Spatial Typo-morphology of Residential House in Supporting to the Resilience of the Indigenous Settlement in the Sub-urban Area, Case: Enclave Settlement in the New Town of Gading Serpong

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Abstract — The growth of the city of Jakarta is marked among others by the development of new towns in the surrounding areas including Tangerang. The growth of this city establishes the character of a distinctive sub-urban area emphasizing on indigenous settlement that retains its rural character. The form of pressure in terms of land acquisition and land development by new town developers concerning vacant land and indigenous settlement areas resulted on the emergence of enclave settlement. To ensure that the enclave settlement is in line with the principles of sustainable development, the phenomenon needs to be explored by focusing on the inhabitants of enclave settlement. This study is based on the question of whether the indigenous settlements of the new town area can survive and be prevailed by using certain strategies. To be able to answer the question, descriptive analysis is exploited based on the grounded method through field observation on the social life of the inhabitants implementing through the spatial arrangement of residential house at the new town of Gading Serpong area. The results revealed that spatial typo-morphology of residential house in the indigenous settlement is basically a reflection of the strong values and social ties of the inhabitants as the uppermost hierarchy of the spatial socio-culture. Therefore, it is important to emphasize that spatial typo-morphology can become significant factor in supporting the resilience of enclave settlements in responding to the development of new towns. 

Keywords— New town ,Enclave settlement, Resilience, Typo-morphology.

I. INTRODUCTION

The emerging phenomenon as new town sub-urban areas is basically an indication of the expansion from urban into rural areas in the developing countries (Pozoukidou & Ntriankos, 2017). Although the development of new towns is aimed at reducing capital city’s load through the decentralization of the population, the distribution of business opportunities, as well as the availability of residential infrastructure (Suyarto, 1993), the negative impact on the indigenous environment is remained real. The most prevalent impacts of the change, among others, are reduced agricultural land (Sahana, et.al., 2018; Parvaiz, et.al., 2017), changed in social society (Gebregziabher, et.al., 2014; Huang, et.al., 2017) and ecology (Haregeweyn, et.al., 2012, Dupras, et.al., 2016), and emerged in social and spatial segregation (Firman, 2004; Daskalova & Slaev, 2015; Winarso et al., 2015; Michelini & Pintos, 2016, de Jeude, M.L., et.al, 2016).

One of the problems arises from urban expansion is related to management and policy factors. These can be related to studies of new town development in developing countries such as those conducted in Beijing in China (Zhao, P., 2013), Ahmedabad (Damayanti, 2010) and Kathmandu (Chitrakar, et al., 2016) and Kolkata (Sahana, et.al., 2018) in India emphasizing on the development and progress of a new town which is heavily influenced by the development policy and the intervention of direct management from both local and central government (Noorloos & Steel, 2016). Whereas in Indonesia, new urban development is likely to be established by the developer without government interference, either in planning or designing, in terms of the acquisition of large number of vacant and uninhabited lands (Damayanti, 2010). The land tenure and development in Tangerang covering such a vast and massive area is one of the city's megapolitan buffers. One that is currently under construction is the new town of Gading Serpong. Developers are building the new town equipped with a full range of urban service scales...
support the resilience of the enclave? To be able to answer the question, the discussion is directed to the community context. This is in line with the effort to respond to environmental problems, the relationships among inhabitants in one community will always be involved (Uzzell, et al., 2002). In terms of territorial border, the interaction among settlers occurs in a place and space that starts from the smallest unit in the family, to a wider territorial boundary (Piselli, 2007). Thus, the analysis in this study begins with the pattern of indigenous settlements’ life manifested in the use of spaces in and around the houses. Therefore, it would be appropriate to do so by identifying the houses with typo-morphological studies.

Typology is concerned with how to classify all kinds of objects based on the similarity in the form of character, trend, size, and hierarchy (Frank and Schneekloth, 1994). While morphology is the study of form and shape (Carmona, 2003) in human settlement, and the process of how the formation and transformation of its forming entities covering city structure, land allotment, road patterns, buildings and open spaces which can be studied in terms of structural, functional, and visual forms (Zahn, 1999). Thus, typo-morphology is a combination of the study of typology and morphology, which is intended to describe the object group based on the similarity of the basic properties. This research is conducted by identifying the similarity in spatial character of the residential houses of the indigenous settlement. Spatial character in the form of the type of space setting will be obtained based on the repeating patterns in the community of enclave settlements.

