Typology of Kampung Houses and Their Transformation Process--
A Study on Urban Tissues of an Indonesian City

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Abstract
There are various house types in the kampungs (urban villages) of Indonesian towns. The size of houses varies from less than 20 square meters up to more than 200 square meters. It is a characteristic of kampung settlements that various house types exist in the same kampung. But on the other hand, we can find the same house types in many kampungs. This paper investigates kampung houses in Surabaya city and shows their typical types, and then reveals the transformation process of kampung houses through the analysis of the relationship between various house types. Based on this analysis of the transformation process, this paper aims to describe the basic principles of the formation of kampung.

Keywords: kampung; urban village; typology of house; transformation process; Kampung Improvement Programme (KIP); Surabaya

1. Introduction
This paper, based on the field survey, analyzes the kampung house types and their transformation in kampungs (urban villages) of Surabaya City, Indonesia. As we discussed in our first paper¹, kampung in Indonesian means village or country. In earlier times, an administrative unit of village was called 'desa', while kampung is a more generally used term in present times.

It is one unique feature of Indonesia that urban settlements are also called kampungs. It is often said that human settlements in developing regions continue to preserve the characteristics of rural village, and such a concept applies to kampungs. As it is well known that the term ‘compound’ in English is derived from kampung², which originally indicated the quarter occupied by the same ethnic group in Batavia and Malacca. Englishmen later began to use the word to indicate the enclosed quarter in India and then afterwards in Africa as well³.

Most of kampungs are now in poor condition physically and economically, but are not necessarily poor socially. It should be emphasized that kampung is not a slum. Kampung shows a different appearance from the urban settlements in western cities. Destruction of social structure and crimes are rarely seen in the kampung. It is also not a discriminated settlement but a community that has its own social system and values. Kampung as an urban settlement has its special characteristics as an autonomous community model. Funo (1987) discusses the characteristics of kampungs and points out what we can learn from kampung communities⁴.

Kampung Improvement Programme (KIP)⁵ initiated by community in Indonesia became well known as a successful urban strategy for upgrading the living environment. There are a lot of lessons to be learnt from the experience of KIP to develop the method of Community Based Development (CBD).

However, KIP provides only such infrastructural facilities as footpaths, drainage, watersupply, electricity and so on, but does not supply dwelling units. The question of redevelopment following KIP is going to be the next major agenda in the CBD program.

Kampungs have been transformed by the impact of KIP. It is the purpose of this paper to explain the mechanism of their transformation focusing on the addition and alteration of space in dwelling units.

It is indispensable that we grasp the transformation process of house types to make proposals on the prototype of urban house and urban renewal system. For this it is of primary importance to reveal space formation system as a whole through the analysis of kampung house types.

This paper first makes an analysis on the typology of kampung houses and then discusses the relationships between the different types to reveal their transformation process. Based on the analysis of the transformation process the paper aims to describe the basic principles of kampung formation.

2. The Outline of the Field Study
There are a number of reasons why Surabaya is se-
lected for the study of Kampung houses. One of the major reasons is that KIP in Surabaya seemed to have the most advanced experience in community housing development, a work that was lead by Johan Silas who is both a theorist as well as the most active enabler in this field. Most of the studies relevant to this paper were carried out jointly with the research team headed by Silas for over the past 20 years.

The principal articles authored by Silas on kampungs are listed in references at the end of the text. He designed *rumah susun* model and implemented the housing projects like *rumah susun* Dupak and Sombo, which are praised as Indonesian new urban house model. We had done the impact study on the project of *rasun* Sombo. Further there was an opportunity to build an experimental house called ‘Surabaya Eco-House’, the planning of which derives in part from the studies of Kampungs. The findings of this paper use field data from the early phase of the research project on Kampung.

The history and outline of Surabaya, the second largest city in Indonesia has been outlined in the works by Silas. At the beginning stage of the research we selected four typical *kampung* to conduct the field study and continue to monitor their transformation in the subsequent years.

This paper mainly deals with the case of *Kampung Sawahan*, which is located in the center of the Surabaya City (Fig.1). *Kampung Sawahan* is a typical and fully-grown *kampung* where one can see various house types. Population density of this Kampung is estimated to be 300-400/ha. The history of the settlement of this area can be traced back to the Dutch colonial period and colonial houses can still be found in some of the blocks.

