International Refereed Journal of Engineering and Science (IRJES)
ISSN (Online) 2319-183X, (Print) 2319-1821
Volume 6, Issue 6 (June 2017), PP.58-67

The Uniqueness Concept of Spatial Urban Settlement Tukad Badung Community In Denpasar

Prof. Dr. Ir. I Wayan Runa, M.T.[1],Ir. I Nyoman Warnata, M.T.[2]
[1]*Architecture Department, Faculty of Tehnic, Warmadewa University, Indonesia*
[2]*Architecture Department, Faculty of Tehnic, Warmadewa University, Indonesia*

Abstract: Long-term goalsto be achievedfromthis studyisthat thespatial developmentof urbansettlementsin DenpasarBali provincecanapply the concept ofdistinctive/uniquelocal wisdombornfromthe local community. Furthermore,it is expected toincrease the attractiveness ofurbansettlementsinBaliwhichhas beenrecognizedas onetourist destinationin Indonesia. Paradigm usedin this studyisphenomenologywithnaturalisticandinterdisciplinaryapproach. Dataindigenous communitiesareexpressed throughpeople's behaviorthroughout Tukad Badungfromupstream todownstream: civitas, activities, facilitiesorequipment used, and thespace usedis collectedthroughdirectobservationinthe field, taking pictureswith photosandcamcorders, measurements, interviewsand sound recordings. The gardenserves asa playground, planting cropshousehold, wherefarming, honingskills, garbagedisposal, andsite preparation/supportceremony. Gangserves as amajor trafficfor humansandspirits. ThengrowingurbansettlementsalongTukadBadungin Denpasarwithspatialconceptsconsisting ofriver(Tukad), border(ambal-ambal/jerogjogan), yards, alleys(Rurung), roads(clan). Urbanhomestead/boardingusingthe concept ofspatialsettlementBaliplainsin generalwithNatahpatternin the middle. Intheyardthere aresomeunitssuch as theshrinebuildings, residentialgroups, andservicegroups(garage,shop,bar).
Keywords: border, local knowledge, river, spatial concept,urbanhousing.

I. INTRODUCTION

Shelter is one of the basic human needs. It is a structural need and will continue to exist and develop in accordance with stages of human life. This necessity is not easy to fulfill, specifically for those living in densely populated urban areas. According to SensusEkonomi Nasional (Susenas) in 1995, a total of 8.14% of the approximately 45 million households in Indonesia live with their relatives. This is caused by the explosion of demand for housing over the last 30 years in large cities. As a result of this explosion, the price of land and housing soared, far beyond the reach of most people (Cahyana and Sudaryatmo, 2002). The improvement of quality of life in national development must be followed by the improvement of housing in a balanced manner. This improvement must be done not only quantitatively but also qualitatively by enabling housing implementation that suit the residents' nature, function, and culture.

In quality, most housing programs refer to the standard; finished products in the form of permanent housing that follow universal technical terms of Western glasses and flavors. As a result, the residents of the house lose their opportunity to embody their identity through the house's appearance. As a matter of fact, they still can to embody their identity. However, they have to dismantle their house first. The phenomenon in the field shows that people immediately dismantled their houses once they get to use the houses. If calculated, it is a waste of investment, since the houses are built with the aid from KPR-BTN. Furthermore, related parties are reluctant to learn from previous experiences and mistakes.

Bali, as a small, international island, experiences problems as previously described. The 2004 data shows that the population of Bali is about 3 million people with a growth of around 7.29 % per year. The level of urbanization is growing rapidly and the inability to provide housing in the cities resulted in the growth of slum areas. In the cities, formal sector (PerumPerumnas and Private Developer) is able to provide only 500 units of house on average or around 8% of the requirement.

On the other hand, the fact shows that the Balinese themselves, until today, are still reluctant to live in a terraced house or apartment. It is probably closely related to cultural factor, in which the Balinese used to live in a village with a vast yard, approximately 400 m2. When they have to move to the city, the experience of living in the village still strongly adheres in their mind. The relatively traditional culture, such as their values, *luan-teben*, and sacred-profane in layout, functionality, and the usage of building materials cannot be easily converted into an urban housing or apartment.

In general, the concept of cultural-based city is divided into two: the non-physical concept and the physical concept. The non-physical concept covers spiritual belief and joint activities, while the physical concept includes the realization of river arrangement, whether it be spatial planning and building layout.

In association with a river, most of the rainwater that falls to the ground flow to lower places. Then, after several resistances due to gravity, it eventually spills to the lake and the sea. The long groove in the surface of the earth where the rainwater flows is called river flow.

If the general condition of urban settlement that is previously described is linked to the housing problems faced by the Balinese living in the cities, specifically in Denpasar, then the study on the local wisdom of the TukadBadung community to find out the uniqueness of the concept of urban settlements in Denpasar, Bali is very intriguing to be continued. It is done in order to obtain a concept or a standard of housing design (the design guideline) in the cities as to make the design suits the culture of Bali better.

Environment degradation is the major factor of the high number of victims and flood. Various attempts on environmental rehabilitation made by various departments and institutions are more project-oriented without any clear, effective purpose and strategies.

In this study, the material that will be analyzed is the local wisdom related to the socio-cultural space (the Balinese culture), or in this case, the physical embodiment of urban spatial settlements along TukadBadung river. It is already known that the community members along Tukad (meaning river in English) Badung used the river as a place to do daily cultural activities. The aspects that are analyzed are the activities of the river utilization culture, the ritual performed by the community, the water condition, and the utilization of space or riverbanks. Through the study on the community's local wisdom, it is expected to discover fundamental values and cultural activities that can be used as a basic reference for creating the concept of urban spatial settlement in Denpasar, Bali.

