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The Paradigm of Antithesis And Harmony As The Dualism of Pattern Fundamental In Architecture of Residential Houses In Bali, Indonesia

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Abstract Residential architecture in Bali consists of housing in the highlands with a linear pattern (*luan-teben* pattern) and lowlands with a *sanga mandala* pattern. The two residential ways form the building masses' configuration with *natah* (plaza or open space) as the building masses' binding space. The zoning system of building masses creates a dualism relationship pattern that contains *utama* (high value) and *nista* (low value) meanings. The dualism relationship forms a building mass configuration with different building functions and characteristics. The purpose of this study is to examine the importance of the relationship between two building masses in high and lowland residential in the diametric and *natah* (plaza or open space) aspects as the middle space or the second node of the diametrical building. The research method used in the study of the meaning of dualism was a qualitative content analysis of the perspective on; (1) space user characteristics; (2) the aspects of the function accommodated; (3) the philosophical background of the user community; and (4) the dynamics of change. The study focuses on highland settlements (Pinggan Village and Pengotan Village) and lowland settlement. This research found: (1) universal meaning based on the general conception of the direction of the sun rising and setting; (2) local purpose from the concept of respect for ancestors in the context of figures and places of origin; (3) the meaning of the antithesis in the context of hierarchy and spatial function; and (4) the meaning of harmony in the context of mutually reinforcing relationships.

Keywords antithesis and harmony; dualism pattern; *luan-teben* pattern; *sanga mandala* pattern; universal and local concepts

1. Introduction

Residential architectural layout of Balinese ethnic communities - highland and lowland residential architecture, has a linear residential and *sanga mandala* pattern [1]–[5].

Linear housing patterns (*luan-teben* patterns) usually occur in mountain settlements that are still vernacular with the same social level, uniformity of residential formation, oriented to the concept of ancestry and nature. The cosmology of dualism, namely *Luan* (high value) and *Teben* (low value). Linear housing patterns tend to form a central space in the middle of a critical area in an elongated shape. There are no boundaries or territories between family housings, so this extended pattern repeats itself from macro housing to residential cluster units. Each residence consists of three zones: the holy place zone, the residential zone, and the outer zone. This picture occurred in Pinggan and Pengotan villages [5]–[8]. Unlike the lowland residential patterns, the concept of *sanga mandala* greatly influences the spatial layout. Dualism pattern in the highland, namely the main building (*Bale Meten* or *Bale Saka Roras*) and supporting facilities (*Bale Sakanem*). The *sanga mandala* residential pattern is formed based on the building mass configuration, including a building mass pattern towards the middle or *natah*. The building mass layout influenced their respective roles and functions and the spatial hierarchy of *utama ning utama* (highest value) and *nista ning nista* (lowest value) zones. The highland settlement pattern has one orientation concept or the *luan* (high value) and *teben* (low value) axes. In contrast, the lowland settlement has two crosses of natural and ritual axes. The natural axis is in the form of the rising and setting of the sun's direction and the ritual axis towards the mountain (generally Mount Agung) and the sea's movement.

Bali's residential architectural layout influenced by the understanding of the ethnic community, especially cosmology knowledge. Knowledge of natural cosmology - mountains and sea; sunrise and sunset - knowledge of the Balinese ethnic community respecting nature as the source of life and maintaining harmony and balance in nature. Bali's residential architecture based on the culture of living in the Balinese ethnic community, based on the concept of animism and dynamism, interprets this universe as having a soul or spirit, besides humans as God's creative soul and

body. The images of animism and dynamism in Indonesian civilization as ancient belief concepts [9]–[12]. Emphasis on human contact with nature, resulting in a habitat pattern that is typically towards mountains or higher ground in the highland settlement. This concept developed in lowland settlements with a complicated life and incorporated natural and ritual aspects in the *sanga mandala* spatial layout. Understanding the cosmology concept is born from the vernacular society's perspective on the existence of deceased ancestors. Respect for older people as a figure who protects their children, people who have died and resided in high places, and people who have death providing safety and well-being to the surviving family. The concept of belief where the person who has died is in the sky, the sky has a meaning as higher space or place, and elevated position on earth is generally a mountain or land higher from other lands [1], [4], [20], [5], [13]–[19].

Understanding the phenomena above is a fundamental conception in shaping residential patterns in highland areas. This understanding also affects residential spatial planning in lowland areas by adding the concept of a natural axis, namely the direction of the sun's rising and setting [13], [21]. The idea of the sun and its direction of movement is the basis of philosophy in spatial planning, which is to provide a life for living things through symbols of the beginning (hope, birth) and the end (death) as a natural cycle of human life.

The background of the concept that underlies the layout of both high and lowlands has not been studied. These studies are only limited to identifying these concepts, not finding the meaning behind the layout's idea. The cosmology of vernacular living space in Indonesia has been done a lot, but fundamental studies are still minimal. The research focus on studying the concept of belief in ancestors or gods who reside at the top of mountains or high places as part of the vernacular spatial [7], [22]–[29]. Others study the concept of the direction of the rising and setting of the sun in the vernacular settlement [26], [30]–[34]. These studies generally lead to studies identifying housing and orientation patterns that have been previously defined and developed so far in vernacular settlements. The background of this spatial pattern is still being studied. The dualism pattern way is fascinating to learn because it will produce a fundamental understanding of the settlement layout of Balinese ethnic communities in the dynamics of increasingly modern housing developments. The development of spatial planning due to human settlements demands a functional space and contemporary trends in society regarding residential spatial planning. The pattern cannot be avoided; what can be done is to understand the fundamentals of residential spatial planning so that the substance (core) and supporting (peripheral) elements are known.

The research aims to examine the fundamental concepts of residential spatial planning for communities in the highlands and lowlands. This whole concept is the basis for people's thinking in arranging their living space based on historical review and the contextual environment. The method used in this study is a qualitative content analysis, and the object of

the study is on highland settlements (Pinggan and Pengotan Village) and lowland settlements that are in Denpasar City. The locus of different character studies was conducted based on (1) vocabulary and traditional also contemporary territories; (2) understand the spatial structure of vernacular society and modern society; and (3) there are varied findings so that the results are more substantial. Content research emphasizes the interpretation of the content presented or contained in the study object and conducts a dialogue with relevant approaches to logically account for research results.

2. Materials and Methods

This study uses a qualitative method of content analysis on the concepts that are the basis for Balinese community housing in the high and lowlands areas. This method emphasizes the interpretation of phenomena that occur in an empirical context and textual thoughts, both of which experience a conceptual dialogue to formulate a meaning behind these phenomena [35]–[38]. The phenomena studied are the Balinese people's residential arrangements who live in the high and lowlands and their settlements' development dynamics. The approach or paradigm used in this study is (1) historical community settlements in mountainous and lowland areas; (2) the belief system of the local community; (3) understanding of universal concepts; (4) function and user community of the building or space; and (5) residential development dynamics. This research's objects are Pingan Village and Pengotan Village as the locus of upland housing and Denpasar City as the locus of lowland housing. The choice of this study's object was based on the character of the occupancy in each different village, which is in mountainous areas that is still having a vernacular name, while the lowland areas are contemporary. The differences in this object's character produce exciting and varied findings, so that general and interpretive conclusions become fundamental findings.

The analysis technique used a model [39] divides the research process into two major stages: empirical and conceptual. Practical deals with phenomena related to conceptual housing and its dynamics and concepts as a synthesis stage by interpreting these findings. The steps of this research are: (1) identifying the idea of occupancy at the locus; (2) studying binary relationships in the diametrical context; (3) understanding the character of each building or space; (4) having a dialogue on general or universal understandings; and (5) formulating the meaning of dualism pattern as the basis for forming linear housing system and *sanga mandala*. The technique of analyzing data is through a coding system translated as finding themes for further dialogue with universal theories—data obtained through observation and interviews in an unstructured manner to find relevant and naturalistic information. In addition to compliance, consultations are also a tool to get data in this study; the results of interviews are analyzed (coding) to formulate themes of findings.

3. Research Result

3.1. Dualism Pattern in Highland Residential Architecture Spatial Layout

The spatial pattern of highland Bali residential architecture has a linear way, uniformity of building habits, and shapes. Linear patterns and uniformity of architectural forms influence the social system of the people who do not have a social status level. The spatial way of residential architecture comes from religious and profane orientations, a fundamental local concept shaping residential layout in the highlands. Uniformity in form as a social aspect and a local idea in cultural values affect residential spatial planning [40]–[43]. The consistency of sacred and profane dualism concepts forms a dualism pattern. Dualism pattern identical to binary diametric as an arrangement or hierarchy of two conflicting spaces in a diametric relationship [44]. The constructed space hierarchy produces a spatial zoning system, namely the holy place zone, the residential zone, and the outer zone (the outside of the yard area). The residential site comes from two building masses' configuration as mutually oriented towards the *natah* (open space or plaza). Each cluster consists of rows of shelters composed of 8 to 10 houses; without being limited by a wall (fence) for each dwelling, only the land's height distinguishes between one residence and another. There is no family relationship in the form of a "blood" relationship between one dwelling and another—the images of residential architectural layouts in Pinggan and Pengotan villages. The linear patterned housings are grouped into residential clusters, each housing in the cluster has no "blood" relationship [5], [6], [8].

One residential unit in Pinggan and Pengotan Village has three zones: the *sanggah* zone, the residential zone, and the outer zone. Inside, the residential from a configuration of two building masses (*Bale Saka Roras/Bale Adat* and *Sakanem*) facing each other and oriented towards the center (*natah* or plaza). The dualism pattern is the determined concept through an orientation towards Puncak Penulisan Temple in Pinggan Village and Pura Tuluk Biyu in Pengotan Village. Which places the sacred place zone (*Sanggah*) in this direction as a direction or pole of holy value, which local people call the *Kaja* direction (spiritual path). The sacred opposition direction is *lebuh* which is the access to the residence. There is an entrance as a sign of the binary opposition's order—the worship zone towards God and ancestors in the main direction to Bukit Penulisan Temple. Relationship means the community relationship between Pinggan Villages and

Pengotan Village respects the ancestors who resided in Pura Bukit Tulisan and Pura Tuluk Biyu. The concept of belief in ancestors in rural communities in mountainous areas affects the concept of spatial orientation as a sacred direction [17], [18], [45], [46]. The firm past between Pinggan Village and the Puncak Penulisan Temple and the Pengotan Village community with the Tuluk Biyu Temple forms a residential spatial layout by placing a holy place or *Sanggah* the Puncak Penulisan Temple. The binary opposition from the direction of *Kaja* (sacred) is *lebuh* (space in front of the front yard of the house), usually as an accessible room and area for physical activities (non-spiritual). In the residential zone, there are two building masses designated for parents or girls and boys. Buildings intended for parents or girls occupy the sacred direction or the *Kaja* direction (the primary path) as a form of respect for parents and girls. Family members need to be protected and respected. (see figure 1 and figure 2). Dualism patterns come from the *Natah* space's existence (open space) and the sky's direction. *Natah* is a physical symbol where humans live, and the sky is a symbol of the gods or ancestors' dwelling place. *Natah* is an open space in the middle of the yard and is the center of the building's orientation [21], [47], [48].

