### BOOK OF PAPERS

24th ISUF International Conference
Valencia 2017

City and territory in the Globalization Age







ISUF
International Seminar
On Urban Form



### Congress UPV

24th ISUF International Conference - City and territory in the Globalization Age

The contents of this publication have been evaluated by the Scientific Committee which it relates and the procedure set out <a href="http://ocs.editorial.upv.es/index.php//SUF/ISUF2017">http://ocs.editorial.upv.es/index.php//SUF/ISUF2017</a>

### Editor in Chief

Vicente Colomer

### Editor Committee

David Urios Juan Colomer Ana Portalés

### Publisher

Editorial Universitat Politècnica de València, 2018 www.lalibreria.upv.es / Ref.: 6366\_01\_01\_01

The full proceedings are published in http://ocs.editorial.upv.es/index.php/ISUF/ISUF2017 under the ISBN 978-84-9048-574-3

DOI: http://dx.doi.org/10.4995/ISUF2017.2017.7017



24th ISUF International Conference - City and territory in the Globalization Age
This book is licensed under a Creative Commons Atribution-NonCommercial-NonDerivates-4.0 International Licensed. Editorial Universitat Politècnica de València http://ocs.editorial.upv.es/index.php/ISUF/SUF2017 CONFERENCE CHAIR

Vicente Colomer

Universitat Politècnica de València Francisco Javier Monclús

SCIENTIFIC COMMITTEE

Adolfo Vigil

Universitat Politècnica de València

Agustín Hernández

Universidad Politécnica de Madrid

Anna Agata Kantarek

Politechnika Krakowska, Kraków

Ana Portalés

Universitat Politècnica de València Universitat de Barcelona

Ángel Martín

Universitat Politècnica de

Barcelona

Ángel Martínez

Universitat Politècnica de València

Antonio Font

Universitat Politècnica de

Barcelona

Asenet Sosa

Universitat Politècnica de València Javier Pérez Igualada

Begoña Serrano

Universitat Politècnica de València Javier Poyatos

Borja Ruiz-Apilánez

Universidad de Castilla La Mancha Javier Ruiz

Brenda Case Scheer

University of Utah

Carla Filipe Narciso

Universidad Nacional Autónoma

de México

Carmen Blasco

Universitat Politècnica de València Universitat Politècnica de Barcelona

Carmen Jordá

Universitat Politècnica de València Universidad de Buenos Aires

César D. Mifsut

Universitat Politècnica de València Universitat Politècnica de València

David Urios

Universitat Politècnica de València Universidad Politécnica de Madrid

Diego Ángel Vegara

Universidad de Guadalajara, México Universitat Politècnica de València

Eloy Solis

Universidad de Castilla La Mancha Universidad Politécnica de Madrid

Enrique J. Giménez

Universitat Politècnica de València Universidad de Castilla La Mancha

Fernando Gaja

Universitat Politècnica de València

Universidad de Zaragoza

Giancarlo Cataldi

Università degli Studi di Firenze

Giuseppe Strappa

Università degli Studi di Roma "La

Sapienza"

Gonzalo Vicente-Almazán

Universitat Politècnica de València

Horacio Capel

Ignacio Bosch

Universitat Politècnica de València

Iván Cabrera

Universitat Politècnica de València

Ivor Samuels

University of Birmingham

Javier Cenicacelaya

Universidad del País Vasco

Universitat Politècnica de València

Universitat Politècnica de València

Universidad Politécnica de Madrid

Jeremy Whitehand

University of Birmingham

Jesús Leal

Universidad Complutense de Madrid

Joaquin Sabaté

Jorge Iribame

Jorge Torres

José Fariña

José Luis Miralles

José María de Lapuerta

José María de Ureña

Escola Tècnica Superior d' Arquitectura de la Universitat Politècnica de València

