World Academy of Science, Engineering and Technology
International Journal of Humanities and Social Sciences
Vol:5, No:5, 2011

Occupants' Behavior and Spatial Implications of Riverfront Residential in Yogyakarta, Indonesia

Hastuti Saptorini

***Abstract*—**The urbanization phenomenon in Yogyakarta Special Province, Indonesia, encouraged people move to the city for getting jobs in the informal sectors. They live in some temporary houses in the three main riverbanks: Gadjahwong, Code, and Winongo. Triggered by its independent status they use it as the space for accommodating domestic, social and economy activities because of the non standardized room size of their houses, where are recognized as the environmental hazards. This recognition makes the ambivalent perception when was related to the twelfth point of the philosophy of community development concept: the empowering individuals and communities. Its spatial implication have actually described the territory and the place making phenomena. By analyzing some data collected the author's fundamental research funded by The General Directorate of Higher Education of Indonesia, this paper will discuss how do the spatial implications of the occupants' behavior and the numerous perceptions of those phenomena.

***Keywords*—**occupants' behavior, socio-economic-cultural activities, spatial implication

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I. Introduction

THREE main rivers pass Yogyakarta, which are: Winongo, Code, dan Gadjahwong. Those have unique and invaluable nature setting as they have the riverbank which becomes the mediator of land and water live. Therefore, their existence should be encouraged to preserve and sustain human, river and nature life. In fact, what happens for real is the occurrence of "constructive and synergical" live phenomenon between these two nature elements which is so interesting to study.

The riverbank settlements in Yogyakarta grow in two categories; the planned and spontaneous settlements. The first cateory tends to grow to the northern direction of Yogyakarta [10], and based on the regional governance space layout, this settlement is developed into three types which are: cul de sac, by pass, and open layout. The second category, riverbank spontaneous settlement, which is the focus of this paper, has some experiences which indicate the dialog mechanism with river [10]. This is shown through "communicative" mechanism between occupants and the river. The communication of both parties appears through the use of riverbank to accommodate the needs of occupants' psychological state in cognitive, affective and psychomotoric. The cognitive activities are the rational-based activities of occupants. The consideration of these activities is so influenced by the occupants's backgrounds that the behaviour expressions are also various. Meanwhile, the motoric activities are the occupants' activities that support their activities and mobilities. In the context of riverbank spontaneous settlement, the cognitive activities by the occupants of either in the riverbank or in river water are relatively more apparent than others. The phenomenal constructed activity can represent more the responsive behavior which is based on the occupants's needs and external condition of river. They have built what so called as a 'space' to occupy various activities, while the river condition itself enables the occupants to articulate the river for fulfilling their needs. As the 'free land', the riverbank has given opportunity to the occupants to act spatially. Trigerred by its independent status and its possibility to explore, the land attracts the occupants to use it as the space for accomodating domestic, social and economy activities. This specific behavior indicates the phenomenal relation among river behavior components. Therefore, their behavior characters are not common considerations for settlement plan. As the result of the differentiation, not only when the occupants do incidential activities but also when they do routines does the unique behavior apparent. This experience indicates that the community of riverbank occupants has constructed their environments based on the functionality, norms, and sense of community for the sake of human's basic needs. How is the process, who is the actor, and what motivation behind the construction of space along the river are the questions that this paper based on. From the explanation I hope that their behavior is the 'real data', which at the same time is also the community's aspiration representative. For many policy makers, decision makers, urban planner and especially for housing planner, this aspiration hopefully can be the consideration. This is very possible as the phenomenal action has social and humanitarian values that have much spirit of sustainable development more than temporary economic values for limited interests.

The author is a lecturer of Architecture Department, Faculty of Civil Engineering and Planning, Islamic University of Indonesia, Yogyakarta, Indonesia, e_mail: hastuti_saptorini@yahoo.com

II. Theoritical Review

A. The Quality of Open Space, Type of Activity, and Settlement Factors

Reference [2] confirms that the physical environment quality is one factor that influences the variety, degree, and the way an activity is created. This master of urban design underlines the relation between open space with the activity demands, which basically is determined by the quality of physical environment of the open space. The good quality of open space will invite certain activity significantly.

