The existence of traditional Balinese architecture on *Puri* and *Umah*

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**Abstract.** Balinese architecture, basically, is seeking for the harmony between The Creator, the human and the environment which is stated in the local religious concept *Tri Hita Karana*. Nowadays Balinese architecture style has grown rapidly with influences of the externals. The research aims to find out the existence of Balinese architecture as cultural tourism potency of Denpasar as the main gate of Bali, especially in the traditional Balinese building namely *puri* and *umah*. This research uses a qualitative method that starts with data mining of respondent's views descriptively, in-depth interviews, and the interpretation of both respondents and researcher as the found concept. This qualitative research proceeds inductively begin with obtaining detailed data, categorizing data, abstracting, and determining the concepts as a finding. The sampling technique is purposive sampling. Data collected by observation, interview, and documentation. From the theory of style and theory of decorative architecture, the existence of Balinese architecture in the traditional *puri* and *umah*, seen significantly developed in the zone of *pawongan* and *palemahan* without ignoring the ergonomic factor. Similarly, the traditional *puri* and *umah* used the ornament that not carved. In the *parahyangan* area, there are insignificant changes in the materials and colours.

1. Introduction

Recently, Bali with its cultural uniqueness facing the complex environmental influences. The various dimensions of external influences (both from outside cultures and the rules/norms embodied in the surrounding society) penetrate into Balinese culture. Although the growth of tourism in Bali has been welcomed by the Indonesian central government as a source of foreign exchange earnings and as a driver of the local economy, planners have an interest in the possible adverse effects of cultural disturbance caused by large inflows [1]. This negative impact is due to a lack of attention to the requirements for sustainable tourism [2].

The traditional Balinese architecture has existed since ancient times inherited as a foundation in building a high-philosophical dwelling. The rules or the ordinances are stated in the Lontar Asta Kosala-Kosali. The Balinese traditional architecture with Hindu-based conceptions is a cultural manifestation, where the character of traditional Balinese housing is largely determined by the norms of Hinduism, customs and the sense of art that reflects the culture.

Problems arise when the profane (impurity character in traditional terms) meet the profit in modern terms as if eliminating regionalism and displaying internationalism [3]. Although the influence of outer cultural became a cultural acculturation, ultimately the summary of the Balinese architecture has its own style. When the profane (traditional) meets the forms of profit (modern) then the problems arise where
the Balinese still strongly believe in the cosmology of the form and function. The theories of functionalism in architecture continue to flourish, in line with the development of modern culture and industry, which put more emphasis on function and technology [4]. The theories of functionalism in architecture continue to grow, in line with the development of modern culture and industry, which emphasizes more on function and technology [4]. In the 19th century when the influence of Western architecture began to take place in Indonesia, the archipelago also began to regard the work of art (including architecture) in response for the liberation of the natural challenges. Yet the Indonesian local concept is an adjustment and alignment with nature [3], so that sometimes it causes a cultural gap. The main of national culture that has been dug for centuries from our own nation has noble values of national culture and needs to be preserved, especially the intangible local cultures.

It is interesting to know the existence of Balinese architecture in the house or building such as puri and umah, especially in Denpasar which is the capital of Bali as well as the gate of Bali Province which is famous all over the world with its natural beauty and cultural custom.

2. Literature studies

2.1. Balinese architecture

In accordance with the General Provisions in Regulation No. 5 of 2005 concerning Architecture of Buildings, there are four architectural notions in Bali, namely:

- Local Architecture is an architecture that has been rooted and established in the culture of the society in a unit of the tradition’s area from a small to a wide area of tradition in Bali Province.
- Inheritance Architecture is the architecture of the past relic in Bali Province, whether in a state of being maintained/utilized or not maintained/not used according to function, move or immobilized in the form of unity or group or its parts or the rest which is considered to have values important to science, history, culture, and other significant values, as set out in the laws and regulations.
- Traditional Balinese Architecture is a spatial and building form that bases on norms both written and unwritten that are inherited from generation to generation.
- Non-Traditional Balinese Architecture Bali is an architecture that does not apply the norms of Balinese Traditional Architecture in its entirety but displays Balinese Traditional Architecture style.