Iván Cabrera Director

José María Ezquiaga

Universidad Politécnica de Madrid

Jose María Lozano

Universitat Politècnica de València

Juan Cano

Universitat Politècnica de València

Juan Colomer

Universitat Politècnica de València

Juan Luis de las Rivas

Universidad de Valladolid

Julia Delloro

Universitat Politècnica de València

Kai Gu

University of Auckland, New Zealand

Laura Lizondo

Universitat Politècnica de València

Luis Alonso de Armiño

Universitat Politècnica de València

Marco Maretto

Università degli Studi di Parma

Margarita Green

Universidad de Santiago

Maria del Carmen Mota

Universidad de Castilla La Mancha

Maria Dolores Aquilar

Universitat Politècnica de València

María Emilia Casar

Universitat Politècnica de València ETSAV (UPV) COMMISSION

María Teresa Palomares

Universitat Politècnica de València

Matilde Alonso

Universitat Politècnica de València

Michael Barke

University of Northumbria

Michael Conzen

University of Chicago

Miguel Camino

Universidad de Manta

Nuria Salvador

Universitat Politècnica de València

Pablo Martí

Universitat d' Alacant

Paolo Carlotti

Università degli Studi di Roma "La Sapienza"

Pilar de Insausfi

Universitat Politècnica de València

Rafael Temes

Universitat Politècnica de València

Teresa Marat-Mendes

Instituto Universitário de Lisboa

Vicente Colomer

Universitat Politècnica de València

Vicente Manuel Vidal

Universitat Politècnica de València

Vicente Mas

Universitat Politècnica de València

Vitor Oliveira

Universidade do Porto

Wendy McClure

University of Idaho

Wowo Ding

University of Nanjing

ORGANIZING COMMITTEE

Ana Portalés

Universitat Politècnica de València

David Urios

Universitat Politècnica de València

Juan Colomer

Universitat Politècnica de València

Ana Portalés

Universitat Politècnica de València

Ignacio Bosch

Universitat Politècnica de València

Iván Cabrera

Universitat Politècnica de València

Javier Pérez Igualada

Universitat Politècnica de València

Luis Alonso de Armiño

Universitat Politècnica de València

María Teresa Palomares

Universitat Politècnica de València

Vicente Colomer

Universitat Politècnica de València

Vicente Mas

Universitat Politècnica de València

ORGANIZING TEAM

Ana Portalés

Universitat Politècnica de València

César D. Mifsut

Universitat Politècnica de València

David Urios

Universitat Politècnica de València

Gonzalo Vicente-Almazán

Universitat Politècnica de València

Javier Pérez Igualada

Universitat Politècnica de València

Juan Colomer

Universitat Politècnica de València

Julia Deltoro

Universitat Politècnica de València

María Dolores Aquilar

Universitat Politècnica de València

María Teresa Palomares

Universitat Politècnica de València

Nuria Salvador

Universitat Politècnica de València

Rafael Temes

Universitat Politècnica de València

LOGISTIC AND DESIGN

Alberto Santiago

Universitat Politècnica de València

Mariví Monfort

Universitat Politècnica de València

EXHIBITION CHAIR

Luís Perdigón

Universitat Politècnica de València

Vicente Colomer

Universitat Politècnica de València

TOUR MANAGEMENT

César D. Mifsut

Universitat Politècnica de València

### Spatial transformation of heritage area as the impact of tourism activity in Kampong Kauman, Surakarta City, Central Java, Indonesia

### Nafiah Solikhah<sup>1</sup>

<sup>1</sup>Department of Architecture, Faculty of Engineering, Tarumanagara University, Campus 1, L Building, 7th Floor, Jl. Let Jen. S. Parman Number 1, West Jakarta 11440, INDONESIA E-mail: nafiahs@ft.untar.ac.id

Abstract. Kampong Kauman in Surakarta City, Central Java, Indonesia was formed in 1757 by Paku Buwono III as the King of Kasunanan Kingdom (Mataram Kingdom) for courtiers and scholars of Madrasa (religious school). Spatial character of Kampong Kauman influenced by Islamic planning and socio-cultural rules of Kasunanan Kingdom. The Grand Mosque is a binding part of the whole area. Firstly, woman in Kauman make the handmade batik for themselves then in 2005 developed program named "Batik Tourism of Kampong Kauman". This study aimed to explore the influence of tourism program towards spatial transformations. The factors that studied are: the organization of space, circulation patterns, hierarchical space, and orientation through the descriptiveevaluation approach methods. Based on the study, Tourism activity engenders transformations on the spatial scale (macro), residential block (mezo), homes (micro). First, the Grand Mosque and Madrasa as a binding area; organization of space in the residential develop into residential, factory and showroom of batik. Second, the circulation pattern forming labyrinth and ends at the Grand Mosque. Third, the hierarchy in the form of public space (the shari), semi-public, and private (the fina/culdesac) is no longer to provide protection to women but as hierarchy of circulation path. Fourth, cluster building orientation does not follow the kiblat direction or axis oriented to cosmos, but influence by the new function as the tourism area. By reviewing the local wisdom and the way of life of that society, we can learn how to apply the culture as education for sustainable of heritage area.

