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Following the end of Millennium Development Goals (MDGs) in 2015with 8 goals, United Nation (UN) develops the sustainability of the world's goalthrough Sustainable Development Goals (SDGs) with 17 goals. As well as othercountries in the world, the Indonesian government is also working towardsachieving these objectives in the government, business and civil society sectorsto co-operate with the UN and the Indonesian government started mobilizing toachieve the Sustainable Development Agenda by 2030. Universal, inclusive andindivisible, the Agenda calls for action by all countries to improve the lives ofpeople everywhere.

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## Study of Residential Development in Urban Fairies

*Eko Agus Priyono* \*and *Pindo Tutuko* 

*<sup>a</sup>Magister of Architecture, University of Merdeka Malang,  
Jl. Terusan Raya Dieng No. 59, Malang, Indonesia*

*<sup>b</sup>Department of Architecture, University of Merdeka Malang,  
Jl. Terusan Raya Dieng No. 62 - 64, Malang, Indonesia*

*E-mail eko@yahoo.com*

### Abstract

The suburban area (pheri-urban) is a transition from the urban and rural areas that have different characteristics and attributes. This area is naturally formed due to developments and congestion that occur from the core city. One of the developmental factors is the interaction between the core cities and the peri peri urban areas. The greater the interaction that occurs the greater the development that occurs in the pheri pheri urban area. Interaction between urban and rural areas will naturally be bridged by the presence of urban pheri-urban areas. Population growth in the city center resulted in an increase in settlement requirements (serlin 2012) and that in the center of the city the developers have been unable to provide the need for settlement due to the high price of land in the city center and the limited land in the centers (Septanaya, 2012). This prompted the development of housing and settlement needs around the hinterland of the city center. With this sprinkling it will generate a snowballs effect, where with the existence of housing and settlement activities will arise aktivitas and other needs such as social facilities needs, economic facilities needs, educational facilities, health facilities, office facilities etc. But in some locations there are also several factors that influence the growth of the pheri pheri, not only caused by the settlement of settlement needs from the city center but due to other factors, such as in Malang, the development of suburbs in Kedungkandang and Lowokwaru influenced by the existence of industrial activity. While the growth of suburbs in Banda Aceh (Ulee Kareng sub-district) is caused by the construction of new transportation line (Prof. Ali Hasyimi Street) thus the facilities and infrastructures or connectivity also influence the development of the periphery. In addition to the above matters more due to the activity that grows by itself there are important factors associated with the development of the periphery of government policy through Spatial Planning, where in each RTRW will be planned areas for residential areas for expansion of urban areas, in the area plan Strategic and spatial pattern will be directed towards the development of the city over the next 25 years, so that with the spatial is expected the development of the city will be directed, and easily controlled.

**Keywords:** Space Patterns, Settlement Areas, Pheri-Urban Zone

### 1. Introduction

According to Tutuko and Shen (2016), the housing development supports the needs of the community as a manifestation of the city's economic progress,

while the existing housing also needs to be maintained in order to preserve the characteristics of rural and agricultural lands as a natural resource. Related to Mark and Goldberg (1986), the land use plan is a tool of urban planning to control the provision of land and buildings and also Borges, Fragoso, et al. (2010) stated that land use is the key for human activity that drives socio-economic development in rural regions.

Urban urbanization growth extends to the periphery. This is seen with the changes of land uses which occurring in two geographically distinct countries. Some areas have experienced the phenomenon of space consumption by urban development that triggered urban sprawl such as at Kecamatan Mlati in Indonesia, Vertou City, Carquefou Town and Sainte Luce Sur Loire City in France (Nurazizah, 2016).

Development of the city can also be seen from the physical appearance of the city is shown by the formation of a small suburb that has properties similar to a town called urban fringe (Bintarto, 1983). Urban fringe is the transition of land use, which is characterized by a fixed transition from agriculture to non-agriculture (Louise, 2010).

The changes of Land use is caused by the development of population and economy, and influenced by activity system, development system, and environment system (Mayasari, 2014). Population growth in urban areas has an impact on increasing the land needs. Due to limited land in urban areas, development will expand in the periphery (Baiquni, 2014). Limited land in the center of the city will certainly make the population began to choose to settle in the suburbs as an alternative settled which certainly causes spatial transformation also in the region. Spatial transformation that occurred in urban peri-willy will certainly change the pattern of space utilization in the area (Mahendra, 2016).

This population increase will then lead to an increase in the community's need for the provision of housing facilities. But if the pattern of housing that was formed was not directed or random (sprawl) and the construction of housing that is less in accordance with the characteristics of the community, it will lead to the formation of unsustainable housing space (Serlin, 2012).

Currently the development of urban peri-urban areas in various metropolitan areas indicates the presence of large-scale settlements in real estate or commonly categorized as invasive formative processes. The tendency of some peri-urban areas to show the rapid growth of housing was not fully happening (Septanaya, 2012).

As we know that every development is essentially based on economic considerations, similarly, the housing development in urban fringe. Economic development in the city is rapidly increasing by the industrial sector. This development was also influenced by the urban development and housing in the surrounding area. Home owner-based housing built by the resident itself will have an impact because of unplanned by professional planners, but by owner

itself. It led to be uncontrolled in terms of design and building quality. In addition, in a formal estate planning does not include planning for home owner-based housing. Various types and styles used to build their homes. They adopted the style of a residential building next to their areas. The project-based housing development and home owner-based housing are influenced by the city development. To achieving sustainable development in this area should be planned well.

## **2. Discussion**

The implementation of Nantes Métropole and Mlati land use regulations had been exists. There is no obstacle in the implementation of the policy in Nantes Métropole, but on the contrary at Kecamatan Mlati there were still some obstacles. The implementation of urban sprawl policy control in Nantes Métropole were automatically follows what had been stipulated in the PLU. (Nurazizah, 2015).

In France spatial policy were much affect to the pattern of space and its developments, but not in Indonesia. The changes of land use in Kabupaten Aceh at Kecamatan Ulee Kareng occurred to along the new transportation route which Prof. Ali Hasyimi Street were crossed at Gampong Lambhuk, Lamteh, Ilie and Pango Raya. At the Kecamatan Banda Raya, the changes of land use were clearly visible in Gampong Mibo, Lhong Raya and Lampuot. In Kecamatan Lueng Bata the changes of land use were occurred at Gampong Batoh and Lamdom. The policy directives of suburban development in Kecamatan Lueng Bata have been touched to the fastest grown region of Gampong Batoh. However, Gampong Mibo in the Kecamatan Banda Raya and Gampong Ceurih in the Kecamatan Ulee Kareng which not included in the fringe development policy were developed rapidly, so that the development of suburbs in Kecamatan Banda Raya and Ulee Kareng runs naturally, without the direction of the policy of Banda Aceh City Government. The Changes of land uses Spatial patterns that happend now were tend to radically follows the existing road pattern (Mayasari, 2014).

Differently to the development in Magetan, the structure of town urban space has not changed much despite the construction of the ring road. Magetan District Government has built a northern ring road to reduce jamming traffics at center of the city . The existence of the ring road also attracted many parties to take some advantages of the surrounding land. Utilization of this land is estimates affecting to the shape and structure of the Magetan City space. The shape of the Magetan city is a compact city modeled with square which some parts of the city extending along the main city road. The structure of the Magetan City spaces in the form of sectoral were characterized by the city's main activities which being in the center of the city as well as following the main city road. The development area on the edge of the city were caused by an



activities increasing in center of the city. The development that occurred did not change the shape and structure of urban space but only increased the shape of the city. The construction of the northern ring road only affects the development of some surrounding villages so that it does not directly change the shape and structure of the Magetan City space (Setiono, 2016).

