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Reinterpretation of Architectural Identity in a Tidal Waterfront City
(Case Study:Transformation of the Riverbank Area in Banjarmasin's Old City Center)

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ABSTRACT: Banjarmasin is known as a tidal waterfront city and it is called City of a Thousand Rivers. The city level was approximately -16 cm below the sea level and almost a swamp-land. The urbanization and the city development programs have changed the city's physical and spatial plan from a wetland to a mainland structure. The issues of the city's transformation have changed the city structure from the waterfront city into the mainland city. Confusion about its architectural identity occurs in the tidal land context from the water-based architectural typology transformation to land-based architectural typology. Reinterpretation of architectural identity needs to be made so that the image of the tidal city will not disappear. The purpose of this study is to revive the architectural identity of Banjarmasin city. This research will be useful for academic and practices for the local management control of the city's government The research procedures could be interpreted as typo-morphological in a tidal waterfront city, through several approaches employing the interpretive-descriptive-retrospective methods in the history of Banjarmasin's urban development and Banjar's community adaptation in this tidal environment.The research findings are: The architectural identity of tidal city can be found in the adaptation of Banjar's community behavior; The architectural tidal identity has been fading, becoming ambiguous and unfamiliar to the present generation of Banjar community; Reinterpretation of the tidal architectural identity may serve as a guideline for the city's lay-out developing from the architectural design of the present and the future.

Keywords:
Reinterpretation of Architectural identity, Riverbank area transformation, Banjarmasin's Tidal Old City Center.

INTRODUCTION

Background

The physical and spatial features of Banjarmasin city should have been identified as a Tidal[1] waterfront city. This can provide a clue as to how the development of environment in this waterfront city had established the tidal typology in its community's water culture. The ambiguity of this city's architectural identity occurred after the transformation of its urban structural management and the water-based architectural typology. The phenomenon of city transformation has changed the identity of the waterfront city into a mainland city. The effort to reintepret the architectural identity of the city will be much needed, so that the image of waterfront city will not disappear.

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The Objective

The objective of this research is to reintroduce the architectural identity of Banjarmasin as a tidal waterfront city, specifically in the case of the riverbank area's transformation in the old city center. It is hoped that the results of this research will be useful academically and for practical purposes, as well as academic papers that discuss the control management of Banjarmasin's urban development.

MATERIALS AND METHODS

Tidal Context

The tidal cycle is one of the natural phenomena found in the sea. It concerns the ebb and flow of the water and its mass particles in the ocean that happen regularly and repetitively, from the surface to the deepest part of the ocean. This movement is caused by the gravitation force of earth and the moon, or earth

and the sun, or even earth, moon and the sun. It can be said that river tidal area is the area impacted by the change of tidal flow in the river. (Fig. 1)

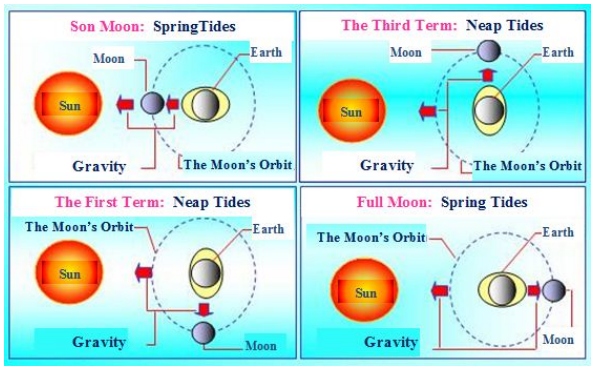

Fig. 1: Types of Tides
(Source: Suardi, 2011)

Genius Loci

Phenomenological architecture is a field that studies the soul of a place, by using the term genius loci (Schulz,1980), referring to local knowledge among the community in its physical environment, to accommodate activities of its members. By using the genius loci approach, we can assess the sense of every place to the community that uses it. Sense of place can be described as a response from the community to the differences between one city to another. Sense of place occurs because there has been interaction between humans as users/observers and objects or places. This interaction creates the realization of differences between environments through the characteristics of its elements. The influence of humans on the environment could form a unique spatial order, based on the context of environment in the traditional culture of urban living. City identity can not be separated from the aspects of city layout, including physical aspects, functional aspects and normative aspects. It can be concluded that city identity is formed by a city's physical identity, urban functional identity, and urban normative identity.