Balinese-traditional architecture is the embodiment of an effort to create space as a place for social, cultural and economic activities, both material and spiritual. Thus Balinese-traditional architecture not only covers physical aspects but also non-physical, not only based on definite and rational considerations, but also based on feelings, aesthetics, and even based on spiritual considerations, according to values, norms, beliefs, customs and Hinduism in Bali [5].

The Lontar Asta Kosali defines the norm as a concept that organizes human actions in building housing and settlements derived from Asta Kosali, or basic guidelines in designing traditional Balinese houses. Asta Kosali's norm originates from Hinduism, so it has a strong influence in the Balinese community. Thus, violations of the norms contained in Asta Kosali also mean violations of Hindu norms [6]. Generally, buildings or traditional Balinese architecture are always decorated with carvings, equipment and color rendering. This ornament has a certain meaning as an expression of beauty, symbols, and communication [7].

2.2. Theories in Balinese traditional architecture

In Balinese Traditional Architecture, architectural theories have not been found explicitly, even though instant architectural guidelines already exist. To study, sort and choose the architectural values contained in Balinese Traditional Architecture, it is necessary to refer to the relevant architectural theory in the scientific domain according to the study.
2.2.1. **Semiotic theory.** Theories about the system of signs and symbols in human life [8]. Semiotic ideas began to enter architectural debates in Italy in the 1950s, in the midst of a crisis teaching material on architectural theory, the monotony of architectural products, and harassment of the meaning in urban environments. The semiotic idea of architecture in the 1960s began to be widely discussed in France, Germany, and England, especially as a polemic and normative instrument to strike the weaknesses of functionalism which underlies the modern architectural design. Whereas the application expanded rapidly in the early 1970s, especially in the United States [9].

2.2.2. **Analogue theory.** The theory of equality, conformity, resemblance, similarity, parallels, equality between two different objects. Some objects in the same form, structure, or function, but different origins or no kinship. According to the Oxford dictionary, the analogy is a part of the similarity between two ideas or thoughts that are compared. Poesprojo explained that based on the substance there are two types of analogies, namely 'Inductive Analogy and' Deductive Analogy, and based on the form of analogies are divided into 'Figurative Analogy and' Illustrative Analogy’ [10]. Usually, an inductive analogy is also called a logical analogy which is a thought that starts from a particular event to a special event that is similar. From this thought, it was concluded that the truth on one event was also true in the other. The deductive analogy is thought which is based on real and empirical similarities between two objects and can be concluded that because they have similarities in many aspects, they are also similar in some other characteristics. The figurative analogy is a thought that begins by interpreting something new using an existing description based on past experiences. The success of this method depends on the strength of the experiences they use. The illustrative analogy is illustrating with forms arranged with ideas that contain thought to convince the public. The aim is to accentuate the outstanding values and be used in experiencing the life. In the illustrative analogy, often the visible description is not the truth of the object itself, but only imaginary or symbolic. According to the principles of rhetoric, there is a difference between imagination and thought. In architecture, the difference will be clearly seen in the illustration of an idea [10].

2.2.3. **The theory of style.** Style is a form or a rule, and equipment that are typical of a certain period and place. Balinese style comes from traditional times and only applies in the area of Bali with certain names such as batur, saka, kereb, murdha or bentala. The provisions contained in Asta-Kosala, Asta-Kosali, Asta-Bumi are examples of orderly Balinese styles. The link between style and culture can be explained as follows: in architecture, history has a very important role in the presence of an architectural form and/or its parts. For example, in the history of Western architecture, one of the periodic indications is the difference in the form of its architecture. Thus, a style is immediate as an object of history, even though not every historical object is a style. Considering some understanding and linkages with culture and history, the styles in architecture have the potency and functions, namely: 1) styles have the potential as the local identity of an architecture; 2) style has the potential to show periodization and the history of architecture; 3) style has the potential to be a conservation factor from efforts to change the appearance of architecture and; 4) The style has the potential to be a source of ideas or themes in making presentations and architectural arrangements.