This study is urgent and important, since lately the public pressure to utilize the river as a place or a space for daily activites is increasing, regardless of the disasters that can be endangering at any moment.

The study on local wisdom or community's traditional value on urban spatial settlement in the cities, specifically on the utiliziation of the space of TukadBadung in the heart of Denpasar, is expected to give birth to a new, unique concept of spatial settlements, including the river spatial planning for urban community in the cities. The output of traditional spatial settlement concept is expected to be born from the local wisdom of the community around the river, so that the new concept is able to maintain the Balinese cultural identity. In addition, it is expected to appeal the Balinese living in the cities to preserve the river in order to keep Bali's nature, in particular, and the earth, in general, sustainable in the future. It is believed to be a fundamental contribution to environmental science or conservation, emphasizing on the fundamental, original ideas in Denpasar in order to support the development of the riverbanks as a front yard (water front).

The fundamental contribution of this study to scientific field is explained as the following. Even until now, the tradition and culture passed down by the ancestors is still going strong in Bali, including Denpasar. This study is expected to enrich the repository of Architectural science, particularly the urban spatial settlements by the river. It gives fundamental contribution to Architectural science, emphazising on fundamental and original ideas to support the development of science, technology, art, and socio-culture.

Now, Tukad Badung has flourished as a place for urban community's activities with its dynamics. This study will further strive to develop a new model of river spatial planning system in urban areas by utilizing the river as a part of beautiful, comfortable front yard. It is also to increase active participation from the local community in order to create a healthy environment. And then, to utilitize the community's cultural potential in the river spatial planning and the economic expand in urban areas. In addition, it is also to develop a model of integration between the community and the government in managing the environment at a specific location in urban areas. The last is to preserve the physical form of culture (artifacts) of traditional spatial settlements along Tukad Badung as a life monument and tourist attraction.

The required output of this study is a textbook about the preservation of urban spatial settlements in Denpasar adjacent to the river ecosystem. This textbook is not only for the Department of Architecture, but also for the Department of Civil Engineering. The additional output is social engineering in preserving the riverside spatial planning.

II. LITERATURE REVIEW

The development of traditional architecture in Macedonia refers to the period of the 19 th century and the first half of the 20th century, when constructions had great intensity. However, there is limited number of buildings that can be adapted for the purpose of modern tourism today. The adjustments to the legislation for cultural heritage preservation, as well as the private ownership of facilities are making the process of developing tourist accommodation facilities harder for implementation. Regions acknowledged for traditional values need to comply with certain social and economic conditions for their rehabilitation for tourism purposes. Thus, it is necessary to improve infrastructure, provide functional road networks, develop health facilities, and investments that will enable the preservation of the buildings, along with the values of the environment and the natural landscape. In terms of protection it is necessary to preserve the value of the buildings - architectural, structural,

and cultural, implement the ecological concept and sustainability, through the creation of modern conditions and adapted facilities as part of tourist infrastructure [1].

National architecture has a special tourist value because it shows individual construction, which is authentic, original and rare. Traditional houses, economic facilities and wooden churches are very important in the tourism of rural mountain areas in Serbia. This paper analyzes the problems of harmonizing the protection and restoration of monuments of folk architecture with their arrangements. Folk architecture aspects as tourist values are presented through examples from other countries. Different ways of connecting the various legal, planning and tourism regulations relating to the national construction have been suggested. It is pointed to the factors which are considered in the activation of folk architecture in Serbian rural mountain areas. The relationship between national construction, protection, development and tourism functions has been analyzed. Due to the historical and ethnographic research in Serbia, the national architecture restoration activities have been undertaken. It is necessary to continue the process of studying these types of monuments, the relocation of threatened structures, the reconstruction outside of the original placement or conservation "in situ". The values of the national heritage and their cultural roles are displayed in the forming of the museum under the open sky. Tourism contributes to increased interest in the monuments of folk architecture, which is manifested in the tendency to expand the network of museums in the open (open-air museum). Above statement has been used in the most modern attempts to preserve the local characteristics of mountain villages [2].

In a densely packed, streetless village such as Neolithic Çatalhöyük in central Anatolia, it is argued in this article that variations in mudbrick recipes were used to mark social identity and autonomy through the performance of building. Geoarchaeological analysis of mudbricks established that cultural modifications were used to create social differences between neighbouring houses. Although mudbricks were ultimately invisible objects, hidden behind multiple layers of plaster, the processes of mudbrick manufacture and house construction were performed in the public domain allowing opportunities for individual expression. These results are situated within a larger practice of hiding and burying meaningful objects at Çatalhöyük, where unseen objects had as much power and affect as any object on display [3].

To date, the Balinese in general and Denpasar community in particular still believes that Tukad Badung is a *pingit/tenget*, or sacred area. Tukad Badung is Pelancahan Ratu Niang, fleet traffic of Ratu Gede Dalem Nusa and also a *linggih pura* and a sacred garden, a place to *ngaturang bakti* (in general, it means showing respect and gratitude to God by giving offerings) and *nunas tirta* for various ritual and also to relax and please the mind [4].

