



*ABSTRACT BOOK*

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# HUNIAN 2019

Heritage & Culture In The Integrated Urban Context

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International Conference of  
Heritage & Culture in the Integrated  
Urban Context (HUNIAN) 2019

## **“Inheriting the Culture for Prosperous Living”**



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## **Keynote Speaker**

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### **Managing Identity and Change: Urban Heritage Authenticity and Integrity**

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Conservation is about management of change, it is about human wisdom and resilience in dealing with the preservation of authentic values, while allowing development in integrated manner. Distinctiveness of a city shall emerge from within itself and cannot be imposed artificially from outside. There-fore, understanding the cultural and morphological “DNA” of the city in both intangible and tangible sense, accumulated over its historical timeline, is essential for a long-lasting urban identity. Contemporarily, apart from rapid economic and physical developments in our Asian cities, to remain true to the city’s authentic identity becoming more challenging and difficult. This keynote paper will focus on the fundamental’s values and principles of a smart and just city, and will suggest a systematic approach to preserve the authenticity of the past, and at the same time to manage changes and developments harmoniously and integrated manner into the future.

# **Imaginary vs Traditional Museum: The Historical Heritage Based Designed**

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This study is a qualitative research was concerned in a museum of the millennials age. By a comparison study between a traditional museum “De Tjolomadoe” and an imaginary of Soekarno’s virtual museum was found the similarities and differences scheme. “De Tjolomadoe” as the traditionally museum shows the giant machines artifacts as the iconic of museum collections, and the Soekarno’s virtual museum shows the imaginary of postmodern architecture building to shows the maestro of artist paintings as the Soekarno’s collections. Both, traditionally and virtually created based on the historical heritages. But, the virtually is the best solution to cut off the major of construction budgets and the rare of museum collections. By a collaboration on multidisciplinary sciences, historical archives, architectural science, and digital application a museum virtual as a video model of the imaginary museum building contained the historical history has suitable with millennials easily to access in everywhere and anytime in the cyberspace.

Keywords: “De Tjolomadoe”, cyberspace, digital application, video of imaginary museum, Soekarno’s virtual museum



# **3D Geospatial Database Framework for Historical Building Management Web-Based in Malang, Indonesia**

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The development of spatial multimedia systems in city planning process is the latest innovation in urban planning and design activities. The development of this system aims to build spatial information on buildings and cities online, especially information on landscape spatial structuring and historic buildings. In line with the Research Master Plan (RIP) of Universitas Brawijaya in the development of science and technology in the field of Good Governance that encourages the development of smart city model, one of which is the identification and application of the Historic Urban Landscape approach by building appropriate partnerships and local management frameworks in identifying conserved buildings and landscaping. The development of this spatial multimedia system raises Malang as a case study. Malang City is one of the cities in Indonesia which has many beautiful urban landscapes, which was built during the Dutch colonial period. There are three periods that gave birth to three important developments in the style of Dutch architecture in Malang. In the latest developments, many historic buildings are poorly managed and prone to eviction due to rapid development, one of which is due to the absence of a good data collection and documentation system,

and the absence of local regulations that protect the existence of these historic buildings. This study also supports the efforts of the Malang city government which is actively conducting the preparation of a Cultural Heritage Preservation Master Plan. Furthermore, the development of spatial multimedia systems is a system package that will be built in web interface design through a programming language. This system accommodates building modeling data and three-dimensional areas that make up the virtual world. Users or the public have the opportunity to explore spatial information on existing spatial conditions and historical urban landscape planning concepts through the assistance of 3D virtual reality data integrated with geographic information systems in the corridors of historic areas in Malang. The phasing of the development of this system includes the identification of buildings or historic areas through field survey activities, the production process of spatial modeling of historic areas involving physical and visual data collection at the building scale and regional scale, and the process of developing spatial multimedia systems integrating multi layering data, both visualization data, GIS data, as well as historical information text data.

Keyword - historic building modeling, geo-referencing, urban heritage management, spatial multimedia, Malang

Subtheme 1:

## **Heritage and Nusantara Architecture**

### **Local Wisdom of Farmers in Ngadas Village, Malang Regency in the Management of Agricultural Landscapes**

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In Indonesia, Ngadas Village is one of the Agricultural Villages. Ngadas people do more activities in the fields than in their homes or dwellings. So, research about local wisdom of the Ngadas community in managing an agricultural landscape was very interesting. Aim of this research was expected to provide an overview of the initiative, creativity, work of the Ngadas community through artifacts in the agricultural landscape in Ngadas Village. The research was conducted through a qualitative approach. As a result, Tenggerese people have their own way of survival. Processing their crops by planting cover crops that actually function for animal feed. But ecologically it has a major impact on reducing erosion and eroding nutrients. In addition, cover crops such as *rumput gajah* also function as physical boundaries and form their own field territory. Farmers in Ngadas also build farmhouses as a form of sustainable agriculture by making potato seeds from the harvest. Aside from being a potato seeds storage, farmhouses are also used as a place to rest without leaving their cultural

aspects, namely *gegenen*. *Gegenen* is an activity to make a body warm itself by burning charcoal when the weather is very cold. So that it can be concluded that the local wisdom of the Ngadas community in managing their agricultural landscape is a form of adaptation from their environment.