Key Words: Kampong Kauman, Impact of Tourism, Spatial Transformation.

### Introduction

Spatial character and identity of a region can experience a shift and transforming. Rossi (1982) reveal a loss of identity caused by region's planning that overlap, then the new plan doesn't pay attention to the existing plan. Meanwhile, according Trancik (1986), one of the causes of the loss of identity of the region is due to too much planning and zoning is applied. Indonesia has a diverse form of architecture of the city and urban areas, one of which is Kampong Kauman.

In the spatial of Mataram Java state, Kauman located at the *Negara* circle reserved for high level employees of royal. Excerpted from Ikaputra (1999), the emergence of Islam in Indonesia affects the order of Javanese Kingdom with the mosque on the west side of the square. Kauman formation begins by the spread of Islam initiated by religious leaders (*ulama*). King studying Islam from religious leaders (*ulama*), then religious leaders (*ulama*) request to built the mosque

around the square. Furthermore, religious leaders (*ulama*) build a school (*madrasah*), residence of students, the cultivation of students which later developed to form settlements named Kauman influenced by Islamic Planning. This is reinforced by the opinion of Lombard (1996 in Sunaryo, 2011: 5) which states that the Grand Mosque always stands close to the square, while around the mosque there are Kampong Kauman and homes for Kaum, are religious leaders (*ulama*) who take care and take responsibility to the activities of the Grand Mosque, mainly associated with the ritual palace.

There are some basic principles of Islamic Planning as expressed by Broadbent (1990). First, the existence of regular planning rules for informal design developed in Islamic culture. Second, the outlook refers to the Qur'an and Sunnah. For example, the protection of women through the hierarchy of sainthood; *mahram* hierarchy (the separation of men to women).

Meanwhile, according to the analysis of Broadbent (1990), an Islamic city embraces four principles. First, there are fundamental differences between the public road (the Shari') are open to the public with an stalemate/cul de sac (the Fina) to a limited group (family/persons including as a member of the group). Second, the mutual interdependence between people in the built environment with structures they inhabit (an ecological sense). Third, there is privacy in which every family is entitled to privacy in the sound/acoustics, sight/visual, and others. The nature of the most prominent of Muslim family is the protection of women from the eyes of strangers, so the hierarchy is formed determines a person's access. Fourth, the regulations that differentiate the width of the pass (the Shari') and stalemate (the Fina). According to Broadbent (1983), one of the characteristics of the region that implementing Islamic Planning is structures of area forming city networking (Urban Labyrinth) with narrow streets that are sometimes closed, straight, short size, turned or spun, penetrated and ended in the courtyard. Excerpted from Dickie (1978), the main element of Islamic Planning application is mosques and religious schools (madrasah).

Spatial patterns of Surakarta in the early days as the of country Mataram Java consists of four territorial namely: *Beteng* and *Negara* around the center of the palace which is inhabited by the royal family, nobles, and high-level civil servants, while the region Negarigung and Mancanegara outside central palace inhabited by communities that do not have a direct kinship with the palace (Santoso, 2008).

Kampong Kauman in The City of Surakarta, Central Java, Indonesia was formed in 1757 by Paku Buwono III as the King of Kasunanan Kingdom (Mataram Kingdom) for Kasunanan Kingdom courtiers and scholars of religious schools (*Madrasa*). Spatial character of Kampong Kauman influenced by Islamic planning and socio-cultural rules of Kasunanan Kingdom that can see on Figure 1. As traditional settlements influenced by Islamic planning, the Grand Mosque is a binding part of the whole area. Circulation pattern forming network (labyrinth) with narrow streets that ended at the Grand Mosque. The outdoor space can be used for circulation. Social activity is dominated by step movement from one place to a different place. Stalemate (*the fina/cul de sac*) generally only passable on foot and bicycles. While the pass (main and branch) can be traversed by motorcycles and vehicles. Kampong Kauman has an area that can not be used as a public road that penetrates and serves as a liaison between the outside world to the other. Hierarchy of hall in Kampong Kauman shows that the existence of a space is getting into more important (Solikhah, 2012).