In planning, modernism has been characterized by a preference for low-density districts (except in central business areas), separation of residential, commercial and industrial land uses, organizing urban systems to maximize speed and access for automobiles, and a "clean sweep" approach to development that believes in erasing an existing site before rebuilding. As David Ley has said, modernism "created spaces, not places" and "masses not meanings...." 6. All of these discussions are pointing to the value of a distinction that Eugene Walter makes between the modernist view of "`place' [as] a neutral container into which you move all the independent contents of your experience" and the view that "place ... actively shapes ecological, social, and individual health and well-being." 24 As manifested in the fields of planning and architecture, this latter perspective has led to the emergence of a post-modern sensibility [5].

It is evident from the usage of *penyampuhan* water as a means of rites. There are hundreds of temple along the river, and there is even one standing in the delta, or in the middle of the river. Some temples are very famous, particularly among the people in Denpasar, and some others are even widely well-known to people outside Denpasar, for instance Tirtha Belong temple where people usually come to *nunas tirta* (getting holy water) that will be used in *Pitra Yadya* ceremony (one of four religious ceremonies in Bali, the purpose is to show respect to the ancestors), in this case, *ngaben* (cremation). There are also Tanah Kilap temple and Candi Narmada temple where people usually come to pray for general occasions. The presence of temples along the river is a reflection of local culture in order to become a culture-based city.

Tukad Badung's Problems. Lands around the river possess high economic value. Thus, it entices the landlords to use their lands for economic production purpose, without considering the ecology aspect or the river's ecosystem, which, in the end, resulted in limited riverbanks.

The rapid land conversion in the upstream reduces soil absorption power, which causes the streamflow to increase. Facts about land cover conditions shows that the ground levels which are coated by waterproof materials are spreading wide. It, in return, reduces the lands' ability to absorb water and also increase the runoff. This phenomenon happens in almost all segments. Even though to date rice fields and vegetation lands still dominate the upstream, the tendency to convert the lands into housing area is very high, especially with the population density that keeps increasing in Badung and Denpasar. The lands condition as previously explained gives positive contribution to erosion and impoverishment of lands fertility. It can be seen from the result of water quality test in which the water flow upstream carries many lands sediment and organic materials.

Badung and Denpasar are indeed designed to be tourism cities. The infrastructure, facilities, and environment are arranged in order to appeal people to visit the cities, either by feet, boats, and public transports. Various modes of transportation can be designed to appear appealing to tourists. Several conditions that must be fulfilled by the cities so that they can be appealing tourist attractions, such as easy access and service with premium quality from the cities' transportation system, setup and high physical quality, guaranteed safety, various unique touristic objects, and quality-based management, and the last but not least is promotion. To make Denpasar as the most important tourism city in Indonesia is not impossible. The purpose is clear: to increase the city's economy. Considering the purpose, there are two things that can be done. First is, creating Denpasar as an educational tourism city. Second is, creating Denpasar as a cultural tourism city.

Then, Tukad Badung can be used for a means of water recreation. It can be achieved by weiring the water, so that the river becomes a decent recreation spot. Based on the potential and technical consideration, the suitable weir system is a rubber dam which high low weir can be adjusted automatically with the water surface. By utilizing the weir system, flood can be prevented and controlled. First thing that needs to be done is careful planning in hygiene, land usage, environmental governance, incentive programs, assessment of investment/capital, and long-term programs, so that they can be integrated with the city government's policies all of setup Muara Nusa Dua reservoir is able to revitalize drainage area of Tukad Badung, particularly the downstream, into a recreation spot which is revolved on environment preservation. Setupthe Muara Nusa Dua reservoir to be a touristic/recreation spot is expected to increase the reservoir's function, which is to make people prosperous or creating a preserved environment. Also, to encourage the development of sustainable people-based economy [6].

The development of touristic areas around the reservoir is one relevant way to select tourism market segment which focuses on culture, humanity, and concern of environmental issues. Developing the area as a touristic area is an attempt to reduce linkages and to increase multiplier effects for the communities around the reservoirof The Muara Nusa Dua Reservoir Part I is 35 hectares, consisting of 3 km2 of inundation areal main bulding, and complementary buildings.

The field data, such as sedimentation, river cross sections, flow rate, and water discharge, are collected both qualitatively and quantitatively. Then, the data are processed both qualitatively and quantitatively, as illustrated in the following study roadmap.

III. METHOD OF RESEARCH

The subject of this study is spatial design of urban settlements in TukadBadung in Denpasar. Denpasar is one of metropolitan cities in Indonesia. It is also the capital, the education center, and the trade center of Bali. Denpasar becomes a very dynamic city with its triple roles. However, at the same time, those roles also arises various problems. The 2nd year study is conducted from March 2014 until December 2014 in order to formulate a concept/model of spatial design of urban settlements i.e: Perumnas and BTN Houses) in Denpasar, particularly those which merge with the river ecosystem.

This study deals a lot with value system, concepts, perceptions, diversity, uniqueness, local wisdom, and local belief about anything outside themselves. Moreover, this study also deals with transcendental and double realities which are experienced and believed by the locals, yet are difficult to explain. Based on the characteristic of the object study, the paradigm applied in this study is phenomenology.