Identity

The word identity means: condition, traits, unique characteristics, and distinct personality of someone or something (Poerwadarminta,1987). Local identity reveals how the local community inhabitated space, how its members articulated their spatial form, and presented their local architecture. Architectural identity is a part of human culture. Elements in architectural identity are marked with pattern, type and system (Habraken, 1998) that continued in the articulation of: form order, place order and cultural order. (Fig. 2)

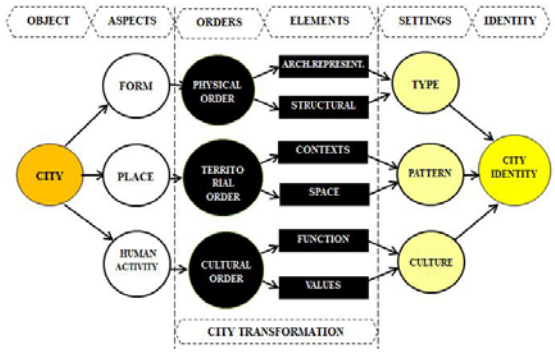

Fig. 2: The City Identity Framework
(Source : Habraken ,1998)

The identity of Indonesian traditional civilization has been wrapped into its local culture, including elements found in oral/spoken media (literature, poetry and the like), signifying the sense of place in the geographical structure of nature with toponymy (Bachtiar et al., 2008) and the creativity of building management (hierarchy, ornaments, colors, symbols) , as well as the culinary creativity that has distinct characteristics. Literally, city identity can be described as the condition, traits, unique characteristics, or distinct personality of a city or urban area.

Continuity and Change in Transformation

As time goes by, culture as a system never stops developing, but keeps transforming and this process results in survival. The transformation process has occurred because of relationships or contacts among the community in various activities that created the adaptation process. The outside influence from contact or friction between two different cultural systems creates the acculturation, or the enrichment of a culture without changing the original characteristics of that culture (Syam, 2005); and assimilation, or the blending process of cultures, where one culture can accept the values of the other culture and make it a part of its development (Hari, 1997), or as a form of cultural sustainability, which is the effort of a given culture to survive (Rapoport, 1994). Even though a culture will change as time goes by, it is hoped that development will take place, so that the culture can still manage to survive.

Methods

The architectural identity of the tidal waterfront city can be found in the area by assessing the typo-morphology of the structure and is representative of city architecture through tissue analysis (synchronic approach) and historical retrospective analysis (diachronic approach). The architectural identity of Banjarmasin city will be reinterpreted from the water culture of Banjar's local community through the typology-morphological approach and retrospective-interpretative-descriptive methods, in order to;

1) examine and analyze the history of urban development in order; and 2) identify the environment lay-out of the tidal waterfront city that had survived and been changed, triggered by the dynamics of development.
Conceptual Framework is shown Fig.3.

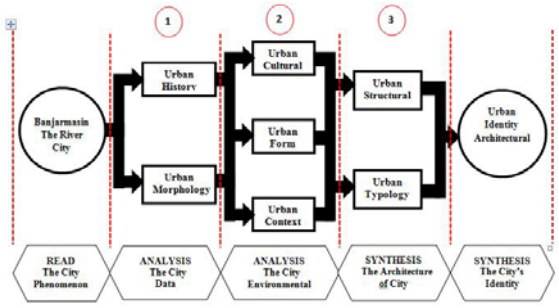

Fig. 3: Conceptual Framework Research
(Source: Kusliansjah, 2013a)

The conceptual study of Banjarmasin's river city recognizes the identity of the distinctive urban architectural characteristics of the so-called kasupasut[2] of the old town, beginning with reading the phenomenon of transformation of the city, and for this purpose three approaches have been used as a basis to draw conclusions from, namely:
Examination of urban history and urban morphology of Banjarmasin city, to analyze the data of the city;
Analysis of the urban form prescribed by urban context and urban culture analyzing the environmental aspects of the city; and
Synthesis of the urban structural and urban typology, the architecture of the city,and the city's architectural identity.