We selected several RTs (*Rukun Tetangga*) to conduct intensive survey and identified 97 dwelling units as samples in Sawahan Kedung Doro. Fig. 2 shows the locations and plans of sampled houses (A-R). The profiles of the households of this sample are as follows.

The average size of households is 5.81 person and 1/3 of households have over 7 members. The average age of the family head is 48.5 years old, which is higher than other 3 *kampungs*. About 50% of family heads are born in Surabaya and 85% are from East Jawa. 4% are from Madura Island, which is connected to Surabaya port by ferryboat with a commutation time of 20 minutes. 10% of family heads have been living since before World War II and 20% came to the area in 1950s.

3. Standard Type of Kampung House

When we walk around kampungs, similar type of houses may be identified without much difficulty. One is first aware of the fact that most of the houses face

![Fig.2. Survey Area of House Types in Sawahan Kedung Doro](image-url)
their gable to the front road (path). And width of the frontage is very narrow while the depth of the site is long. Space formation also resemble to each other because of strip-like land.

At the front, the room called ‘ruang tamu’, which means ‘guest room’ and also used as a living room, is laid along the access road. Living in the access area is common in kampung house. ‘Ruang tamu’ rarely partitioned by walls, is a flexible space, and is through leading to the backside of the house.

In the rear, there are bedrooms---ruang tidur, and kitchen—dapur, followed by bathroom—kamar mandi. It is also common that utility space is laid at the end of the house.

We will first take Kedung Doro area (Fig.2) and confirm the standard type of kampung house. The most common house form one often finds in the kampungs is type C (Fig. 3). In this house type, from the front to the rear, teras (terrace), ‘ruang tamu’, ‘ruang tidur’, ‘ruang makan’, ‘dapur’, ‘kamar mandi’ are laid out successively in one row. ‘Ruang makan’ means dining room and is rarely independent. In case of C, ‘dapur’ or other space is used for dining. ‘Ruang tidur’ is not a closed individualized space but often opens to the corridor. ‘Kamar mandi’ was formally laid out in the backyard but ‘sumur’ (well) is now inside the houses. The width of the frontage differ considerably (ex. G-3000, B-3500, F-4000, C-5000, D-6000 mm) but the basic formation remains the same.

The standard type of kampung house is not constructed in one go. In general, a kampung house is gradually completed by additions and alterations according to the needs. The structure is changed to be permanent from a temporary one.

The archetype of kampung house is a one-room unit, which can be said to be a minimum kampung house. The inhabitants who live in one-room dwelling unit use the open space for the daily activities. Including ‘ruang tamu’, there are two rooms (‘ruang tamu’ + ‘ruang tidur’) in this form of minimum house.

The standard type of kampung house comes after the above two-room house type, with an additional room—kamar mandi’.

C type house (as well as F type), that is the standard type of kampung house, covers 15% of samples, and if we include G-type, which has ‘ruang makan’ (dining room), the share is one fourth of all types of kampung houses.

House A, which is the minimum house for the aged couple, does not divide ‘ruang tamu’ and ‘ruang tidur’ but there is an independent ‘dapur’. House B where 7 members live is a variation of standard type where one ‘ruang tidur’ is converted into Fig.3. Layout and Household Constitutions of Housetypes Surveyed
Rooms are added in sequence to the existing row. The most typical example is the case of H where the standard unit is added next to the dwelling unit. The same standard units are often laid alongside in parallel. Ten members live in house H, which was, at the beginning, a two-room house. Family H manages a rental house next to their house.

The residents of kampung often invite the relatives from the same rural village. Such connections as illustrated by this case is expected to influence the process of land subdivision in the kampung.

House D is the example that expands half-span to acquire 'ruang tidur' and 'ruang makan'. House E is the case that expands one span for 'toko' (shop).

When building density in the lot becomes high, horizontal expansion is difficult due to the scarcity in the available open space. House F where ten members live is an example that adds one room on the second floor of standard kampung house. Case G is the example of two storied house.

It is one of the findings that there are several types among various kampung houses made to fit the local conditions.

4. Typology of Kampung House

House types may be identified according to several characteristic features of kampung houses. The primary cause that regulates physical formation of kampung house is the building construction system. Building construction system should follow the constraints of narrow site and the access road. As mentioned above, narrow front width and long depth of house characterize the form of kampung house, which makes a high density living possible. Building system fitted to kampungs has also been developed in the kampungs.