Similarly at the control of land uses that happened in Kelurahan Mlati, where this region has lost 301.9 acre of agricultural area in the period 1996-2010. From the result of the image overlay, and the input-output analysis that 10.32% of the land uses in Mlati were changed over that period, resulting in the loss of 290.67 acres of agricultural area with 13.12% of which turned into settlements. However, 65.9% of the land use is still in accordance with the planning documents. This area lacks at legal aspects in the implementations of the land uses policy because the planning documents have not yet been ratified. The institutional aspect shows the consistency and availability of resources, but there are weaknesses in the implementation which related to the control and law enforcement. Investments, tax policies and illegal practice on the changes of land use are a threat to policy implementation (Eko, 2012).

The development of periphery area in Mayasari article; 2014, is influenced by the opening of new transportation line, differently with the change of city development that happened in Malang City, where the population growth rate of Malang city about 0,86% higher than East Java population growth (0,75% ). Population growth in Malang city is high happening unevenly in all parts of the city. Based on the analysis that has been done, founded the difference of spatial transformation that happened in the northern peri urban area of Malang City with the area that is in the south of the city. Kecamatan Kedung kandang in the south of the city undergoes a low transformation and has a tendency to develop linear land pattern, while Kecamatan Lowokwaru undergoes a high transformation and has a concentrated at the land pattern. The differences are caused by population factors such as high population growth, activity center, accessibility, developer role and policy factor related to the pattern of spatial pattern of the area. The pattern of settlements in Kecamatan Lowokwaru has a pattern that tends to be concentric, while in Kecamatan Kedung kandang tend to be linear and spread. The existence of universities and industry became the center of growth that affected the development of spatial transformation in each area or Kecamatan (Mahendra, 2016).

There are 5 (five) factors that had influences to the growth of marginal area in Kecamatan Karanganyar as the capital of district/Kabupaten, it is about the availability of social facility factor, service factor, economic and environment factor, amenity factor, and comfort factor. According to theory, the biggest factor that affecting to the growth is the accessibility factor, not the availability factor of social facilities. This differences happens because, in



previous theories were founded that the background of the research location is in the big cities. While this research is conducted with the location in the capital city of Karanganyar which is the third city or small urban area. In addition, the means of transportation in big cities in the previous study were cars, and the means of transportation at this research site (suburb area of Kecamatan Karanganyar) were mostly motorcycles. So it can be concluded that the factor of availability of social facilities is the biggest factor affecting the growth of peripheral areas in the third city or in small urban areas, where the means of motorcycle transportation is more widely used by its citizens (Baiquni, 2014).

Based on research from (Medina, 2013), there are 9 formulation Factors that influence the selection of residential location characteristics in Kecamatan Waru and Kecamatan Taman in accordance with the characteristics of the citizens, namely: Accessibilities (the easyness for going to the Shopping Center); Availability of Clean Water Infrastructure; Availability of Shopping Facilities (Shops); Availability of Worship Facilities (Mosque); Beautyness (cleanliness); Accessibilities (Ease Into Public Transport), Accessibilities (the easyness for going to Schooling), Availability of Electricity Network and Land / House Price.

Overall, the factors which hamper the decrease in the number of housing procurement are high land prices, the availability of vacant land for an increasingly limited housing designation and the distance from Lumpur Lapindo. While other factors such as conditions of availability of public facilities, environmental quality, spatial or government policies, the availability of public utilities and market demand does not preclude housing investment in the region in the period 2006-2010. But on the other side, were founded that non-spatial factors that significantly affect the decrease of housing procurement in Sidoarjo regency are the stability of economic conditions, the amount of the transactional cost, the long time and expensive licenses, the development impact fees And the rules or regulations in land acquisition activities that are non-binding or impartially entirely for residential developers who have a location permit (Septanaya, 2012).

### **3. Conclusion**

Nantes Métropole and Mlati both have a set of rules governing the urban sprawl control mechanism. The planning rules for controlling urban sprawl in Nantes Métropole are SCOT and PLU. While the implementation of the policy of PLH (Local Housing Plan) is done to balance the supply of rental housing. Nantes Métropole planning rules are very effective in their area. While at Mlati, and RTRW and RDTR are planning regulations to control urban sprawl. However, in practice in the field, both areas face different obstacles and weaknesses. Mlati sub-district tended to experience greater obstacles than Nantes Métropole (Nurazizah, 2016). Land use change in Ulee sub-district, Banda Raya sub-district, Lueng Bata Kareng sub-district, Gampong Ceurih sub-

district not entirely influenced by Aceh's spatial planning policy, but more influenced by new transportation path, Prof. Ali Hasyimi Street (Mayasari, 2014).

Land use change and spatial transformation or urban development that occurred in Malang City (Kedungkandang Subdistrict and Lowokwaru Subdistrict) is more influenced by the existence of economic activity that is the activity of universities and industrial area (Mahendra, 2016). In terms of land use change and space utilization plan it is found that the percentage of land use change in accordance with plan is greater than unsuitable that is equal to 65.91% versus 34.09%. The magnitude of this percentage of nonconformity indicates a problem in the implementation of the space utilization plan. From the SWOT analysis on the implementation of the spatial plan policy, it is known that the weakness lies in the regulatory factor / aspect that is not yet approved RDTR APY of Mlati District become the Regional Regulation, so the legality of micro spatial document (RDTRK) is needed in controlling the utilization of space (Eko, 2012) .

The construction of the northern ring road only has an impact on the development of several villages around it so as not to change the shape and structure of the Magetan City space. The development of Sidorejo Village, Cepoko Village, Milangasri Village and Purwosari Village as the center of environmental activities for the surrounding villages have been in accordance with the planning, while the Village of Kentangan has not been the center of environmental services as planned (Setiono, 2016).

Commercial approach on project-based housing development emerged due to the opportunities of economic that exist in the area where the business interest has. A change was designated originally for residential. In the term of Sustainable Development, so there are several aspects that will keep the harmony between project-based housing development and home owner-based housing. To achieve harmony, it takes good coordination between the private sector, public sector, and society.