2.2.4. **Theory of ornaments and decoration as a variety of architectural ornaments.** Ornaments and decorations as part of applied aesthetics that includes elements of artwork and design elements in architecture the term of applied aesthetics are more specific can be called 'architectural ornaments diversity', the whole set of elements of artwork and design elements that are carved or affixed in architecture. Sculpting and affixing is expected to attract the attention of observers, both directly and indirectly, or as forming the atmosphere and identity. Variety of architecture ornament as a set of various types, patterns, colours, of decorative elements can be broadly classified into two groups, namely ornaments and decorations: 1) Ornaments are: i) every detail of shapes, textures and colors which are intentionally utilized or carved/formed as symbolic and to attract the attention of observers, [11]. ii) ornamental diversity which is an integral part of the construction, in other words, the ornament appears...
as a result of the completion of a construction called tectonics [12]. 2) Decoration is: i) a combination of several materials, equipment, and objects or objects used to decorate a building in order to present a certain atmosphere or style [11], ii) various ornamental elements applied to architectural components, but not an integral part of construction and merely installed as an aesthetic/ornamental element. In these conditions, these elements can be removed and reinstalled [12].

2.3. Functions in traditional Balinese architecture
Balinese people in the past were very obedient to the customary norms and ethics that prevailed in a royal environment. The relevance of function or use value in Balinese traditional architecture is strongly influenced by Catur Warna as a professional stratum in Balinese society. This will determine the classification of building typologies that used by the community, both in the form of housing and Bale. For the brahmin or priest is called griya; for ksatriya or the knight and royal family is jero; for waisya or businessman called jeroan; and for sudra or worker called unah; while the castle for the king is called puri according to his level of authority.

2.3.1. Typology bale and its functions in Balinese traditional residential

- Bale Daja (North) or meten comes from the word ‘mati’ + ‘an’, mati or ‘die’ intended not to stop lives, but to ‘die’ from activity or sleep. Meten is functioned as a younger’s bedroom. It called gedong if it is functioned as a place to store sacred objects or other valuable objects. It called Bale Bandung if it is combined with a porch or amben meten. It called Gunung Rata if the front porch has two terraces (andé), it is the biggest type that usually used in puri, griya, and jero.

- Bale Dauh which is located in the west part of the site as a place for parents to sleep at night, while during the day it is used as a workplace and reception area for guests in general, it is located close to pawon/kitchen so that the elders are easily to proceed the kitchen.

- Bale Dangin, located in purwa/dangin/East where the sun rises, as a bedroom for a grandparent who has entered the Vanaprastha life phase. Bale Dangin which is close to mrajan as the sanctum of the ancestors and Ida Sang Hyang Widi, so that it is easy to pray in order to get closer to the Creator.

- The family sanctum is called ‘marajan’ or ‘sanggah’, derived from the Sanskrit word ‘rajan’ which has means king. Raja is the head Kingdom, a noble or honored position. The word rajan in Sanskrit was given the prefix ‘ma’ then becomes ‘marajan’ or ‘mrajan’ which means a place to glorify and worship, especially for the ancestors. The word ‘sanggah’ comes from ‘sanggar’ which literally means temple or ‘sanga’ in relation to the word ‘anangga’ which means holding high, can also mean upholding or worshiping [13].

- Su (e) manggen, derived from word sema + anggen means temporary graves. Bale sumanggen is a place to carry out the manusya yadnya ceremony and pitra-yadnya ngaben ceremony so that it has the most sacred position compared to other bale pawongan. The profane function is as a bedroom for a boy, a place to study and receive respected guests.

- Pawon derives from word pa + awu + an, awu means ash, which functioned as a kitchen and other housewife activities. In the back of the kitchen, there is a place to store rice and other crops called lumbunglijineng.

- Lumbunglijineng, as a place to store rice in the upper space, and bale at the bottom as a place for family member to do custom work, and they keep their equipment or tools underneath.

- Cage, as the place of livestock, serves as a reservoir of water or leftovers and as a piggy bank.

- Angkul-angkul, as the exit but not an entrance for the housing member. Pemesuan or exit gate means the outside orientation, as a symbol of the identity of the inhabitants.
2.3.2. The meaning in Umah architecture. Architecture is a building that contains meaning. Likewise, with Balinese umah, it contains a meaning as implied value (intangible), which needs to be understood through the proper interpretation. The meaning studies of Balinese umah as a text can be analogous to an assessment of the manuscript which is a reverse activity from explanation to interpretation conversely [14].