Patterns from another dualism are the direction of sunrise (*Kangin*) and sunset (*Kelod*). The religious order (*Kangin*) is towards Pura Ulun Danu Batur in Pinggan Village and Bukit Abang in Pengotan Village, while the opposition is in the opposite direction. This direction by the placement of *pelinggih* (worship elements) to the ancestors oriented towards the *Kangin*. Pura Ulun Danu Batur is a place for the *Moksa* (level of human perfection) of King Sri Aji Jayapangus, an ancestor or someone highly respected by the community [8]. Meanwhile, as the place of origin for Pengotan Village people, Bukit Abang is now before the Panji Sakti expedition [5]. This description shows that the main direction (sacred/*Kangin*) on the concept is prioritized or respected and has a historical relationship with the population concerned. Meanwhile, the opposition to this direction is more in the order of physical value.

The orientation with sacred values in Pinggan and Pengotan villages forms a macro spatial layout on a residential scale. The direction of *Kaja* as a dualism pattern has a primary (religious) value by placing the holy places (*Pura Desa* and *Puseh*) in the order of *Kaja* in Pinggan Village and Pengotan Village. Opposition from this direction has a profane value occupied by elements of *Pura Dalem* and *setra* or graves. *Pura Desa* and *Pura Puseh* are symbols of the house's soul, while *Pura Dalem* and graves are symbols of the house's body.

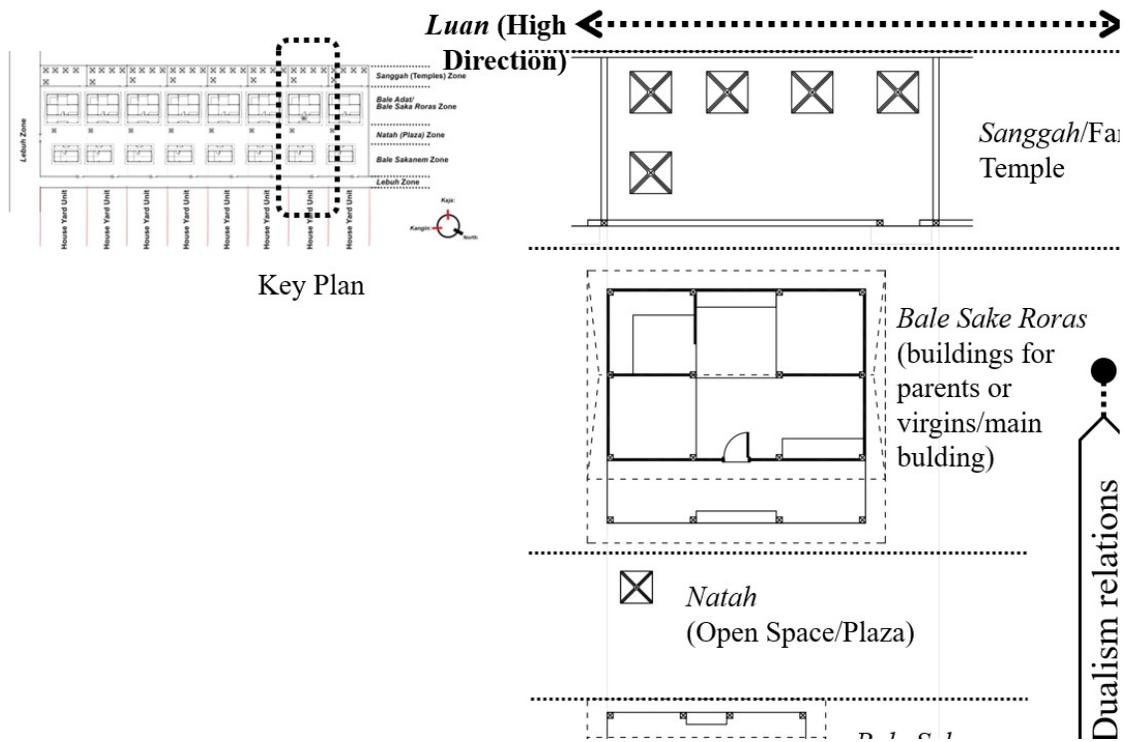


Figure 1. Dualism Pattern in Pinggan Village Residential

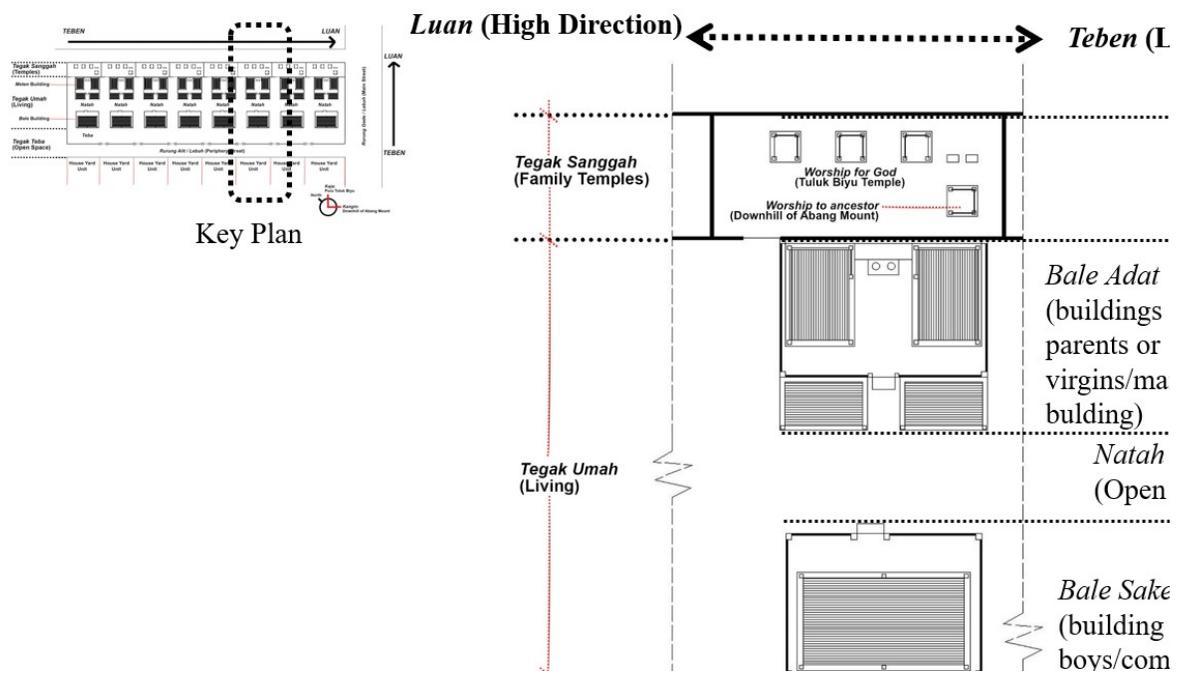


Figure 2. Dualism Pattern in Pengotan Village Residential

The dualism pattern concept influences the shape transformation of a house or building mass and its spatial structure. The direction that tends to be maintained is building mass and space that does not experience additional building abundance in the *Kaja* and *Kangin* directions. *Kaja* and *Kangin* indicate that this direction symbolizes the soul, the residential entity, and the dwelling's strength in Pinggan and Pengotan villages.

The order or zone that usually undergoes a change or transformation of space and the shape of the building mass is the direction of *Kelod* and *Kauh*. *Kelod* and *Kauh* area as development new buildings in residential dwellings and toilets in the profane order. There are additional buildings with contemporary architectural styles in the *teben* or secular direction on the residential scale. (see figure 3)

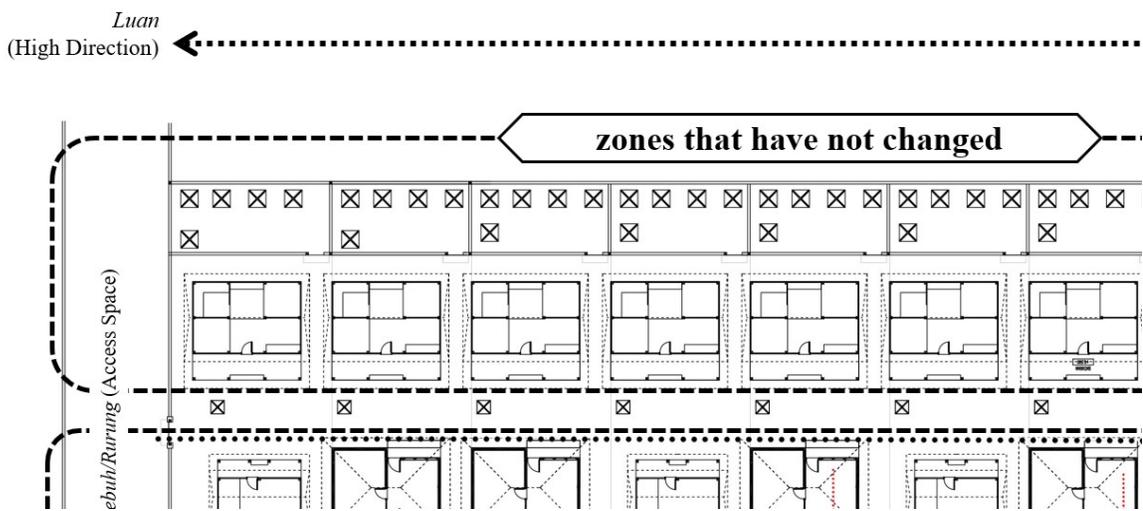


Figure 3. Zones That are Subject to Change in Pinggan Village

3.2. Dualism Pattern in Lowland Residential Architecture Spatial Layout

The *Sanga Mandala* concept affects the spatial layout of Balinese ethnic dwellings in lowland areas [13], [14], [49], [50]. The *Sanga Mandala* concept is a residential site zoning system that divides the house yard into nine zones. Each zone has a hierarchy of space from the highest (*utama*) level to the lowest (*nista*) level. The designation of each hierarchy of freedom does manifest in the mass of the building and open space. The configuration of the building mass forms a pattern that has oriented toward the *natah* (plaza). *Natah* is a space and becomes the center of orientation towards the building masses in one yard of the Balinese ethnic residence [21], [48], [49]. The existence of *natah* affects the occupancy pattern in a yard towards the middle (space), the facade of the building mass facing the *natah*. This concept comes from the crossing of the idea of religious orientation (*Kaja* and *Kangin* direction) and profane (*Kelod* and *Kauh* direction), which is called the natural axis and the ritual axis [27], [51]–[53]. The natural axis is interpreted as the orbital movement of the sun rising and setting, while the ritual axis is the

direction of the mountains and the sea. The intersection of these two axes forms a spatial layout with a hierarchy of *utama* and *nista* spaces. The order of the *sanga mandala* space has nine zones, namely (1) the holy place zone (*Sanggah*); (2) *Bale Meten* building zone; (3) the *Bale Dangin* building zone; (4) *Bale Delod* building zone; (5) *Bale Dauh* building zone; (6) the area of the *Pelinggih Penunggun Karang* (holy statue); (7) the kitchen building zone; (8) *Jineng* (rice storage) building zone; (9) pig pen zone; (10) *Natah* (open space or plaza) zone; and (11) the entrance zone or *Angkul-angkul*. The placement of the masses and length in a residential yard is influenced by the orientation and hierarchy of sacred (high value) and profane (low value). These holy and unholy conceptions reinforce each other and form a dualism pattern as the basis for developing the *sanga mandala* concept. Dualism pattern is a relationship between two opposing poles but creates a harmonious and balanced relationship.