Firstly, woman in Kauman make the handmade batik for themself. Batik business in Kauman so advanced that most of the entrepreneurs managed to build a magnificent house circa 1800-1950. The house has a double function, namely as a residence and place for battik business. In 2005 many people improving traditional batik into commercial, and developed a program named *Batik Tourism of Kampong Kauman* that relies on socio-cultural appeal. Until 2015, Kampong Kauman has 67 batik and craft showroom. This is in line with the growing of awareness that the competition to win the world tourism market, the socio-cultural elements have an important role. This is due to the tendency of tourism taste back in the atmosphere of the past, the culture as a form of preservation. Programs of Batik tourism of Kampong Kauman

affects the spatial transformations. This study aimed to explore the influence of tourism programs towards spatial transformations.

### Methodology

The type of study used is qualitative through the descriptive-evaluation approach methods. The scope of the study area is the Kampong Kauman, Subdistrict Pasar Kliwon, Surakarta city, Central Java, Indonesia with an area of 19.20 hectares. While the scope of the substance are the assessment of transformation of spatial system in Kampong Kauman, Surakarta as the impact of the tourism activity. The factors studied were the factors determining the regional spatial system abstracted from Habraken (1988 in Setyaningsih, 2004), namely: organization of space, circulation patterns, hierarchical space, and orientation.

The descriptive-evaluation approach methods of the factors that shape the spatial system in Kampong Kauman, Surakarta throught a comparative study between the original concept of spatial patterns of Kampong Kauman with views after the existence of tourist activities *Batik Tourism of Kampong Kauman* so that can be known spatial transformation of there.

### Measurement and analysis

### Organization of Space

At the initial concept, Kauman have organization space influenced by Islamic planning seen from the element forming region. It is inseparable from the history and purpose of Kampong Kauman. Figure 2 represent Great Mosque as the core and binding organizations of regional space including the element forming region, namely: *madrasa* (religious school), houses of batik entrepreneurs, public facilities, small mosque (*langgar*), and roads. In residential blocks, the bonding element is small mosque (*langgar*). Initially, the woman in Kauman make the handmade batik for themself or sold on a small scale so that the organization of space in residences of batik entrepreneurs private into the back. This is in addition to the influence of Javanese culture is also to provide protection to women through the area of separation with men.

Based on Musyawaroh (in Pusponegoro, 2007), organization and function of space in residences of Kampong Kauman before existence of tourism activity, namely: the front area for the yard, side yard (hallway) and backyard for service area, *pendhapa* to receive guests or lounge, *dalem* for the child's bedroom or living room family, *senthong* for parents bedroom, *pringgitan* to lounge or circulation area, *lojen* at home in the edge of main way to showroom or warehouse of batik, *lojen* at home in the alley for a bedroom or warehouse of batik, the second floor of *lojen* and *gandok* to the warehouse of batik; bed batik artisans or for a drying batik, the first floor of factory to produce batik, second floor for a drying batik.

During its development, the settlement function changes according to activities, especially economic activities. The new function areas as Tourism area affect spatial pattern of Kampong Kauman. Organization of space in some residential of batik entrepreneurs changes, Pendhapa and senthong firstly for residential acivity, then develop into showroom, homestay, workshop.

Figure 3 represents organization and function of space in residences of Kampong Kauman after existence the tourism activity. The front area is the parking area, side yard and rear yard for a service area or garden, *pendhapa* to receive guests and showroom, *dalem and senthong* for showroom and workshop; *lojen* and *Gandok* be part of baik bussiness activity, the first floor of factory for process of making batik, Tratag for sunning batik yet mostly empty or had collapsed altogether. In some cases there are homes that are totally converted into homestays/ hotels.