Humans naturally have physical, soul (spiritual) and energy. Balinese umah also have physical, activities, and meaning as the desired need for the fulfillment of the human body and soul above. Then there are related things as the express form (visible) and implied form (invisible) such as the meaning.

2.3.3. The identification of Balinese Umah. In accordance with the concept of Tri Hita Karana Balinese umah is essentially grouped into (1) parhyangan (holy space); (2) palemahan (environment space); and (3) pawongan (living space). In this term, it can be assumed to elements of the soul, physical and energy that exist in a living body. And inside Balinese umah is also possessed by the mass concept and living space called Tri Angga which is part of the head, body, and legs, as a symbol of harmony between humans (bhuana alit) and their environment (bhuana agung).

a) Paon is a space or room used for daily cooking, as well as a dining room and a place to store the foods. Paon is the place for housewife’s daily work. In the concept of Balinese housing, paon is the nearest part to pamesuan (exit gate) which is the best place for surveillance.  
b) Lumbung or jineng or granary as a place to store crops and others, which in the lower part is also intended as a sitting room or work space. Overall the form and construction are adjusted to the designation. The physical form of jineng can be observed based on:

- The form of jineng has a rectangular shape. This building is a stage and multi-storeys building, with four pillars and arched saddle roofs.
- The structure and construction of jineng are made in such a way that it can structurally accommodate the harvest as much as possible. Considering the storage time in the jineng is longer than the harvest periods the building is designed as follows:

1) The storage space must be large in a roof cavity with a rate limit or ceiling below it.
2) In order to keep the yields kept dry, the open space below must get enough sunlight and fresh air.
3) Placed in a high place so as to avoid disturbances of livestock, rats, insects and others.
4) Pile construction uses signpost so that rats do not easily enter storage.

c) Bale Dangin or sumanggen is used for manusya yadnya ceremonies (for example matatah, weddings, etc.) and pitra yadnya, therefor it can be said that bale dangin have a fairly sacred position among the other buildings. Bale dangin, also called bale odot, also has profane and multipurpose uses as a place for sleep and guests house.

d) Meten or Bale Daja is a sacred place for storing sacred objects/heirlooms/treasures and as a place for panyekeban (a kind of quarantine) for girls when she reaches adulthood or known as menek deha. But profanely, it is used as a bedroom for women or girl, it is also used as living room, even as a place to do work even as a place to work as found in the meten sakuts bandung and meten gunung rata.

e) Sangsah/pamrajan, placed in the main zone called the utama mandala, is a sacred building for worshiping of the family member both to The God and their ancestors. This sacred building is in the northeast part of the area (the direction called the kaja-kangin). There are several kinds of sacred buildings such as palinggih padmasana/padmasari, kemulan rong tiga, taksu, and piyasan. This holy place is bordered by a wall in Balinese called panyengker which is on the west side or the south part of it there is an entrance gate called pamedal with its apit lawang. Generally, the width of pamedal is a half length measured by outstretched arms (abelah dada/setengah depa). The position of the holy place ground floor (natatah) is the highest among other ground. In the housing
layout, the space between one building to another or to fence wall (panyengker) is measured by the dimensions (sikut) of foot soles ( tampak), and the dimensions of pangurip (life) which is called tampak ngandang (transverse feet’s palm). The sequence of this dimension measurements a re Sri, Indra, Guru, Yama, Rudra, Brahma, Kala, Uma plus urip, then recount from Sri, Indra and so on, then the provisions set in the asta kosala-kosali and asta bumi. In the beginning, the walls were traditionally made from soil, which was structurally separate from the roof frame structure. Awareness of the importance of proportions in the house of Bali precisely lies in the meanings of measurement and calculation and is a strong indication for this awareness. The rhythm in Balinese housing can be found on poles that are lined up at each bale, such as bale daun, bale dangin, bale delod and bale meten. The rhythm as a whole can also be seen in the form of a limasan roof (with a gerantang fault), except in the granary building, which has special uses for storing harvest.

f) Ornament, when observed, parts of the Balinese building cluster contain many meanings. First, it can be seen on the pillar of the building (saka). Saka itself - like other building components - has segments called heads, bodies, legs. Each part has an ornament that has meaningful terms. Starting from the top section called kupuh tunggal, then the below section called muon, coping, pepudakan, baong, paga sari, selisir, jongkok asu, padu raksa, asta pada.