There is a dualism pattern on the ritual axis between *Bale Daja* or *Bale Meten* (sacred direction) and *Bale Delod* (profane order). The two buildings facing each other and *natah* as the binding of the two periods. The dualism consists of sacred and secular levels through an orientation direction of the house's user or occupant. The

holy or central order is in the *Bale Meten* or *Bale Daja* direction, while the profane order is in the *Bale Delod* building. *Bale Daja* or *Bale Meten* is a building used by parents or elders in the family concerned or designated as a place for unmarried girls [47], [49], [54], [55]. *Bale Daja* or *Bale Meten*'s function and user characters show that parents mean someone who needs to be respected by their existence and represent the ancestors. Unmarried girls have a meaning as a symbol that is still holy or not tarnished, and it is necessary to maintain their presence by placing them in a closed *Bale Daja* building. Respect

for ancestors and things that have sacred values are in a divine direction and zone. It is opposite the *Bale Delod*, which functioned as a bedroom for the boy to maintain the house's existence. The meaning of "guarding" is marked by the semi-open *Bale Delod* building and as a place for men. So, the dualism pattern relationship between *Bale Daja* and *Bale Delod* has the meaning "soul" and "body"; between soul and body does not negate but strengthen. *Bale Daja* and *Bale Delod* mean that each has a role and function through spatial planning based on its characteristics. (see figure 4)

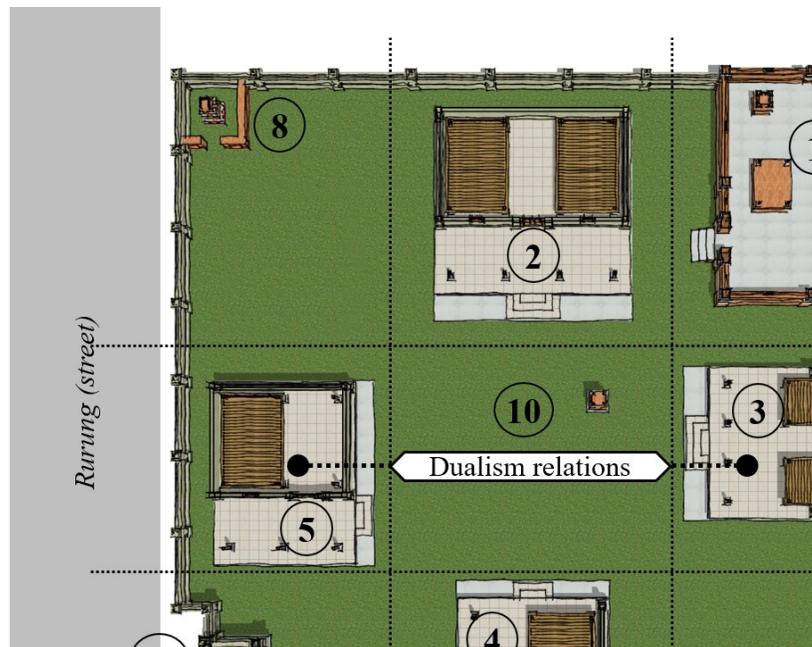


Figure 4. Dualism Pattern Relationship between *Bale Daja* and *Bale Delod*

Another dualism is between *Bale Dangin* and *Bale Dauh*, each of which is in the *utama* zone (high value) or the direction of the sun rising and *nista* (low value) or the direction of the sun setting. *Bale Dangin* functions as a building for carrying out human ceremonial activities, namely marriage, *otonan* (Balinese birthday), and funeral. This building's orientation is in the rising sun's direction and the building's path facing the *natah* (plaza). The order of the sun rising is a symbol of new hope or new life. A person's death is not the end of life but is the beginning of new birth, marriage as the beginning of running a married life, and the *otonan* (Balinese version of birthday) ceremony as a prayer for the better. Hope and a new life through religious traditions at *Bale*

Dangin are placed in the *utama* zone (high value) as the beginning of life. The *Bale Dauh* building functions as a living room or a boy's residence. *Bale Dauh* is used to receive guests during traditional ceremonies, orientation towards the *natah* and the sun's rising. *Bale Dauh* aims to direct the guests' eyes watching the *manusa yadnya* ceremony held at *Bale Dangin*. So, it can be concluded that the dualism pattern *Bale Dangin* and *Bale Dauh* have a meaning as a new future hope direction and neutralize negative influences on the sun set's guide (*kauh* focus). The relationship between these two directions or poles has a significant role. It strengthens each other to achieve a level of balance in the occupancy of Balinese ethnic houses. (see figure 5)

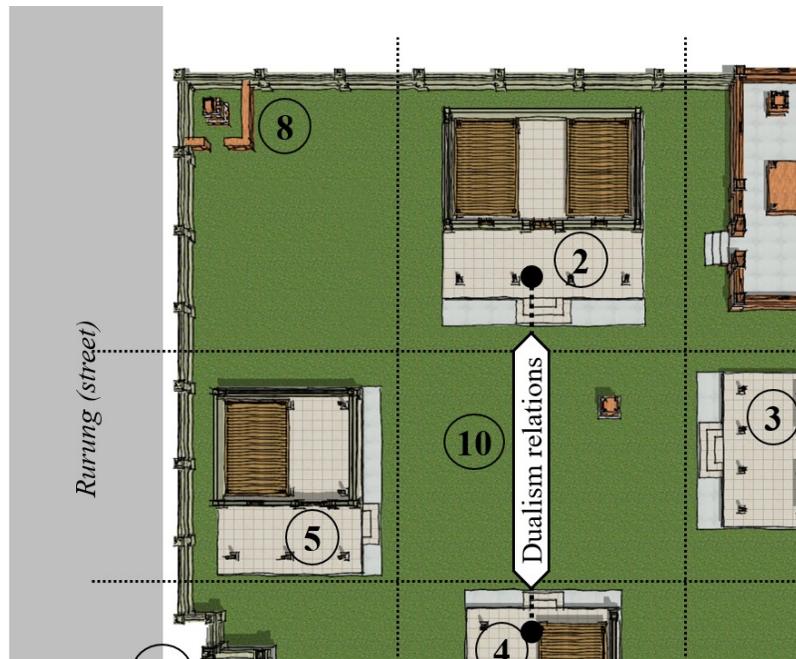


Figure 5. Dualism Pattern Relationship Between *Bale Dangin* and *Bale Dauh*

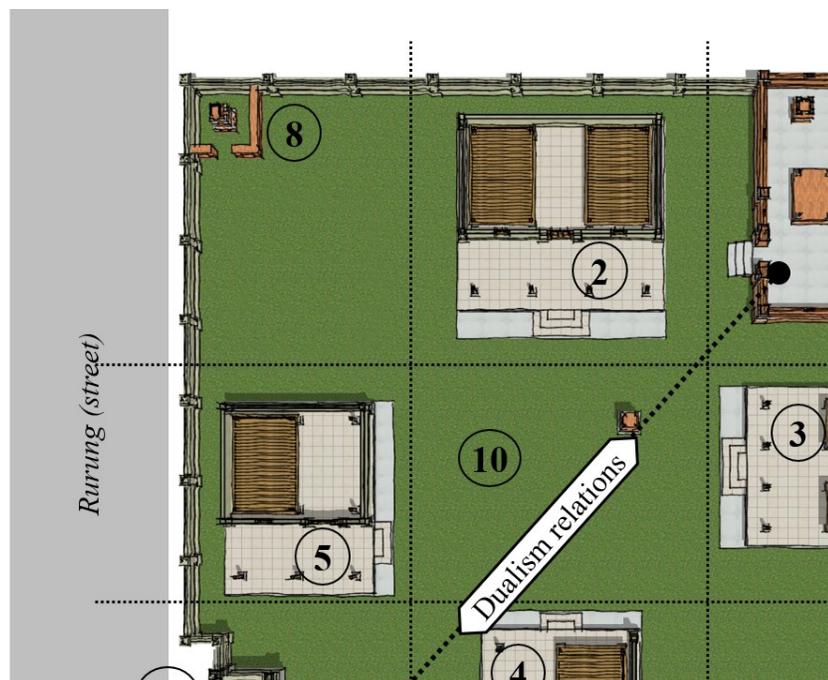


Figure 6. Dualism Pattern Relationship Between *Sanggah* and *Paon*

The shrine building or the *Sanggah* and the kitchen building or the *Paon* are dualism pattern pairs formed diagonally. The shrine zone is in the *Utama Ning Utama* zone (highest value), and the *Paon* or the kitchen is in the *Nista Ning Nista* zone (the lowest value). Their existence in a *sanga mandala*-patterned spatial structure plays a significant role and strengthens one another. Building a holy place as a symbol of holiness associated with divinity and people who enter the room must meet the

sacred space's requirements. Manifestations, in the form of freedom, mark sacred space as religious identities; this manifestation is in the form of hierophant [53], [56]–[59]. It is different from the kitchen building or the *paon* building used as a place for cooking, but symbolically has a meaning as a smelter or destroyer of opposing forces. The kitchen has a substance as a neutralizer of opposing forces that enter the yard and object. The dualism relationship between the two elements has a significant

role in creating and maintaining an intangible balance in the yard. (see figure 6)

Natah is a living room that binds the building period in a *sanga mandala* pattern layout. *Natah* has an essential role in safety during disaster mitigation; when an earthquake occurs, *Natah* as open space becomes a destination for an escape from earthquakes [21]. However, in the context of rituals, *natah* is a space for *mecaru* ceremonies - a ceremony to neutralize natural forces under the human realm or the invisible world in the human realm. The role of *natah* is symbolic and valuable as a space for balance, namely harmonization between tangible and intangible areas and areas for disaster mitigation. As a balanced space, *natah* becomes a knot space in a *sanga mandala* patterned layout, with its center in the middle of the yard (*natah*). The opposition from the

natah space is the sky, which symbolically is the place where the gods reside who give gifts to earthly creatures. They receive assistance from heaven (the gods), *natah* must first be neutralized through ceremonial activities to receive holy revelations in a clean container. There is an understanding of the sky as the space of the gods. The dualism pattern context between *akasa* (sky) and *pertiwi* (earth/*natah*) has an inseparable relationship, both of which influence each other in maintaining symbolic balance and benefit in the *sanga mandala* patterned spatial layout. Before a religious ceremony is carried out in the yard of a Balinese ethnic residence, a tradition is carried out in the *natah* to clean the *bhuta* world (invisible power) so that revelations that are sent down from the sky or above can be adequately received without being disturbed by *bhuta* elements. (see figure 7).