Phenomenology (naturalistic) emphasizes on the "natural" context: a thorough context that cannot be understood by isolating or eliminating and thanout of the contexs. The meaning of a phenomenon can only be captured as a whole. It is the result of reciprocal (interactive) relation, not just a linear causal relation. Generalization on phenomenology is a work hypothesis that can be transferred to other cases with some level of conformity [7]. Qualitative method (phenomenology) works as follows. The design is general, flexible, and developing in the process of studying. The objective is to gain an understanding of meaning, to develop theories, and to illustrate a complex reality. The instruments are human (the researcher themselves), notepads, and voice recorders, without a research assistant. The qualitative data come from participation, individual documents, and unstructured in-depth interviews. Small samples are taken in purposive manner, continuous analysis, inductive, looking for patterns, models, or thematic. The relationship with the respondent is close, and on par within a long period. The proposed design is brief and general, the problem is allegedly relevant with no hypothesis, and the focus of the study is written after the data are collected from the field. Qualitative study is closely related to the distinctive, contextual factors. Therefore, each context is handled in terms of its own context. In this study, the study unit/observation area is the entire urban settlements in TukadBadung, which is divided into three major blocks: the upstream, midstream, and downstream. The unit which studied the scale of settlements space along TukadBadung in Denpasar is expected to bring identification or information on values/ideas/notions about local wisdom that deals with the management of settlements space, and also the utilization of the river space in particular. Those values are expected to be developed further to enrich the concept of cultural-based city in Denpasar, Bali.

The "variable" observed on the scale of urban settlements space along the river is border land use, values, orientation, social organization, public space (communal), daily activities, rituals, and achievement.

Urban settlements along TukadBadung in Denpasar are chosen as the location/target of the study by considering several aspects in objective manner. In general, the river space in the heart of the city possesses various functions, ranging from social, individual, to ritual function. The space in the river has been studied since long time ago, therefore it is easier to collect supporting data. TukadBadung has its own style in utilizing space, which each family that lives along the river makes it as a sewage disposal, and at the same time, the center of ritual activities or a place to get the holy water of life.

The process of this study consists of three stages. First, the study begins with understanding the study background, followed by determining the objective and benefit. Then, reviewing the literature related to the theory, substance, and method of study. Essentially, the theory and substance are background knowledge; meanwhile the method of study guides the course of the study. The data in this stage are collected through a study of literature, thus, the data collected are secondary data.

The second stage is conducting in-depth field study on the main case, urban settlements along TukadBadung in Denpasar, which resulted in several themes. Next, holding an inter-theme dialogue until several concepts are obtained, which is followed by an inter-topic dialogue until a local wisdom (traditional value on the utilization of the settlements space, particularly the riversides in Denpasar, Bali) is obtained. The primary data are collected by measuring, conducting interviews, taking pictures, voice recording, and participating study.

Third, the result, which is the local wisdom (the new discovery) about the value on the utilization of urban settlements along Tukad Badung in Denpasar, is discussed again (not compared), with urban settlements design concept (housing complex, perumnas, BTN houses) and related theories. The physical and non-physical data of the settlements along Tukad Badung are collected by conducting a field study. The physical data are collected by measuring and taking pictures, meanwhile the non-physical data are collected by conducting both regular and in-depth interviews. Then, the new discovery becomes the basic theoretical and practical reccomendation for preservation or conservation concept, with emphasis on the fundamental and original notion in Denpasar. It is done in order to support the development of the space on riverside as a water front, as Denpasar is aiming to be a culture-based city.

The study mechanism involves a validation of input, verification of analyzing proccess, and validation of output (result). Input validation or credibility is conducted by examining various data in triangulation manner so that the data match the context. The data that have been collected are checked at the double sources (respondents and literature). In addition, a briefing session is also conducted for the groups consist of the final semester students to clarify and unify ideas between the researchers and the groups, and also among the groups. The verification of analyzing proccess is conducted by examining the tentative result and meaning repeatedly or gradually. Meanwhile the validation of output is conducted by rechecking the previous analyzing proccess and matching it with the source of information (the data).

The study procedure elaborates the sequence of the study, which begins with observation, followed by presentation and ends with data analysis. Essentially, the study is conducted by following a certain procedure: a three gradation network with a text of a chapter of sub-chapter as the result. The riverspace scale involves history, cosmology, mindset, cultural life, ritual, hierarchy and social classification, land utilization, border, values, orientation, communal space, and achievement. Related to the sequence of observation, first thing to do is illustrating/measuring the river, followed by conducting in-depth interview, observing and collecting documents. In several cases of data validation, the measurement is taken by two professional measuring personnel. While in field, notes, records, photographs, pictures, sketches and diagram are all taken and made. Then after returning home, the completed version "field notes" are made, which include everything that has been heard, seen, experienced, and thought in order to collect, present, and reflect the data. The data are presented in narrative texts, tables, and pictures (sketches, maps, photographs, and diagrams). In presenting the data, the researchers are aided by the student groups. After that, the data are analyzed using comparative method. Then, the data from various sources are compared, and abstracted gradually so that a new theory/concept is created.

The study techniques involves strategy, method, and accuracy of the study. The study strategy starts with the study on the main object, which is the urban settlements along Tukad Badung in Denpasar. After that, the study is continued to formulate a spatial design concept of urban settlements, particularly in designing the riverside space. The study techniques emphazise on the qualitative method, in which the researchers or the human factor plays an important role. The main data sources are speech and actions, and the rest are additional data, such as documents, photographs, and statistics. Qualitative study relies on interviews, observations, and participant observations in collecting data in the field. Interviews are conducted in an open, deep, and un-structured manner. The accuracy or validity of the study is done in triangulation manner, particularly in checking the data through other sources. This is done by comparing the data from observations with the data

from interviews, and also comparing the data from interviews with documents related to the topic or the theme of study. Descriptive qualitative study relies on human's role as the study instrument (human instrument) and mostly used software as an instrument to analyze the patterns of relationship between groups of data, for instance. The data are collected mostly by the researchers, except in certain case (for topography measurement), collecting the data is assisted by professional measuring personnel. The measurement is done for validation purpose, not quantification. In order to obtain the field data, both software and hardware are used. The software includes a question list that mostly contains open questions aside from normative questions. Meanwhile, the hardware includes a map of the village, notebooks, melimeter papers, pens, rulers, erasers, voice recorder (casette), and camera. In addition, the measurement of the level or the height of the river surface in particular uses Total Station GTS 211D (TOPCON), reflectors prism, measuring staff, and tripod. The data from observation and field measurement are proccessed into descriptive texts, tables and pictures (schematic or diagrams, photographs, and maps)