Keywords: local wisdom, agricultural landscape, culture, enclave village.

# **Typology of the Facade of Weapon Barracks at Fort Oranje**

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The Dutch colonial period in Indonesia, especially in Ternate for about 3.5 centuries, left a very broad influence, especially for the development of architecture. The colonial heritage architecture has its own features and historical values. In Ternate, the influence of Colonial Architecture was very pronounced. This could be seen from the standing of several colonial buildings, such as the Citadel, Offices, Resident Houses, Weapons Barracks and several houses. The barracks building is one of the Dutch colonial-style buildings that is still maintained today. The research method used is descriptive-qualitative method with typology approach. The results of the field survey will be explained again in writing through typology theory related to the research title. Typology approach can classify building elements, building styles in a period of a particular architectural era. The results obtained from this study is the existence of colonial buildings in his day

Keywords: Dutch colonial architecture, typology, weapon barracks

# **Contextualizing Modernization in The Kayutangan towards Its Images as a Heritage Town Area of Malang**

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The Kayutangan Street Corridor is historic areas where there are still found historical buildings of the Dutch East Indies that form the distinctive character of Malang City. In 2019, the Mayor of Malang plans to revitalize the Kayutangan area with a citywalk concept such as found on Jl. Malioboro Yogyakarta. Thus, good planning is needed, so that the goals of revitalization can be achieved. This study aims to identify the contemporary physical aspects in the Kayutangan corridor as a basis for the preservation of the area towards its images as a fresh heritage town area. The study was carried out critically in an explorative descriptive way by identifying data from observations, photo documentation, and sketches in the field. The results of this study indicate that buildings that have undergone changes are expected to be able to display images or support the Kayutangan area as a historic area of Malang City. In addition, supporting spots are needed to provide adequate parking area.

Keywords: heritage sites management, Kayutangan corridor, Malang, revitalization

# **Changes in Architectural Characteristic in Megalitik Todo Village based on Periodization**

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Flores is an island in the East Nusa Tenggara region. It consists of eight tribes with Manggarai as the largest tribe. As the biggest tribe, of course, Manggarai has a diverse local culture including cultures that were passed down in prehistoric times in the form of megalithic traditions. Supported by several previous studies, three megalithic settlements were found in Manggarai, namely Ruteng Pu'u, Wae Rebo and Kampung Todo. But in his pedigree, Todo has a big role in the formation of Manggarai because in his government system, Todo is the forerunner to the formation of Manggarai in the past in a double form. With this level, Todo becomes interesting to discuss because it leaves a lot of history and megalithic artifacts as evidence of the existence of the community in the past. However, over time, there is a fairly rapid development in settlements that can cause bias in settlement arrangements. For this reason, this study aims to examine the changes that exist in Kampung Todo which are arranged based on the divided period that has been analyzed from the related literature. Overall, the analysis was carried out in three stages. The first step is reducing data. After the data is reduced, the data is given a code to facilitate the analysis process. The second is data analyzed based on the categories found from observations and interviews. The third stage is the description and

interpretation of data to find the themes of the findings. Findings themes discussed with architectural characteristics were then collected to obtain final conclusions.

Keywords: Todo village, settlement, changes



# **Baruk, A Traditional House of Bidayuh in Borneo, Its Space Related to Structure**

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Traditional architecture is a part of the national heritage as well as to proof that their ancestry as an indigenous people who was early inhabit in those locations. Unfortunately, not all traditional buildings are still standing on; many of them have extinction by the nature or by cultural distillation. The study aims at to get architectural knowledge how to seek the Bidayuh house construction, particularly Baruk as a cultural heritage of Borneo by knowing the space meaning through its structural order to behalf of its preservation. The investigation at the Bidayuh village in Serian, Bau and data collection through pictures, sketches and some interviews within the Kampung Budaya Sarawak, have completely contributed to this study. The research started from elaboration of its space to find space structure, and then followed the structure analyses to find actually interrelationship function and meaning. Through critical comparisons of the architectural theories and case studies of the other traditional houses in Borneo have grasped some conclusions. The study argues that Baruk is continually evolving as one of the cultural heritage products of Dayak in one side and adding the architectural knowledge in the world of contemporary on another, albeit nearly extinction. The

method of this research based on descriptive analyses and qualitative.

Keywords: Bidayuh, Baruk, Space, and Structure

# The Development of the Post Office Cultural Heritage in Semarang

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This paper aims to find new improvements from the post office building that mostly occupies the old building that is classified as a cultural heritage building. Architecturally the purpose of conservation of cultural heritage has been written in regulations and laws, but how to conserve the activity of the postal activities? Facing decreased customer transactions, increased competition from new technologies in digital, changing the city patterns and the Post Office building as currently configured faces a challenging and uncertain future. Nearly half of the buildings that have been built since the 18th century is empty due to changes in the function of the post office which no longer sends mail. The building of cultural heritage requires conservation of content and containers that are adaptive to new functions. If conservation only relies on the uniqueness of buildings, it is found that there is a gap in the development of conservation models to adapt building and postal services to the digital influence and delivery of goods by the private sector and potential locations. By using the historical method of postal development, the history of the old city area and the field survey to examine the shift of the present function, it is revealed that the conservation efforts that have been carried out by PT. The Indonesian Post Office not only focuses on buildings and activities but also attempts to increase the economic value of buildings in order to improve the image as

post office service and strengthen the image as a gateway to the old city area of Semarang. It is found that the exposure activity was an old activity that was still attached to the post office building until now. Adaptive re use is to accommodate activities that have relevance to post service activities. As the architecture view, it is the unique architecture in the building and the city planning, because the post office building occupies a marker as the zero point of the city or also acts as a gateway to the old city at that time (it is possible to find other several cities), then the post office building has a commercial value which is quite high. Thereby adding commercial activities to get a better economic value can be increased (i.e. added activities for café, minimarket, co working space). This recommendation will provide economic value for managers in dealing with the issue of a collapsed post office