### Circulation Patterns

Circulation patterns of Kampong Kauman in the initial concept follows the structure of roads and settlements that influenced by the concept of Islamic planning. Circulation patterns forming

networks (labyrinth) with narrow streets that are sometimes closed, straight, short size, turned or spun, penetrated and ends at the Grand Mosque. In other words, the main road is very integrated with other roads and connecting Kampong Kauman with the outside area as well as connecting outside the region with the Great Mosque. The main street is a circulation path of the flow of vehicles and people to and from the branches of the road, both the pass and the stalemate.

Figure 4 represents differences in the width of the pass (the Shari') and stalemate (the Fina). The existence of an stalemate is one influence of Islamic planning as a protection the women of the eyes of foreigners, so that the hierarchy is formed determines a person's access. The outdoor space is used for circulation. Stalemate (the Fina) into a private area and can only be passed by a particular person. There is no open spaces in Kauman because almost the entire territory populated by building and circulation path. In the arrangement of the house, the land is used optimally with the building or fence to the edge of the boundary.

During its development, the settlement function changes according to community activities, especially economic activities. The new function areas as tourism area affect spatial pattern of Kampong Kauman. The circulation pattern still forming network (labyrinth) but it does not end at the Grand Mosque. Kampong Kauman position adjacent to the Klewer market as a center of trade and main roads in the four sides forming organically circulation pattern in the form of the pass. Stalemate be no longer a private area as it begins to be developed into a public area (showroom, homestay, batik workshop, other commodities). While the pass be the components that make up the main branches of the road. Burning of Klewer market at the end of 2014 did not affect circulation patterns in the Kampong Kauman, only the intensity of vehicles and humans are reduced.

### Hierarchical Space

Kauman are settlements that have specific activities and have a space that separate from the outside area. Stalemate (the Fina) can not be used as a public road that penetrates and/or as liaison to the other. Hierarchy space of Kampong Kauman indicates that the existence of a space into is getting more important. Great Mosque as part of binding the whole spatial or into the core region. Residential blocks and streets form a hierarchy of space, getting into more and more private. Small mosque (musholla) be binding block occupancy and are liaison in the middle of the dwelling. Hierarchy of space on the building blocks, namely: Residential, residential blocks, stalemate, road constantly. There are fundamental differences between the public road (the shari') are open to the public with and stalemate (the Fina) to a limited group, ie family/persons including as a member of the group.

During its development, the settlement function changes according to community activities, especially economic and tourism activity. Influence of Islamic planning visible from elements forming the area. It is inseparable from the history and designation the Kampong Kauman. The new function areas as Tourism Affect area spatial pattern of Kampong Kauman. The hierarchy in the form of public space (*the shari*), semi-public, and private (*the fina/culdesac*) is no longer to provide protection to women, only as hierarchy of circulation path.

### Orientation

At the beginning of the formation of the Kampong Kauman, entire of buildings blocks that comprise the cluster of buildings, the pass, stalemate, and the main street oriented to Grand Mosque that ca be seen in Figure 5 (a). Small mosque (Musholla/langgar) built following the Qiblah direction axis ( $\pm$  150 to the west). The existence of a small mosque on the side of the main road and the branch road then become a reference for the orientation of the settlement blocks. In residences of batik merchants scattered along the main road of Kampong Kauman, building orientation is north-south that is the influence of the sacred-profane orientation of Karaton Kasunanan.

The development of Kamppong Kauman as the tourism area encourage homeowners who are on the edge of the main road and the branch to add doors opening onto the main road and the

presence of additional spaces facing the main road for the business premises/showroom. Figure 5 (b) represents a variation of the buildings orientation in Kampong Kauman present, namely the Grand Mosque, *langgar*/small mosque, the pass, and stalemate.

During its development, there are some variations in the orientation depends on the position of the building blocks that can be seen at Figure 5 (c)-(d). It is influenced by the development of the circulation path, the development of the region as a tourism activity *Batik Tourism of Kampong Kauman*, as well as the development of socio-religious activities of the community with the presence of *langgar*/small mosque. The function of settlement changes according to community activities, especially economic activities. The new function areas as tourism area affect spatial pattern of Kampong Kauman. Cluster building orientation does not follow the Qiblah direction or axis oriented to the cosmos, but influenced by tourism and economic activity.