The research materials in this study are mostly primary data that directly collected from the location of the study. In addition, it includes relevant secondary data from latest journals or books that contain the result of previous study. The materials used in this study are maps, pictures, photographs, and social cultural living for human emphyrical. The study materials are mainly concerned with traditional values and the utilization of the river space.

The paragidm applied in this study is phenomenology with naturalistic and interdisipliner approaches. The data of the community's behavior along Tukad Badung from upstream to downstream, such as civitas, activities, facilities or equipment used, and spaces used are collected by direct observation in the field, taking pictures with camera and handycam, measurement, and voice recording (cassette).

IV. RESULT AND DISCUSSION

The local wisdom of TukadBadung community is divided into two major categories: physical (tangible) and non-physical or belief (intangible). The physical (tangible) analysis of the traditional settlements along TukadBadung in Denpasar consist of the river (*tukad*), border (*ambal-ambal/jerogjogan*), garden (*teba*), yards, alley (*rurung*), and roads (*marga*). In addition, the community's activities based on the local wisdom are divided into two, profane activities and sacred activities.

Profane activities carried out in the river, which runs from north to south, are recreational activities, bathing, washing clothes, and toilet for both female and male, fishing, water spinach farming, and raising livestock. Meanwhile, sacred activities carried out in the river are for ritual purposes, such as *nganyut, nunastirtabeji* for *manusayadnya* and *pitrayadnya*. In the border (*ambal-ambal/jerogjogan*), usually there are large trees, such as kepah (*Sterculiafoetida*), beringin (*Ficusbenjamina*), bunut, canging, and ae.

The non-physical or belief (intangible) analysis is as follows. At first, the river is believed as the recreation place of RatuNiang, ship traffic ofAncanganRatuGede, place of spiritual cleaning (*pelukatan*), and also home for spirits like Memedi, Gamang, Tonya, and Samar. However, now, based on the observations and in-depth interviews, belief in spirits has begun to diminish.

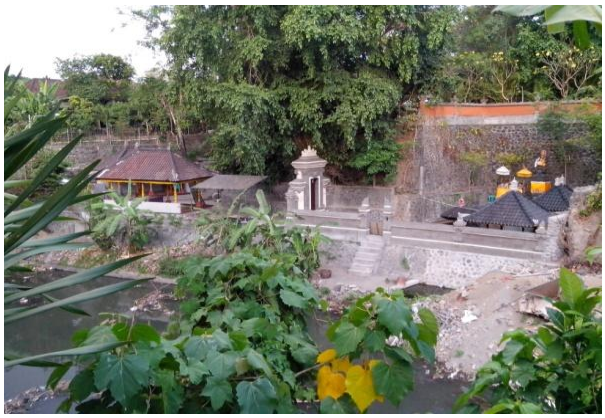

Figure 1: Sacred activities performed at this shrine are ritual activities such as *nganyut, nunas*TirtaBeji for ManusaYadnya and PitraYadnya.

Here will be described the beginning of the spatial concept of traditional settlements along TukadBadung in Denpasar, which consists of the river (*tukad*), border (*ambal-ambal/jerogjogan*), garden (*teba*), yards, alley (*rurung*), roads (*marga*).

At first, the river serves as a channel for flood. At the border (*ambal-ambal/jeorgjogan*), there is Pura Taman, Beji, sacred trees, profane trees, and alley (*rurung*) that leads to the ricefield that measures approximately 150 cm (*apenyanan*). Garden (*teba*) serves as playground, for farming, and honing skills. Moreover, it also serves as a dumping ground, and a place used for preparing/supporting ceremonies. Alley (*rurung*) serves as the main traffic for humans and spirits.

The yards apply Bali Dataran spatial concept with the natah located in the middle of the yard. In the yard, there are several buildings, such as TempatSuci, *SanggahPengijeng, TunggunKarang, Bale Daja, Bale Dangin, Bale Delod, Bale Dauh, Paon, Lumbung, and Pamesuan*, all of which oriented to an open space or *natah* in the middle.

In TempatSuci, there are Sanggah as the pengayat to the river with various names, such as RatuNiang and RatuManikDarma. Furthermore, there are also beji and garden with a sacred pond. The road serves as cars traffict, Cikar, and plaza(Natah) for ceremonies.

As the era changes, the spatial concept of traditional housing along TukadBadung in Denpasar also undergoes several changes. However, some stay unchanged. One of the parts that undergo change is the river dimension. It is generally smaller and and its sides tend to be added with tender. There are many sacred trees and profane trees in the border getting cut down. The dimension of the border and alley also decreased due to the private nature of the yard's owner. The function of the garden is now changed into non-agriculture or service. The buildings tend to be enclosed, each house has its own toilet/wc, and lumbung proper transforms into a symbolic lumbung. Some houses have outer orientation and be an economic/social function, such as store or *warung*. On the contrary, the dimension of the road increased. The roads become wider with more cars, trotoarization project, and also Denpasar Sewerage Drainage Plan (DSDP) project in the middle of the road.