The Research Location

The locations for this research are: the Martapura riverbank, Kuin riverbank, Delta Tatas area, as the embryo of Banjarmasin and the area of the city's rulers, both in the eras of the Banjar Kingdom and the Dutch Colonial Government. (Fig.4)

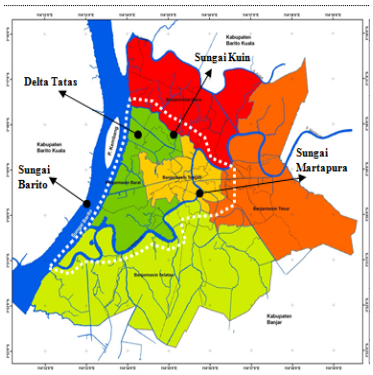

Fig. 4: Map of Delta Tatas
(Source: Bappeda, 2009)

Analysis and Synthesis

Banjarmasin's Architectural Identity

River City in the Diurnal Tidal[3] Context

Banjarmasin city is the capital city of South Kalimantan province that covers an area of ±72 km^2, an example of tidal waterfront cities in Indonesia. Geographically, this city has developed on a delta that has 107 rivers, creeks and canals. The position of this city is on the bank of the Barito River divided by the Martapura River that has several creeks and canals which intertwine with the two rivers. This is influenced by the hydro-dynamic current in the Barito River that occurs because of the tidal impact from the surface of the Java Sea. The physical impact on the city is the creation of natural tidal space on the riverbanks. The adaptation of the city community to the water context has created local wisdom concerning the tidal phenomenon in water culture as the local urban identity. This phenomenon's toponymy in Banjar is known as calap (logged).

Water Culture of the Traditional Banjar Community

The culture of the Banjar community is older than the establishment of the Banjar Kingdom (Mentayani, 2008). The Banjar community consists of a mixture between the Dayak people (mainland/upland community) and Melayu (Malay) people (sea/river community), and also the newcomers (of Chinese and Indian extraction). The ancestors of the Banjar community are believed to have come from the Deutero Malay group (Young Melayu people), immigrants from South East Asia that arrived around ± 500 BC. This group brought the Dongsong culture (that had already used metals for tools in the Bronze era). From the beginning, rivers and the tidal area created the local water culture in Banjar traditional life. In the history of Banjarmasin city, it can be seen that the traditional community of this city had made the river their life generator, to support them in: cooking, bathing and washing, transportation modes, building the port, irrigation canals, and city drainage. Several Banjar toponyms related to river and water can be found in the Banjar vernacular vocabulary, such as: batang banyu (river), kuala (estuary), teluk, antasan, anjir, handil, saka (different types of traditional canals for water transportation or irrigation). All of this had become part of the collective memory that marked the local wisdom of the Banjar community in articulating their identity in the wetland natural environment of the tidal water context. (Fig.5)
The water culture in the Banjar community could be discerned from its behavior when interacting with river space, river water characters, and the lives spent on the river. There were many types of boat (jukung), that were found as their water transportation mode, used for going down the river (batang banyu). They also used the tidal water characteristics for facilitating them when traveling on the rivers; when it was low tide, they would go

Fig. 5: Local Water Culture of Traditional Banjar Community
(Source: Kusliansjah, 2013a)

to the estuary (kuala), and when it was high tide, they would go back (mudik) to the upstream and up to the mainland (ke bukit). The social behavior of the Banjar community has been developed based on their relation to the water. They used the river water collectively, and they also used the river space from the estuary (upstream) of the river, as well as the body of the river and riverbanks. This local water culture also created the unique architectural identity of Banjar, including a floating market, floating port, wooden bridges (gertak) that connected the river to the mainland, and architectural types of Banjar's floating houses (lanting), in addition to water houses on stilts (scaffolding) along the riverbanks of Martapura, Kuin, and Alalak.

