ARCHITECTURAL BEHAVIOR AND SPACE PATTERN OF POTTERY MAKERS AT KLIPOH VILLAGE – BOROBODUR INDONESIA

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ABSTRACT

Pottery makers are one of the uniqueness communities existed in Borobudur. They seem like old traditional people with their own culture which colors the life style of Borobudur. It is very difficult, actually for them to keep their existence in this modern era. Since Klipoh village declared as Tourism village in Borobudur, the existence of traditional pottery had already attracted many tourists and traders to come, visit and buy pottery. They are also interested in learning how to make pottery and the way of life of pottery makers.

The activities of pottery makers basically have strong influence over their surrounding area of their house including room decision. Before tourists come to Klipoh, local people never have problem regarding to “crowdedness” in their house. Since tourists and traders come and do their activities together with pottery makers, consequently, their house becomes “crowded”. This kind of situation will then encourage researchers to observe what has happened regarding to that matter.

By using behavior mapping method, it can be figured out that one of the factors influenced the “crowdedness” is the tourists’ and traders’ activities that forced pottery makers to facilitate their activities. Otherwise, they would lose their potential pottery market. This condition will then lead pottery makers to make some adjustments in their house by rearranging everything including position of furniture and all the pottery materials.

1. INTRODUCTION

In the context of behavior and environment architecture, there is a strong relationship between behavior and environment. This interaction is really dominant because both of them are giving strong influence and giving means to each other. In terms of the pottery industry, the pottery makers create activities that always require space or territory. Potteries themselves are objects which are actually made of wet clay, then hardened by baking. Pottery includes both decorative and practical items such as bowls, vases, dishes and lamps. Four steps are needed to make a pottery product: preparing the clay mixture, shaping the clay, decorating and glazing the item, and firing (baking). The firing temperature gives pottery its finished appearance and its strength.

To accommodate such activities, most of the pottery makers tried to provide spaces for processing the clay to become pottery. All of those spaces are located inside and outside their house. Product House itself is a place that is used to facilitate the human activities as well as to interact among users. It was visualized in various form related to behavior and cultural style of the users including pottery makers.

Space or territory setting created by pottery makers inside their house had brought significant influence towards the behavior setting of pottery makers and other related users of the house. It means that, there is relation between space as a chain of physical aspects and space as spatial aspects, so that it could be used to facilitate all activities. Behavior setting contains many aspects of people who did their activities and interact as their characters in a place or space within time frame.

In the case of Klipoh pottery makers, there are some problems occurred in terms of pottery maker’s behavior and space. There was conflict between pottery makers and tourists as the user of pottery production space in pottery maker’s house. One of the crucial problems is “crowdedness”. Frequently, “crowdedness” in production space occurred in time when tourists visit this place and traders as another user come to do their transactions also in production space. Traders come to pottery makers to buy pottery products and sell again to traditional market. This condition will then become worse particularly during holidays. As for tourists, they usually visit the pottery industry in a group and during their visit they try to involve in the pottery making process.
When they come and do their activities together in the production space, that will become a problem in terms of space quality.

2. METHODOLOGY RESEARCH

Research method used in this research is behavioral mapping. Based on Haryadi and Setiawan [1], behavioral mapping is described in a sketch or diagram of an area where people can do their activities. The aim of this method is to draw people’s behavior in a map and to identify the type of their behavior. Besides, it is also used to show the relationship among users by visualizing a specific design. Mapping behavior could be done directly on the spot, when and where of the observation was conducted is recorded by the researcher. Women are the main group to be observed as pottery makers while tourists and traders are dominantly observed as “intruders” that forced to some spatial changes of the production space.