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## Study of Residential Development in Urban Fairies

*Eko Agus Priyono* \*and *Pindo Tutuko* 

*<sup>a</sup>Magister of Architecture, University of Merdeka Malang,  
Jl. Terusan Raya Dieng No. 59, Malang, Indonesia*

*<sup>b</sup>Department of Architecture, University of Merdeka Malang,  
Jl. Terusan Raya Dieng No. 62 - 64, Malang, Indonesia*

*E-mail eko@yahoo.com*

### Abstract

The suburban area (pheri-urban) is a transition from the urban and rural areas that have different characteristics and attributes. This area is naturally formed due to developments and congestion that occur from the core city. One of the developmental factors is the interaction between the core cities and the peri peri urban areas. The greater the interaction that occurs the greater the development that occurs in the pheri pheri urban area. Interaction between urban and rural areas will naturally be bridged by the presence of urban pheri-urban areas. Population growth in the city center resulted in an increase in settlement requirements (serlin 2012) and that in the center of the city the developers have been unable to provide the need for settlement due to the high price of land in the city center and the limited land in the centers (Septanaya, 2012). This prompted the development of housing and settlement needs around the hinterland of the city center. With this sprinkling it will generate a snowballs effect, where with the existence of housing and settlement activities will arise aktivitas and other needs such as social facilities needs, economic facilities needs, educational facilities, health facilities, office facilities etc. But in some locations there are also several factors that influence the growth of the pheri pheri, not only caused by the settlement of settlement needs from the city center but due to other factors, such as in Malang, the development of suburbs in Kedungkandang and Lowokwaru influenced by the existence of industrial activity. While the growth of suburbs in Banda Aceh (Ulee Kareng sub-district) is caused by the construction of new transportation line (Prof. Ali Hasyimi Street) thus the facilities and infrastructures or connectivity also influence the development of the periphery. In addition to the above matters more due to the activity that grows by itself there are important factors associated with the development of the periphery of government policy through Spatial Planning, where in each RTRW will be planned areas for residential areas for expansion of urban areas, in the area plan Strategic and spatial pattern will be directed towards the development of the city over the next 25 years, so that with the spatial is expected the development of the city will be directed, and easily controlled.

**Keywords:** Space Patterns, Settlement Areas, Pheri-Urban Zone

### 1. Introduction

According to Tutuko and Shen (2016), the housing development supports the needs of the community as a manifestation of the city's economic progress,

while the existing housing also needs to be maintained in order to preserve the characteristics of rural and agricultural lands as a natural resource. Related to Mark and Goldberg (1986), the land use plan is a tool of urban planning to control the provision of land and buildings and also Borges, Fragoso, et al. (2010) stated that land use is the key for human activity that drives socio-economic development in rural regions.

Urban urbanization growth extends to the periphery. This is seen with the changes of land uses which occurring in two geographically distinct countries. Some areas have experienced the phenomenon of space consumption by urban development that triggered urban sprawl such as at Kecamatan Mlati in Indonesia, Vertou City, Carquefou Town and Sainte Luce Sur Loire City in France (Nurazizah, 2016).

Development of the city can also be seen from the physical appearance of the city is shown by the formation of a small suburb that has properties similar to a town called urban fringe (Bintarto, 1983). Urban fringe is the transition of land use, which is characterized by a fixed transition from agriculture to non-agriculture (Louise, 2010).

The changes of Land use is caused by the development of population and economy, and influenced by activity system, development system, and environment system (Mayasari, 2014). Population growth in urban areas has an impact on increasing the land needs. Due to limited land in urban areas, development will expand in the periphery (Baiquni, 2014). Limited land in the center of the city will certainly make the population began to choose to settle in the suburbs as an alternative settled which certainly causes spatial transformation also in the region. Spatial transformation that occurred in urban peri-willy will certainly change the pattern of space utilization in the area (Mahendra, 2016).

This population increase will then lead to an increase in the community's need for the provision of housing facilities. But if the pattern of housing that was formed was not directed or random (sprawl) and the construction of housing that is less in accordance with the characteristics of the community, it will lead to the formation of unsustainable housing space (Serlin, 2012).

Currently the development of urban peri-urban areas in various metropolitan areas indicates the presence of large-scale settlements in real estate or commonly categorized as invasive formative processes. The tendency of some peri-urban areas to show the rapid growth of housing was not fully happening (Septanaya, 2012).

As we know that every development is essentially based on economic considerations, similarly, the housing development in urban fringe. Economic development in the city is rapidly increasing by the industrial sector. This development was also influenced by the urban development and housing in the surrounding area. Home owner-based housing built by the resident itself will have an impact because of unplanned by professional planners, but by owner



itself. It led to be uncontrolled in terms of design and building quality. In addition, in a formal estate planning does not include planning for home owner-based housing. Various types and styles used to build their homes. They adopted the style of a residential building next to their areas. The project-based housing development and home owner-based housing are influenced by the city development. To achieving sustainable development in this area should be planned well.

## **2. Discussion**

The implementation of Nantes Métropole and Mlati land use regulations had been exists. There is no obstacle in the implementation of the policy in Nantes Métropole, but on the contrary at Kecamatan Mlati there were still some obstacles. The implementation of urban sprawl policy control in Nantes Métropole were automatically follows what had been stipulated in the PLU. (Nurazizah, 2015).

In France spatial policy were much affect to the pattern of space and its developments, but not in Indonesia. The changes of land use in Kabupaten Aceh at Kecamatan Ulee Kareng occurred to along the new transportation route which Prof. Ali Hasyimi Street were crossed at Gampong Lambhuk, Lamteh, Ilie and Pango Raya. At the Kecamatan Banda Raya, the changes of land use were clearly visible in Gampong Mibo, Lhong Raya and Lampuot. In Kecamatan Lueng Bata the changes of land use were occurred at Gampong Batoh and Lamdom. The policy directives of suburban development in Kecamatan Lueng Bata have been touched to the fastest grown region of Gampong Batoh. However, Gampong Mibo in the Kecamatan Banda Raya and Gampong Ceurih in the Kecamatan Ulee Kareng which not included in the fringe development policy were developed rapidly, so that the development of suburbs in Kecamatan Banda Raya and Ulee Kareng runs naturally, without the direction of the policy of Banda Aceh City Government. The Changes of land uses Spatial patterns that happend now were tend to radically follows the existing road pattern (Mayasari, 2014).

Differently to the development in Magetan, the structure of town urban space has not changed much despite the construction of the ring road. Magetan District Government has built a northern ring road to reduce jamming traffics at center of the city . The existence of the ring road also attracted many parties to take some advantages of the surrounding land. Utilization of this land is estimates affecting to the shape and structure of the Magetan City space. The shape of the Magetan city is a compact city modeled with square which some parts of the city extending along the main city road. The structure of the Magetan City spaces in the form of sectoral were characterized by the city's main activities which being in the center of the city as well as following the main city road. The development area on the edge of the city were caused by an



activities increasing in center of the city. The development that occurred did not change the shape and structure of urban space but only increased the shape of the city. The construction of the northern ring road only affects the development of some surrounding villages so that it does not directly change the shape and structure of the Magetan City space (Setiono, 2016).

Similarly at the control of land uses that happened in Kelurahan Mlati, where this region has lost 301.9 acre of agricultural area in the period 1996-2010. From the result of the image overlay, and the input-output analysis that 10.32% of the land uses in Mlati were changed over that period, resulting in the loss of 290.67 acres of agricultural area with 13.12% of which turned into settlements. However, 65.9% of the land use is still in accordance with the planning documents. This area lacks at legal aspects in the implementations of the land uses policy because the planning documents have not yet been ratified. The institutional aspect shows the consistency and availability of resources, but there are weaknesses in the implementation which related to the control and law enforcement. Investments, tax policies and illegal practice on the changes of land use are a threat to policy implementation (Eko, 2012).