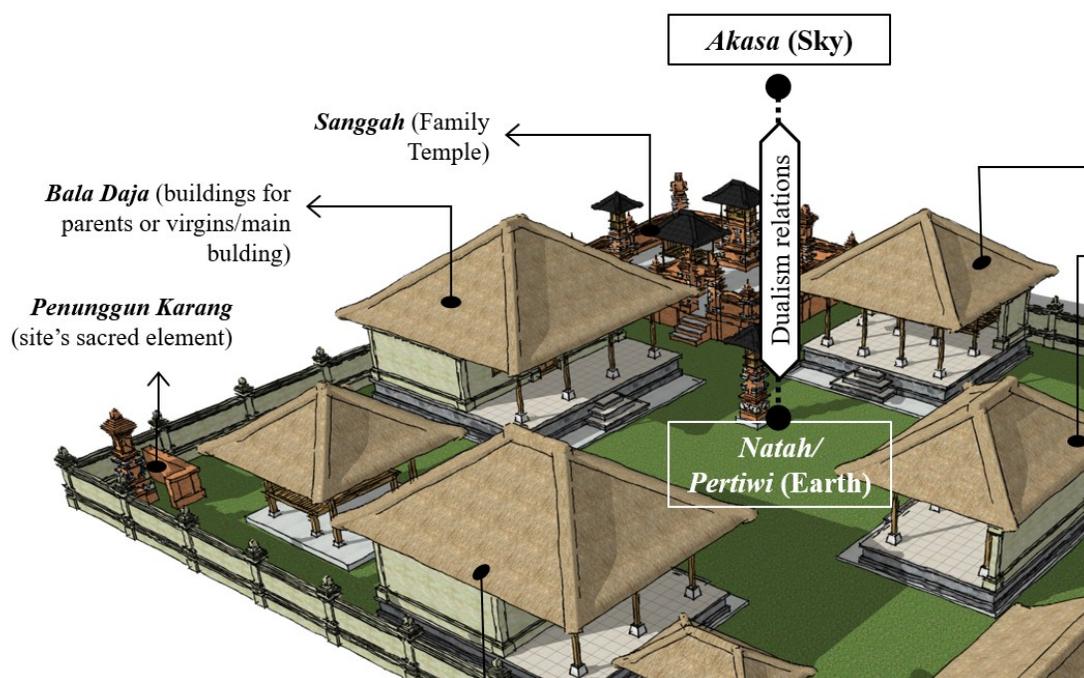


Figure 7. Dualism Pattern Relationship Between *Akasa* and *Pertiwi/Natah*

The development of lowland residential spatial planning transforms (form and function addition) in each zoning. This occurs due to economic growth, the increasing need for space, and the trend in the development of traditional Balinese architecture towards neo-traditional or contemporary [5]. This development is dominated by the masses of buildings in the defiled or offensive zone, while the primary or sacred site does not experience significant changes. The addition of new space functions or facilities generally occurs in these zones. Zones and building masses fixed based on their position and role are the *sanggah* (holy place), *Bale Daja*, and *Bale Dangin*. The dualism pattern is very clearly visible from its spatial structure development; the space

with the *utama* value still retains its value. The one with the *nista* value undergoes a transformation based on the development of the era and space requirements.

3.3. Synthesis: Universal Concepts and Local Concepts, Antithetic and Harmonious Dualism

The Balinese ethnic community has a culture of living through a residential layout based on universal and local dualism patterns. The universal concept is usually the direction of the rising and setting of the sun. This polar dualism uses the sun to have a philosophical meaning as the source of life through the rays and light it produces. The sun does pair with the earth, which serves as a place

for all living things to grow and thrive (world) (Paramadhyaksa, 2016). The sunrise and sunset direction are also the basis in Balinese ethnic living space, sunrise as a symbol of hope (soul) and sunset as a symbol of smelter (physical nature). In vernacular settlements in Indonesia, the territories that use the sun in their layout are the settlements of Dusun Segantar [29], Torajan residence [34], Kajang traditional residence [31], Singengu Village residence [32], and the residence of Kepencar Village [33]. In Bali, the sun's concept is used in Balinese ethnic housing in lowland areas with the *sanga mandala* idea. In the *sanga mandala* pattern, the direction of the sun's rising and the setting is a natural symbol in the placement of *Bale Dangin* and *Bale Dauh*. The sun's increasing focus has the meaning of the *utama* direction (sacred or high value). The sun's setting is *nista* (profane or low value)—the sun's philosophy's perspective and understanding influence Balinese ethnic residential buildings' layout in the lowlands. The local concept as the basis for the formation of Balinese ethnic residential architectural forms has different variants. The belief system of each resident influences this variant. Strong relationships with ancestors and place of origin are the direction of the primary residential orientation. The emotional connection between residents who occupy the house with the principle of orientation believed to be a form of respect for their ancestors. This local concept as the direction of *Kaja* orientation usually placed buildings that correlate with religiosity. This concept does use in forming a residential architectural layout for ethnic Balinese mountains and lowlands settlements.

The dualism pattern relationship in the architectural layout of the Balinese ethnic settlements has the meaning of dualism, antithesis, and harmony. The antithesis definition is that the dualism pattern existence as marked by a zone that is *utama* (high value) and *nista* (low value). Zones and directions that are of *utama* (high value) correlate with sacred, religious, and something glorified and respected; on the other hand, the value of *nista* (low value) is in the form of a profane building or something that has a fusing and neutralizing role. During its development, spaces in the *nista* (low value) direction experienced more changes and additions to contemporary buildings than in the main path. Remain and changed becomes an antithesis or conflict between the two orientation poles in symbolic meaning and dynamic formation. In other perceptions, these two elements become a harmonious concept. Two parts mean that both strengthen in presenting a symbolically balanced space. This balance does achieve through ritual activities and roles, in which the two areas have their respective roles and have different rituals with the aim of spatial harmonization. So, that dualism pattern has an antithetic relationship from value and meaning, and a harmonious relationship or mutually reinforcing each other's roles to create spatial balance.

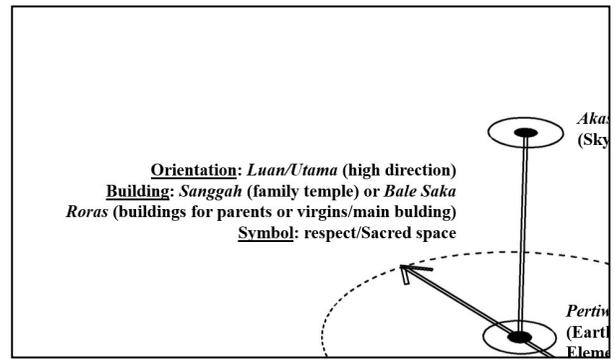


Figure 8. Dualism Pattern Concept in Highland Settlements

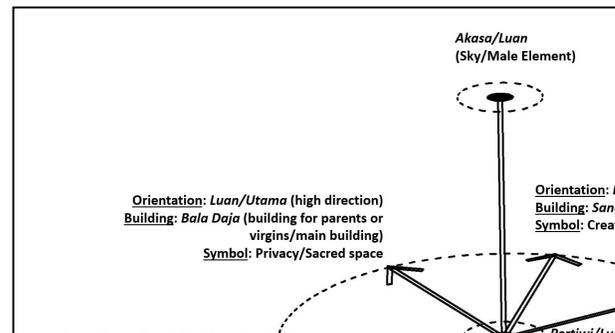


Figure 9. Dualism Pattern Concept in Lowland Settlements

4. Conclusions

Understanding the Balinese ethnic community in managing their residential space is based on a local and universal perspective that produces a dualism pattern. In the form of local and universal concepts, dualism pattern has their respective functions and roles and have their meaning and philosophy. The function aspect relates to each binary's space use divided into two: *utama* (sacred or high value) and *nista* (profane or low value). The holy has a relationship with religiosity and privacy. The profane has a nonreligious and communal connection. The sacred concept relates to the meaning of the soul and the profane with a physical sense. Aspects of each pole's roles (*utama* and *nista*) have their respective roles and, of course, are different. However, it aims to create a harmonious relationship between the two aspects in carrying out its function. They do not cancel each other out but reinforce each other in creating a spatial balance (harmony). In the dynamics of the spatial development of ethnic Balinese residences, spaces that undergo changes and increase in building mass, namely area with low value and buildings or architecture that have a relationship with religiosity and religion, do not experience significant changes. Antithesis and harmony as dualistic philosophies from dualism pattern are fundamental concepts in giving birth to the spatial idea of Balinese ethnic settlements in the high and lowland

areas. Antithesis in spatial planning means different functions and roles, while harmony means strengthening each other's positions and roles in creating a harmonious and reinforcing relationship. This fundamental concept is the mindset or initial understanding of Balinese ethnic communities shaping and creating linear and *sanga mandala* spatial plans.