3. ARCHITECTURE BEHAVIOR

Human Behavior study in Architecture consists of analysis about the relation between human and environment and its implementation in the design. It means that human behavior will strongly influence the design of space where they do their action. Space itself has a ‘social logic’ as much as these relational patterns affect everyday behavior, contributes to structuring social relationships, “and the way in which society and culture become intelligible through their spatial forms” [2]. Hillier and Hanson [3] defined two basic theorems to illustrate how space works socially. The first, which views space as “generative” because social rules and practices do not need to be invoked to account for movement according to spatial configuration, deals with linear spaces of circulation and movement. The second theorem describes space as “reproductive,” and applies to the use of spaces, component spaces of building types that contribute to on-going reproduction of social relations. The following are some behavior definitions [1]:

- Behavior is an individual or group feeling or action that describes happiness, joyfulness, comfort, sadness, stress, etc. It will also describe their needs of territory.
- Behavior is a result of interaction between forces and needs from individual or group of people with setting of situation.
- Behavior is a kind of mechanism which correlates the characteristic of individual or group of people with setting of situation or condition.
- Behavior means everything related to tangible factors like eating, cooking, crying, working, seeing; and everything related to intangible factors for example: fantasy, motivation, and process that occurred particularly when someone keep silent or physically steady [4].

Laurens [4] envisages that as empirical study, behavior has some characteristics such as:

- Behavior is actually tangible, but the cause of behavior cannot be seen directly.
- There are many kinds of behavior, e.g. simple and stereotype like amoeba, complex like human social, and there is also biology mental process.
- Behavior is various, with classification, e.g. cognition and affective, which shows rational, emotional, and physical movement.
- Behavior can be realized and unrealized.

Behavior setting could be simply defined as interaction between activity and specific place. While, behavior setting consists of a group of people’s behavior, place, and time constrain. What actually becomes the obsession in behavior setting is how we identify constantly or regularly the behavior which shows up in certain situation or setting. The term of behavior setting will then be divided into two:

- System of setting is a chain of spatial elements which has correlation between each other.
- System of activity is a chain of behavior which is done by someone or group of people [1].

4. KLIPOH VILLAGE

Klipoh village’s name comes from “Nyai Kalipah”. “Nyai Kalipah” is the first person who lived in a village along Kringing River, Borobudur Regency, Central Java, Indonesia. Klipoh has a scenic beauty due to its location between Menoreh and Sumbing mountains.

As shown in Fig. 1, Klipoh village is located in Karanganyar and closed to Borobudur temple, the famous Buddhist Temple in Indonesia. Almost 500 tourists per year come and visit Klipoh as one of the pottery tourism villages in Borobudur.

This village has uniqueness because most of the people are making traditional pottery until now. They make pottery in the form of vase, candle, frying pan, wall decoration, ashtray, Borobudur
souvenir, etc. The method used to make pottery is still very traditional and people employ very simple technologies such as hand building and simple manual potter’s wheels.

5. THE RELATION BETWEEN BEHAVIOR AND SPACE

There are 3 types of pottery industry houses with different characters used in this. Pottery makers with mass production (>40 pieces/day), medium production (40 pieces/day), and low production (< 40 pieces/day). The research was conducted during holiday and ordinary day especially to observe the density of tourists coming to Klipoh.

As mentioned in the first description that most of the crafters are basically women. They are using veranda or terrace to do their pottery activities.

The activities of craftwomen as pottery makers in all types of pottery production levels are mostly the same as seen in Table 1. The activities of pottery maker start from early morning after they woke up at 04.00 am – cooking at around 05.00 am – making pottery from 07.00 am, 12.00 pm break – start working again from 13.00 pm until 16.00 pm. Table 1 shows the detailed description of pottery maker activities.

From the above activities, pottery makers need some rooms/spaces to accommodate and run their activities, for example:

1. Wake up in the morning - bedroom
2. Cooking – kitchen
3. Pottery making – pottery production area. (in Fig. 2)
4. Break - veranda