The Tidal City's Architectural Identity

There are three aspects that formed Banjarmasin's identity: The city's physical identity is formed by the development of tidal space into the urban architectural layout such as the linear layout pattern of the dispersed building environment along the river banks, the terrace pattern in the layout of water-land access, and the stage building layout pattern, the Banjar typology of tidal architecture, such as: lanting, the water stilt house type related to the system in the tidal space of the river. The city's functional identity is shown by the way Banjar's traditional community inhabited the river in their daily activities, as mentioned above. Urban normative identity is shown by the attitudes and behavior that consisted of the local wisdom and culture of the Banjar community due to their position in the living space on water and mainland; wet and dry conditions; dirty and clean conditions; lower and upper hierarchic position; right and left balanced position; and front-back position (balance of the boat in the water). (Fig.6)

Therefore, the lay-out of the traditional city of Banjarmasin (especially in the old city center that became the future city) was articulated by the community based on their local wisdom (inhabitation of the sense of place), in the form of articulation of the tidal waterfront city architectural layout that has unique identities based on pattern, type, and system. In order to find the meaning of local architectural identity of Banjarmasin, which became a part of the traditional architecture of Banjar's community.

Fig. 6: Zone of Tidal Influence and Types of Architectural Identity
(Source: Kusliansjah, 2013b)

RESULTS AND DISCUSSION

Acculturation of Urban Architecture in the Transformation of Banjarmasin's Development

Tissue analysis (synchronic approach) and historical retrospective analysis (diachronic approach) yield the morphological characteristics of Banjarmasin city that began as an independent kingdom and a maritime trading empire. The city as a major center of economic growth saw a variety of political power structures until the late 18th century after the kingdom had experienced ups and downs and finally split due to a power struggle, and especially after the intervention of the Dutch. From these approaches, four transformation processes emerge that influenced acculturation of architectural identity of tidal waterfront city Banjarmasin, that triggered the vagueness of this city's identity.

Transformation Caused by the Role as a Port City

In 1526 AD. the Banjar Moslem Kingdom was established by King Suriansyah, with its capital city of Banjarmasih. This city was developed as an international port city, with trading as its main income. This activity generated a larger market and city port. The local community (Banjar and Dayak ethnicity); regional newcomers (Malay, Javanese, Madurese, Buginese and other tribes) and international immigrants from Asia (Chinese, Indians, Arabs) and Europe (Dutch, British), had developed their settlements on the Martapura and Kuin riverbanks. The external influence triggered cultural acculturation between local residents and the newcomers. This caused the transformation of traditional architecture into eclectic architecture.

Transformation Caused by the Intervention of Dutch Colonial Policy

In 1826, there was an agreement between the Dutch VOC (Netherlands East Indies Company or Dutch East India Company) and Banjar Kingdom (Saleh, 1986), that divided Banjarmasin into two parts, and the Dutch Colonial government was taking over Delta Tatas as the center of its military activities, trading activities, and Dutch sailing territory. Tatas Island had grown remarkably fast as the new government center, while the Kuin area (the former kingdom center) had become the Banjar community's settlement area. In this era, the city center's architecture had been transformed from water-based organic architecture into water-land based planned architecture. The Dutch Colonial government developed the structure of urban roads and canals, for the benefit of military defense and logistics, to shorten the distance compare to the river ways. Mainland road construction had been introduced for the first time to this tidal city by the Dutch, who had used the local wisdom of the Banjar community to build canals. There were ten canals located in the city area. There were five types of canal that had been found, where four of them were built together with the roads. The city center featured the so-called spider's web pattern and the "Fort Tatas" as its center. The Dutch colonial powers had built the infrastructure of the city in this area, equipped by a port, lodges, and a hospital at the bank of Martapura River. The fort was connected by the axis of roads-canals from the Barito river. Then, it was continued by moving the community settlements to the side of the roads, to the periphery. The objective was to monitor the sailing activities on the Martapura and Kuin river from Fort Tatas, as well as monitoring the activities of the ethnic squatter community in Banjarmasin, and anticipate the rebels. In 1869, the Banjarmasin Kingdom had been abolished, and during 1883-1890 it was the beginning of the era of Dutch colonial intervention. In 1918, the city became the capital of Residentie Zuider en Ooster Afdeeling van Borneo (Southern and Eastern Section) and had a proper Gemeenteraad (city council). In 1938, the city's status changed into an autonomous area as Stads-Gemeente, the capital of the Government of Borneo. The city planning was conducted by Ir. Th. Karsten. Before 1942, when the Japanese forces invaded, this city was demolished by the Dutch.