Keywords: heritage, post office, colonial building, image, reuse

# Layout, Configuration, and Interaction of Spaces on Malang City Square To Re-Construct The Concept of Alun-Alun

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Jami' Mosque Malang is one of the *catur tunggal* elements within the layout of Malang city square. The development and changes that occur in one or all of the elements that form the square (one of them is the Jami' Mosque) will also affect the spatial configuration. Therefore, the spatial order interrelationship between the elements forming the square needs to be understood as one of the identities of the Javanese city, one of which is the existence of the mosque as part of the '*mancapat*' in the layout of the square concept. The existence of the Jami' Mosque with its functional complexity can be the initial foundation to explore its spatial configuration and interaction in the Malang city square. Behavior setting approach with space syntax is used to determine the relationship between the space in the mosque and the square by using the superimposition of spatial patterns formed over time. Understanding the concept of the Malang city square layout is expected to be able to maintain the meaning of the spatial that has been formed. And further, to be able to bring back cultural values and information as the identity of urban space in Java.

Keywords: Jami' Mosque Malang, city square, spatial, behavior setting, culture

# **Fostering the Management of Post Office Building from Architectural, Heritage and Urban Design View**

## **Case Study: The Solo Post Office, Central Java, Indonesia**

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There have been many studies on the impact of social media and the presence of freight forwarding services by private parties. Social media and private parties have an effect on post office services in the world and Indonesia. The digital era and the delivery of mail and goods through private sector services has led Postal services to do innovation in postal services. There have been several efforts by Pos Indonesia in transforming businesses following the rapid changes in the business environment. The strategy of PT. Pos Indonesia is conducting business transformation covering all aspects of business, human resources, strengthening of subsidiaries, developing new products, and pushing towards digitalization. Other efforts include venturing into financial services and purchasing tickets and payment for electricity, water, and daily necessities. Post Office is open longer, hours of work done by the office is from Monday to Saturday accessible from 08:00 am to 09:00 at night. From several studies, some of the strategies carried out focus on managerial improvement. There is potential for organizational development from an architectural and urban design perspective. The method used in this study was to

collect data from aspects of architecture and urban design. The technique was used to find the potential location and commercial value of buildings — Re-Documenting architectural building as method research. There found a possibility for developing the third floor of the post office as an commercial area that supports the potential of the surrounding urban space as a commercial area and the Solo city area, which is full of historic city values. In Indonesia, the presence of the post office usually in historic city and the activity still exists today. Due to the presence of social media and competing with private shipping service. the space of post office activities is shrinking. The rest of the unused space can be used for commercial activities in areas that support postal activities, cultural heritage values and city heritage values. Moreover, the location is close to commercial areas and historic city areas. This recommendation can increase strategic value to increase financial income for PT. Indonesian post. This breakthrough finding can answer the question of the collapse of post offices in Indonesia due to the presence of social media and the delivery of goods through private shipping services. These efforts support building conservation activities by adaptive re-use in cultural heritage buildings.

Keywords: Solo, Indonesia post office, culture, assets, cultural heritage

Subtheme 2:

## **Art and Architecture Design**

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### **The Wringin Lawang Concept in the Border *Gapura* of Malang City through Geometry Fractal Synthesis**

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The era of the Majapahit kingdom was the forerunner of *Gapura*. In those days the *gapura* has a function as the entrance to the kingdom. The shift shows the shift in function to the *gapura* that is now a marker towards the inclusion of a city including Malang. The entrance *gapura* of Malang City is identified with a character similar to one of Majapahit relic temple, *Gapura Wringin Lawang*, located in Mojokerto, East Java. This study aims to visualize the suitability of geometric characters in the city of Malang with *Gapura Wringin Lawang*. The pairing of four border *gapura* with the *Gapura Wringin Lawang* was analyzed by identifying the physical characteristics of the arch to demonstrate the visual suitability between the entrance *gapura* in Malang City with *Gapura Wringin Lawang*. To strengthen the results of the analysis continued synthesis by using the method of fractal geometry assisted by a box-counting method. This method divides the visual image from visible buildings into squares of varying sizes. This method is used to evaluate the fractal dimensions at once to find out further the suitability between the buildings with the initial



concept of the design. In the future, this concept can help the designer to interpret the idea as well as widen creativity in designing similar buildings.