### Conclusion

Based on the study, activity of *Batik Tourism of Kampong Kauman* engenders transformations on the spatial pattern in Kampong Kauman. First, the Grand Mosque and madrasah (religious school) as a binding zoning; labyrinth pattern of roads forming the structure of the area developed as a liaison with outside Kauman; organization of space in of batik entrepreneurs houses develop into residential, factory of batik including showroom and workshop, homestay. Second, the circulation pattern forming network (labyrinth) and does not ends at the Grand Mosque. Third, the hierarchy in the form of public space (*the shari*), semi-public, and private (*the fina/culdesac*) is no longer to provide protection to women, only as hierarchy of circulation path. Fourth, cluster building orientation does not follow the kiblat direction or axis oriented to cosmos, but influence by the new function as the showroom. It was need the direction of the main road. During its development, the settlement function changes according to community activities, especially economic activities.

### References

Broadbent, G. (1983) 'Meaning in The Islamic Environment. Islamic Architecture and Urbanism', Selected Papers from A Symposium Organized by the College of Architecture and Planning (5-10 January 1980), A.Germen (ed) (King Faisal University: Dammam) 183-198.

Broadbent, G. (1990). *Emerging Concept in Urban Space Design*. (Van Nostrand Reinhold: New York) 11-15.

Dickie, J. (1978) Allah and Eternity: Mosques, Madrasas and Tombs. Architecture of The Islamic World: Its History and Social Meaning, G. Michell, (ed) (Thames & Hudson Ltd: London) 15-47.

Ikaputra, S. Basuki, (1999) 'Menelusuri Dalem Pangeran pada Kawasan Keraton Yogyakarta', *Makalah Pada LNSPA IV*, Yogyakarta 23-24 April 1999.

Musyawaroh (2002) 'Deskripsi Tata Fisik Rumah Pengusaha Batik Kauman Surakarta'. Unpublished Thesis from Magister Architecture Gadjah Mada University: Yogyakarta.

Pusponegoro, M, dkk (2007). KAUMAN: Religi, Tradisi, dan Seni (Paguyuban Kampung Wisata Batik Kauman: Surakarta).

Rossi, A. (1982) The Architecture of The City (The MIT Press, Cambridge: London).

Santoso, J. (2008) Arsitektur-kota Jawa: Kosmos, Kultur dan Kuasa (Centrapolis: Jakarta) 117-119.

Setyaningsih, W. (2004) 'Tata Ruang Dalem Pangeran di Baluwerti Surakarta', *Jurnal RUAS-Architecture and Urban & Regional Planning Department, Faculty of Engineering, Brawijaya University*, vol. 2/no. 1, Jun. 2004. 33-41.

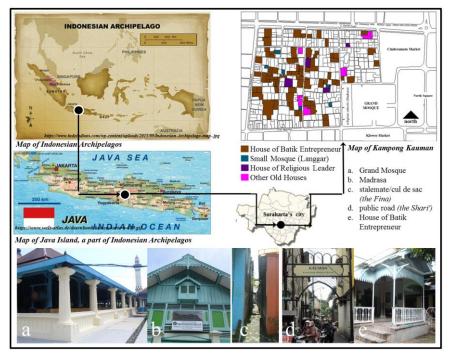
Solikhah, N. (2012) Pemahaman Logika Sosial (The Social Logic of Space) di Kampung Kauman Kota Surakarta, Proceeding National Conference SERAP#2 (Gadjah Mada University: Yogyakarta) 233-248

Sunaryo, R.G., Soewarno, N., Ikaputra, Setiawan, B. (2011). The Transformation of Urban Public Space in Yogyakarta: A Search for The Identity and Character of The City . *International Symposium:* 

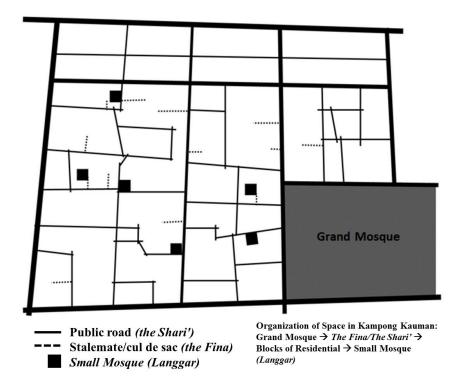
*Insular Diversity: Architecture – Culture – Identity in Indonesia.* 18-22 May 2011. Gadjah Mada University: Yogyakarta.