The development of periphery area in Mayasari article; 2014, is influenced by the opening of new transportation line, differently with the change of city development that happened in Malang City, where the population growth rate of Malang city about 0,86% higher than East Java population growth (0,75% ). Population growth in Malang city is high happening unevenly in all parts of the city. Based on the analysis that has been done, founded the difference of spatial transformation that happened in the northern peri urban area of Malang City with the area that is in the south of the city. Kecamatan Kedung kandang in the south of the city undergoes a low transformation and has a tendency to develop linear land pattern, while Kecamatan Lowokwaru undergoes a high transformation and has a concentrated at the land pattern. The differences are caused by population factors such as high population growth, activity center, accessibility, developer role and policy factor related to the pattern of spatial pattern of the area. The pattern of settlements in Kecamatan Lowokwaru has a pattern that tends to be concentric, while in Kecamatan Kedung kandang tend to be linear and spread. The existence of universities and industry became the center of growth that affected the development of spatial transformation in each area or Kecamatan (Mahendra, 2016).

There are 5 (five) factors that had influences to the growth of marginal area in Kecamatan Karanganyar as the capital of district/Kabupaten, it is about the availability of social facility factor, service factor, economic and environment factor, amenity factor, and comfort factor. According to theory, the biggest factor that affecting to the growth is the accessibility factor, not the availability factor of social facilities. This differences happens because, in

previous theories were founded that the background of the research location is in the big cities. While this research is conducted with the location in the capital city of Karanganyar which is the third city or small urban area. In addition, the means of transportation in big cities in the previous study were cars, and the means of transportation at this research site (suburb area of Kecamatan Karanganyar) were mostly motorcycles. So it can be concluded that the factor of availability of social facilities is the biggest factor affecting the growth of peripheral areas in the third city or in small urban areas, where the means of motorcycle transportation is more widely used by its citizens (Baiquni, 2014).

Based on research from (Medina, 2013), there are 9 formulation Factors that influence the selection of residential location characteristics in Kecamatan Waru and Kecamatan Taman in accordance with the characteristics of the citizens, namely: Accessibilities (the easyness for going to the Shopping Center); Availability of Clean Water Infrastructure; Availability of Shopping Facilities (Shops); Availability of Worship Facilities (Mosque); Beautyness (cleanliness); Accessibilities (Ease Into Public Transport), Accessibilities (the easyness for going to Schooling), Availability of Electricity Network and Land / House Price.

Overall, the factors which hamper the decrease in the number of housing procurement are high land prices, the availability of vacant land for an increasingly limited housing designation and the distance from Lumpur Lapindo. While other factors such as conditions of availability of public facilities, environmental quality, spatial or government policies, the availability of public utilities and market demand does not preclude housing investment in the region in the period 2006-2010. But on the other side, were founded that non-spatial factors that significantly affect the decrease of housing procurement in Sidoarjo regency are the stability of economic conditions, the amount of the transactional cost, the long time and expensive licenses, the development impact fees And the rules or regulations in land acquisition activities that are non-binding or impartially entirely for residential developers who have a location permit (Septanaya, 2012).

### **3. Conclusion**

Nantes Métropole and Mlati both have a set of rules governing the urban sprawl control mechanism. The planning rules for controlling urban sprawl in Nantes Métropole are SCOT and PLU. While the implementation of the policy of PLH (Local Housing Plan) is done to balance the supply of rental housing. Nantes Métropole planning rules are very effective in their area. While at Mlati, and RTRW and RDTR are planning regulations to control urban sprawl. However, in practice in the field, both areas face different obstacles and weaknesses. Mlati sub-district tended to experience greater obstacles than Nantes Métropole (Nurazizah, 2016). Land use change in Ulee sub-district, Banda Raya sub-district, Lueng Bata Kareng sub-district, Gampong Ceurih sub-

district not entirely influenced by Aceh's spatial planning policy, but more influenced by new transportation path, Prof. Ali Hasyimi Street (Mayasari, 2014).

Land use change and spatial transformation or urban development that occurred in Malang City (Kedungkandang Subdistrict and Lowokwaru Subdistrict) is more influenced by the existence of economic activity that is the activity of universities and industrial area (Mahendra, 2016). In terms of land use change and space utilization plan it is found that the percentage of land use change in accordance with plan is greater than unsuitable that is equal to 65.91% versus 34.09%. The magnitude of this percentage of nonconformity indicates a problem in the implementation of the space utilization plan. From the SWOT analysis on the implementation of the spatial plan policy, it is known that the weakness lies in the regulatory factor / aspect that is not yet approved RDTR APY of Mlati District become the Regional Regulation, so the legality of micro spatial document (RDTRK) is needed in controlling the utilization of space (Eko, 2012) .

The construction of the northern ring road only has an impact on the development of several villages around it so as not to change the shape and structure of the Magetan City space. The development of Sidorejo Village, Cepoko Village, Milangasri Village and Purwosari Village as the center of environmental activities for the surrounding villages have been in accordance with the planning, while the Village of Kentangan has not been the center of environmental services as planned (Setiono, 2016).

Commercial approach on project-based housing development emerged due to the opportunities of economic that exist in the area where the business interest has. A change was designated originally for residential. In the term of Sustainable Development, so there are several aspects that will keep the harmony between project-based housing development and home owner-based housing. To achieve harmony, it takes good coordination between the private sector, public sector, and society.

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## Spatial Patterns on Traditional Houses in Java as an Effort to Preserve Historic Buildings

**Johan Wahyudi<sup>a\*</sup>, Pindo Tutuko<sup>a</sup> and Hery Budiyanto<sup>a</sup>**

*<sup>a</sup>Magister of Architecture, University of Merdeka Malang,*

*Jl. Terusan Raya Dieng No. 59, Malang, Indonesia*

*Corresponding Author: johanwahyudi\_arsitektur93a@yahoo.com*

### Abstract

Java Island can be divided into several cultural areas of Banten and Sunda in West Java, while in Central Java and East Java there are Pesisir Kilen, Pesisir Wetan, Banyumas, Bagelen, Negarigung, Mancanegari, Surabaya, Tanah Sabrang Wetan and Madura (Koentjaraningrat 1994: 27). Traditional buildings have been a silent witness to how life in the past was run and its influence on the life order of society at that time and has the original building characteristics of Indonesian society in that era and functionally have special purpose and purpose which influence the process of the establishment of the building. This study is expected to provide a benefit form of development of science related to traditional houses in general that can be applied in building architecture. The method used in this paper is the study description descriptions, namely exposing and analyzing spatial patterns in some traditional houses in Java. The method of data collection is done by looking for literature studies on the issues to be discussed, namely the literature of several studies that have been done and has been published in the form of scientific papers. From the discussion of the pattern of space to some traditional houses on the island of Java, there are similar patterns, although in the arrangement of space there is in one mass of buildings and mass plural.

**Keywords:** Spatial, Spatial Patterns, Traditional House

### 1. Introduction

The development of architecture in the world will always change based on the dimension of time that influence it, either in terms of building style, building arrangement pattern, or from functional aspect of building. However, the essence of the works of the architecture is still taking the example or duplicate of the application of architecture on ancient or ancient building works. It can't be denied that in the past, the architecture of the building appeared as a masterpiece designed with full dedication and able to influence the condition of architecture in the surrounding area. In addition, there is a special characteristic of the condition of this ancient building to be more appreciated of its existence, that is from the historical aspect of the building, where the longer the age of the building stands, the higher the historical value contained in it. The traditional building has been a silent witness to how life in the past was run and its influence on the life order of society at that time and has the original building characteristic of Indonesian society in that era and



functionally have special purpose and purpose which influence the process of the establishment of the building. According to Tutuko & Shen (2014), dwellers build onto their own houses gradually, reflecting the behavioral occupancy of the dwellers. The adaptability of dwellers arranged their house, while still maintaining their tradition and dwellers tend to adjust their spatial setting in order to accommodate domestic activities. Moreover, for instance, the Javanese community appreciates and tolerates changes and developments that come from both inside and outside Javanese culture. Even so, the characteristics of Javanese culture remain virtually unchanged (Tutuko & Shen, 2014). Spatial arrangement of traditional house should be studied to other types of house. The type of house is not limited in popular traditional house in Indonesia only. In addition, it is necessary for making the guideline for better understanding for local government and planner about spatial arrangement of traditional house to achieve sustainable urban form.