### Table 1: Potters’ daily activities

<table>
<thead>
<tr>
<th>Activities</th>
<th>Time</th>
<th>Room/Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wake up</td>
<td>04.30</td>
<td>Bedroom</td>
</tr>
<tr>
<td>Praying</td>
<td>04.30</td>
<td>Bedroom</td>
</tr>
<tr>
<td>Shopping</td>
<td>04.45</td>
<td>Traditional market</td>
</tr>
<tr>
<td>Cooking</td>
<td>05.00</td>
<td>Kitchen</td>
</tr>
<tr>
<td>Breakfast</td>
<td>06.00</td>
<td>Dining room</td>
</tr>
<tr>
<td>Feeding Chicken</td>
<td>06.30</td>
<td>Terrace</td>
</tr>
<tr>
<td>Producing potteries</td>
<td>08.00</td>
<td>Production room and front yard</td>
</tr>
<tr>
<td>Praying</td>
<td>12.00</td>
<td>Bedroom</td>
</tr>
<tr>
<td>Break</td>
<td>12.15</td>
<td>Terrace</td>
</tr>
<tr>
<td>Producing Pottery</td>
<td>13.00</td>
<td>Production room/terrace</td>
</tr>
<tr>
<td>Storing the potteries</td>
<td>16.00</td>
<td>Storage, living room, production room, gallery</td>
</tr>
<tr>
<td>Cooking</td>
<td>17.00</td>
<td>Kitchen</td>
</tr>
<tr>
<td>Eating</td>
<td>17.00</td>
<td>Dining room</td>
</tr>
</tbody>
</table>

Fig. 2: Making pottery

They are doing the activities as their daily routines, except on Sundays they usually burn the pottery in fireplace called “kampung” together with the other pottery makers that have no fireplaces as seen in Fig. 3.

Fig. 3: “Kampung” or fire place

On Sundays or in time when they have to bake the pottery products, the woman usually only assists her husband to prepare the pottery products that will be baked.
From the three types of pottery production levels, there are some different characteristics of designing rooms among them. As for the large pottery production house, usually they produce modern pottery production which are more creative and attractive. They also produce pottery in a large amount. They have more rooms to accommodate all the pottery activities such as: soil preparation area, showroom inside the living room and they have their own “kampung” for fire place.

They even build new pottery gallery in other building owned by one of the member’s of the pottery makers group. They are using that gallery together to exhibit their pottery products.

As for middle type of pottery makers, they usually produce traditional pottery products and sell their products direct to the traders who always come on site. They also receive tourists but only few because they only focused to produce traditional pottery for local market. The rooms or spaces to support pottery production are less than the large pottery production house. Therefore, they have limited room/space to accommodate tourists or traders activities. They have only production space, drying space, storage room. As for soil preparation, they bought from the large pottery makers. They joint fireplace with the larger pottery makers.

The smallest pottery production type only produces pottery less than 40 pieces per day due to their economic condition. This group of potters is very poor, therefore they have no “kampung” or fire place to bake their products and they have no gallery to exhibit their products. They only use production space to accommodate the tourists and traders.

Based on the observation, tourist activities in the pottery industry houses in general are listed in Table 2.

**Table 2: Tourist activities**

<table>
<thead>
<tr>
<th>Activities</th>
<th>Time</th>
<th>Room/Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parking</td>
<td>Anytime</td>
<td>Front yard</td>
</tr>
<tr>
<td>Watching pottery product</td>
<td>Anytime</td>
<td>Gallery</td>
</tr>
<tr>
<td>Trying to make pottery</td>
<td>Anytime</td>
<td>Production room</td>
</tr>
<tr>
<td>Looking for Souvenir</td>
<td>Anytime</td>
<td>Living room</td>
</tr>
<tr>
<td>Transaction</td>
<td>anytime</td>
<td>gallery</td>
</tr>
</tbody>
</table>

From Table 2, it could be seen that tourist activities are using almost all of the pottery maker space. Tourists are using the front yard where pottery makers usually use as a space for drying pottery, tourist use the gallery where pottery makers use as a place to keep some of pottery products, tourists use the production room to watch the process of pottery making and are directly involved in molding pottery.

While, the trader activities are the following:

1. Select pottery products → in the front yard, gallery
2. Do transaction → in the front yard, terrace/veranda
3. Packing pottery products in the basket → in the front yard
4. Bring out the products

**Table 3: Traders activities**

<table>
<thead>
<tr>
<th>Activities</th>
<th>Time</th>
<th>Room/Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parking motor bike</td>
<td>07.00</td>
<td>Front yard</td>
</tr>
<tr>
<td>Choosing pottery product</td>
<td>07.00</td>
<td>Gallery/Production Room, front yard</td>
</tr>
<tr>
<td>Transaction</td>
<td>07.30</td>
<td>Terrace</td>
</tr>
</tbody>
</table>

The trader is using some pottery maker’s spaces, i.e. front yard where potters usually dry potteries, gallery for displaying and storing the potteries, terrace for making and molding the potteries.