Trancik, R. (1986) *Finding Lost Space*, Theories of Urban Design (Van Rostrand Reinhold Company: New York).

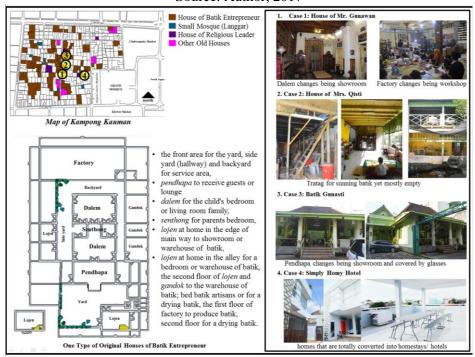
### Illustrations



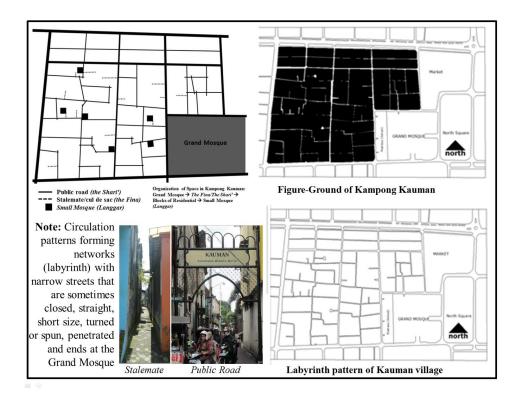
**Figure 1.** Elements that forming of regions identity in Kampong Kauman Source: Author, 2017



**Figure 2.** Organization of space in Kampong Kauman based on line map Source: Author, 2017



**Figure 3.** Organization and function of space in residences (house of batik entrepreneur) Source: Author, 2017



**Figure 4.** Circulation pattern of Kampong Kauman Source: Author, 2017

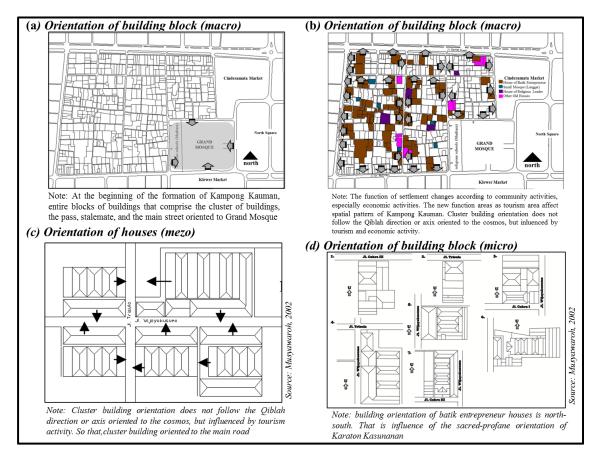


Figure 5. Orientation of area, residential block, houses in Kampong Kauman Source: Author, 2017



The Universitat Politècnica de València certifies that

La Universitat Politècnica de València certifica que

## NAFIAH THOHA

passport A1977776, attended the event THE 24th INTERNATIONAL SEMINAR ON URBAN FORM: 'CITY AND TERRITORY IN THE GLOBALIZATION AGE', held from 9/27/17 to 9/29/17 (mm/dd/yy), and it witness whereof, it is issued this certificate.

# NAFIAH THOHA

con pasaporte número A1977776, ha participado en el evento THE 24th INTERNATIONAL SEMINAR ON URBAN FORM, realizado del 27/09/17 al 29/09/17, y para que conste a los efectos oportunos, se expide el presente certificado.

The participant presented contributions. Titles on the back

Electronically signed document, can be verified at https://sede.upv.es/eVerificador. Secure Verification Code FCPJHSXIGUO mento firms do electrónicamente, verificable en https://sede.upv.es/eVerificador. Código Seguro de Verification COde FCPJHSXIGUO mento firms do electrónicamente, verification FCPJHSXIGUO

El participante ha presentado comunicaciones. Títulos al dorso.