In the context of expansion from urban into rural areas (sub-urban), the survival of the indigenous settlement can not be separated from the pressure of change due to the presence of new towns in the vicinity. Therefore, this study is in line with the review of resilience. The concept of resilience represents the ability of rural areas to adapt to the changing condition outside its territory in such a way as to maintain a satisfactory quality of life, as well as to adjust to the ecological, economic and social problems that accompany it (Heijman et al., 2007). In line with the opinion of Heijman, Kelly(2015)articulates that sustainability is a society's effort to survive and grow to a more resilient situation in the current environment of change, uncertainty and insecurity by involving economic, institutional, social, cultural, and natural domains. It emphasizes that the resilience of the settlements is closely related to the adaptation process of external pressures supported by the socio-cultural factors of the community (Thulstrup, 2015; Muntele & Banica, 2013; Thorn, et al., 2015). The process of adaptation involving
communities inhabiting one region is known as community resilience (Kelly, et al., 2015; Lier, 2015; Sagala, et.al., 2015). Muntele and Bănică (2013) more specifically associate community resilience with the spatial relation in which resilience refers to the relationship between spatial variation of the smallest unit to the macro unit.

On the other hand, spatial socio-cultural concept represents the concept of social relations activities among people in order to fulfill their needs whose implications lie on spatial planning (arrangement on the length, width, and height) as a space where the activities are carried out (Wibawa, 2014). Thus, the concept of resilience of the indigenous settlement can be traced from how the inhabitants adapt to the spatial arrangement in the house as the smallest unit of analysis. It is essentially a reflection of the social values of the community in the research area as the hierarchy of the highest unit of analysis.

II. METHOD

Research Locus
The research was conducted in one of the enclave villages in Kampong Curug Sangereng, RW 06 Curug Sangereng Village, Kelapa Dua District, Tangerang Regency, Banten.

Method
The method of the study is descriptive-analysis, in which the data were directly conducted in terms of field observation and in-depth interviews from the selected informants. Physical and non-physical data in the form of phenomenon and activity of the inhabitants were thoroughly examined by using typo-morphology study as a collaboration between the study of typology and morphology. The study of typology is used to reveal the basic character of the physical formation of buildings and spaces in and around the settlement which is a manifestation of the social, cultural, and economic activities of the inhabitants. Eventually, the character can be formulated as a factor contributing to the resilience of the people inhabiting the enclave settlements. Whereas, the morphological approach using Zahn theory (1999) with special emphasis on the functional studies. This study, is therefore, based on the following scheme (figure 1).

III. RESULTS AND DISCUSSION
The analysis in this study is based on the theory that a settlement as a work of architecture basically reflects the life recognition of the society, which contains some communicated meanings (Rapoport, 1977). Thus, residential houses inhabited by the community can be positioned as the media of communication of the inhabitants’ everyday lives. The presence of the new town of Gading Serpong, developed by two major developers, PT Paramount Land and PT Summarecon which requires a large area by the acquisition of vacant land and pre-existing settlements. One of the impacts of territorial morphology is the emergence of enclave settlements. The term enclave or squashed in the settlement which is used as the research location describing the condition of the territory of a settlement located in the middle of a new town area (figure 2).
In terms of territorial area, the presence of planned settlements in the form of new towns has a direct physical impact on the research sites, namely the separation of neighborhood unit (RukunTetangga) areas within a community unit (RukunWarga) as can be experienced from the research location (figure 3).

Changes in around and within the physical environment of the indigenous settlement represent the existence of pressure and external disturbance embodied in the form of planned settlements in the newtown area from the early 1990s to the present day. This pressure resulted on other non-physical changes, such as the change of dominant occupation of
indigenous settlements from previously plants gardening and raising animals into the informal workers.

Facing the pressure of landscape changes, although it directly affects the daily aspects of social life such as work, and the increasingly closed areas, it does not have a big effect on the physical formation of the residential houses. In addition, the inhabitants of enclave settlements ensure the potential of internal strength as social asset, such as, bonds of kinship and neighboring ties as the character of rural society that is remained apparent. The form of attachment can be observed from the spatial component of the house that represents the character: houses are built without front fence, there is no separating wall between one house to another, the terrace is functioned as living room and as a lounge.