Transformation Caused by City Development Policy

In the era of the Republic of Indonesia (1945-present), Banjarmasin city had been transformed due to the policy of centralization of city development (Old Order and New Order eras), and regional autonomy in the Reformation era. In 1950, the city had built canals for the transportation route in the downstream area of Kalimantan. After 1965, the development of the Trisakti seaport on the Barito riverbank had been made to support the second city port (Boom) that had been built by the Dutch, and there was also the development of the Riam Kanan dam. In 1970 -1975, there were some developments that occurred in the city, including the development based on the Pelita I (5-year) master plan; high density of city development; and the typology of the city that consisted of asphalt roads, dirt roads and alleys. In 1976-1980, there was the development based on the Pelita II master plan; while the urban life was still supported by the river, and the number of mainland roads was still low. There was also the implementation of the Kampong Improvement Program (KIP), the development of PDAM (water supply) and city electricity. During the 1980s, there was the development of the new mainland road to the north toward Marabahan and the Central Kalimantan area. Next, there was the central development based on Pelita III – V. In 1998, the Reformation era had begun. In 2003 there was the implementation of the regional autonomy policy, and also the city canal development program for drainage channels, as well as land transportation development. Due to this development, the city's residents had chosen to use the land transportation mode instead of water transportation. During 2003-2004 there was a lot of shrinkage in the river due to higher demand of space for settlements in the city. The regional autonomy policy tended to speed up the economic growth of the city. Main roads in the city were dominated by commercial buildings, including ruko (shophouse building of a similar architectural type covering the main roads). The transformation of the city occurred in this era, including the city corridor of Banjarmasin that had become denser, featuring uniform buildings just like the other cities in Indonesia. In the development era, our country had implemented top-down policy, based on law, regulations, and policy of the central government, that tended to apply in general, marked by superimposition on the city layout and without paying much attention to the context of places. This had been imprinted physically in our city layouts. During 2004-2008 the number of residents increased due to the birthrate and urbanization rate. This in turn caused a higher demand for living space, and the riverbanks became more crowded by new buildings and older buildings that had been renovated. The land transportation network had been more elaborately developed due to a higher number of motorized vehicles. In the city, the number of real estate agents for housing in the mainland had

grown. Rice fields and private canals (saka) had been sold, while the irrigation and drainage system in the city had been divided into water pockets. Prototypes for city flats were starting to be developed. Later, the city government had tried to organize the usage of riverbanks for conservation land and the city's green open space. From 2009 until now, there was an activity to identify the city's riverbanks. Implementation of Regional Law (Perda) No.2 of 1997 regarding river management, supported by Permendagri (Ministry of Home Affairs Regulations) No.1 regarding green open space in the city, had limited the usage of rivers and riverbanks for building development and any other activities beyond the function of the river.

Transformation Caused by Global Influence

The globalization phenomenon is reducing barriers in the world. Cultural changes are happening incredibly fast. The global economy market is expressing the capital power that has been dominating our space and culture. Building designs in other countries can be copied easily in our country which has changed the form of city architecture and transformed the face of the cities to look similar to one another. The identity of urban architecture is not only rooted in local culture and tradition, but has also been influenced by global trends. The transformation of city architecture in our country tends to suffer from a local identity crisis. The global warming phenomenon is aggravating the context of water cities in Indonesia. The impact of global warming on the high tide has become a threatening issue of nature that could drown Banjarmasin. Until the year 2100, it is projected that the level of the Java Sea will rise ± 0,934m and will drown ± 2581km2 of area around the city (Susandi, 2008).

CONCLUSION

The research findings are:

The Architectural Identity of Tidal City Can be Found in the Adaptation of Banjar's Community Behavior

The architectural identity of the tidal city of Banjarmasin could be interpreted through several approaches of the Banjar community's adaptation to its tidal environment to become a physical, functional and normative city assuming an identity as toponymy (local name place branding), Banjar's traditional water culture, the behavior in inhabiting and articulating the nature of the tidal water space of their environment. To identify the essential identity of the old town's architecture of Banjarmasin, Kasupasut learned from the process of adaptation and acculturation (sense of place) and the local water culture, which has spawned the identity of Banjarmasin city, in the following ways:

The identity of the city's architecture is part of the attitude of tidal Banjar community life which has inherited tradition, and contains the values of typical local wisdom;