On the walls can be found several profiles such as penukub, at the top of profile and the most visible, more inside there are several profiles called sesari, tiyas, ganggon sesari, and baong capung. The diversion profile (pepalihan) which also emerge, called paleh punding/gelang lutung. The flat part is the wall, and the lower part of the wall is called sedupak, and paleh wayah. In addition, at the lower section (bataran) it has a pepalihan that consists of penukub, tiyas, sesari, baong capung, banyu kambang, paleh wayah and tatag ujan/lemah ujan. The wood construction of the bale-bale structure, known as dedeleq, kincut, tugeh, tadapaksi (penumbak), waton, likah, galar, pelangkan, selimarlapad, sunduk bawak, sunduk dawa, and liat respectively. On the roof frame, there are sections namely pemada, igiga, apit-apit, gerantang, pemucu, sinab, lambing, canggah wang, saka/lambang and kolong. As a cover, the roof consists of several parts called pemubug, lambang, enab, djre and kampyah (especially on a rooftop?). It is different from jineng which also has saka, sunduk dawa, sunduk bawak, waton, selimar, likah and galar, the construction specifically also has sawah pemungung which is lies on the langki, sunduk pulang and dedampingi (assembled on saka above the sunduk pemauung), sunan, penyasa stand on it, gegolok dawa, gegolok bawak, papan tarib atap, apit udang, apat, tugeh, bubun, iga-iga, kenca, semah, kolong, tataf, apit-apit, sirang, langit-langit, tehet enab, tatakan waton, laitgajah, lait gegolok, lait, langki, pintu kuadi, jejeneng, ulap-ulap, penete, and papan.

In groups of sacred building such as Padmasari consists of four main segments, namely (from top to bottom): (1) pelangkiran, consist of pipid (patra punggel), tabing, tiyas, penukub (taluh kakul), sunduk dan karang curing; (2) batur sari, consists of simbar gantung, patra punggel, karang jae, paleh bukur, karang tapel, gelang lutung dan sesari. (3) Sancak segment, consist of sedupak, karang manuk, patrasamlung, karang tapel, paleh bukur, gelang lutung, sesari, tiyas; and (4) Paleh capah segment, consist of penukub, tiyas, sesari (mas-masan), simbar, karang asti, sesari, tiyas, sedupak and lemah hujan.

2.3.4. Aesthetics in traditional Balinese architecture. Traditional Balinese Architecture is the embodiment of the aesthetics of the human within their natural sphere. Thus becomes solid into the buildings with their ornaments. The religious values of the natural objects reflected into a harmonious aesthetics.

Aesthetic, ethic and logic considered as the bases in collecting, managing and placing the ornament. Three main living elements as the ornament are a human being, the animal, and the plant. The ornament with a human object presents their social and religious life.

The ornaments and decorations as part of applied art/aesthetics are the most valuable things for the Balinese. The Creator and nature have provided the beauty of Bali land. Art and beauty as the communication media with nature and The Creator. There is no even a single day without art and beauty.
The beauty manifested in every form of offerings as Hindus in Bali. As a farmer, the Balinese were free enough to creatively use their time to make various works of art.

The harmonization with nature, environment and the Creator is applied in Balinese Traditional Architecture with various strategies and methods. Balancing the *buana alit* as the contents and the buildings/*buana agung* as the container, applied by dividing the elements of *angga*/sarira to become *Tri Angga*. The division of these three elements applies in a macro to the micro, Bali, Desa Pekraman, Pekarangan, Bale and the component of Bale. The Mandala division implemented in the building on its ornaments pattern.

In Balinese Traditional Architecture substantially ornaments and decorations serve as a media of communication between observers and the buildings, in addition to providing a character of authority, magic, splendor and showing Balinese identity.

3. The methodology
The study determines the existence of Balinese architecture in the castle building (puri) and umah the residence in Denpasar. The study uses a qualitative method, the study locates in several castle buildings and houses in Denpasar. Furthermore, the theory of style, the theory of ornaments and decorations used to describe the existence of the values of Balinese Traditional Architecture.