Main axis of the house that is the direction of the ridge is in general orthogonal to access road (The gable of kampung house faces the access road). We call this type of house 'Tsuma-iri' (gable house) type against 'Hira-iri' type, the ridge of which runs in parallel to the front path, in Japan. So it is convenient to classify 'Tsuma-iri' (gable house) type and 'Hira-iri' type firstly.

Building construction system is the same although the widths of the houses are different. Roof structure using truss is pre-fabricated and is on sale at the small building material shops. This is one of the aspects to show that there exists a building system for the kampung house.

The bigger houses consist of several units of standard type of kampung house. We can see the kampung house with 4 units or 4 ridges in Kampung Sawahan. In terms of the number of units or ridges, we can classify the kampung houses in the following way (Fig.4).

A. Tsuma-iri type (gable house) with one ridge: one unit.
B. Tsuma-iri type (gable house) with two ridges: two units.
C. Tsuma-iri type (gable house) with three ridges: three units.
D. Tsuma-iri type (gable house) with four ridges: four units.

E. Hira-iri type

Further classification is desirable between the single storey and the double or multi-storey houses, as well as those which are built with open courtyards. Accordingly, there are --

F. Two storey or multi-storied house, and
G. Courtyard house

The above two types, however, are rare in the kampungs of Surabaya.
**Kampung** houses have the common spatial units as described above. Basic spatial units of the dwelling are as follows:

- M: **ruang tamu** — guest room or living room
- D: **ruang tidur** — bed room
- K: **ruang makan** — dining room
- P: **dapur** — kitchen
- N: **kamar mandi** — bathroom or toilet
- T: **teras** — terrace

First of all, whether the **kampung** houses have the basic dwelling spaces like **ruang tamu**, **ruang tidur**, **ruang makan**, **dapur**, and **kamar mandi** or not is the point for the classification. And whether the houses have the special rooms like shops, factories and so on or not, are features, which add to the variation of house types.

Secondly, houses where **ruang tamu**, **ruang tidur**, **dapur**, and **kamar mandi** are laid in linear fashion may be differentiated from other forms of dwelling layouts.

Thirdly, we classify **kampung** houses according to the number of **ruang tamus** and **dapur**s that shows the number of households in a dwelling unit.

Based on the features discussed above, we can identify the several house types (Fig.5) in **kampung** as follows --

**Archetype (A-1) — Minimum kampung house.** One room house. One room is basically used as **ruang tidur** but also used as **ruang tamu** and **ruang makan**. Other activities like bathing, washing are done outside the room. Small **teras** is often used as **ruang tamu** or **ruang makan**. Rental room belongs in general to this type. The average size of this A-1 type houses was 15sqm and average number of family was 4.3 persons. Houses, the sizes of which are less than 10 sqm, occupies up to 26.32% of A-1 type houses. The average lot size is 26.37sqm.

**Two-room House (A-2) — This type consists of** **ruang tamu** and **ruang tidur**. **Ruangan tamu** is used as **ruang makan** that is, living-dining of multi-purpose use. The average size of the houses is 24.97sqm and average number of family members is 4.6. The average size of lots is 59.3sqm. The average years of staying in the same kampung is 25.5years. Inhabitants of this house type are found to have lived for the longest period in kampung.

**Standard Type House (A-4) — A-3 Type House is the type that adds** **dapur** to A-2 type house, and the Standard Type House A (A-4) is the one that adds **kamar mandi** to A-3 Type. **Ruangan tamu** is also used as **ruang makan** in this type. All the rooms are roofed in this A-4. The average size is 46.9 sqm and average number of family is 4.83. 5 persons (the average size 38.55 sqm-26.67%) or 6 persons (the average size 56.18 sqm-20.0%) live in the **Standard Type House A** (A-4). The years of staying in the same **kampung** is 20 (5 persons) or 23 years (6 persons). The average size of lots is 81.77 sqm.

**Standard Type House (A-5) —** **Ruangan makan** becomes independent from **ruang tamu** or **ruang tamu** is divided into two parts one of which is used as dining. In general, **teras-ruang tamu-ruang tidur-ruang makan-dapur-kamar mandi** are laid out in linear from the front to the rear. It sometimes happens that **ruang makan** is laid infront of **ruang tidur** if the width is enough. The average floor area is 61.8sqm and average size of the family is 4.50. The average size of lots is 101.00 sqm, which is larger than Type A-4 because Type A-5 has independent **ruang makan**.