In Indonesia, one of the three indicators linked to the SDGs document as a continuation of the MDGs, is a small-scale environment or socio-economic development in which one of the goals is set forth in the 11th goal's of making cities and human settlements inclusive, secure, resilient and sustainable, Point 11.4, namely: strengthening efforts to protect and preserve the world cultural and natural heritage. In line with this, the targets and indicators of Indonesia's National Development 2014-2019 based on the Vision-Mission of President Joko Widodo (NAWACITA) on NAWACITA 9: We will strengthen the Unity and strengthen social restoration of Indonesia, target: develop special incentives to introduce and Promoting local culture with indicators: 5. preserving and revitalizing 100% (from baseline) cultural preserve, museums and cultural parks throughout districts / cities by 2019; 6. Increasing the number of cultural heritages recognized by the United Nations Educational, Scientific and Cultural Organization (UNESCO) to 2 per year starting in 2016; And 8. 100% of districts perform preservation and data collection of cultural and ancestral heritage in their areas by 2019. It is also contained in the Government Regulation of the Republic of Indonesia Number 26 Year 2008 on National Spatial Plan Chapter II Purpose, Policy and Strategy Arrangement of National Territory Spaces Part One Objectives of National Spatial Planning Article 9 (1) The policy on the development of a national strategic area as referred to in Article 6 letter c covers: a. Conservation and enhancement of the function and carrying capacity of the environment to maintain and enhance ecosystem balance, conserve biodiversity, maintain and enhance the function of area protection, preserve the uniqueness of the landscape, and preserve the national cultural heritage; E. Preservation and social and cultural improvement of the nation; F. Preservation and enhancement of the value of protected areas designated as world heritage, biosphere reserves, and Ramsar.

The government's attention, especially the conservation activities in the national scope, as contained in the Act on Heritage Reserves No. 11 of 2010

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Article 5 which contains "belonging to the category of cultural heritage classification shall be any man-made, mobile, or immovable object in the form of a unit or group, or its parts or residues, which are at least 50 years of age, And is considered to have important value for the development of history, science and culture." Various conservation or conservation efforts quite often get attention especially in the national and international scope, but there are still some factors that hamper the progress of the conservation. This is a consideration that must be resolved considering it is hampering the government's performance in seeking the preservation of buildings and areas. These barriers are: cost factors, political factors, and social factors.

Java Island can be divided into several cultural areas of Banten and Sunda in West Java, while in Central Java and East Java there are Pesisir Kilen, Pesisir Wetan, Banyumas, Bagelen, Negarigung, Mancanegari, Surabaya, Tanah Sabrang Wetan and Madura (Koentjaraningrat, 1994:27).



**Picture 1. The Cultural Area of Java**  
(Source: Koentjaraningrat, 1994: 27)

Based on the background, then the problem to be in the study is how the formation of spatial patterns in traditional homes in Java. This study is expected to provide a benefit form of development of science related to traditional houses in general that could be applied in building architecture.

## 2. Methodology

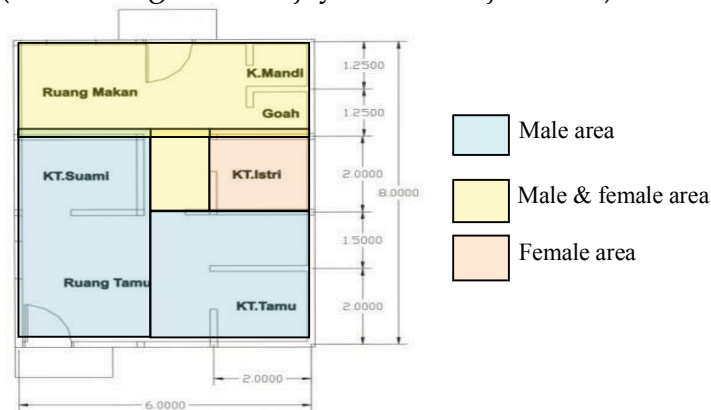
The method used in this paper is the study description descriptions, namely exposing and analyzing spatial patterns in some traditional houses in Java. Stages include the Determination Aspect Discussion, Data Collection, and Data Processing to generate a conclusion.

The method of data collection is done by looking for literature studies on the issues to be discussed, namely the literature of several studies that have been done and has been published in the form of scientific papers.

### 3. Discussion

#### 3.1. Traditional village house Dukuh in Garut, West Java

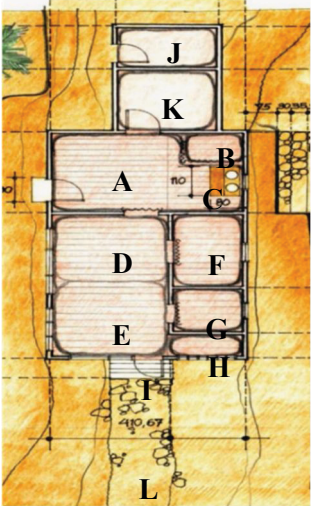
Sundanese people divide the space by their respective functions based on their beliefs and beliefs, this division is based on gender and family order. In one house in Kampung Dukuh this shows the division of the area of men and women. The male area has an edge or *golodog* on the front while the female area is behind (Kustianingrum, Sonjaya, & Ginanjar, 2013).



**Figure 2.** Plan of Dukuh village building  
(Source: Kustianingrum, Sonjaya, & Ginanjar, 2013)

#### 3.2 The House of Indigenous Peoples Kasepuhan Ciptarasa in Sukabumi, West Java

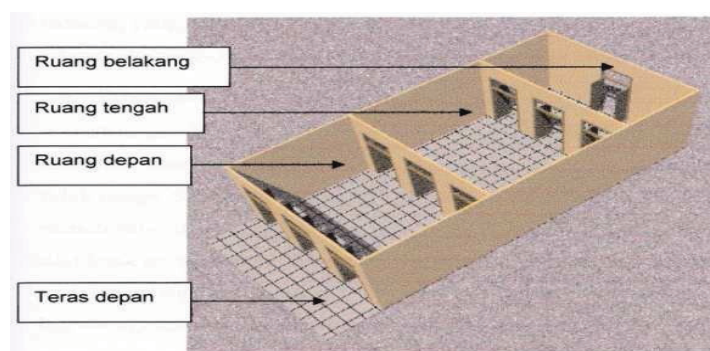
The organization of space on the stage house consists of 3 (three): *tepas imah*, *tengah imah* and *pawon*. *Tepas imah* (front) is a male area, because its activities tend to be done by men, middle (middle) becomes a common area, because men and women can do activities together, while *pawon* (rear), because all activities are done by women (Nuryanto & Widaningsih, n.d.).