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The activities in the open space are distinguished into three categories: *necessary activities*, *optional activities*, and *social activities* [2]. The three of them require different physical condition. *Necessary activity* is the activity in the open space which is done routinely and based on obligation, tasks or on the condition when a person has no other choice. Some examples of routines in open space that are not included in this category are going to school, to market, deliver mails, etc. All those activities only need simple open space. It means that though the space or room is not that good and conducive, the activities keep going on. It is somehow different from the category of *optional activities.* This category requires the open and physically conducive open space, as a response, the community's activities will have relatively wide variations. It means that if the open space is in good and conducive condition, the activity for this category is significantly built. In the other hand, if the open space is in the bad condition, the activity of this category is relatively limited. Activities under this category are for recreation purposes such as: taking a walk for fresh air, sitting around, sun bathing, etc. The *social activities* are spontaneous and tend to depend on either quality or existence of community in the open space. When the recognized and suitable community is available, the number of communities increases together with more various types of activities. Therefore, these activities are considered as the "resultant" ones as they are existed in connection with the two other categories so that they are meaningful and contextualized with the place where the activities take place. When some children play in the open space, not long after, other children of the same age will join to play various games for some time. References [8] - [10] indicated the relatively strong physical condition of the riverbank. When the river is placid (usually during the hot season), people do many activities along the riverbank such as women washing kitchen utensils and clothes, children swimming, men placing fish net, and youngsters dry some parts of the riverbank to get some fish (*nawu:* Javanese). Meanwhile, the part of riverbank exposed to sun is mostly used to dry cloth, home appliances, and bed. The researchers in [3] found the community behavior of Code riverbank settlement that indicated the tolerance character of the occupants. Originally from the same hometown, the community still hold dear the value of togetherness which enables the tolerance character in spatial act to indicate the significance in community scale. It means that with the limited spatial and natural resource, the occupants can still live in urban area as supported by the strong character of tolerance.This character is accordance with the Javanese concept that called the *"gotongroyong"* (= to cooperate to do something). This concept means the people to help one another, so that they have strong tolerance and togetherness in the community. As in [11] highlighted that the basic tradition of this concept comes from *the gemeinschaaft of mind* concept, which consists of co-operative and organized action for a common interests (p.6). This means that the social interaction is seems to be way of life in Javanese culture.

B. Community Development Concept

In terms of community development concept, there are fourteen points to manage the sustainability community development [2] and [10]. The first elevent points are the [2]'s concepts of sustainable community development, that were considered on social, cultural, economical, and ecological aspects. The last three points are the general concept that were necesserely implemented in Indonesia.

1. Sustainable community need to integrate people, land, and buildings
2. Residents of different backgrounds, who share values and life experience, should be able to live together successfully
3. New buildings should be harmonized with existing structures, reflect the history and spirit of the community, and successfully relate to each other
4. Development patterns need to consider natural systems and features, which in turn can be set in a context that encourage residents to enjoy the outdoors
5. Residents should be able to modify their dwellings to accommodate and reflect their changing needs
6. Families are started and split apart, children move out and come home, and careers are switched and ended.
7. Construction and landscaping products should be minimally toxic during their installation and use, and should be disposed of safely or recycled when no longer needed
8. Biological systems should be used to treat wastewater and compost organic trash within the neighborhood, where space and condition permit
9. Community ties and social bonds need to be called upon to encourage the conservation and maintenance of common resources
10. Its urban form and circulation networks need to permit safe travel by car, foot, public transport, and bicycle
11. Community can feel like a place or a series of place
12. Residents are the subject, not the object of development
13. Residents in the riverbank area are "the environmental keeper" of government management disability
14. They need advocacy, protection, not eviction

Some urban designers have also recognized that for developing communities need a clear sense of place and identity [12]. They concerned to create **places** rather than "**just space**". Their experiences in place making projects has highlighted that the communities will offer significant value to those that live in them as healthy places that residents can identify with, form social bonds around and be proud of.Those concepts are seem to be implemented by some residential riverfront in Yogyakarta, Indonesia. The behaviour of occupants among *Gondolayu* settlement was also examined by [13] as the basis for planning the riverbank for settlement. It was found that the occupants working in informal sector still