In the town underscores the importance of choosing and designing features of buildings with their operation, maintainability, and life-cycle preservation in mind, if structural and fabrics integrity must be maintained, and sustainability achieved, while restoration dollars are saved. Originality/value - Ilozor et al.'s building defects cause-effects model was applied in understanding the contributions of various architectural and building features to certain faults, defects or failures that impact the preservation of buildings' structural and fabrics integrity [8].

Meanwhile, parts unchanged are the alley, holy place, ritual pavilion. The main traffic to the river for humans and spirits is still the alley, but there are some alleys that transform into *rurunggantung*, and some others are closed. Trends of environmental, social and economic development in the modern world are driving forward the theory and practice of Green Building with important role for architecture and architects. Complex quality assessment methodologies developed in different regions of the world to evaluate environmental, social, economic and creative features of new and renovated buildings and urban complexes are analyzed in order to identify the most effective and advanced tools and methods. The importance of sustainability aspects is presented by a comparative analysis of basic features of building's qual-ity assessment methods originated in different countries and regions, as it reveals the structure and weight impact of different evaluation methods. The article also addresses the impact of Green Architecture theories and assessment methods on architectural practice by analyzing outstanding case studies in urban design, landscape architecture and volumetric building design [9].

The Variation of Urban Housing. The sample is taken in purposive manner, and there are 24 boarding houses in three locations (upstream, middle, and downstream) in TukadBadung treated as the samples. The cases on urban housing, both from middle class and lower-middle class which represent the three locations previously mentioned are elaborated in the following.

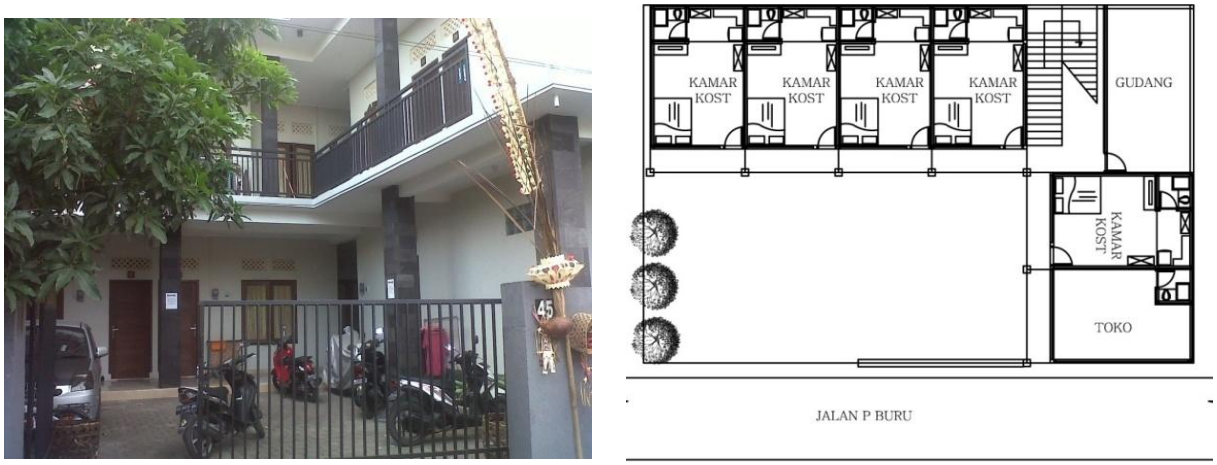

Figure 2: Simple boarding house in TukadBadung Central area whose building form has approached the building of a luxury boarding house.

Home Yogi boarding house is located at Jalan Nusa Kambangan No. 31 Denpasar, owned by Mister Wikanta. The 1st floor of the boarding house is used for parking area, while the 2nd floor is for bedrooms. There are 6 bedrooms, 5x7 meter each, without a living room and a kitchen. The facilities provided in the boarding house are: an AC, a refrigerator, a sink, a 29 inch LCD TV, a bathroom with bathtub, a water heater, and a bed with mattress sized 200x200, and electricity that is paid using electronic credit. Home Yogi boarding House is available for daily and monthly rent. The rent is Rp 250.000,00 per day and Rp 2.000.000,00 to Rp 3.000.000,00

per month. Another boarding house, "B" (this boarding house does not have a name), has 5 rooms on the 1st floor and 6 rooms in the 2nd floor, which make it 11 rooms in total. Each room is 4x6 meters, with a bedroom, a kitchenette, and a bathroom but there is no living room. This boarding house also has a *warung*(a small shop that usually sells local food and other necessities) that sells food as an additional facility. The parking area for cars and motorbikes are merged with the front side of the boarding house. Other facilities such as mattress, TV, tables, and wardrobe are provided by the boarders themselves. This boarding house is only available for monthly rent. The rent is paid on the agreed date between the boarders and the boarding house owner. The amount paid is Rp 650.000,00 per month.

This boarding house is located at Jalan Bukit Tunggal No. 14, Denpasar. It provides 2 types of rooms: Type 1 has 3 rooms in total; each has a bedroom, a kitchen, a private bathroom, and a spot for drying clothes in the back. Type 2 has 6 rooms in total; each has a bedroom, with communal kitchen and bathroom. Another boarding house is located at JalanPulau Ron, Gang Dewa No.1 Denpasar. There are 4 bedrooms, kitchen, and private bathrooms. The parking area is only for motorbikes and bicycles. The rent is Rp 600.000,00 per month and per room. Monthly electricity bill is already included in the rent.