Acknowledgments

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Evaluation Report	
General Comments	The paper unveils the architectural, psychological, and philosophical bases of traditional Balinese dwellings. An equilibrium of material and spiritual bottom lines is surveyed and explained thoroughly, providing an overreaching potential in terms of history and - primarily - of both operational instructions for the development of the respective built environment and the positive and normative general theory of architecture. On the one hand, this potential is unique and deserves appreciation and exploitation, however, it rests only on the brink due to numerous shortcomings of the paper on the other hand.
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The Paradigm of Antithesis And Harmony As The Dualism of Pattern Fundamental In Architecture of Residential Houses In Bali, Indonesia

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Abstract Residential architecture in Bali consists of housing in the highlands with a linear pattern (*luan-teben* pattern) and lowlands with a *sanga mandala* pattern. The two residential ways form the building masses' configuration with *natah* (plaza or open space) as the building masses' binding space. The zoning system of building masses creates a dualism relationship pattern that contains *utama* (high value) and *nista* (low value) meanings. The dualism relationship forms a building mass configuration with different building functions and characteristics. The purpose of this study is to examine the importance of the relationship between two building masses in high and lowland residential in the diametric and *natah* (plaza or open space) aspects as the middle space or the second node of the diametrical building. The research method used in the study of the meaning of dualism was a qualitative content analysis of the perspective on; (1) space user characteristics; (2) the aspects of the function accommodated; (3) the philosophical background of the user community; and (4) the dynamics of change. The study focuses on highland settlements (Pinggan Village and Pengotan Village) and lowland settlements. This research found: (1) universal meaning based on the general conception of the direction of the sun rising and setting; (2) local purpose from the concept of respect for ancestors in the context of figures and places of origin; (3) the meaning of the antithesis in the context of hierarchy and spatial function; and (4) the meaning of harmony in the context of mutually reinforcing relationships.

Keywords antithesis and harmony; dualism pattern; *luan-teben* pattern; *sanga mandala* pattern; universal and local concepts

1. Introduction

The residential architectural layout of Balinese ethnic communities - highland and lowland residential architecture, has a linear residential and *sanga mandala* pattern [1]–[5].

Linear housing patterns (*luan-teben* patterns) usually occur in mountain settlements that are still vernacular with the same social level, uniformity of residential formation, oriented to the concept of ancestry and nature. The cosmology of dualism, namely *Luan* (high value) and *Teben* (low value). Linear housing patterns tend to form a central space in the middle of a critical area in an elongated shape. There are no boundaries or territories between family housings, so this extended pattern repeats itself from macro housing to residential cluster units. Each residence consists of three zones: the holy place zone, the residential zone, and the outer zone. This picture occurred in Pinggan and Pengotan villages [5]–[8]. Unlike the lowland residential patterns, the concept of *sanga mandala* greatly influences the spatial layout. Dualism pattern in the highland, namely the main building (*Bale Meten* or *Bale Saka Roras*) and supporting facilities (*Bale Sakanem*). The *sanga mandala* residential pattern is formed based on the building mass configuration, including a building mass pattern towards the middle or *natah*. The building mass layout influenced their respective roles and functions and the spatial hierarchy of *utama ning utama* (highest value) and *nista ning nista* (lowest value) zones. The highland settlement pattern has one orientation concept or the *luan* (high value) and *teben* (low value) axes. In contrast, the lowland settlement has two crosses of natural and ritual axes. The natural axis is in the form of the rising and setting of the sun's direction and the ritual axis towards the mountain (generally Mount Agung), and the sea's movement.

Bali's residential architectural layout was influenced by the understanding of the ethnic community, especially cosmology knowledge. Knowledge of natural cosmology - mountains and sea; sunrise and sunset - knowledge of the Balinese ethnic community respecting nature as the source of life and maintaining harmony and balance in nature. Bali's residential architecture based on the culture of living in the Balinese ethnic community, based on the concept of animism and dynamism, interprets this universe as having a soul or spirit, besides humans as God's creative soul and

body. The images of animism and dynamism in Indonesian civilization as ancient belief concepts [9]–[12]. Emphasis on human contact with nature, resulting in a habitat pattern that is typically towards mountains or higher ground in the highland settlement. This concept developed in lowland settlements with a complicated life and incorporated natural and ritual aspects in the *sanga mandala* spatial layout. Understanding the cosmology concept is born from the vernacular society's perspective on the existence of deceased ancestors. Respect for older people as a figure who protects their children, people who have died and resided in high places, and people who have death providing safety and well-being to the surviving family. The concept of belief where the person who has died is in the sky, the sky has a meaning as higher space or place, and elevated position on earth is generally a mountain or land higher from other lands [1], [4], [5], [13]–[20].

Understanding the phenomena above is a fundamental conception in shaping residential patterns in highland areas. This understanding also affects residential spatial planning in lowland areas by adding the concept of a natural axis, namely the direction of the sun's rising and setting [14], [21]. The idea of the sun and its direction of movement is the basis of philosophy in spatial planning, which is to provide a life for living things through symbols of the beginning (hope, birth) and the end (death) as a natural cycle of human life.

The background of the concept that underlies the layout of both high and lowlands has not been studied. These studies are only limited to identifying these concepts, not finding the meaning behind the layout's idea. The cosmology of vernacular living space in Indonesia has been done a lot, but fundamental studies are still minimal. The research focuses on studying the concept of belief in ancestors or gods who reside at the top of mountains or high places as part of the vernacular spatial [7], [22]–[29]. Others study the concept of the direction of the rising and setting of the sun in the vernacular settlement [26], [30]–[34]. These studies generally lead to studies identifying housing and orientation patterns that have been previously defined and developed so far in vernacular settlements. The background of this spatial pattern is still being studied. The dualism pattern way is fascinating to learn because it will produce a fundamental understanding of the settlement layout of Balinese ethnic communities in the dynamics of increasingly modern housing developments. Spatial planning development due to human settlements demands a functional space and contemporary trends in society regarding residential spatial planning. The pattern cannot be avoided; what can be done is to understand the fundamentals of residential spatial planning so that the substance (core) and supporting (peripheral) elements are known.

The aspects mentioned above influence the culture of living, which is oriented to the cosmological and physical contextual aspects of land, not only occurs in Indonesia, but outside Indonesia the concept of a culture of living. Sacred and profane cosmology is a dualism in spatial settlement planning. According to Ashdown that there is a paradox

between sacred and secular spaces in their value orientation. The orientation of the value of the holy area is influenced by substantial (ritual) and situational (religious experience) encounters. The value of sacredness fades when the ritual meetings decrease, and space can increase sacredness while maintaining these aspects of the ritual. The sacred and profane show that space's dualism [35]. According to García & Belmonte, the orientation of the Hellenic community settlements in the Mediterranean Iron Age was towards mountains, forests, and springs. There is dualism in the spatial orientation in Hellenic community settlements. Namely, there are two settlement orientations, namely (1) based on aspects of local wisdom; and (2) based on fundamental needs (aspects of a place to get a living, clothing, and food). [36] Another research conducted by Zhou et al. states that settlement orientation is not based on rituals but is influenced by aspects of the physical environment. Such settlements in Dong in China experience migration and adapt to their physical environment, namely Mountain, Water, Forest, and Paddy fields. This forms direct payments - main settlements and secondary settlements - peripheral settlements that develop and adapt to their environmental conditions. [37] From the study above, it can be concluded that there is a dualism of settlement orientation, namely, primary orientation and peripheral orientation.

The research examines the fundamental concepts of residential spatial planning for communities in the highlands and lowlands. This whole concept is the basis for people's thinking in arranging their living space based on historical review and the contextual environment. The method used in this study is qualitative content analysis, and the object of the study is on highland settlements (Pinggan and Pengotan Village) and lowland settlements that are in Denpasar City. The locus of different character studies was conducted based on (1) vocabulary and traditional also contemporary territories; (2) understand the spatial structure of vernacular society and modern society; and (3) there are varied findings so that the results are more substantial. Content research emphasizes the interpretation of the content presented or contained in the study object and conducts a dialogue with relevant approaches to logically account for research results.

2. Materials and Methods

This study uses a qualitative method of content analysis on the concepts that are the basis for Balinese community housing in the high and lowlands areas. This method emphasizes the interpretation of phenomena that occur in an empirical context and textual thoughts, both of which experience a conceptual dialogue to formulate a meaning behind these phenomena [38]–[41]. The phenomena studied are the Balinese people's residential arrangements who live in the high and lowlands and their settlements' development dynamics. The approach or paradigm used in this study is (1) historical community settlements in mountainous and lowland areas; (2) the belief system of the local community;

(3) understanding of universal concepts; (4) function and user community of the building or space; and (5) residential development dynamics. This research's objects are Pinggan Village and Pengotan Village as the locus of upland housing and Denpasar City as the locus of lowland housing. The choice of this study's object was based on the character of the occupancy in each different village, which is in mountainous areas that is still having a vernacular name, while the lowland areas are contemporary. The differences in this object's character produce exciting and varied findings so that general and interpretive conclusions become fundamental findings.

The analysis technique used in a model [42] divides the research process into two major stages: empirical and conceptual. Practical deals with phenomena related to conceptual housing and its dynamics and concepts as a synthesis stage by interpreting these findings. The steps of this research are: (1) identifying the idea of occupancy at the locus; (2) studying binary relationships in the diametrical context; (3) understanding the character of each building or space; (4) having a dialogue on general or universal understandings; and (5) formulating the meaning of dualism pattern as the basis for forming linear housing system and *sanga mandala*. The technique of analyzing data is through a coding system translated as finding themes for further dialogue with universal theories—data obtained through observation and interviews in an unstructured manner to find relevant and naturalistic information. In addition to compliance, consultations are also a tool to get data in this study; the results of interviews are analyzed (coding) to formulate themes of findings.

3. Research Result

3.1. Dualism Pattern in Highland Residential Architecture Spatial Layout

The spatial pattern of highland Bali residential architecture has a linear way, uniformity of building habits, and shapes. The architectural forms influence people who do not have a social status level. The spatial way of residential architecture comes from religious and profane orientations, a fundamental local concept shaping the residential layout in the highlands. Uniformity in form as a social aspect and a local idea in cultural values affect residential spatial planning [43]–[46]. The consistency of sacred and profane dualism concepts forms a dualism pattern. Dualism pattern identical to binary diametric as an arrangement or hierarchy of two conflicting spaces in a diametric relationship [47]. The constructed space hierarchy produces a spatial zoning system, namely the holy place zone, the residential zone, and the outer zone (the outside of the yard area). The residential site comes from two building masses' configurations as mutually oriented towards the *natah* (open space or plaza). Each cluster consists of rows of shelters composed of 8 to 10 houses; without being

limited by a wall (fence) for each dwelling, only the land's height distinguishes between one residence and another. There is no family relationship in the form of a "blood" relationship between one dwelling and another—the images of residential architectural layouts in Pinggan and Pengotan villages. The linear patterned housings are grouped into residential clusters, each housing in the cluster has no "blood" relationship [5], [6], [8].