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utilizing the open space around the river for domestic and social activities: washing, cooking, parking, storing, gardening, playing, etc. It is meant that the residents have succeeded change the open space as space without any function to the place where many activities generated, although their reasons are sometimes caused by the forced conditions.Reference [13] recognized that those behavior may be caused by the limited variety of space and the building width that they own (p.95). Their activities were dominated by the activities outside house especially the social and economical ones. The indoor activities are merely for taking a rest. The above researches indicate that the social and cultural factors serve as the basis for the occupants articulating the settlement environment. This fact has been spotted by the master of international housing. Reference [6] underlined that houses are the institutional phenomena which are influenced by the factors of social, culture, economy, spiritual, and physical environment (p.46).On the other hand, this paradigm has been ambivalent valued by some stakeholders, government in particular. Their behavior signage performed the slum visual image of residential riverfront. Reference [4] recognized the Romo Mangunwijaya's effort of eviction evidence of Code residential riverfront occupants caused of the slum performance image and the government policy to making beautiful Yogyakarta as the tourism city (p.16). He refused that government policy by giving advocacy of residential riverfront development.Reference [4] found the three dominant characters of slum residential: deviant behavior, culture of the slum, apathy and social isolation (p.117). The first characteristic seems like the vandalism, drug, thievery, etc. The culture of the slum, second characteristic, is the poverty culture in which they have indicated the stalls, no privacy, chaos, confusion, fighting, etc. The last characteristic, the apathy and social isolation is caused by the natural inferiority of the occupants and the their absence in the urban development existence [4].

III. Research Method

This phenomenon is examined by observation method and interview based on the empirical condition regarding three housing elements: humans, environment and behavior. Humans are related to settlement occupants consisting of children, teenagers, parents and elders, either as individual or as communal. The environment is always related to the setting of a house and around the riverbank settlement which are often used for accommodating their activities. Interview is addressed to 147 respondents who are living in the 6 clusters spreading along 3 riverbanks.

In this context the riverbank setting is limited to outer space related with the river and the river water itself. Last but not least is behavior factor which indicates relation between the two elements, that is how the two factors work and articulate the setting should *not* be selected.

IV. Spatial implication of The Occupants Behavior

The experience of the settlement occupants along the three riverbanks of Yogyakarta in articulating their environment indicates the rational-based behavior mechanism. The following description is the note that I record during the research, compiled on the basis of the settlement setting category following the explanation on occupants' typology as their arguments in utilizing the land around the settlement.

A. Occupant Typology

The level of occupants' social and economy in the spontaneous settlement is indicated by the level of education, job, number of family member, settlement density, ownership status, and building width. Each parameter is basically the specific character of developing countries. The typology of the occupants under the research tells that mostly of them are immigrant. Most of their education background is elementary school (52,8%), and only 2.4% of them have tertiary education, while the rest spread as those who have secondary education.Among various professions, the category of service has the largest number. The professionals of this category work as a bicycle garage owner, radio reparation service, employee of motorbike garage, employee of public transportation and pedicab drivers, etc. This group work with little technical ability without money capital, except for the pedicab driver. Every time he has finished his job, he will park his pedicab in open area of his house. The other part, 27.9% of the number of the occupants, work as laborer. They just rely on their physical endurance to do the errands which do not need many skills such as errand boy, Laundromat worker, garage workers, porter, etc. Seller category is another choice of job for the occupants in this settlement. Almost in every cluster the street hawkers selling ready-to-eat food become the breadwinner for their family. The last category has been an image attached to the occupants of the spontaneous settlement: scavenger (15%). Without any skills or capital they swarm any neighborhood to collect garbage and used things which will be sold afterward. The collected garbage is very often brought home for cleaning prior to be sold to a collector. The cultural typology of the occupants in the spontaneous settlement is indicated through their social background and the habits. This cultural typology is significantly apparent. The occupants do domestic, social, and economy activities in outdoor area including around riverbank and in the river itself.

B. Outdoor Spatial Order In The Riverbank

The occupants articulate the outdoor space with no other reason than to accommodate the domestic, social and physiological interests [9] and [10]. The behavior of leaving the belongings outside the house is included into cognitively functional demand. Clothes, motorcycles, pedicabs, tables, chairs, etc are the occupants' belonging which were laid outside the house. These stuffs are used for domestic and economic activities function as the expansion of type of room which is functionally room articulation. The expansion mechanism happens in the outdoor spatial planning. Fig. 1 and 2 show the findings of outside room articulation in the spontaneous riverbank which is built to fulfill the occupants' need on the basis of domestic, economic, and or social consideration.



