ that means to walk, which is also sources of the English word ‘amble’ (Wolch, 2010)
3 The ‘garu ronda’ is usually located in the gate in kampung alley or in other strategic place for community night patrol by volunteer men who participate in the community security of their kampung living in the night. The ‘garu ronda’ also can be used interchangeable for multipurpose activities. In the morning, sometimes used for morning market stall, in the day used for children playing and some people also used for taking a rest and in the night used for community night patrol.
4 Currently, several urban redevelopment projects of kampung housing are being carried out in Indonesian vernacular urban settlement typically called kampung housing. The planner emphasizes that it has a proper concept in implementing urban redevelopment projects, so that kampung dwellers would not have to move from their original areas. The basic principle of this project was to resettle all of the former residents without changing their existing living style.
5. There are three types of functional relationship between human behavior and the physical environment, which have differentiated by Wohlwill (1970). The first type, the environmental context limits the particular behavior patterns that can occur within it. The second type of relationship is one in which some of the qualities that characterize specific residing within them. The third type, environment serves as a motivating forces which may result in either strong feelings or attitudes, approach or avoidance behavior, or adaptation.

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3.1 Margin and Typing Space
The printed size is slightly smaller than that of the A4 you might be familiar with. The printed size is 275mm x 210mm: its height is 22 mm shorter than the common A4. Therefore, set up each margin with A4 papers as follows: 35mm top, 43 mm bottom, and 30 mm for both right and left. Then the typing space should become 217mm in height and 150mm in width. Be careful not to have any print beyond the typing space.

3.2 Fonts
Times Roman is the standardized font for the journal. Font size should be 14 pt for a paper title, 13 pt for authors' name(s), 10 pt for body text, authors' affiliation(s), title and correspondence of the first author, and 9 pt for an abstract.

4. Subheadings
Subheadings can be employed in no more than three levels. All headings should be in 10 pt and the initial letter needs to be capitalized. Each level is differentiated as follows: the first level, such as the Introduction and Method, should be bolded and preceded by an empty line; the second level should be bolded and italicized, but does not need to vacate the preceding line; the third level in 10 pt is italicized, but does not need to be bolded. First and Second level subheadings should be numbered such as “1.” for first level and “1.2.” for second level. Third level subheadings should be indicated with a number and half parenthesis such as “(1)".

5. Figures and Tables
Each figure and table needs a descriptive title that should be bolded in 10 pt Times font. Letters used in figures and tables must be at least in 8 pt for intelligibility. Do not put type on either sides of a figure or a table; the rest of the space should be left blank. When continuing the text, start a new line. All pages are printed in gray-scale. All contents should be optimized for gray-scale printing.

5.1 Figures
The title of each figure should be preceded by “Fig.” (abbreviated), with the appropriately labeled number and two spaces. Capitalize appropriate words in each title. Ex. “Fig. 3 Title of Figure” Titles should be placed on the bottom center of each figure.

A figure should be as clear as possible for accurate comprehension. Both bitmap and vector images are acceptable, but try to convert them into EPS file (Encapsulated PostScript) for the best quality for publication. Those who do not know how to convert file to EPS, just let us know. Please attach the original figure independently from the body file.

5.2 Tables
The title of each table should be proceeded by "Table " and the appropriate number. After the number, add two spaces. Ex. “Table 2 Title of Table” The title should be placed on the top left of each table. Try to be as clear as possible and avoid repetition. If possible, attach the Excel file which the table is based on.

6. Note
Notes are displayed in text, sign note number in superscript like this. Footnotes, which are notes typed at the bottom of a pages are not acceptable. Please locate all notes in sequential order immediately after the main text. All notes should be listed and elucidated in detail. The number in superscript should not be bracketed like this. Here is an example:

This problem is still being argued and not found in the solution.

2 Baba (2004) also pointed to this problem.

7. Citation & Reference
There are two styles when you indicate a citation. Either one is acceptable, but please do not use both. One is used for indication within the text; author(s) and publication years in parentheses that come right after the end of the citation like this (Shelton, 1999). The other style is to provide a number in superscript such as [1] with a half parenthesis to each citation, and they should be listed in sequential order at the end of the paper. Here are examples of both styles.

7.1 In-Text Style


—List should be alphabetically ordered. If one reference information needs more than a line, add 4 spaces before starting the second line.

7.2 Sequential Number Style


8. Others
8.1 Numerical Units
The SI system should be used for units of measurement.

8.2 Copyright
Submission of an article to the “Journal of Habitat Engineering and Design” implies that it is an original and unpublished work, and it is not under consideration for publication elsewhere. On acceptance of submitted manuscripts, the copyright thereof will be transferred to the editorial board.

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