Keywords: geometry fractal, *gapura*, box-counting

# Urban Tipography as a Reflection of Talkative Behavior in Malang City

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There is a phenomenon of large sign letters presence in almost all cities in Indonesia at present to mark names of places that are already known by the public, including Malang City. This trend shows that there seems to be a contagion that infects one city to another without apparent reason. This mimetic phenomenon represents bad talkative behavior. Large or monumental letters assembled into one striking word as a sign (signage) of a place. An urban signage should be able to show a structuring role by building a unique identity and sense of place, thus creating an image in the form of the environment. However, the presence of monumental signs letters is no longer unique when all cities are busy to imitate and become stereotypes. How to interpret the large sign phenomenon as urban-talkative on architectural populism in the context of semiotics. This study aims to interpret the phenomenon of urban space typography design through semiotics from pragmatism paradigm based on the first semiosis process of interpretant pole in Malang City. This research uses pragmatism, deductive and mixed-method methods. The research results indicate that the process of interpretant affirmation from the level of secondness to thirdness occurs in three ways; (1) not linear, (2) cross and (3) linear. Not linear affirmations indicate the problem of communication between urban institutions and citizen as interpretant. Cross affirmations indicate that interpretants tend (1) to look at accompanying elements of

typography rather than the typography itself and (2) encourage typography as a city identity. Whereas linear affirmations indicate that (1) the presence of urban typography is a talkative behavior and becomes a problem of urban psychology and (2) interpretants tend to look urban typography in terms of subfunctions or content rather than the design of the typography itself.

Keywords: first semiosis, pragmatics, semiotic, typography, urban

# Sacred Signs and Form of The Modern Mosques

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The existence of a sign on the building is very important, because it is that communicates the message of the building to the observer and the user. With the sign, a building can be known its functions. Not only the sign, the form of the building also shows the function in it. Therefore, a sacred building like mosque should also need sacred signs and form. This study aimed to explore sacred signs and form of the modern mosques. This study used Peirce's Semiotics approach and concept of form-function-meaning relation. The results of this study indicate that the some modern mosques have strong sacred signs and form, and some are not. The results of this study can be the beginning of further studies (development studies) and a reference source for studies of sacred signs and form of the other sacred buildings.

Keywords : form, function, modern mosque, sacred sign, sign

# **Visual Continuity Evaluation of Transition Space on Shopfront of Shopping Center in Malang, Indonesia**

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The expansion of shopping centers has become an issue of interest to the formation of a transitional space between the shop fronts with a public area. Shopping facilities are expected to accommodate the continuity of motion and good visual on spaces that transition with the surrounding environment. The purpose of this study was to determine the typology forms a transitional space in the front area of the shop building in the shopping center as well as knowing the quality of the visual aspects of continuity of motion-transition space in the front area of the shop building in a shopping center in Malang City. Character formation of transitional space in shop front has encouraged the emergence of various types and scale of territorial between private space and public space, both physically and psychologically. Building frontage or shop fronts have a high degree of transparency to the area of the road, which can present the appearance of the expansion and territorial psychological. A study of motion-visual continuity transition space in the shopfront of the shopping center utilized a field observation and a sequential photo mapping method. This study analyzes the typology of shop front space and the continuity of visual. The results of this study concluded that the typology forms a transitional space in the front area of

the shopping building in the shopping center in Malang is inserted interface type that has a good quality of motion-visual continuity on aspects of proximity, similarity, continuity, and closure.

Keywords: transitional space, shop fronts, shopping center, space continuity, sequential photo mapping.

# **The Characteristic of Minaret Based on Community Preference for the Composition of Mosque Architecture in Malang City**

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The mosque is one of the public facilities as a place of worship for Muslims. The mosque's architectural elements include domes (roofs), mihrab, minarets, portals, and decorative ornaments. Elements of mosque architecture can express the identity of a mosque. Minaret is one of the architectural elements of the mosque which acts as a marker of the existence of mosques on a city scale and has a design element in the form of a minaret head, minaret body, openings, ornaments, and structures that are integrated with the mosque building or separated from the mosque building. The object of this research is the Jami Great Mosque 'Malang, Sabilillah Mosque, Nurul Muttaqin Mosque, Ahmad Yani Mosque, and Manarul Huda Mosque. The people's preference for the characteristics of the minaret of mosque architecture in Malang City was analysed using the conjoined analysis method. The purpose of this study is (1). Identify the variety of minaret design elements in Mosque Architecture in Malang City, (2). Knowing people's preferences for the composition of the Minaret design elements, and (3). Analysing the characteristics of Minaret based on community preference on the composition of Mosque Architecture in Malang City. The results showed that the characteristics of Minaret were

based on community preferences on the composition of mosque architecture in Malang City, namely (1). The shape of the minaret is conical octagon, (2). The shape of the minaret head is a top dome, (3). The number of minarets is 2 pieces, (4). Has an ornament, (5). Minaret structure is separate from the mosque building, and (6). Has an opening.