The next case study is on a boarding house at JalanKunti No. 6 North Denpasar. The land where the boarding house is built is approximately 150m2. On this site, there are four boarding houses, approximately 24m2 each. Each unit has an air-conditioned bedroom, a living room, a kitchen, and a bathroom with a water heater.

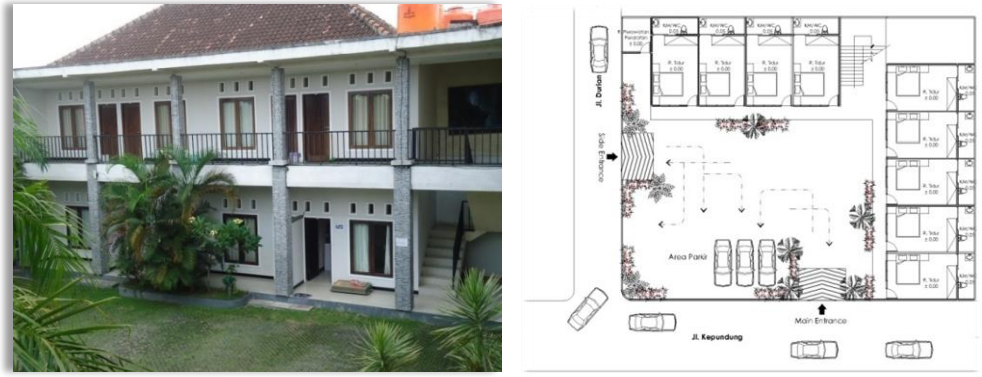

Figure 3: Layout 1st floor of an exclusive boarding house located at JalanKepundung no. 25 Denpasar.

This sample is located at Jalan Made Bina Kavling 15. This is a private residence of I GustiNyomanWinaya. He comes from Kamasan village, Tabanan, and has been living in Denpasar since 15 years ago. He is an employee in an office and also the klianadat in BTN area where he resides. BapakWinaya lives with his wife and two daughters. His house had been renovated 10 years ago for thefacade and room layout. Winaya's family feels comfortable living in this house. Facilities in this house are *sanggah*as a holy place, 2 bedrooms, a kitchen, and toilets.

The next sample is an exclusive boarding house at Jalan Taman Pancing South Denpasar. Costumer service: 087861193532 atau 03612725276. The land is 315 m2 while the building is 300 m2. This boarding house is a 2-storey building, with 10 rooms in total. Each room has an AC, a bed, a wardrobe, a TV, a private bathroom, and a sink. The rent is Rp 1.100.000,00 per month. There are several rules that must be followed by the boarders, for instance, it is forbidden to bring, use, or keep flammable items such as gasoline, kerosene, stoves, fireworks, etc. It is also forbidden to damage the boarding house facilities. For the convenience of fellow boarders and its surrounding, the boarders are expected not to cause a commotion. In addition, they should maintain order and keep the boarding house and the surrounding neighborhood clean.

Insect-food-plant associations have been shown to be influenced by the chemical, physical and nutritional characteristics of plants. To explore the potential effects of leaf structure on shelter building behavior in a Neotropical skipper butterfly, we investigated shelter building patterns on two congeneric food-plants that varied in leaf thickness. Shelter architecture varied significantly between hosts, with thicker leaves requiring longer cuts to construct shelters. The relationship between shelter building behavior and leaf structure is discussed in relation to selection pressures on larval shelters and food-plant choice [10].

The boarders have several rights and duties. They are entitled to use the boarding house facilities meanwhile the boarding house manager is entitled to enter the rooms when needed or when there is an emergency. As for the boarders' duties, they must pay the rent as agreed. Those who bring their own electronic devices must save electricity.

The boarders must submit a copy of their ID that is still valid. In addition, they must be willing to compensate for damage or loss of inventory items inside their rooms and boarding house,. In case of fire, riot, natural disasters (flood, earthquake, landslide, etc), the owner of the boarding house is not responsible for the boarders' valuable and important documents.

The Lake Jackson Mounds site (8LE1), located near Tallahassee, Florida, has long been considered to be a frontier Mississippian center. This assertion is primarily based on elaborate burial goods recovered during salvage excavations in the i<)jos. Ground penetrating radar (GPR) on the two largest intact mounds at Lake Jackson revealed new information about their morphology and construction histories. These findings demonstrate that mound-building practices at the site were distinct from earlier, local Woodland mound-building traditions, and more similar to those of other Mississippian centers, such as Etowah and Moundville. Lake Jackson revitalized mound building in the Tallahassee area under the influence of external connections with groups in the Mississippian interaction network. These findings show how mound building was an integral practice for expressing and expanding Mississippian ideologies and rituals. This work also shows the utility of GPR in exploring mounds' morphologies and construction histories [11].

The manager of the boarding house is entitled to take action (evicts the boarders) when there is a mismatch between the data given by the boarders or when the boarders disturb/harm other parties.