When viewed from a socio-cultural background, the inhabitants of the enclave settlement remain homogeneous. Ethnically, indigenous communities as inhabitants of enclave settlements are mostly Sundanese who occupy semi-urban areas as farmers (Research Team of Tangerang City, 2015). If viewed from the origin of the occupants, there is no migrant occupant from outside of the region. Thus, the conditions of socio-cultural ties of the community is due to the kinship factors and inhabitants who are hereditary inhabit the village. Although there is a significant change in the livelihoods due to the loss of agricultural land, the remaining territorial character continues to form in terms of plantation and livestock areas which are cultivated by the communities. The cultural background becomes one of the factors that are influential on the lives of socio-cultural character in the society, especially in terms of intimacy of family and neighbors. The character of rural society is reflected through homogeneity in terms of language, culture, social system, and intimacy of family and neighbor (Wijayanti, 2014). One of the intimacy of neighbors and the family ties that exist in the community, is being manifested into the space setting around the residential houses, in the form of the existence of space or place as a gathering activities or in the local language is called a habit of ngariung (gathering).

![Fig.4: The character of space arrangement on the residential houses](source: Field data (2018))
In the context of spatial arrangement, the community members unconsciously design their houses based on the social conditions especially in the provision of public space around the dwelling. The room plays a big role in daily activities as a medium of interaction among members of the community due to the close social relations between inhabitants. From the observation and field data analysis, the emergence of the characteristics of the type of space that almost always appears in every residential house is an open terrace space that also functioned as a living room, and "virtual" space that functioned as an informal gathering place (figure 4).

Setting the space is possibly performed by the inhabitants due to the intimate relationship among the occupants so that the direct interaction allows to be happened at any time without a barrier (figure 5).

This condition leads to the formation of residential spatial typology in the formation of spatial houses with the composition of the living space as a private zone, and the living room, terrace, yard, and gathering space as the public zones. There are two types of variations caused by a house with a front yard (figure 6a) and a house without a front yard (figure 6b).

Fig. 5: The character of spatial arrangement of the residential houses which allows the interaction at any time

Fig. 6(a): Type 1 space setting at residential houses with a yard
On the macro spatial scale, the pattern of social life that has an emotional connection among the inhabitants of the enclave settlement gives rise to the territorial communal space which is an accumulation of typology of spatial arrangement in each residential unit. Referring to the theory of Habraken (1998) which states that the presence of territorial limits measured from the interests of individual and public private life is closely related to the basic spatial theory that divides the nature of space with the category of private - semi-private (semi-public) - public. The relationship among the inhabitants is very close because of the similarities of background and bond of familial relationships which demonstrates a large public space in every residential house. If every public space in every residence is accumulated, it basically reflects the creation of a wider territory. Quoting from Altman (1975), the established territory can be classified as a community territory (Figure 7).

Fig.6(b): Type 2 space setting at residential houses without yard

Fig.7: Scheme of communal territory as the accumulation of public space on spatial setting at a residential houses
With the occurrence of community territory as depicted in Figure 7, the social bonding among inhabitants will always grow through daily activities. This is to support the appearance of social comfort atmosphere felt by the community as the resident of enclave settlement although physically there are many limitations on the inhabited area. In the wider context, these conditions are basically supported the values of sustainable development in the form of social and ecological development, which have impacted and directed to the role of human dimension and to the involvement of all social and economic strata (Soetomo, 2009). The phenomenon and meaning of spatial in the form of community territory is a reflection of the resilience to live in the enclave settlement.

IV. CONCLUSION
Changes on environmental landscape in and around the enclave settlements resulting from the construction of planned settlements in the form of new towns, in itself provides a direct impact on the living order of the inhabitants. Although the physical existence of enclave settlements is surrounded by many limitations caused by the developer, the community can survive based on the social bonds (family and neighboring ties) as a reflection of the character of rural society. Efforts to respond is reflected in the spatial arrangement as social character, both in the residential sphere and the neighborhood area. The condition produces a hierarchical functional typology, i.e., micro in the form of residential spatial type, and macro in the form of communal territory. The spatial constellation is a reflection of the strong social cohesion both in the individual and in the community. This becomes one achievable factor that contributes to the resilience of the community in the enclave settlements.

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