Keywords: mosque architecture, minaret, preferences



# **The Meaning of Typographic Design in Malang Urban Space: Based on Signs and Objects Relations**

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The phenomenon of the presence of big signs on a place name in almost all cities in Indonesia to mark the name of a place that is actually already known by the surrounding community will ultimately affect the collective knowledge of citizens. It's just that the presence of the big writing is no longer unique when all the cities are busy cheating and becoming stereotypes. The city moves in the same direction but wild, without any endemic uniqueness of the city that can be highlighted and proud of, so that the sense of place of the city becomes a cliché. Its presence has plagued like a disease and become a talkative phenomenon for urbanites in Indonesia, Malang City is no exception. This study aims to interpret the phenomenon of urban space typography design in semiotics based on the pragmatic paradigm through the second semiosis process of the relation between representamen (signs) and objects in the city of Malang. The selected objects are typography of Malang City Square, Batu City Square, Idjen Boulevard, Universitas Brawijaya, and Malang State University. This study, uses a descriptive mix-method approach in exploring the meaning of the audience and understanding interpretants of the phenomenon of a series of uppercase letters in the urban space. The results of the study show that there is a relationship between the

representamen (signs) and objects as icons and indexes, which have not yet reached the relationship as symbols.

Keywords: typography, pragmatics, semiosis II, object, sign, representamen

# **Cognition Map for the Blind in Extraordinary Type A School (Case Study: SMP/SMALB A YPAB Surabaya)**

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The blind has limitations on the vision where it is not able to visually capture the information so it has its own uniqueness in performing cognition maps. This research is conducted to find out how the map of cognition by visually impaired especially in SMP/SMALB A YPAB Surabaya, where the research site has a school design in general, therefore want to know what elements are used visually To represent their space in understanding the environment. The research uses a qualitative method of descriptive, where the data belongs to the mapping data of visual impairment and existing environmental data. The visually impaired movement data is obtained by a person centered mapping method with a sample of group blind students, the total and lowvision that moves without the help of others. From the two data is done analysis of the linkage between movement patterns with existing environmental data. From the results of the analysis is done synthesis related cognition map for visually impaired, which is on what physical elements help the blind in the activity. The results of the study of cognition maps in the blind show a difference in the use of physical elements for total visual impairment, lowvision and groups. The total blind and the group used a lot of hands, then the sense of the foot feel. Unlike the visual impairment, the sense of vision is

still functioning so that there is not much use of the sense of the senses but prioritizes the sense of vision.

Keywords : cognition map, visual impairment, senses

# **Mapping the Motion Space of Children in Autism Treatment Center of Malang City with TEACCH Approach**

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The Autism Treatment Center in Malang City applies structured teaching-learning methods with the TEACCH (Treatment and Education Of Autistic And Related Communication Handicapped Children) approach where there are four important components, namely physical structure, schedule, work system, and visual structure. The four components are interrelated with each other so that the goal of helping the development of autistic children can be achieved. The physical structure is the first step to encourage the interest of autistic children. A good physical arrangement of space can minimize the tantrum effect of autistic children. Thus, this paper aims to research the space for autistic children with the TEACCH approach. The method used in this study is behavioral mapping in the form of person-centered mapping, place centered mapping, and physical trace that aims to determine the pattern of activity, furniture layout, and trace activities of autistic children during therapy activities. The results obtained are the motion space of autism children because the anthropometry of autistic children is different from normal children.

**Keywords:** anthropometry, autism, motion space, TEACCH

Subtheme 3:  
**Urban Design, Architectural  
Landscape and Tourism**

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**Morphological Study of Residential  
Real Estate Development in Urban  
Fringe (Case Study: Tunggulwulung  
Urban Village, Municipality of  
Malang)**

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In the last two decades of the 21st-century residential real estate development in the municipality of Malang has increased rapidly. The urban fringe has chosen for the development location because of the availability of vacant land and the situation in this area is not too crowded. The lower land value makes the urban fringe feasible to be developed as a residential real estate area. Tunggulwulung is one of the urban fringes in the Lowokwaru sub-district, and this location is not too far from Lowokwaru downtown. This area is strategic for the development of residential areas. To find out the pattern and characteristics of the real estate residential development process, we need a morphological study. The periodization of morphological study limitations on this study is from 2003 to 2019. Through this research, we will know the trend and culture of real estate development in the urban fringe, especially at Tunggulwulung urban village.

From the study, we know that the new residential real estate development in this location increased significantly in 2006-2011. The pattern trend of the residential form is linear and compact forms and the shape is square, rectangular-shape, fan-shaped, and unpatterned shapes. The largest residential real estate that had been developed was “Permata Jingga”. Furthermore, the new formal settlement has developed on several intercity roads. The most rapidly developed area in this location is in the southeastern region, it caused by near distance from the central business area, it is the urban culture of the metropolitan city in Indonesia that new residential area was developed at near the downtown and intercity roads. The increasing value of residential real estate land areas between 2003 until 2019 was 112.8%. Today, 52.3% of the total area in Tunggulwung urban village was developed as a residential area.

Keywords: morphology, residential, real estate development

# **Perception, Preference, and Participation: Community Social Inclusion and Involvement as Decision making Process in *Architourism***

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Architecture and tourism are inseparable things. In tourism development, planning and design also carried out and generate some architectural design. The architectural product involved a user, who will respond in an indisputable way towards the architectural object and built environment in general. People design the environment and the built environment modifies our deportment. It is important taking into consideration the perception, preference, and participation in the design process as design is a decision making process. Perception is indeed a complex process involves integrating information through our senses, processing it, which implies analyzing the received information and comparing it against several gathered knowledge based on people characteristic, experience and psychology which can affect the preference and participation. This paper addressed the importance and mechanism of community perception, preference, and participation in tourism and architecture design process. Two case studies are analyzed using a qualitative approach. Through this research, it is indicated that the good perception and preference could generate participation. The participatory



design could be a good method for the decision-making process in *architourism*.