The identity of Banjarmasin city tidal architecture needs to be explored with the paradigm of Eastern and Western thought, because the city in its development has undergone a spatial transformation to meet the needs of the cultural life of the community that inhabits a water-based area, which has gained local knowledge in addressing and using the water, and has been transformed into a culture of life on land which tends to separate and move away from the water;

The identity of the city's tidal architecture is important for Banjarmasin, to keep the values of the traditional Banjar water-based community's culture from becoming extinct, so that it can be utilized, and the values that may be useful for the present and future generation can be understood;

The identity of the city's tidal architecture is recommended to its Banjarmasin government for promoting :

Preparation of local wisdom values of Banjar's traditional values in the local content curriculum for formal education;

Motivation of people's mindset to care about the aquatic environment through non-formal environmental education;

Preparation of the concept of sustainable spatial development guidelines for the city's architecture is based on the tidal identity and values of the local wisdom of the Banjar community;

Control of development management of the city, which preserves the water balance in Banjarmasin's urban spatial architecture.

The Architectural Tidal Identity was Fading, thus Becoming Ambiguous and Unfamiliar to the Present Generation of Banjar Community

The relationships between elements forming the architectural identity of the tidal water area known as Kasupasut has made the transformation of the city of Banjarmasin proceed along its 489-year history. Some elements form the identities that trigger the morphological character of the city to be:

An international port city;

The colonial castle defense strategy (the spider's web structure type and the pattern of canal streets);

The development of a ground-based city ;

The development of the forest industry and mining;

An urbanized city;

Implementation of Spatial Planning Act No.26 of 2007;

The opening of the road network in the city and across the city;

The sustainable city waterfront Program (river embankment project (siring), demolition of houses on the banks of water and tidal areas.

The architectural identity of the waterfront tidal city of Banjarmasin was fading, became ambiguous and unfamiliar for the present generation of Banjar community, due to the influence of four different dynamic processes of urban transformation, namely:

Transformation as a port city;

Urban transformation by intervention of the Dutch colonial powers;

Transformation due to the policy of urban development from independence time up to the present;

Transformation because of the openness of the globalization era.

Transformation of Banjarmasin city architecture had triggered a local identity crisis. The transformation process started when the water cities, which previously relied on the support of rivers (for those based on agriculture) or seas (for those based on sea resources) had slowly changed into land-based ones due to the development in the land and automotive industries. The identity of water cities had started to be abandoned and forgotten. Sadly, many water spaces and areas became marginalized, and the river creeks and city canals were even lost or covered. However, the unchanging reality is that the natural context of those cities (still located around the water environment or wet tidal area and related to the global ecology system) has made an impact on the quality of city planning and layout.The transformation of Banjarmasin into an industry-based city had caused its local identity crisis as a tidal waterfront city. The local water culture of Banjar community that used to be agriculture-based has now been marginalized and become a land-based culture. The easier way of living a land-based life has changed the behavior of the city community toward water and rivers. The impact may be observed in the transformation of the riverbank layout in the old city center. Many roads and types of land infrastructure were built without paying much attention to the context of tidal water. A number of creeks and city canals could not be sailed anymore, because they were blocked or covered by the bridges or other city installations. The area of the river body became very narrow because it was surrounded by packed buildings that had been oriented toward land road access and turned the river space/canals into the backyard that tended to become city waste channel and add the risk of adding the river/canal sedimentation, so it could create floods when the tide is high. The city mainland area also changed into water pockets, due to the division cut of creeks or canal waterways. High density buildings were developing along the riverbank, covering the view of the river from the city. This has caused Banjarmasin city to look ambiguous, affecting the architectural diversity of the city in the form of tidal contextual and non-contextual tidal architecture. The identity crisis of Banjarmasin city sketched above has also taken place in many other water cities in Indonesia, whose number is fairly dominant in this country, amounting to approximately 214 cities out of the total number of 497 cities in Indonesia. Water cities in Indonesia cannot avoid the transformation that has changed them into land-based cities. The ambiguity of identity of city architecture in the context of the tidal area ranges from the typological transformation of wetland architecture to the transformation of the structure of this water city. The architectural identity of the tidal waterfront city, terrace architecture, and synergy of local water culture are no longer being implemented and even remain unrecognized these days. The effort of reinterpreting the architectural identity of the city really needs to be made so that the image of the water city will not be lost.