	Pawon Section	<ul style="list-style-type: none"> <li>• Kitchen (A)</li> <li>• Tungku Hawu (C)</li> <li>• Padaringan (B)</li> <li>• Bathroom (K)</li> <li>• Panggulaan (J)</li> </ul>
	Tengah Imah Section	<ul style="list-style-type: none"> <li>• Living room (E)</li> <li>• Masamoan room (D)</li> <li>• Master bedroom (F)</li> <li>• Child's bedroom (G)</li> <li>• Wawarungan (H)</li> </ul>
	Tepas Imah Section	<ul style="list-style-type: none"> <li>• Buruan Imah (L)</li> <li>• Golodog (I)</li> </ul>

**Figure 3.** Organizational space on the stage house  
(Source: Nuryanto, & Widaningsih, n.d.)

### 3.3 Kaliwungu Traditional House, Central Java (Pesisir Kilen)

Kaliwungu traditional house has a single mass, but topped by three *limasan maligi* row to the rear which meet on the side length. With the shape of the mass extends backward, it is not topped with a single saddle / saddle stretching from front to back, but instead with the *limasan* whose axis extends across the front-back axis of the house. The shape of the roof is indeed one of the vocabulary form of Javanese house (Wahyudi, 2015).

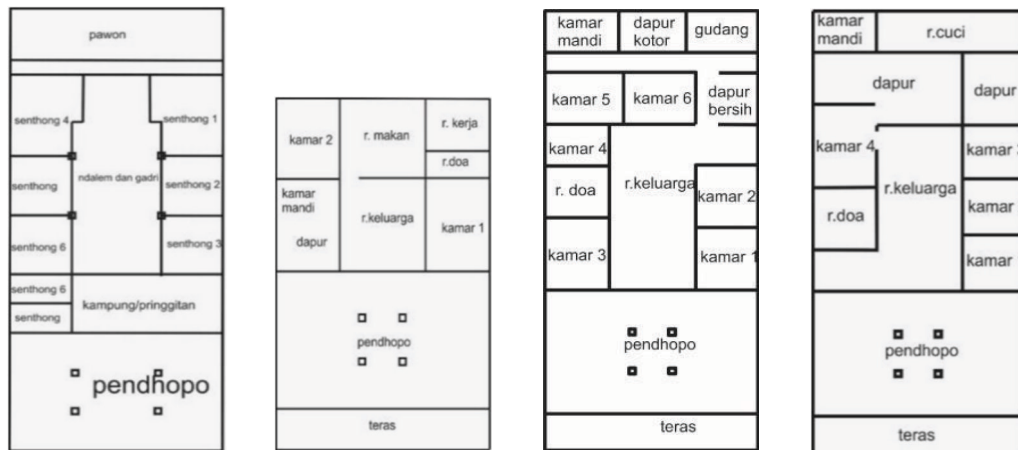


**Figure 4.** Traditional house space organization of Kaliwungu  
(Source: Wahyudi, 2015)

### 3.4 Kenthol House in Bagelen, Purworejo, Central Java

Kenthol house has a central spatial structure with its center space is *dalem* while its secondary room is *pendopo*, *senthong*, and *pawon*. In this case, *dalem* is considered as a central space because many activities occur in this area. Specialized activities and interactions with family members. The division of the hierarchy of space based on the nature of public space, semi-public, semi

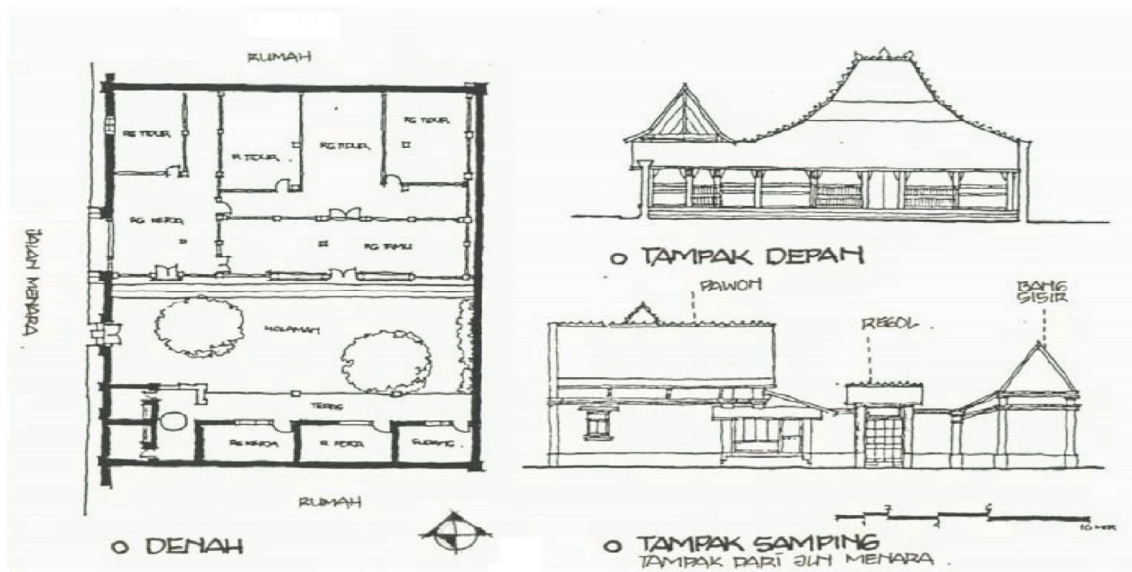
private, private and sacred space can still be seen and still applied to every home. Space formation according to nature of space (sorted from public area to private) that is *pendopo*, *pringgitan*, *dalem / gadri*, *senhong*, and *pawon*. It has a formation similar to traditional Javanese house in general (Pratama, 2016).



**Picture 5.** House of *Kenthol* Plan at Bagelen  
(Source: Pratama, 2016)

### 3.5 Traditional Kudus Houses

The traditional house Kudus is not a single building but the unity of some building period that serves for the residence and perform daily activities at home. The pattern of building arrangement in the footprint consists of main building, open yard and complementary building. The main building faces to the south, the position of the building on the north side of the tread. The complementary building usually occupies a position on the South of the site opposite to the main building and separated by an open courtyard in the middle of the tread. The tread limit is a high fence of brick pairs. Access to the site via the *regol* on the side or front of the site. *Regol* shaped roofed gate with double doors. Often this *regol* is the only achievement into the site (Sardjono, 1997).