**Tsuma-iri Two Unit Type (B-9) —** This is the type that adds a **ruang tidur** to A-5 type. More **ruang tidurs** are added when the family members grow. Additional rooms are roofed, sharing the wall and the corridor of main building. The average floor area is 77.43sqm and average size of the family is 5.90. The average size of lots is 135.65 sqm. The average years of staying in the same **kampung** is 22.76 years.

**B-10 type is the type that has two Standard Type House A (A-4). D-16 type is the type that enlarge B-10 type in both sides.**

Fig. 6 shows the relationship between the plot size and the floor area of typical house types.

5. Transformation Process of Kampung House

Again, we have to emphasize the fact that **kampung** houses are not built as
completed house at once in the beginning stage. They are later enlarged according to the needs of the inhabitants step by step. Likewise the structure of the kampung house are changed from temporary structure using bamboo or timbers to permanent structure using bricks and RC. People tend to build barrack like wooden house at first, and then alter the materials when the family can afford to pay. The walls made of bamboo mats are called gedek and the walls made of bricks are called tembok. Inhabitants prefer tembok wall. There are many houses with tembok wall in the front but gedek in the rear.

We could get the data of 15 examples on the detail transformation process from kampung Sawahan. Let us pick up some examples that gradually transformed according to the changes in the members of a family.

A minimum addition of the house is by the enlargement of a room. We see many cases that enlarge ruang tamu. KIP often requests the house adjacent to the road to be trimmed in order to increase the width of the road, which necessitates the alteration to the affected house.

Addition of rooms are carried out in various ways. There are many examples that add toko (shop) or warung (stall) in front of a house. One finds cases that cover kamar mandi in the open yard. This is the typical process of A-2 type house transformed to Standard Type House A-4 or A-5. The additions both to the front and to the back are also not uncommon. Usually the time of addition of rooms is when there is an increase in the family members. Following are some of the instances to illustrate such changes in Kampung houses.

The family of case X (Fig. 7) came to this kampung in 1950 and at first built Two-room House (A-2) with sumur in the open air. The family members were husband, wife and new born daughter at that time. They added one room as new ruang tamu to the front and built dapur and kamar mandi in the backyard as the second stage in 1960 when the family members increased to five. Ruang tidur was divided into two and semi-open teras was added at the third stage. Here we get the Standard Type House A(A-4).

The transformation process from A-1 and A-2 to A-4 is most usual in the kampungs.

If the area of house lots have no room to carry extension at the back or at the front, additions are then made bar wise that is at right angle to the existing longitudinal sequence of rooms. Inhabitants may expand to any direction when they have enough space in the lots.

The addition we often see in the kampungs is those which add half-span or a full one-span. House owners tend to built another span when the grownup child needs another house to accommodate the new family, or when the owner wants to build a rental house to make more income.

The case Y (Fig. 8) is a typical example that adds units in parallel. The family head with his wife came and built Two-room House (A-2) in the year 1950. They added a unit of half-span next to the original house for ruang tidur in 1965. They had three children at that time. Then, they added another half span unit in the opposite side as the second stage enlargement. Dapur and kamar mandi can be shared by two families. The partition is made of gedek (bamboo mat) so that space arrangement can be made more flexible. Finally one house unit was built for rental purpose, and which is a Standard Type House A (A-4).

When there is no more space to expand the dwelling area on the ground floor, inhabitants begin to add rooms on the second floor. in Sawahan almost all area had now been fully developed, and there are already 22 houses with space on the 2nd floor among a total of 97 units. In
the second floor, the family first builds two rooms, then steps further to use all space that is available above the ground floor. It is difficult to make a stair to lead to the 2nd floor because of narrow width of the kampung house. There are no standard type of kampung house exceeding two floors.

6. Conclusion

The distribution of houses in the kampung look chaotic but the individual housing process is not so complicated. This paper first clarifies several types of kampung house based on the field survey and then analyses the process of their transformation.

Following the above analysis, we can conclude the transformation process from A-1 and A-2 to A-4 and A-5 as typical in kampung. Further variations of house types can be explained as variants of the above types. Fig. 9 is a diagram showing the transformation process of the kampung houses. The space formation that looks amorphous at the beginning can be understood as multiple layers of the ever developing housing process to meet the changing needs of the inhabitants. The significance of this paper is to reveal this spatial dynamics of the kampung houses.