The above observation showed that, there is relationship between potters, traders and tourists activities with crowdedness especially when those activities come together at the same time in the same area. Most of them will have bad feeling whenever crowdedness occur. Potters, tourists and trades for example, they do activities and transaction together in the front yard area closed to the fire place. The space of fireplace itself is already full with straws, pottery productions and ashes, as shown in Fig. 4. So, when tourists (in one group consist of 3 to 5 persons) visit the pottery industry, they are welcomed in the front yard. They are very interested in the way craftswomen work with clay and the sharing of a special cross-cultural experience.

**Fig. 4: Pottery production area**

They can also see the craftswomen making the pottery and at the same time tourists can also involve in making pottery.
If tourists come around 7 o’clock to 9 o’clock, they will meet traders that do the transaction with pottery makers. At this time, pottery makers usually exhibit their products on the yard (Fig. 5).

Fig. 5: Selling pottery to traders in the front yard

The number of traders is actually only a few. But their motorcycles and big baskets fill up the space. Such condition will then become a problem particularly when there are other users work in that place. Traders use all the spaces for transaction, leaving very limited space for tourists or pottery makers to do their activities.

Remembering the house condition of the potters is very simple and limited space, full of things/furniture and in mass up condition, therefore whenever the traders and tourists join together with pottery maker activities, the problem of space will easily appear. They could not really control the use of spaces, because the house does not have enough space to accommodate the activities together at the same time. Actually the space is only for pottery production but it has to accommodate the tourists’ activities too. Therefore, the pottery makers cannot easily work, move and pass through the space.

Fig. 6: The terrace for pottery production place

The consequences of potters are preparing/creating more spaces for tourist and trader activities by rearranging their rooms, furniture, etc. Pottery makers of mass and medium class production have their own “kampung” or fireplace. That is different from the potters of low class production, they have no “kampong” due to limited budget. But they usually burn the pottery together in one place/”kampung”. They burn and bake on Sundays together after one week they collect all the potteries. In case, they have pottery order they can bake the pottery any days.

Fig. 7: Pottery process

Another thing that may also cause crowdedness is people’s perception. In this case study, people’s perception differences between potters, traders and tourists about space function.

People’s perception of space is basically based on the understanding of people in making any adjustments for their territory/spaces in their houses. They usually manage their space based on their space needs.

Special for pottery makers, they never thought or predicted that someday their village will be visited by traders or tourists. At the first, they only thought that they make potteries for fulfilling the daily need of local people. In this case, the pottery makers should then make some adjustments regarding to house spaces planning. The pottery makers/potters should consider the capacity of spaces in accommodating the activities, so they are not shocked when they have unexpected guests like tourists and traders. Besides, the potters should also think about the layout of furniture, potteries tools, and other things in every single space, to anticipate the crowdedness and ease the circulation. So that, it would not cause the people circulation inside the house become hampered. All users are expected to easily pass through the rooms/spaces.
**Table 4: Behavioral mapping of activities and space**

<table>
<thead>
<tr>
<th>SITE PLAN</th>
<th>ACTIVITIES</th>
<th>SITE PLAN</th>
<th>ACTIVITIES</th>
</tr>
</thead>
</table>
| 1: Mass Pottery production | Craft Woman:  
1. Wake up in the morning → bedroom  
2. Preparing all the needs for making pottery → production room  
3. Making pottery and serving tourists → production room  
4. Drying pottery → backyard  
5. Helping firing the pottery → fireplace  
6. Continuing making pottery → production space  
7. Bring the pottery inside → put the pottery in showroom → living room  
8. Watching TV / relaxing → living room  
9. Sleeping → bedroom  

Usually they produce: modern products. The space needed to accommodate the activities: showroom, fireplace, production space, living room | Tourist:  
1. Seeing and watching pottery → showroom / gallery  
2. Trying to make pottery → terrace  
3. Buying souvenirs → showroom / gallery  

Trader:  
1. Looking at pottery → yard  
2. Selecting → yard  
3. Bargaining and buying → yard  
4. Putting in the pottery into the basket → yard  