Fig.1 The occupants have covered the open space by paving block for parking the pedicab (the *becak*: Javanese), drying clothe, motor cycles



Fig. 2 The occupants have constructed the stair by laying the con block for going down to the river bank where chicken stable placed. The chicken sold to the others and or to the market for getting money

C. Outdoor Spatial Order In The River Water

There is only slight different articulating phenomenon that appears in the river water. People will consider the weather and climate in Yogyakarta prior to utilizing the water. The fact that water behavior during rainy season is different from the hot season becomes the people's consideration when articulating the water river for some activities.The domestic activities in the river water are mostly shown by the occupants' habits of routines and incidental such as washing, bathing and using toilet as seen as in Fig. 3. It is common to see the women chatting with others while washing the clothes. This activity is a mechanism of mass communication which they need to resolve the monotonous jobs, and indeed as it has social-psychological values, it becomes the driving force to motivate the women doing the routines. Therefore, the river existence has significant social dimension.



Figure 3. The women using the river water for washing clothe together while chatting the others.

For teenage and men community, the habit of fishing in the river is the recreation which has economy values. To get the fish they use some ways such as placing fish net and drying the river water (Fig. 4). The fish will be either consumed by themselves or is sold to the seller in markets to get some money. This communal activity generates the social and psychological dimension as people take it as recreation, thus though the money is only little, they keep doing the fishing activity.



Fig. 4 The fishing activity in the river water

The occupants' habit that supports the river existence is related to the occupants' response in ecological way. The significant culture in the riverbank settlement is the agricultural habits related to riverbank management. The gardening activities such as planting productive plants (banana, mangoes, coconut, etc) or non productive ones (flowers) are done along the vacant land of the riverbank. The people also usually sell the plants for the family's side income.

Swimming is incidental hobby of the children and teenage community. This activity is mostly done when the river stream is placid and the weather is bright. Thus, during the hot season, this activity is barely seen.

D.Sustainable Community Development

In terms of the twelfth point of the sustainable community development concepts that residents are the subject, not the object of development, the Yogyakarta experiences are sometimes happened with the ambivalent images and policies. The ambivalent images blowed up when the urban viewers and or the urban planners have looked up to the temporary housing construction of the occupants as the slum visual image performance. They seems to be the "freckle' of the city so that they are sometimes evicted. Their role of the occupants as the development subject have never legitimated by the urban controllers.The reasons of this paradigm are that spontaneous settlement has been indicated to fighting the beautiful city concept, as the hope as the Yogyakarta to be tourism city. Their behaviours, both in the riverbank (planting fruits, step construction, etc), and in the river water (swimming, washing, fishing by drying the water, etc) have also been looked as the danger of their safety and or the damage of ecosystem sustainability as well.As [1] highlighted to the sustainable development that considered three aspects independently: society, economy, and environment, Yogyakarta experience seems to be not appraised and opposed to the sustainability movement. The occupants'

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experience of changing the neglected openspace to the useful space is the place making phenomenon, so that this is necessarily supported as the social and cultural potents. By adopting the [7]'s theoritical approach by which the Surbakti's Dependency Theory that considering the poverty is the macro structure impact who profitable some people and figurative to workhard for the urban poor, so that the next paradigmatic solution steps are changing that macro structure and development of informal sectors to improve the life standard.
For implementation this paradigmatic solution concept, the most strategic planning is enhancement the Kampung Improvement Program/KIP [7] in which the potent of both individual and communal spirits of "participation" in place making will be resisted. The KIP is the government program in housing development for poor people which focuses on development of services infrastructure, e.g. communal bath, road construction, street furniture, public amenities, etc.