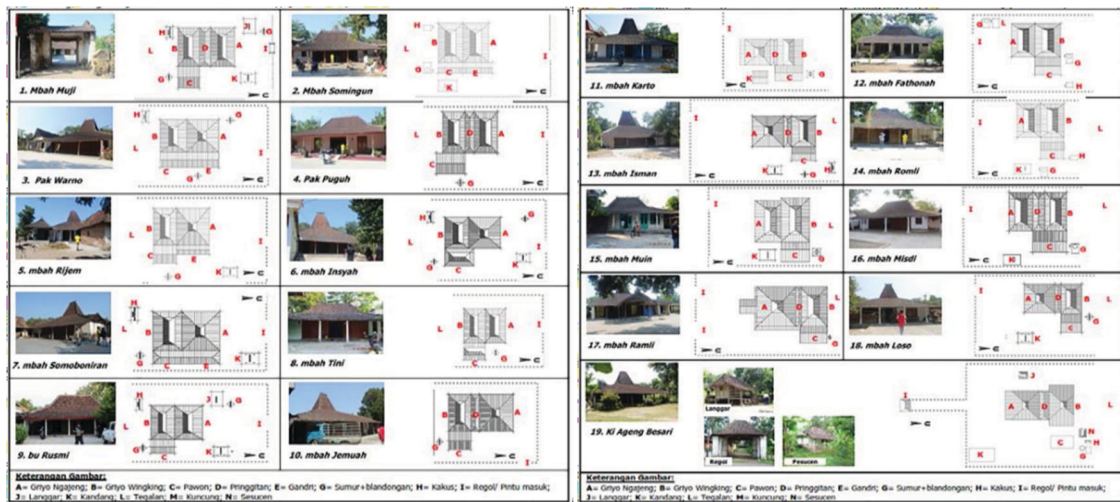


**Picture 6.** Floor Plan, and Looks of Traditional House in Kudus  
(Source: Sardjono, 1997)

### 3.6 Ponorogo's Traditional House Building

The simplest building cluster in Ponorogo's traditional house is for front grille, headdress and kitchen. The type of building used for *griyo ngajeng* and posterior brick can use a type of vertex, *sinom* or *dorogepak*. For most kitchen utensils use a type of suction. From here it appears that the selection of the type of building has no definite layout, the homeowner is left to decide on his choice. The front of the front grille was added to the emperor sector, which proceeded to the side to pull up with the kitchen or booth. The structure of the north-facing traditional Ponorogo's home, from ten types of buildings used in a wide variety of grooms, the kitchen is positioned all east, while when the building is facing south, all the samples indicate that the kitchen position is always located in the east of the *griyo wingking*, or to the right of the main building (Susilo, 2015).

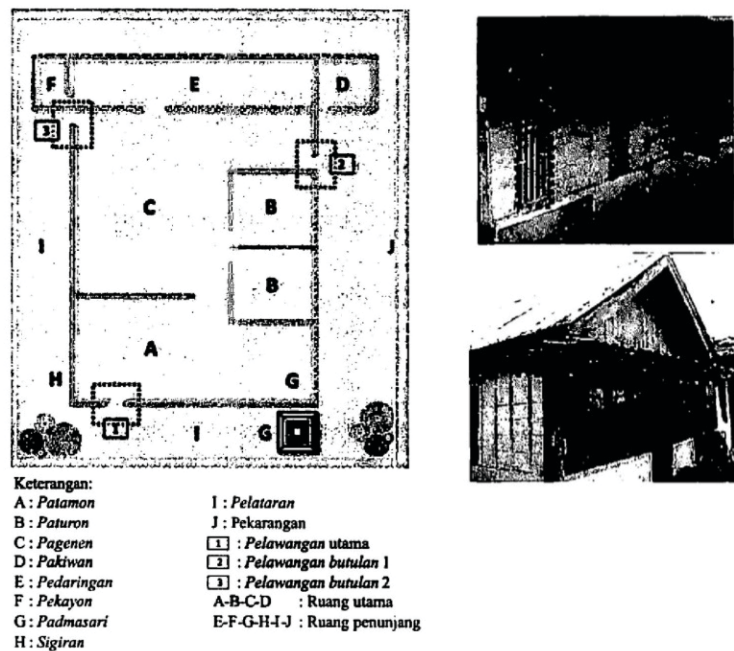




**Table 1.** The order of the traditional Ponorogo house period facing North and South  
*(Source: Susilo, 2015)*

### 3.7 Tengger Residents of Wonokitri Village of Pasuruan Regency

The structure of residential / residence in Wonokitri Village based on Tengger custom is called seven po, consisting of yard, courtyard, *patamon* (living room), *paturon* (bedroom), *pagenen* (kitchen), *pedaringan* (storage room), and *pakiwan* (bathroom).



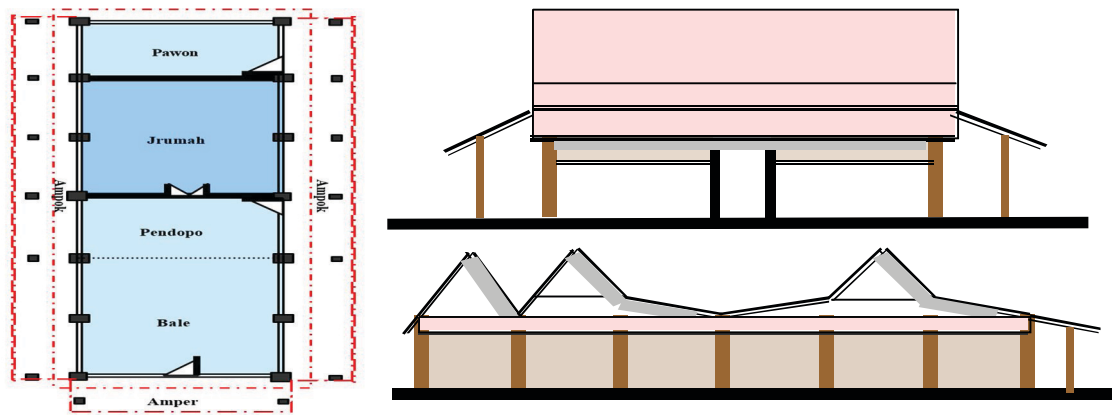
**Figure 7.** Lay out the spatial division and look at the traditional houses of the Tengger Village of Wonokitri Village  
*(Source: Ayuninggar, Antariksa, & Wardhani, 2012)*

Characteristics of each space and component in traditional house of Tengger Village of Wonokitri Village, are as follows: 1. The main room, consists of *patamon* (living room), located on the front of the house, which is directly behind the entrance of the main door, *paturon* (bedroom), should be on the right side of the main door, *pagenen* (kitchen), originally became the first room built in addition to the main room. Placed behind a *patamon*, serves as a kitchen for cooking as well as dining room and functionally used for family gathering (family room), *pakiwan* (bathroom), should be placed in the back of the house (the outermost) and separated from the house building, 2. Supporting space, consists of *pedaringan* (storage space), space to store crops and equipment items, *pekayon*, a room for storing firewood, is placed in the back of the house and is generally adjacent to the *pagenen*, *padmasari*, a special means of worship for the family that is located in the area of the courtyard of the house, *sigiran*, space to hang and store unpeeled corn. Laying is on the side of the front of the house (Ayuninggar, Antariksa, & Wardhani, 2012).

### 3.8 Traditional Osing House

The type of space can be distinguished over the main space, that is *bale-jrumah-pawon* (always there); Supporting space, that is *ampers*, *ampok*, *pendopo* and barn (not always there); *kiling* as a marker of Osing territory. *Bale* is located in front of the living room, family room and ceremonial activity room; *jrumah* is located in the center of functioning as a private room and bedroom; and *pawon* is located behind as though it is separate from the *jrumah*, which serves as a kitchen, an informal living room and living room. Characteristics of each space is adapted to the functions and activities as a container of fulfillment of everyday life, where each space is influenced by the assessment of the meaning of the activities undertaken as well as who inhabit or perform activities in that section. The composition of the main room is the composition of space *bale*, *jrumah* and *pawon* sequentially from front to back in 1, 2 or 3 parts of the house. This arrangement of spaces has various combinations that can be categorized in 7 groups, namely B- (P + J) -P; (B + P) -J-P; B-J-P; B- (J + P); (B + J) - (P + L); (B + J) -P; and (B + J + P). The categorization is based on the connection of the composition of the space with the composition of the house, where the first 4 arrangement is the most complete composition while the last 3 is the adjustment of space arrangement as a result of changes in the composition of the house form. Spatial relations pattern embraces the principle of closed ended plan, where the axis of balance symmetry that divides the composition of the space to the left and right stops in a space, namely *jrumah*. The principle of closed ended plan is only seen in the composition of *bale* space, *pendopo* (if any), *jrumah* and *pawon* sequentially backward (Suprijanto, 2002).