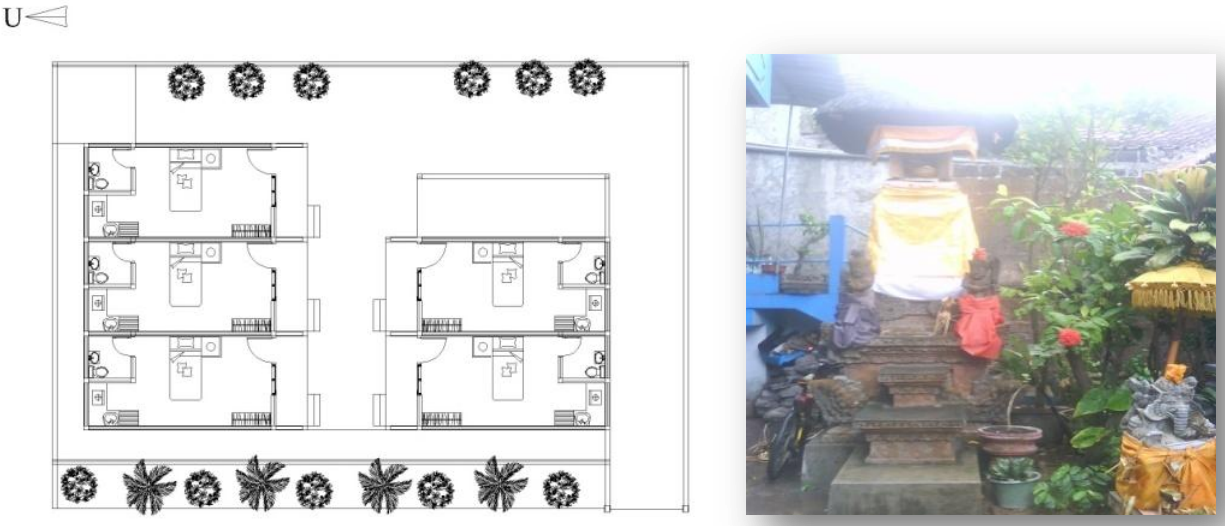

Figure 4: This boarding house has the hallmark of a gate-shaped entrance that has aApitLawang and Sanggah.

V. CONCLUSION

At first, a river serves as a channel for flood. At the border, there are Pura Taman, Beji, sacred and profane trees, and an alley that leads to the ricefield that is approximately 150 cm (*apenyanan*). The garden serves as a playground and also a dumping ground. In addition, the garden is also utilized as a place for farming, honing skills, and preparing/supporting ceremonies. Meanwhile, alley serves as the main traffic for humans and spirits. But then, urban settlements flourish along TukadBadung in Denpasar, applying a design concept that consists of a river (*tukad*), border (*ambal-ambal/jerogjogan*), yard, alley (*rurung*), road (*marga*). The yard of urban settlements/boarding house applies Bali Dataran spatial concept, with *natah* located in the middle of the yard. In the yard, there are several units of building, such as holy place, residential units, and service units (garage, *warung*, and laundry).

ACKNOWLEDGEMENTS

To all parties who have assisted the implementation of this research such as community leaders, JeroMangku (the holy person in the holy place), and the younger siblings of our students delivered a lot of gratitude, with hope what can be generated in this research may be useful both theoretically and practically.

REFERENCES

[1]. Namicev, Petar; Namiceva, Ekaterina. Traditional Architecture with Contemporary Use. Methods of Preserving the National Architecture of Macedonia. *Journal of Settlements and Spatial Planning*; Cluj-Napoca 7.1 (2016): 89-97.

[2]. Pavlovic, Sanja; Zivanovic, Zora; Gataric, Dragica; Stanic, Sara. The Traditional Architecture in the Function of Planning and Development of Rural Mountain Areas in Serbia as Tourist Destinations. *Journal of Settlements and Spatial Planning, suppl. Special Issue No.1;* Cluj-Napoca. (2012): 85-95.

[3]. Love, Serena. The Performance of Building and Technological Choice Made Visible in Mudbrick Architecture Author Information. *Cambridge Archaeological Journal;* Cambridge 23.2 (Jun2013): 263-282.
[4]. Warnata N.,Kembalikan Kesakralan Tukad Badung, *Makalah Seminar Menata Sungai Membangun Kota*, Fakultas Teknik Universitas Warmadewa, Denpasar. 2007.
[5]. Alexander, Don., The Resurgence of Place: Modernism is out and building places that fit with the environment and local aspirations is in. *Alternatives Journal;* Waterloo 28.3 (Summer2002): 16.
[6]. Runa W., 'Menjual' dan Melestarikan Muara Tukad Badung, *Makalah Seminar Menata Sungai Membangun Kota*, Fakultas Teknik Universitas Warmadewa, Denpasar.2007.
[7]. Guba, E.G., Lincoln, Y.S., *Naturalistic Inquiry*, (Sage Publications, Beverly Hill, 1985.
[8]. Ilozor, BD. Architectural and building features disparity and preservation of structural and fabrics integrity. Journal of Engineering, Design and Technology; Bingley 6.1. 2008 : 33-47.
[9]. Stauskis, Gintaras. *Green Architecture Paradigm: From Urban Utopia To Modern Methods Of Quality Assessment.*Mokslas: LietuvosAteitis; Vilnius 5.3. 2013 : 181-188.
[10]. Greeney, Harold F; Walla, Thomas R;Lynch, Ryan; LZoologia;*Architectural changes in larval leaf shelters of Noctuanahaematospila (Lepidoptera: Hesperiidae) between host plant species with different leaf thicknesses***;** Curitiba 27.1 (Feb2010): 65.
[11]. Seinfeld, Daniel M; Bigman, Daniel P; Stauffer, John Grant; Nowak, Jesse C. *Mound Building at Lake Jackson (8le1)*, Tallahassee, Florida: New Insights From Ground Penetrating Radar. Southeastern Archaeology; Abingdon 34.3 (Dec 2015): 220-236.