Reinterpretation of the Tidal Architectural Identity May Serve as a Guideline for the City's Orders Developing in the Architectural Design of the Present and the Future

Reinterpretation of urban architectural identity is an effort based on the research conducted into the local culture of the traditional Banjar community in addressing the water tidal context. This effort is very important for Banjarmasin because it could show the unique characteristics of the water city and the value of the traditional local water culture of the Banjar community that is in harmony with its environment, especially in order to avoid the local values being lost in the middle of uniformed culture in this global era. Hopefully, reinterpretation will build a new image for the Banjarmasin community. Reinterpretation of the architectural identity of the tidal city (including its water values of Banjar's culture in the past) can serve as a guideline or directive for orders developing in the present and the future architecture.

Based on the above conclusions, some of the following goals may be established, so that:

Reinterpretation of the Architectural Waterfront Identity of the Tidal City Becomes an Educational Tool to Discuss the Local Wisdom Concerning Water Culture

The lack of information about the wisdom of local water culture for the current Banjar generation must be addressed very seriously by the government of Banjarmasin, especially in education and familiarization with public information, through the following approaches:

Formal education for the river city community (Local subject/ content curriculum). The strategic goal for this program is to formulate a lesson on the values of local water culture and Banjar community's togetherness in discussing the nature of water city, as a local subject as part of the curriculum of basic formal education.

Informal Education intended for the River City Community (eco-learning). The strategic goal is to change people's mindset to value the water environment through informal education in order to identify the tidal water culture as the identity of the Banjar community, and to implement this in people's daily lives.

Reinterpretation of the Architectural Waterfront Identity of the Tidal City Becomes an Effort to Control City Development

The management policy of Banjarmasin city development needs academic papers to be in synergy with the spirit of place of the local water culture of the Banjar community. This policy must be elaborated on in Local Regulations and control procedures of city development, whose architectural identity is the waterfront tidal city.

Reinterpretation of Local Identity to Form gide line for Planning the Concept of City Architecture in Addressing the Context of

Tidal Water

This effort is also needed to build the river city's infrastructure and community settlements. The architectural plan for Banjarmasin is water-based architecture, including development of the concept of a floating-based river city, introducing innovative ideas and solutions to decrease the high density in the riverbank area (and also to secure the riverbank area from the impact of tidal waves in the global warming era) that could get out of hand in the future.

RECOMMENDATION

Based on the above conclusions, it is recommended that the local government of Banjarmasin should take the following steps:

Formulate the values of local wisdom of Banjar's traditional community, as a local subject in the formal curriculum to be taught in Banjarmasin;

Organize a community movement that cares about the water environment through informal education (eco- learning);

In collaboration with academic institutions formulate a sustainable concept for developing city architecture of the tidal water identity based on the values of the local wisdom of Banjar's traditional community;

Control the management of city development with the input of academic papers to discusses the balance of the water environment in Banjarmasin's architectural order of the water environment in city's architectural layout.

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ENDNOTES

1. Tide refers to a natural phenomenon happening at sea that can be interpreted as a natural tendency, that is to say an upward and downward movement on the surface of the sea water along with all of the particles of its mass from the surface down to the deepest parts in repeated patterns; regulated periodically during its cycle, as a result of the impact of gravity and the centrifugal effect coming from the force of attraction between bodies in the universe, especially the Sun and Moon to the water mass on Earth, going on between the Earth and the Moon, or the Earth and the Sun, or between all three.

2. Kasupasut is an acronym that stands for tidal river area [kawasan sungai pasang surut in Indonesian] taken to mean the area of the river's flood plain, with a border running from the position of the flooded river area at ebb-tide to the borderline of the river's demarcation, which is periodically affected by the tidal river area.

3. The Diurnal Tidal Pattern is a natural ecosystem phenomenon in the shape of a dynamic wave current that runs periodically in a time cycle, causing the movement on the surface of the river water accompanied by all of the particles of its water mass (volume) as a result of the pressure exerted by the hydro-dynamic current flowing from this riverbank. The characteristic feature of the diurnal tidal time cycle takes place once when the tide is rising and once when low tide (ebb) comes every day.

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