Traders and tourists usually come in a small group or big group. They come in the morning or in a day time. Tourists prefer to come in the holiday. |
| 2: Medium Pottery production | Craft Woman:  
1. Wake up in the morning → bedroom  
2. Preparing all the needs for making pottery → production room  
3. Making pottery → production space  
4. Drying pottery → yard  
5. Helping firing the pottery → fireplace  
6. Continuing making pottery → production room  
7. Bring the pottery inside → living room  
8. Watching TV / relaxing → living room  
9. Sleeping → bedroom  

Usually they produce: traditional products. The space needed to accommodate the activities: fireplace, production space, living room | Tourist:  
1. Seeing and watching pottery → production room  
2. Trying to make pottery → production room  

Trader:  
1. Looking → yard  
2. Selecting → yard  
3. Bargaining and buying → yard  
4. Putting in the pottery into the basket → yard  

Traders and tourists usually come in a small group or big group. They come in the morning or in a day time. Tourists prefer to come in the holiday. |
| 3: Low Pottery production | Craft Woman:  
1. Wake up in the morning  
2. Preparing all the needs for making pottery → production room  
3. Making pottery → production space  
4. Drying pottery temporarily → yard  
5. Helping firing the pottery – together with other pottery makers → public / common fireplace  
6. Continuing making pottery → production space  
7. Bring the pottery inside → living room  
8. Relaxing → living room  
9. Sleeping → bedroom  

Traditional products: No showroom, No fireplace → public fireplace | Tourist:  
1. Seeing and watching pottery making → veranda  

Trader:  
1. Looking → veranda / production space  
2. Selecting → veranda  
3. Bargaining and buying → living room  
4. Putting in the pottery into the basket → yard  

Traders and tourists usually come in a small group or big group. They come in the morning or in a day time. Tourists prefer to come in the holiday. |
From the explanation above, most of the pottery makers in Klipoh set the spaces basically not based on pottery process but only on the need of spaces. They have no detailed or perfect room planning in their house. They are not good architects. Hence, they put spaces anywhere according to their wish.

Besides, the traders and tourists in this case could be said as intruders. They are unexpected users for the pottery makers. But because pottery makers need them for economic reason, hence they allow them to use their space and force them to share their spaces for their activities. They enter the pottery maker’s territory and make some changes of the function of the rooms/space and disturb the privacy. They already made the pottery makers uncomfortable for especially when they have to serve tourists and traders, meanwhile they have to finish also their work. Frequently, during this busy time they choose to stop their pottery making activities because they could not serve the tourists and traders at the same time (Fig. 8).

![Diagram of potters house](image)

**Fig. 8: Space setting of potters house**

### 6. CONCLUSION

People’s behavior and space have a very close relation. Space influences the behavior of people and vice versa. In the case of pottery makers in Klipoh, problem occurred regarding crowdedness. There are conflicts between pottery makers’ needs, traders’ needs and tourists’ needs. The pottery makers need spaces to work, traders need spaces for pottery transaction while tourists need spaces for seeing, watching and making the pottery in the same area of pottery makers. That becomes a problem, because the host (pottery makers) has never expected especially tourists and traders to come to their house before, hence they never provide special space to accommodate their needs in their house. Since Borobudur has been declared as a tourist destination and traditional pottery has become famous, many tourists and traders come to Klipoh. As traditional people, with many kinds of limitation including budget, lots for expanding the house, people never change their original houses. They still keep their houses as it is, therefore when tourists and traders come to their houses, the problem of crowdedness and uncomfortable situation occur. They have no more spaces to serve the tourists and they have no more privacy.

### 7. RECOMMENDATION

Pottery makers need concentration and supported condition in doing their activities. To anticipate the appeared problem regarding tourists and traders that also use their spaces to do their activities and most often disturb their concentration, pottery makers should make some adjustments: 1) rearrange the layout of furniture and they have to move out some of the unused furniture in order to give some spaces for tourists and traders activities; 2) they have to put all the pottery products in storage room that usually used in every empty space inside the house; and 3) to anticipate the increasing number of tourists and traders they have to start providing special room/space to facilitate tourists and traders activities.

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### REFERENCES