One residential unit in Pinggan and Pengotan Village village have three zones: the *sanggah* zone, the residential zone, and the outer zone. Inside, the residential from a configuration of two building masses (*Bale Saka Roras/Bale Adat* and *Sakanem*) facing each other and oriented towards the center (*natah* or plaza). The dualism pattern is the determined concept through an orientation towards Puncak Penulisan Temple in Pinggan Village and Pura Tuluk Biyu in Pengotan Village. Which places the sacred place zone (*Sanggah*) in this direction as a direction or pole of holy value, which local people call the *Kaja* direction (spiritual path). The sacred opposition direction is *lebuh* which is the access to the residence. There is an entrance as a sign of the binary opposition's order—the worship zone towards God and ancestors in the main direction to Bukit Penulisan Temple. Relationship means the community relationship between Pinggan Villages and Pengotan Village respects the ancestors who resided in Pura Bukit Tulisan and Pura Tuluk Biyu. The concept of belief in ancestors in rural communities in mountainous areas affects the concept of spatial orientation as a sacred direction [18], [19], [48], [49]. The firm past between Pinggan Village and the Puncak Penulisan Temple and the Pengotan Village community with the Tuluk Biyu Temple forms a residential spatial layout by placing a holy place or *Sanggah* the Puncak Penulisan Temple. The binary opposition from the direction of *Kaja* (sacred) is *lebuh* (space in front of the front yard of the house), usually as an accessible room and area for physical activities (non-spiritual). In the residential zone, there are two building masses designated for parents or girls and boys. Buildings intended for parents or girls occupy the sacred direction or the *Kaja* direction (the primary path) as a form of respect for parents and girls. Family members need to be protected and respected. (see figure 1 and figure 2). Dualism patterns come from the *Natah* space's existence (open space) and the sky's direction. *Natah* is a physical symbol where humans live, and the sky is a symbol of the gods or ancestors' dwelling place. *Natah* is an open space in the middle of the yard and is the center of the building's orientation [21], [50], [51].

Patterns from another dualism are the direction of sunrise (*Kangin*) and sunset (*Kelod*). The religious order (*Kangin*) is towards Pura Ulun Danu Batur in Pinggan Village and Bukit Abang in Pengotan Village, while the opposition is in the opposite direction. This direction by the placement of *pelinggih* (worship elements) to the ancestors oriented towards the *Kangin*. Pura Ulun Danu Batur is a place for the *Moksa* (level of human perfection) of King Sri Aji Jayapangus, an ancestor or someone highly respected by the

community [8]. Meanwhile, as the place of origin for Pengotan Village people, Bukit Abang is now before the Panji Sakti expedition [5]. This description shows that the main direction (sacred/*Kangin*) on the concept is prioritized or respected and has a historical relationship with the population concerned. Meanwhile, the opposition to this direction is more in order of physical value.

The orientation with sacred values in Pinggan and Pengotan villages forms a macro spatial layout on a

residential scale. The direction of *Kaja* as a dualism pattern has a primary (religious) value by placing the holy places (*Pura Desa* and *Puseh*) in the order of *Kaja* in Pinggan Village and Pengotan Village. Opposition from this direction has a profane value occupied by elements of *Pura Dalem* and *setra* or graves. *Pura Desa* and *Pura Puseh* are symbols of the house's soul, while *Pura Dalem* and graves are symbols of the house's body.

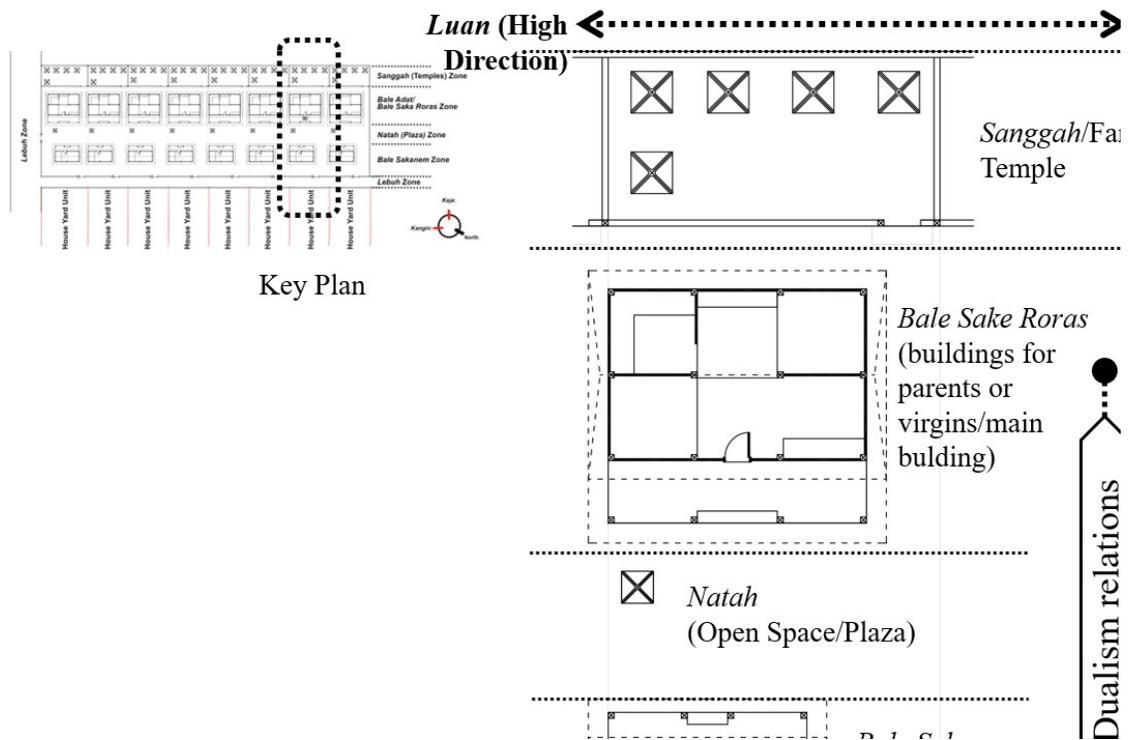


Figure 1. Dualism Pattern in Pinggan Village Residential

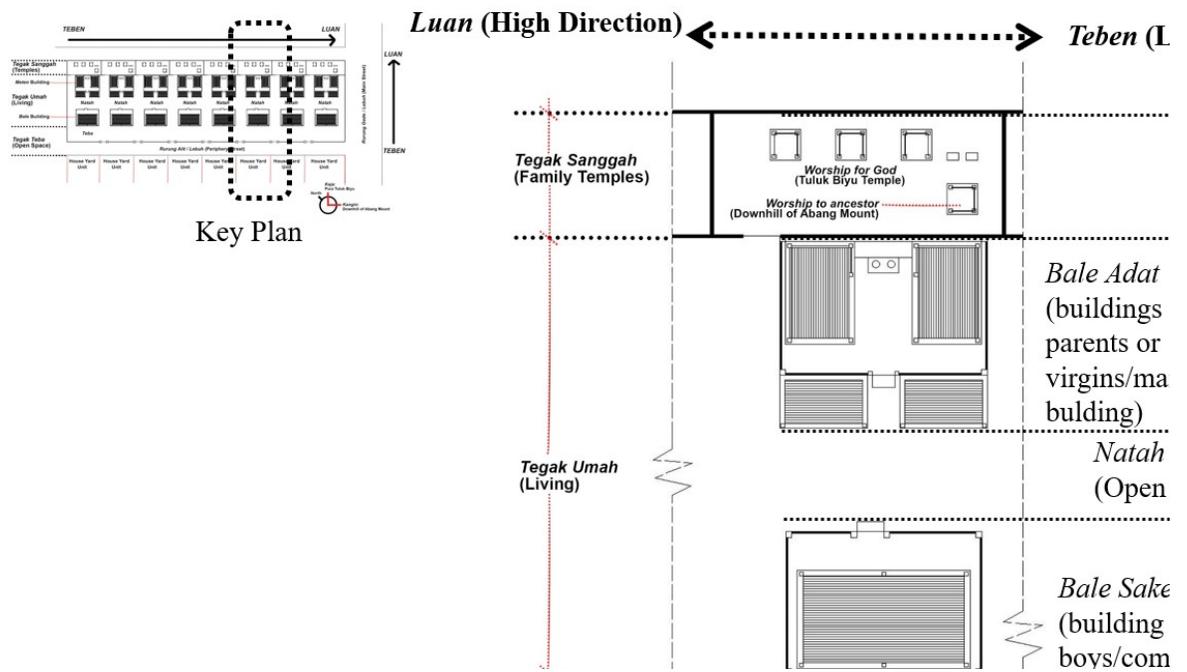


Figure 2. Dualism Pattern in Pengotan Village Residential

The dualism pattern concept influences the shape transformation of a house or building mass and its spatial structure. The direction that tends to be maintained is building mass and space that does not experience additional building abundance in the *Kaja* and *Kangin* directions. *Kaja* and *Kangin* indicate that this direction symbolizes the soul, the residential entity, and the dwelling's strength in Pinggan and Pengotan villages.

The order or zone that usually undergoes a change or transformation of space and the shape of the building mass is the direction of *Kelod* and *Kauh*. *Kelod* and *Kauh* area as development new buildings in residential dwellings and toilets in the profane order. There are additional buildings with contemporary architectural styles in the *teben* or secular direction on the residential scale. (see figure 3)