Keywords: perception, preference, participation, decision making, architecture.

# Visual Image of Architectural Elements as The Identity of Menanga Traditional Village

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The Menanga Village have interesting traditional houses and village layout. There are some unique architectural shapes, easily known and remembered by the observers' minds. This study combines descriptive and graphical method with quantitative analysis to translate the mental map into a variable map, in order to determine the role of architectural elements as a place identity in village space. Referring to the mind map, the Lynch five elements in Menanga Village are distributed into four sequences as: district and path; edges; nodes; and landmarks. The results of study show that the district and path elements were remembered by all of observers, edges were remembered by most observers, while nodes and landmarks were only remembered by a small number of them. The most dominant place mark element is the combination of traditional houses rows with the main corridors forming unique village visual character. The large river flow behind the residential area and the highway in the front of village has an important role as a boundary line of village's core. Other physical elements that are supposed functioned as nodes and landmark markers are too weak and unable to be a place marker or as a navigation tool for people who want to go elsewhere in the village core. Therefore, structuring and façade repairing of architectural elements are needed to realize the visual linkage among the elements. It

aims to lift the image and identity of Menanga as a traditional architectural village that needs to be preserved.

Keywords: visual image, identity, preservation, traditional village

# **Place Attachment in Public Space Case Study: Hiraq Square Lhokseumawe Aceh – Indonesia**

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Concerning to the issue of place attachment, the research tends to observe the functional attachment which will affect the level of attachment in Hiraq Square Lhokseumawe (HSL), a renowned public space among local people in the city of Lhokseumawe, Aceh, Indonesia. Place attachment is known as a process to unite people and specific space that can encourage the sense of place. It is also indicating the interrelation between physical features and its function, by this process the sense of a place can be emerged. These concepts concentrate on the physical features and activities together with the meanings affected by users that will establish the meaning and the identity of the place. The research is conducted by applying indirect method to simplify ordinary patterns and people-particular patterns of the place. Overall, 120 respondents at certain area of HSL were questioned through questionnaire survey and 10 kiosk operators were questioned. The findings indicate that the people have a robust relationship with the local environment and appoint the significance of place as economics' dependence and recreational place. The level of functional attachment to HSL is range from level 1 to level 3, whereas

level 3 implicates a higher engagement in loyalty, goals and obedience to the environment.

Keywords: place attachment, public space, sense of place

# Sustainability of Thematic Kampongs

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Indonesian urban areas are formed by formal and informal pattern of settlement. Kampongs are typical feature in urban settlement which are often misled as slum areas, therefore it is important to see whether kampongs are sustainable or not. The research selects four thematic kampung based on four dimensions to measure kampong's sustainable Multi-dimensional scaling (MDS) was used to measure the sustainability by incorporating four dimensions: economy, environment, social, and education. The result shows that the four kampongs were highly sustainable in economy, social, and education. Environment dimension was generally lower than the other three dimensions. The performance of each thematic kampung did not correspond with the theme.

Keywords: settlement, multi dimensional, scalling, sustainability, thematic kampung.

# **Children-Friendly Assessment of Urban Green Open Space: The Case of Trunojoyo Park in Malang City, Indonesia**

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UNICEF issued a policy in the form of CFCI (Child Friendly City Initiative) as an effort to fulfill children's rights. Malang City has fulfilled the child-friendly indicators with a Madya rank, by meeting 60-70% of the Child-Friendly City Indicators. Malang City provides a playground for children in public spaces, one of them is in Taman Cerdas Trunojoyo. However, there are some problems in the park such as poor maintenance of park facilities that can affect the child-friendliness of the park. Therefore, the question arises whether Taman Cerdas Trunojoyo is child-friendly or not? This research is conducted to get a result if Taman Cerdas Trunojoyo is child-friendly or not. This research is a descriptive research. The method used is a mixed method, which combines quantitative and qualitative methods with research respondents are parents/guardians of children and childrens. Quantitative methods are used to determine respondents' perceptions of the quality of the object of study. The qualitative method is used to review the existing condition of the object of study through the researcher's perceptions and literatures. Based on the analysis of the literature and 141 respondents, it was found that the child-friendly quality of Taman Cerdas Trunojoyo was good according to parents/guardians of the children. While

according to children's perception, the quality of child-friendly of the park is Decent. So, it can be said that Taman Cerdas Trunojoyo is child-friendly and suitable for children.

Keywords: child-friendly, quality, playground



# **Design Factors of Ngembul Spring Water Tourism Development for Conserving the Green Belt of Tajinan, Malang**

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Community-based tourism development is now being developed on many lands belonging to the village community, or owned by the government, which are considered capable of involving the community in planning, management and decision making in their development. Ngembul Spring Water (NSW) is a potential spring water with the Green Belt surrounded to develop as a Community Based Tourism in Tajinan, Malang. There are various design factors to develop it, including three main factor as attraction, accesibilities, and accomodation. Community preferences are needed to understand the design factors of tourism development. Primary data was collected through in-depth interviews, field observations, and questionnaires. Primary data then analyzed by qualitative methods, namely explanatory, to explain the actual conditions of the field. Furthermore, quantitatively the results are analyzed by factor analysis. From the factor analysis, seven design factors emerged which could determine the priority elements in tourism development. The preference factors are very important to know the direction of community-based tourism development while conserving the green belt.