Notes

4. Shuji Funo, The Self-Contained Urban Communities Based on the Ecological Balance in the Region, ‘Social and Economic Issues in Urban Communities: Planning and Development of Satellite Town (New Towns) in Southeast Asia, Indonesian Institute of Sciences, Program of Southeast Asian Studies, 25-27 June, 1996. The characteristics of kampung as an urban community to be may be outlined as follows.
(1) Variety of Kampungs:
Each kampung has its own characteristics, which varies with its location (distance from the city center), constitution of income groups, migratory backgrounds of inhabitants or mobility of population, its history its spatial pattern and so on. As there are certain difficulties to make a generalization on Kampung, we classify kampungs at least into three categories: urban kampung, fringe kampung, and rural kampung, which is made according to their location.
It is very important that distribution of various kampungs give alternatives when people choose the place to live. Even the poorest income group can find some kampungs to live. As Silas pointed out, variety of kampungs is only a solution to the housing problems at the moment.
Residential areas in Japan are rather monotonous and homogeneous everywhere and are losing their localities and identities. It is interesting to find that various kampungs are scattered widely in the city.
(2) Heterogeneity:
Kampung is not a homogeneous community. Rich people used to live next to poor people. Complexity of inhabitants is a characteristic of kampung. It is sure that people from same region tend to live in the same area, but relationships between different groups are not always exclusive. It should be noticed that rich people support the life of the poor even in poorest kampung.
(3) Kampung as an Autonomous World:
Kampung is not only a residential area. New town in Japan is often called Bed town because it has no other functions except sleeping (staying). But kampung produces many things by home industry. Kampung has both functions of production and consumption, which is different from Bed town in Japan that only consumes goods. Circulation system of goods is not so simple but it is characteristic that the circle of production and consumption can be seen as a closed system within the kampung. Living place is very near to workplace, which means that all the activities can be carried out in the neighborhood.

Kampung itself is parasitic on various facilities of the city and cannot survive without earning money from outside the kampung. But to a great extent kampung life is autonomous.

4. Kampung as a Highly Serviced Society—Rombong Culture: Everybody can get almost all the kinds of foods and goods for daily life within the kampung, because Rombong (pushcart) and street peddler (Vendor) always served inhabitants. Many kinds of Vendors had visited down town area of Tokyo before, but Japan already lost such Rombong culture of the past.

It is because opportunities of getting jobs are very few that we can see many rombongs and vendors in the kampung. But to the inhabitants, kampung is a highly serviced society.

5) Mutual Aid System—Gotong Royong, Arisan: Kampung has a hierarchical administration system. RT-RW system looks like a top-down system, and it is said Japanese armies introduce that kind of system (Tonarigumi or Chounaikai) to Indonesia. But on the other hand, it is also pointed out that traditional society has such kind of community organization system. In any case, the spirits of mutual aid characterize kampung community. Gotong Royong activities and Arisan system are indispensable to kampung life.

6) Preservation of Traditional Culture: It is often seen in the kampung that newcomers build the same style of house as that in rural village from where they come. People tend to preserve the traditional way of life, which is also one of the characteristics of the kampung. The standard type of kampung house has of course a relation to the rural traditional house in East Java. Kampung should be considered to be a settlement that has own vernacular values in Indonesia.

(7) Complexity of Ownership Relations: It is one of the major characteristics that ownership relations are complicated. Modern land laws introduced by Dutch and traditional laws (Adat) coexist in the kampung. Relations between primary right and secondary right are not easily understood for foreigners.

5) The history of KIP traced back to colonial period is discussed in the following paper. Naohiko YAMAMOTO, Shuji FUNO, Kampung improvement in Dutch East Indies and the development process of a Madurese kampong - Case study of Kampung Sidodadi in Surabaya -. Journal of Architecture, Planning and Environmental Engineering no. 556, 2002.

6) Rumah means room or house and susun means layered. Rumah susun is flat in general.

7) Rusun is abbreviation of rumah susun.


10) Kampung are kampung Sawahan, Sawah Puluh(Ujung), Donorejo and Kali Rungkut. The first survey was carried out from 3rd to 24th August, 1982 and the second was done from 2nd to 24th August 1983. Total number of samples is up to 242: 97 from Sawahan, 64 from Sawah Puluh(Ujung), 28 from Kali Rungkut, 53 from Donorejo.

References
4) Silas, Johan. Spatial Structure, Housing Delivery, Land Tenure and the Urban Poor in Surabaya, Indonesia; in Land for Housing the Poor, AIT, Select Books, Singapore, 1983.