**Figure 9.** Plan and Look Osing's traditional house  
 (Source: Suprijanto, 2002)

### 3.9 Tanean Lanjang in Madura

The formation of Madura traditional settlements begins with a main house called *tonghuh*. *Tonghuh* is the home of an ancestor or an ancestor of a family. *Tonghuh* equipped with *langgar*, *kandang*, and kitchen. If a family has a married child, especially a girl, then the parents will or even have to make a home for girls. The placement of a house for girls is in the position to the east. Such a settlement group is called *pamengkang*, as well as if the next generation has occupied it will form *coren* and up to *tanean lanjang*. Such an arrangement continues to evolve from time to time. If the arrangement is too long then the arrangement changes to face. The order of the house arrangement still starts from the western end then ends at the eastern end. This consideration is attributed to the limited area of cultivated land, so as not to reduce the existing land as much as possible.

So, to trace a single lineage trace can be traced through the composition of the inhabitants of his house. The longest generation can be seen up to 5 generations that is on *tanean lanjang*. The position of *tonghuh* is always on the western edge after the break. *Langgar* is always located in the west end as the end of the existing building. The composition of the house is always oriented north-south. Page in the middle is called *tanean lanjang*. This very long generation can still be found due to underage marriage, even many of them are married before menstruation.

The arrangement of space lined with the binding space in the middle shows that *tanean* is the center of activity as well as a very important space binder. The east-west axis is imaginatively seen separating the group of houses and outer space. *Langgar* as the ending gives more importance and main of the composition of space. The elevation of the building floor also provides an increasingly clear value of the hierarchy of space. The ending suffix ends at the *langgar* at the end or end of the west-east axis. The *tanean lanjang* pattern

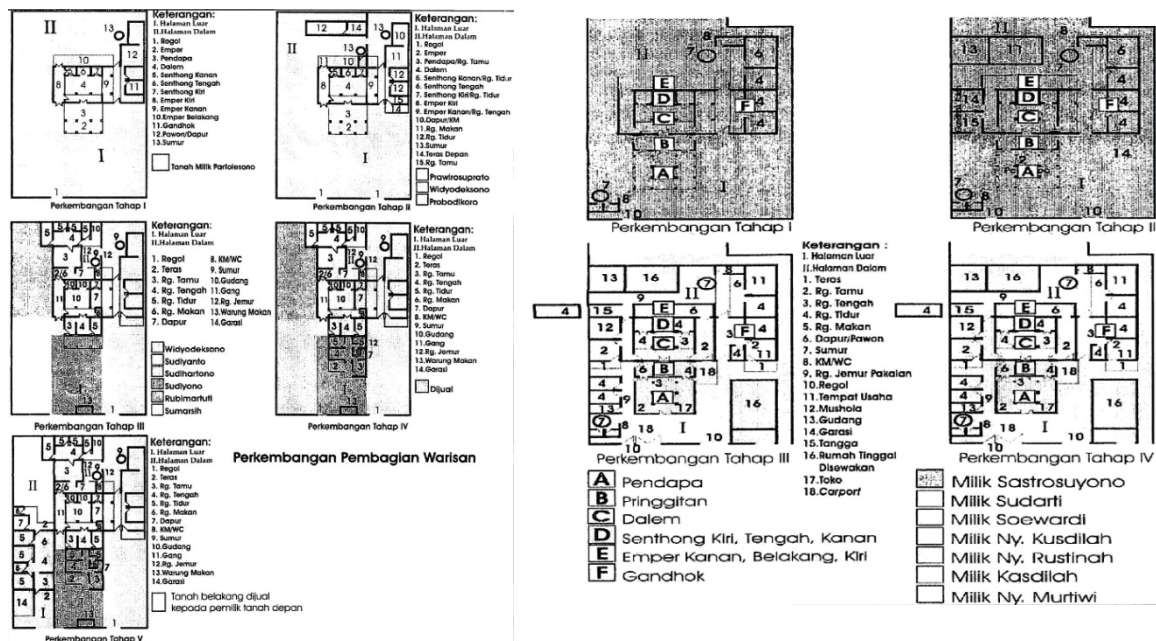
provides an overview of zoning space according to its function. Residence, kitchen and *kandang* in the east, at the western end is broken. *Langgar* has the highest value, is spiritual compared with other buildings that are worldly. *Langgar* reflects the main functions in religious life, sacred to perform prayers, performing rituals of life and at the same time as the center of everyday activities. In everyday life, *Langgar* plays its role as a workplace, as well as a place for men to oversee the produce of the earth, livestock, wife and children. Another function is to receive guests and guest bedrooms of men who stay overnight, also warehouse (Tulistyantoro, 2005).



**Figure 9.** Tanean Length Layout Model, in Torjun District, Sampang Regency, Madura, Has a North-South Building Direction  
(Source: Tulistyantoro, 2005)

### 3.10 Traditional House of Jeron Beteng, Kraton, Yogyakarta

The system of inheritance distribution using the principle of testament or will, which by means of the will allows the role of parents still have full rights in dividing the inheritance and possible no disputes arising due to different calculations. In the system of inheritance distribution, do not use the pure benchmark of the three inheritance law (Islamic Law, Customary Law and State Law), but adapted to local conditions. Distribution of inheritance resulted in the ownership of traditional dwellings into a compound, in the sense that traditional homes have changed the meaning of traditional living room *Jeron Beteng*, Kraton Yogyakarta. Inheritance distribution pattern of land does not follow the division of land measured and based on the price of land, but based on the position and boundary of space and traditional building form. The division pattern begins with a separate division between *dalem*, *pendhopo* and *gandhok* (Tarigan, 2013).



**Figure 10.** The development of space changes  
(Source: Tarigan, 2013)

#### 4. Conclusion

From the discussion of the pattern of space to some traditional houses on the island of Java above obtained the following results:

1. Building in Dukuh village in West Java, is a single mass building with one roof. It is synonymous with indigenous houses Kasepuhan Ciptarasa in West Java, Tengger residential community in Wonokitri Pasuruan.
2. Kaliwungu traditional house in Central Java, is a single mass building with more than one roof. It is synonymous with Kenthol Bagelen's home in Central Java, and identical to the traditional Osing house in Banyuwangi.
3. Kudus Traditional House in Central Java, is a multi-massed building with more than one roof and is identical with traditional Ponorogo house building, Tanean Lanjang residence in Madura, and Jeron Beteng traditional house, Kraton in Yogyakarta.

With the increasing development of the city, understanding of the relationship between space requirements and cultural phenomena is needed. By understanding the spatial arrangement of traditional house and population growth, solutions to significant housing problem can be found, a direct understanding of the various parts of traditional houses are considered essential. Understanding the spatial arrangement of traditional houses will be helpful to support housing construction.

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