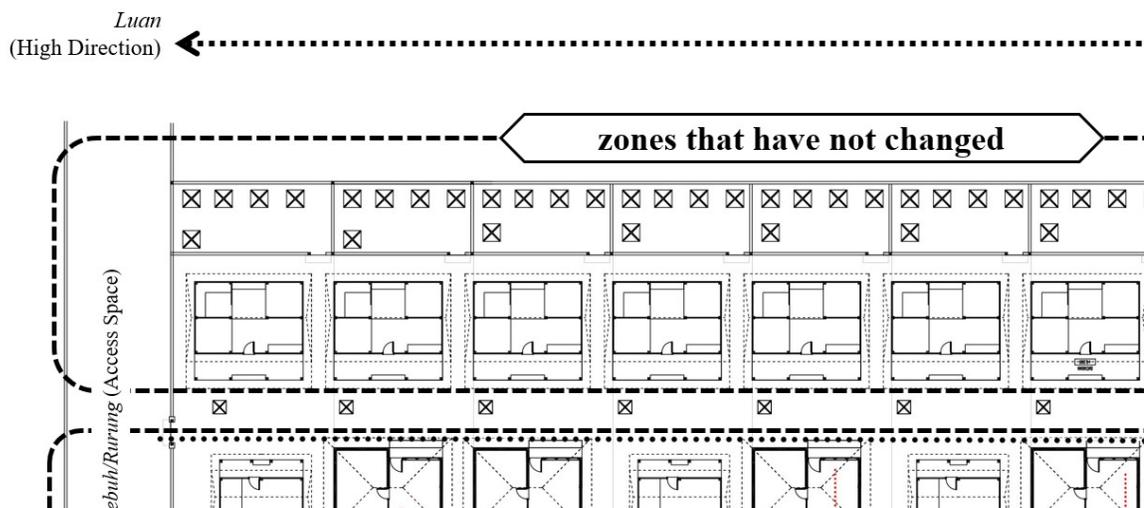


Figure 3. Zones That are Subject to Change in Pinggan Village

3.2. Dualism Pattern in Lowland Residential Architecture Spatial Layout

The *Sanga Mandala* concept affects the spatial layout of Balinese ethnic dwellings in lowland areas [14], [15], [52], [53]. The *Sanga Mandala* concept is a residential site zoning system that divides the house yard into nine zones. Each zone has a hierarchy of space, from the highest (*utama*) level to the lowest (*nista*) level. The designation of each order of freedom does manifest in the mass of the building and open space. The configuration of the building mass forms a pattern that has oriented toward the *natah* (plaza). *Natah* is a space and becomes the center of orientation towards the building masses in one yard of the Balinese ethnic residence [21], [51], [52]. The existence of *natah* affects the occupancy pattern in a yard towards the middle (space), the facade of the building mass facing the *natah*. This concept comes from the crossing of the idea of religious orientation (*Kaja* and *Kangin* direction) and profane (*Kelod* and *Kauh* direction), which is called the natural axis and the ritual axis [27], [54]–[56]. The natural axis is interpreted as the orbital movement of the sun rising and setting, while the ritual axis is the direction of the mountains and the sea. The intersection of these two axes forms a spatial layout with a hierarchy of *utama* and *nista* spaces. The order of the *sanga mandala* space has nine zones, namely (1) the holy place zone (*Sanggah*); (2) *Bale Meten* building zone; (3) the *Bale Dangin* building zone; (4) *Bale Delod* building zone; (5) *Bale Dauh* building zone; (6) the area of the *Pelinggih Penunggun Karang* (holy statue); (7) the kitchen building zone; (8) *Jineng* (rice storage) building zone; (9) pig pen zone; (10) *Natah* (open space or plaza) zone; and (11) the entrance zone or *Angkul-angkul*. The

placement of the masses and length in a residential yard is influenced by the orientation and hierarchy of sacred (high value) and profane (low value). These holy and unholy conceptions reinforce each other and form a dualism pattern as the basis for developing the *sanga mandala* concept. Dualism pattern is a relationship between two opposing poles but creates a harmonious and balanced relationship.

There is a dualism pattern on the ritual axis between *Bale Daja* or *Bale Meten* (sacred direction) and *Bale Delod* (profane order). The two buildings facing each other and *natah* as the binding of the two periods. The dualism consists of sacred and secular levels through an orientation direction of the house's user or occupant. The holy or central order is in the *Bale Meten* or *Bale Daja* direction, while the profane order is in the *Bale Delod* building. *Bale Daja* or *Bale Meten* is a building used by parents or elders in the family concerned or designated as a place for unmarried girls [50], [52], [57], [58]. *Bale Daja* or *Bale Meten*'s function and user characters show that parents mean someone who needs to be respected by their existence and represent the ancestors. Unmarried girls have a meaning as a symbol that is still holy or not tarnished, and it is necessary to maintain their presence by placing them in a closed *Bale Daja* building. Respect for ancestors and things that have sacred values are in a divine direction and zone. It is opposite the *Bale Delod*, which functioned as a bedroom for the boy to maintain the house's existence. The meaning of "guarding" is marked by the semi-open *Bale Delod* building and as a place for men. So, the dualism pattern relationship between *Bale Daja* and *Bale Delod* has the meaning "soul" and "body"; between soul and body does not negate but strengthen. *Bale Daja* and *Bale Delod* mean that each has a role and function through spatial planning based on its characteristics. (see figure 4)

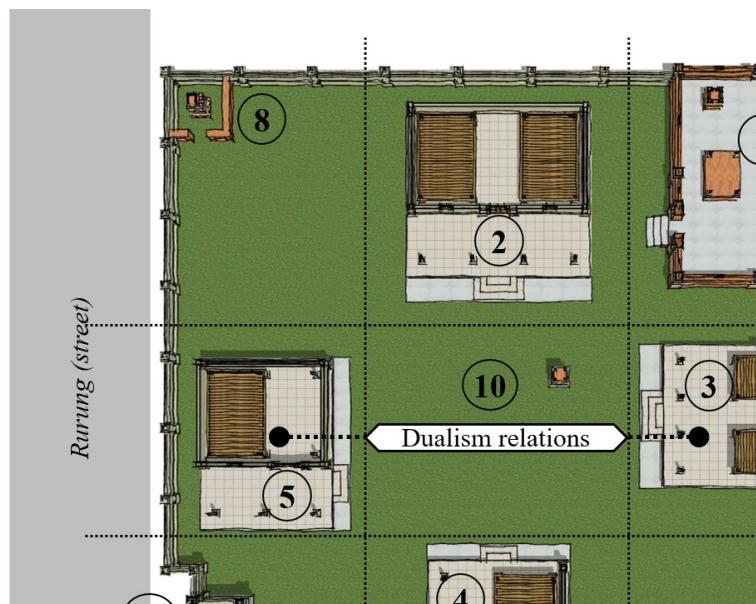


Figure 4. Dualism Pattern Relationship between *Bale Daja* and *Bale Delod*

Another dualism is between *Bale Dangin* and *Bale Dauh*, each of which is in the *utama* zone (high value) or the direction of the sun rising and *nista* (low value) or the direction of the sun setting. *Bale Dangin* functions as a building for carrying out human ceremonial activities, namely marriage, *otonan* (Balinese birthday), and funerals. This building's orientation is in the rising sun's direction and the building's path facing the *natah* (plaza). The order of the sun rising is a symbol of new hope or new life. A person's death is not the end of life but is the beginning of new birth, marriage as the beginning of running a married life, and the *otonan* (Balinese version of birthday) ceremony as a prayer for the better. Hope and a new life through religious traditions at *Bale Dangin* are placed in the *utama* zone (high value) as the beginning of life. The *Bale Dauh* building functions as a living room or a boy's residence. *Bale Dauh* is used to receive guests during traditional ceremonies, orientation towards the *natah*, and rising sun. *Bale Dauh* aims to direct the guests' eyes to watch the *manusa yadnya* ceremony held at *Bale Dangin*. So, it can be concluded that the dualism pattern *Bale Dangin* and *Bale Dauh* have a meaning as a new future hope direction and neutralize negative influences on the sun set's guide (*kauh* focus). The relationship between these two directions or poles has a significant role. It strengthens each other to achieve a level of balance in the occupancy

of Balinese ethnic houses. (see figure 5)

The shrine building or the *Sanggah* and the kitchen building or the *Paon* are dualism pattern pairs formed diagonally. The shrine zone is in the *Utama Ning Utama* zone (highest value), and the *Paon* or the kitchen is in the *Nista Ning Nista* zone (the lowest value). Their existence in a *sanga mandala*-patterned spatial structure plays a significant role and strengthens one another. Building a holy place is a symbol of holiness associated with divinity, and people who enter the room must meet the sacred space's requirements. Manifestations, in the form of freedom, mark sacred spaces as religious identities; this manifestation is in the form of a hierophant [56], [59]–[62]. It is different from the kitchen building or the *paon* building used as a place for cooking, but symbolically has a meaning as a smelter or destroyer of opposing forces. The kitchen has a substance as a neutralizer of opposing forces that enter the yard and object. The dualism relationship between the two elements has a significant role in creating and maintaining an intangible balance in the yard. (see figure 6)