E. Territorial Phenomenon

In the territorial context, these phenomena have specific experience of articulations. In the micro scale, the territorial interest is shown through personalization and it builds the occupants' identity. The strong indicator can be seen from material selection, the sign symbolizing capacity and the ownership of the occupants. However, other territorial interests such as the motivation which builds the domination, coordination, power, and aggression are not strongly indicated in this category of settlement. The territorial phenomenon is strongly indicated through some various conditions of the settlement whose purpose is to build the territory especially in the micro scale. The people in the individual scale are more dominant than those in communal as can be seen from some activities of small scale business: printing, motorbike garage, duck/chicken breeding, fish breeding, and daily activities such as baby bathing, parking, and drying clothes, all of them are done outdoor. If connected to the context of category, those activities can be classified into secondary territorial category as everybody can access the area together with the occupants. Meanwhile, the spontaneous areas are mostly created by functional activities such as planting and washing clothes near a well. The room for recreation activities is the area occupying children and women's activities, which according to Altman theory is categorized into public territory. The occupants of spontaneous settlement see territory as the manifestation of the public area utilization through the expansion of their settlement land/area. The expansion is based on two factors. First, it is because the room limitation (the occupant density is above the standard), and second, is the concession of land status around the house. The first reason is the basis of functional-based territory. Actually, the average number of the occupants: 10.4 m2/individual is already above the standard of 10 m2/individual. Moreover, since their house has other function that is as home-based enterprise, the house is still very much limited. The dominant paradigm is also the basis of this matter. The availability of 'free' and 'non-used' land triggers the motivation to own the land itself. The opportunity to own the public 'belonging' apparently has become the 'phenomena' among the occupants of this category.

Related to [5]'s explanation on the territorial category (p.129), *Winongo, Code, Gadjahwong* experience have the trend on the establishment of violation category instead of defense. The violation category is mostly influenced by the factors of situation and culture, while the personal factor is seen on the agricultural spirit of the occupants who have planting culture. The strong indication in this context is the hobby for planting flowers in the vase and place them along the riverbank.In the category of violation, the variety of invasion and contamination is seen in this community with the absence of crimes. The invasion category which is influenced by situation factor includes printing, machine shop, duck and fish breeding. Because of the limited space of their house, they use area around the house to support the business. Physically they control and enter the land which they don't belong in order to support their economy interests.

Influenced by cultural factor, the occupants also build the invasion territory. Some occupants use the open land around the riverbank to mingle with other people: women will chat and children will play there, the activity which is the manifestation of Javanese culture. The culture of social interaction indicates an individual's quality in living with society, then when his house cannot occupy for more activities, he will move outside; the area which does not belong to him. Other territory which is built in this community is the precaution type done by planting flowers in the vases lined up along the riverbank in addition to building a security post on the riverbank as the defense mechanism of the unfriendly environment. This action is based on the reason for defense and security besides the chatting and agricultural culture.Meanwhile, the invasion which is based on the social-culture factors is indicated by the use of open space along the riverbank to chat or to play around as one manifestation of Javanese culture. The culture of social interaction indicates an individual's quality in living with society, then when his house cannot occupy for more activities, he will move outside; the area which does not belong to him. The category of contaminative violation was also significantly found among the community of Winongo, Code in [7], [8], and Gadjahwong. Most communities use the riverbank to do activities, which others see as uninteresting ones such as building a well for washing clothes, bathing, drying clothing, storage, and parking vehicle. Other people will see those activities as visually and physical uncomfortable ones. This is because of the social and condition of the people who has limitation in terms of land and economy. By locating the well and facilities for bathing, washing and using toilets, the sanitation installation becomes relatively practical and more economical. The dry is located outside house as the sunlight cannot enter easily through the house because of the density

V. Conclusion and Recommendation

The articulation phenomenon of the riverbank occupants has indicated the benefits and utilization (deliberate action) in social, economic, and cultural way. For the occupants, river has generated significant live in the process of living in functional and psychological way. Therefore it is suggested that the river be preserved during the city planning and

development process for the sustainability and totality in reaching the contextual housing development. It will be very wise for the stakeholders to consider this phenomenon while making the decision plan which in turn can become the regulation decision. Only, the stakeholders need to synthesize carefully so that it will generate the benefits and optimum utilization and these applied regulations will not cause:

a. Conflict of interests
b. Conflict with natures, and
c. Conflict of ownership

Last but not least, the deep and wider research on the beneficial values and the phenomenon of riverbank utilization need to be done in order to have more significant proof and test. Objectivity is also needed to strengthen the symptom existence. This is possible to do if similar research is conducted by using the alternative method, so that the new findings will be completing the previous ones and become the complimentary remarks for the so called legendary case in this country.

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