Keywords: Design factors, tourism, conserving

# The Ecological Impact of Tempeh Industrial Center in Sanan Village

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Sanan Industrial Centre is one of household industrial centers in Malang City. Waste produced in Sanan Industrial Center comes from two sources, they are from tempeh and cattle farmers industries. There are 14 tempeh industries that utilize waste from tempeh as food and drinks for cattle, while other 149 tempeh industries do not use the waste from tempeh and choose to discharge them into rivers which causes rivers to be polluted. There are industries that utilize cow manure into biogas in Sanan Industrial Center. The aim of this research is to calculate the availability and needs of soybean waste and wastewater as food and drinks for cattle, also to calculate the availability and needs of biogas. The analytical methods used are analysis of the availability and needs of soybean waste and wastewater, analysis of the availability and needs of biogas, and cluster analysis. The availability of untapped wastewater is 4,157 liters/day and the needs of drinking water for cattle is 2,577 liters/day. The availability of untapped soybean waste is 3,541 kg/day and the needs of food for cattle is 3,522 kg/day. The availability of energy in Sanan Industrial Center is 3,809 m<sup>3</sup>/day and the needs of energy for cooking is 378.2 m<sup>3</sup>/day. There are 59 groups spread in Sanan Industrial Center for biogas distribution consisting of industries and cattle farmers.

Keywords: ecological impact, waste utilization, tempeh industry, biogas, analysis of the availability and needs, cluster analysis.

# The Effect From Population Growth To Land Use Change In Malang City

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The population growth in Malang in the slow-growth group. The growth of the population only 25.59 percent from 1980 to 2010. If we compare the growth of population to other cities, the growth of Malang population is very low. It happens because there is an effect from the proportion of migration on the population structure. The proportion of migration in this city is low and it makes an effect to slow population growth. In the same time, the slow change of population makes the effect to land-use change. From the data, the change of land use for building function is high. The increasing of building land use proportion on the total city land, shows the influence of population growth on land-use change. For another land-use type, we see the change of land use with agriculture function, pasture and forest are high too, but that is the decreasing chance of proportion. From this study, there is a finding of the effect of population growth and land-use change on Malang city. Keywords: typography, pragmatics, semiosis II, representamen, object, sign.

Keywords : population growth, land use change, Malang City

# **A Study of The Effect of Population Growth to Rainfall Changes**

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The research data uses rainfall data at the Sumber Rejo Kemiling station in Bandar Lampung and data on the number of population in Kemiling District from 2000-2015. The aim is to analyze changes in rainfall and population in the region. So we can find out the effect of population changes on changes in rainfall. This research is very important because there is an assumption that the two influence each other, even though there is no empirical evidence. Data shows the average annual rainfall and population growth in Kemiling is 152.58 mm / sec and 39564.95 people (2000), 200.30 mm / sec and 53869.53 people (2005), 267.17 mm / sec and 63778.00 people (2010), and 171.58 mm / sec and 65637.00 people (2015). The results of data analysis show that population growth does not affect changes in rainfall in Kemiling.

Keywords: Population growth, rainfall, Kemiling, Bandar Lampung.

Subtheme 4:  
**Building Science and Technology**

**Earthquake-Resistant Design  
Principles of the Traditional House in  
Lombok Island**

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Indonesia lies above one of active three tectonic plates on earth which causes earthquake disasters frequently. In 2018 the island of Lombok was hit by a 7.0 Richter Scale earthquake creating major destruction of buildings. While most of modern building construction damaged when hit the waves, some of traditional houses in Segenter region remained steady and safe from the disaster. This study examines the structural and construction system of some traditional houses safe from the waves in Lombok. It focuses on the views of geometry of building, joint of structure-construction system, as well as building materials applied. Field observation was held to understand details of constructions. Collected data were analysed based upon earthquake resistance design principles. The outcomes of this study would be beneficial for modern house designs in the future.

Keywords: traditional house, earthquake, structural system, construction.

# **Lesson from Vernacular Tobacco Barn: A Passive Design Strategy for Energy-Independent Building**

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Gudang Atag is one of Indonesia's vernacular buildings which is a characteristic of the Na-Oogst tobacco plantation as raw material for cigars. This tobacco barn can produce tobacco leaves with quality that conforms to the standard using the process of air curing. Air curing is the process of drying tobacco using only wind inside the building-without mechanical support, thus makes Gudang Atag classified as an energy-independent building. Building performance is supported by the envelope, building size, wind availability, and tobacco barn workers. From the studies conducted, several passive design strategies might be applied as adaptations from the concept of air curing in Gudang Atag.