Parameters in this study are the existence of Balinese architecture in Balinese traditional buildings, namely the puri and umah in Denpasar, the existence of which is in terms of form, an aspects of the material, structure, ornamentation, and development of ornamental variety, color, layout, change and expanding functions.

4. Observation results

4.1. Puri Satria
Historically, this castle is inseparable from the Puputan Badung war in 1906. There are two Dutch buildings namely wantilan and the former Badung regent's office which was built in 1928. The Kori Agung with the Dutch style makes it different from the castles in Bali in general. The local architecture character appears on its fence wall. (source: interview and observation results).

In the parhyangan zone, the layout of the temple does not change significantly, only changes in the material used. When the renovations, the wood used is camphor. While on the roof, it still uses palm fiber.

![Figure 1. Main gate of Puri Satria and the pendopo.](image)

In the pawongan section or places where residents do their activities, many changes, and expansion of its function, in terms of the building materials, both in terms of quality, color and dimensions changes. The quality is decreasing, the dimensions get smaller and the color changes. The floor structure is not used brick, but ceramics and marble. Philosophically, brick brings warm and hot, which can be used to avoid rheumatism. The roof and pillar frame structure has also changes. The ornaments that placed above the door, there are no more plant and animal patterns (*karangsae*).
In the section of palemahan, there has been a change of necessity and layout. In the first room entering the puri (ancak saji) has been used as a place for business. On the fence wall (penyengker), using a concrete structure no longer uses wood structure, which affects the harmony values. Ornaments on the sticky wall that used to be carved, now no longer use carvings, there are only patterns.

![Figure 2. Red brick dominancy in the material used.](image)

The concept of sanga mandala in Puri Satria generally no significant changes. The most section that changes is palemahan section. Tri mandala and Tri angga are still maintained as well as the Tri Hita Karana concept. Overall changes occur due to lack of understanding, and availability of materials that affect quality and efficiency factors.

### Table 1. Observation results in Puri Satria.

| No | Indicator                             | Description                                                                                                                                 |
|----|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | The building form                     | The buildings form cannot be separated from its historical aspect. The most typical buildings in Puri Satria is the pendopo/wantilan (hall) and the kori agung (the main gate), because those building were built by the Dutch in the European style. |
| 2  | The materials                         | Dominantly using the red brick                                                                                                               |
| 3  | The ornaments                         | Less of carving, like Badung style                                                                                                             |
| 4  | The layout                            | The size of puri area is 2.7 Ha. Its layout regarding to the Tri Mandala, and in the palemahan zone there are taman sari (garden), ancak saji and senetan (dunungan) |
| 5  | The function changes and expansion    | Puri is no longer as the central of the government. Nowadays puri functions more as a place for social and religious activities.        |

4.2. **Puri Tainsiat**

This castle is a close relative of the Puri Agung Satria. Puri Tainsiat also had an important role during the Puputan Badung war. However, because it is not the main castle, the Dutch architectural style has little influence. (source: interview and observation results).

In parhyangan zone of Puri Tainsiat the significant changes only on the material used. When the renovations, the wood used is camphor. While on the roof, it still uses palm fiber. In the pawongan section, the expansion and changes occur. The floor no longer uses brick but uses ceramics and marble.

The structure of the roof and the pole also changes in the wood type. The door has changed uses the gebyok style. Thus, bale delod and bale dauh use both Balinese architecture and Javanese style. Above the door, there is no more karangsae ornament.

In the section of palemahan, there has been a change of function. The main hall used to be a briefing room for the soldiers, recently used as parking lot. The fence wall (penyengker), uses the red bricks. Ornaments only sticks a sandstone with the raw pattern.
The local concept such as tri mandala, tri angga, and tri hita karana still implemented, especially in parhyangan zone. In pawongan and palemahan zone there are significant changes regarding the limitation of space.

Table 2. Observation results in Puri Tainsiat.

| No | Indicator                                      | Description                                                                 |
|----|-----------------------------------------------|-----------------------------------------------------------------------------|
| 1  | The building form and the materials           | Bale delod and bale dauh, resemble like a residence. The walls material uses paras with variations. The door uses the gebyok type. The kori agung of Puri Tainsiat generally uses brick decorated with two lion statues. |
| 2  | The ornaments                                 | Plant ornament on saka and less carving style                                |
| 3  | The ornaments                                 | Less of carving, like Badung style                                           |
| 4  | The function changes and expansion           | The hall which was used to be a briefing room now becomes a parking lot.     |

4.3. Puri Dangin

When several small kingdoms in Badung were united by Ida Kyai Sakti Pemecutan, the kingdom was centered in Puri Alang Badung Denpasar. One part of it is Puri Dangin. Called Puri Dangin because it is located in the east of the central castle.

In parhyangan zone of Puri Dangin the significant changes only on the material used. When the renovations, the wood used is camphor. While on the roof, it still uses palm fiber. In the pawongan section, the expansion and changes occur. The floor no longer uses brick but uses ceramics and marble.
The structure of the roof and the pole also changes in the wood type. The door has changed uses the gebyok style. Thus, bale delod and bale dauh use both Balinese architecture and Javanese style. Above the door, there is no more karangsae ornament.

In the section of palemahan, there has been a change of function. There are some main building uses as a hotels and rented shopping room. The fence wall (penyengker), uses the red bricks. Ornaments only stick a sandstone with the raw pattern.

Table 3. Observation results in Puri Dangin.

| No | Indicator | Description |
|----|-----------|-------------|
| 1  | The building form and the materials | The form generally uses old forms structure, only modified due to the availability of materials. The material used are red bricks combines with paras. |
| 2  | The decoration and ornaments | The decorations and ornaments uses original statues and carvings of animal and plant. |
| 3  | The layout | The local concept still applied and there are some changes in palemahan zones |
| 4  | The function changes and expansion | Some building has functioned as a hotel and business lot. |

4.4. Umah

Umah is a Balinese residence in Denpasar City which is classified as not a puri. As the object of research is a residence that still uses traditional architectural patterns even though it has undergone several adjustments due to limitations.

In the parahyangan zone or mrajan, there are no significant changes, only changes in the use of materials used, while on the roof, it still uses palm fiber. In the pawongan zones, there are a lot of changes and expansion in the materials used, color selection, and ornamentation which always keep the characteristics of Balinese architecture.
Figure 7. Palemahan in optimizing space availability.

In the Palemahan zone, considering the availability of space, the concept of Tri mandala, Tri angga, and the Tri Hita Karana are still preserved. Overall changes occur due to lack of understanding, and availability of materials that affect quality and efficiency factors.

Table 4. Observation results in umah.

| No | Indicator                          | Description                                                                                                                                 |
|----|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | The building form                 | In general, there are three types of Balinese house (umah). The first type is the house structure with complete bales, namely bale daja, bale dangin, bale delod and bale dauh and other complementary bale. The second type, the order of the house with one or more bales and the third type is the type of house with a mrajan and only one Balinese bale or even no bale at all due to the space limitation. |
| 2  | The materials                     | The umah buildings are dominantly wood and black sandstones. Since space is limited, some umah placed under the second floor of the building. Thus, the ceiling of bale uses gypsum material. |
| 3  | The layout                         | The layout of the house of Bali, in general still follows the standards of traditional architecture. But there are some houses that do not heed traditional Balinese values because of limited space. For example, in determining the location of the main door to enter the house. |
| 4  | The function changes and expansion| Bale Dauh and Bale Delod, as residential buildings. Bale Dauh remains as a guest house, while Bale Delod used as a place to rest for the habitant. |

5. Conclusion

From the Theory Style and Theory of Ornament, Decoration in architecture, the existence of Balinese architecture in traditional buildings puri and umah has a significant change in the zone of Pawongan and Palemahan. Changes that occur in the building form, materials, function but still considering the ergonomic factors or occupant’s convenience. Some buildings also functioned commercially to make profits. In the parhyangan zones, there are no changes on the form, layout, and functions. A slight change occurs in materials and colors.

The limitation of space is the main factor that causes changes in the Balinese traditional housing. Management efforts are needed that prioritize the preservation of traditional values in Balinese buildings. Management models with heritage-based tourism can be a solution for preserving cultural values while still generating benefits for the community.

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