Keywords: Gudang Atag, tobacco barn, passive design strategy, energy-independent

# **The Thermal Comfort of the Building Judging from the Comparison of Temperature Reduction in the Use of Red Bricks, Lime Bricks and Ventilation Bricks as Building Walls**

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Indonesia is one of the most countries affected by climate change. One of the biggest effects that happen on the environment is global warming exists and it caused the air temperature to rise. Thus climatic conditions will directly affect the human body, since the human body is influenced by few factors, such as air temperature. In addition to energy alteration, Indonesia is also one of the indicated countries facing an energy crisis. Thus can be seen from the comparison between the requirement of energy and its supply that occurred in recent years. The requirement of energy is very important to support the daily needs of human life. The impact of the two phenomena above is environmental damage, disaster, and few more, which eventually affects the level of thermal comfort in the building, so that affects directly its inhabitant, such as human being. To minimize it, some methods can be used to get thermal comfort in building, so that the energy consumption in the building can be optimized. The method that is used to reduce the room temperature inside the building in this study is by using the characteristic of each material and its type. This is based on the fact that conductivity (other than convection



and radiation) of building materials greatly influences heat transfer, especially through the building walls. This study aims to discover the best temperature reduction between utilized red bricks, lime bricks, and ventilation bricks material that can be used as well as wall construction. The study used qualitative and quantitative methods. Field measurements are made during activities of the inhabitants. The conclusion is based on the comparison result of the best temperature reduction between utilized red bricks, lime bricks, and ventilation bricks.

Keywords: thermal comfort, temperature reduction, utilized red bricks, lime bricks, ventilation bricks.

# **Variety of Materials Using Origami Patterns to Improve Acoustic Quality (Lecture Room of Architecture Department, Faculty of Engineering, Universitas Brawijaya)**

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Lecture room of Architecture Department in Faculty of Engineering, Universitas Brawijaya, is a room with a quite large volume of space. The location of this object is close to M.T. Haryono Street which has a fairly dense traffic activity resulting in hearing disturbance for lecturing activity inside the room. The sense of hearing is one of the senses that plays a role in learning activities. These facts show how good acoustic conditions should be applied for the lecture room. Due to the high cost required to apply commercialized acoustic panels, this research utilizes coconut coir, corrugated cardboard boxes and profoam as acoustic panel alternatives. The simulation of coconut coir, corrugated cardboard boxes and profoam with a thickness of 4 inches and a total area of 87.88 m<sup>2</sup> towards tenuous level of origami patterns (Miura Ori, Ron Resch, Water Bomb and Yoshimura) using Freeform Origami software shows a result of different volumes according to convex, concave and flat shapes. The convex and concave forms are chosen because they have good sound distribution qualities. The simulation is continued with SketchUp software on alternatives of four origami patterns to determine the panel volume effect on the

reverberation time inside the room. After being given the acoustic panel recommendation to the lecture room, it is able to reduce noise to 32% of the initial noise, the reverberation time that meets the standard in the range of 0.6 – 0.8 seconds and speech intelligibility that also meets the standard of not less than 15 dB. Based on the calculation of the average room reverberation time at a frequency of 500 – 2000 Hz using four origami tessellation patterns, the results obtained are 0.9 seconds, 0.87 seconds, 0.88 seconds and 0.86 seconds where the best alternative is Yoshimura origami pattern.

Keywords: acoustic quality, acoustic panel, profoam, coconut coir, corrugated cardboard, origami tessellation.

# **Strategies to Improve Natural Lighting in Deep-Plan Cultural Heritage Buildings in the Tropics**

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The tropical climate has an advantage in terms of utilizing natural lighting for buildings. On the other hand, deep-plan buildings have limitations in introducing natural light through the sides. While introducing natural light from the roof risks admitting heat and glare. The cultural heritage building is a legacy that must be preserved and protected. Nowadays some of them switch functions and are managed for public functions. Cultural heritage buildings with a deep-floor plan in the tropics have two problems to be solved, namely limitations in introducing natural light from the side and maintaining the visual appearance of the building when renovations are carried out. This paper aims to explore strategies that can be done to improve natural lighting in the deep-plan cultural heritage building. Field measurement and digital simulations are used to determine the existing natural lighting conditions of the building and provide a visualization of design recommendations. The results show that vertical lighting can be used in cultural heritage buildings without changing the building facade. The strategy is carried out by minimizing the incoming glare through consideration of the sun's vertical service angle, as well as the reflection of light to maximize the distribution of light into the building.

Keywords: natural lighting, deep-plan, cultural heritage building, tropics

## Subtheme 5: **Architecture Simulation and Modelling**

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### **The Three Dimension (3D) Spatial Urban Heritage Informatics of Malang City, Indonesia**

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The spatial multimedia systems in urban planning process is the latest innovation in urban planning and design activities. The development of this system aims to build spatial information on buildings and cities online, especially information on spatial structuring of landscaping and historic buildings. Furthermore, this research forms the foundation for the integration of the Geographical Information System (GIS) and the Building Information System (BIM). The development of this multimedia spatial system refers to the rules of developing the Digital Platform for Urban Heritage Management. Therefore, the development of spatial multimedia systems must have complete spatial data that contains three significant information, namely: the historic data layer, present situation data, and future planning data. The development of this spatial multimedia system raised Malang as a case study. The purpose of this study is as a 3D geodatabase building

distribution in Malang in an effort to support information preparation of the Master Plan for Preservation of Cultural Heritage of Malang City.

Keywords: 3D, spatial information, geodatabase, building heritages, Malang City.

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