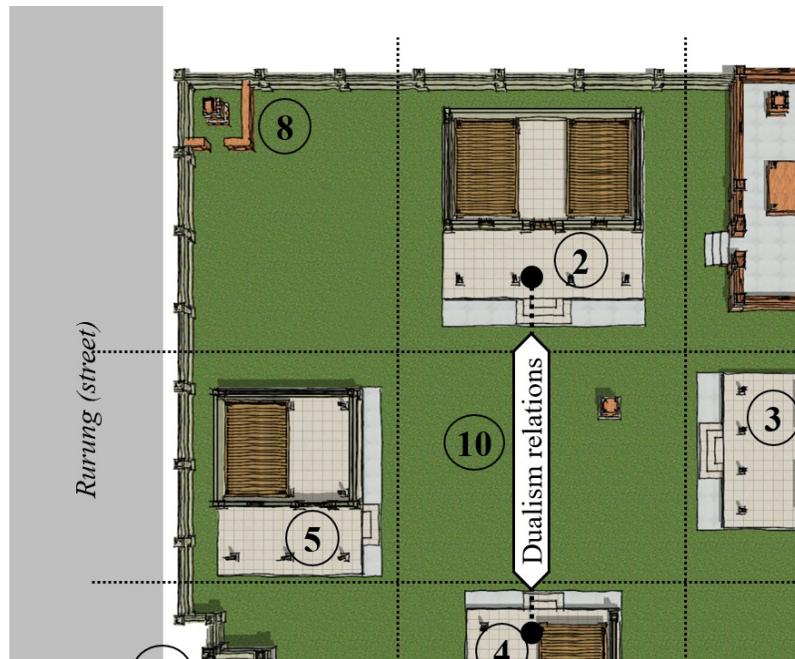


Figure 5. Dualism Pattern Relationship Between *Bale Dangin* and *Bale Dauh*

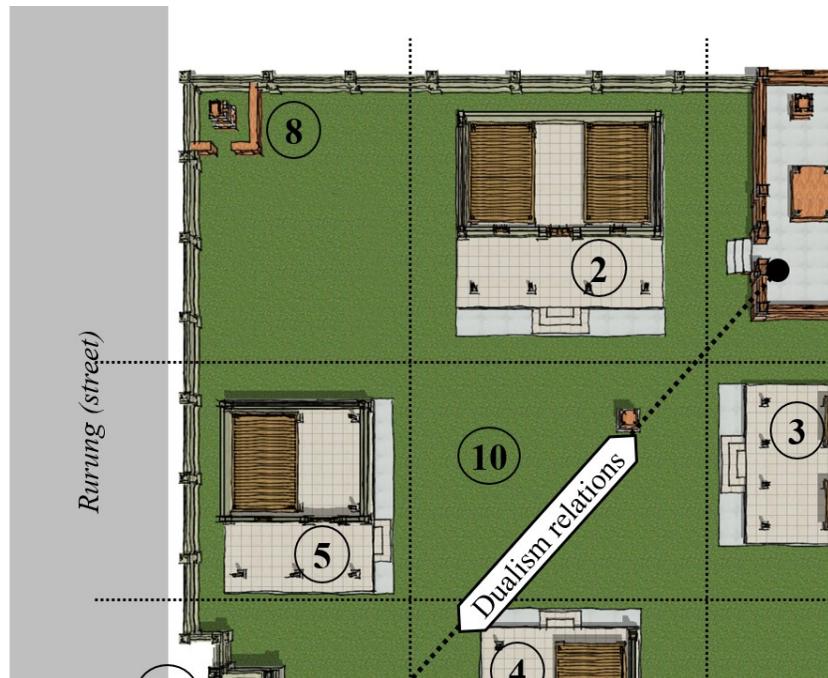


Figure 6. Dualism Pattern Relationship Between *Sanggah* and *Paon*

Natah is a living room that binds the building period in a *sanga mandala* pattern layout. *Natah* has an essential role in safety during disaster mitigation; when an earthquake occurs, *Natah*, as an open space, becomes a destination for an escape from earthquakes [21]. However, in the context of rituals, *natah* is a space for *mecaru* ceremonies - a ceremony to neutralize natural forces under the human realm or the invisible world in the human realm. The role of *natah* is symbolic and valuable as a space for balance, namely, harmonization between tangible and intangible areas and areas for disaster mitigation. As a balanced space, *natah* becomes a knot space in a *sanga mandala* patterned layout, with its center in the middle of the yard (*natah*). The opposition from the *natah* space is the sky, which symbolically is the place where the gods reside who give gifts to earthly creatures. They receive assistance from heaven (the gods), *natah* must first be neutralized through ceremonial activities to receive holy revelations in a clean container. There is an understanding of the sky as the space of the gods. The dualism pattern context between *akasa* (sky) and *pertiwi* (earth/*natah*) has an inseparable relationship, both of which influence each other in maintaining symbolic balance and benefit in the *sanga mandala* patterned

spatial layout. Before a religious ceremony is carried out in the yard of a Balinese ethnic residence, a tradition is carried out in the *natah* to clean the *bhuta* world (invisible power) so that revelations that are sent down from the sky or above can be adequately received without being disturbed by *bhuta* elements. (see figure 7).

The development of lowland residential spatial planning transforms (form and function addition) in each zoning. This occurs due to economic growth, the increasing need for space, and the trend in the development of traditional Balinese architecture towards neo-traditional or contemporary [5]. This development is dominated by the masses of buildings in the defiled or offensive zone, while the primary or sacred site does not experience significant changes. The addition of new space functions or facilities generally occurs in these zones. Zones and building masses fixed based on their position and role are *sanggah* (holy place), *Bale Daja*, and *Bale Dangin*. The dualism pattern is very clearly visible from its spatial structure development; the space with the *utama* value still retains its value. The one with the *nista* value undergoes a transformation based on the development of the era and space requirements.

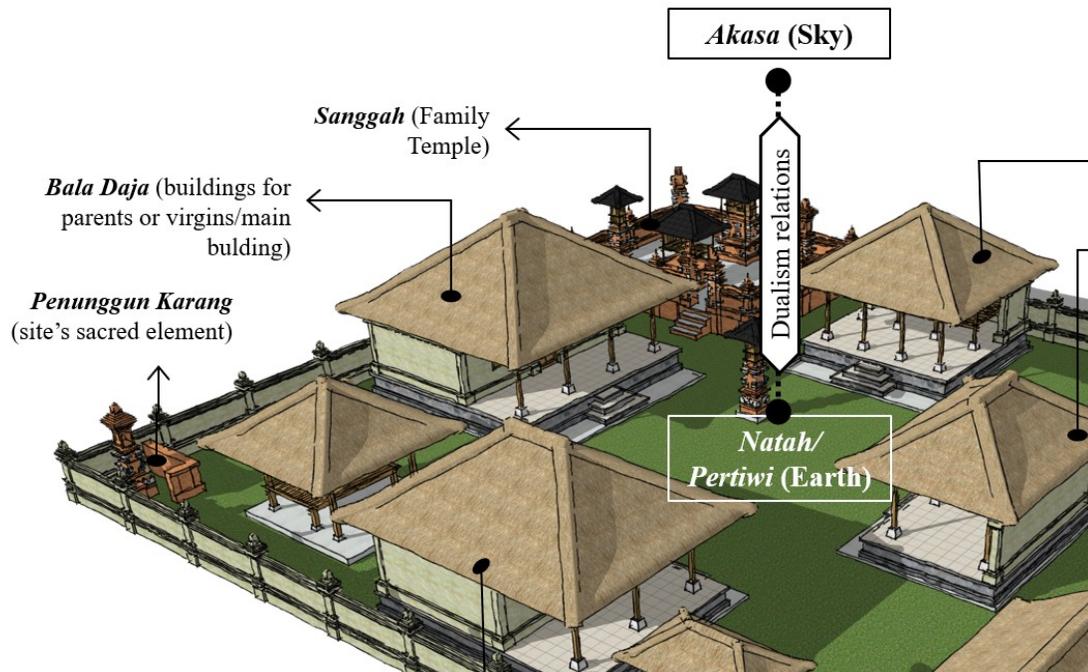


Figure 7. Dualism Pattern Relationship Between *Akasa* and *Pertiwi/Natah*

3.3. Synthesis: Universal Concepts and Local Concepts, Antithetic and Harmonious Dualism

The Balinese ethnic community has a culture of living through a residential layout based on universal and local dualism patterns. The universal concept is usually the direction of the rising and setting of the sun. This polar dualism uses the sun to have a philosophical meaning as the source of life through the rays and light it produces. The sun does pair with the earth, which serves as a place for all living things to grow and thrive (world) (Paramadhyaksa, 2016). The sunrise and sunset direction are also the basis in Balinese ethnic living space, sunrise as a symbol of hope (soul) and sunset as a symbol of smelter (physical nature). In vernacular settlements in Indonesia, the territories that use the sun in their layout are the settlements of Dusun Segantar [29], Torajan residence [34], Kajang traditional residence [31], Singengu Village residence [32], and the residence of Kepencar Village [33]. In Bali, the sun's concept is used in Balinese ethnic housing in lowland areas with the *sanga mandala* idea. In the *sanga mandala* pattern, the direction of the sun's rising and the setting is a natural symbol in the placement of *Bale Daging* and *Bale Dauh*. The sun's increasing focus has the meaning of the *utama* direction (sacred or high value). The sun's setting is *nista* (profane or low value)—the sun's philosophy's perspective and understanding influence Balinese ethnic residential buildings' layout in the lowlands. The local concept as the basis for the formation of Balinese ethnic residential architectural forms has different variants. The

belief system of each resident influences this variant. Strong relationships with ancestors and place of origin are the direction of the primary residential orientation. The emotional connection between residents who occupy the house with the principle of orientation is believed to respect their ancestors. This local concept, as the direction of *Kaja* orientation, usually placed buildings that correlate with religiosity. This concept does use in forming a residential architectural layout for ethnic Balinese mountains and lowlands settlements.

The dualism pattern relationship in the architectural layout of the Balinese ethnic settlements has the meaning of dualism, antithesis, and harmony. The antithesis definition is that the dualism pattern existence as marked by a zone that is *utama* (high value) and *nista* (low value). Zones and directions that are of *utama* (high value) correlate with sacred, religious, and something glorified and respected; on the other hand, the value of *nista* (low value) is in the form of a profane building or something that has a fusing and neutralizing role. During its development, spaces in the *nista* (low value) direction experienced more changes and additions to contemporary buildings than in the main path. Remain and changed becomes an antithesis or conflict between the two orientation poles in symbolic meaning and dynamic formation. In other perceptions, these two elements become harmonious concepts. Two parts mean that both strengthen in presenting a symbolically balanced space. This balance does achieve through ritual activities and roles, in which the two areas have their respective roles and have different rituals with the aim of spatial harmonization. So, that dualism pattern has an

antithetic relationship from value and meaning and a harmonious relationship or mutually reinforcing each other's roles to create spatial balance.

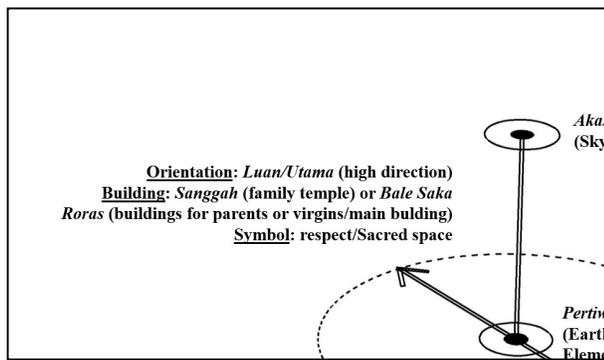


Figure 8. Dualism Pattern Concept in Highland Settlements

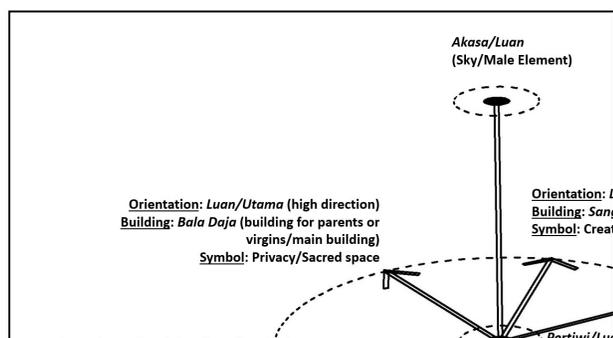


Figure 9. Dualism Pattern Concept in Lowland Settlements

4. Conclusions

Understanding the Balinese ethnic community in managing their residential space is based on a local and universal perspective that produces a dualism pattern. In the form of local and universal concepts, dualism pattern has their respective functions and roles and have their meaning and philosophy. The function aspect relates to each binary's space use divided into two: *utama* (sacred or high value) and *nista* (profane or low value). The holy has a relationship with religiosity and privacy. The profane has a nonreligious and communal connection. The sacred concept relates to the meaning of the soul and the profane with a physical sense. Aspects of each pole's roles (*utama* and *nista*) have their respective roles and, of course, are different. However, it aims to create a harmonious relationship between the two aspects in carrying out its function. They do not cancel each other out but reinforce each other in creating a spatial balance (harmony). In the dynamics of the spatial development of ethnic Balinese residences, spaces that undergo changes and increase in building mass, namely areas with low value and buildings or architecture that have a relationship with religiosity and religion, do not

experience significant changes. Antithesis and harmony as dualistic philosophies from dualism patterns are fundamental concepts in giving birth to the spatial idea of Balinese ethnic settlements in the high and lowland areas. Antithesis in spatial planning means different functions and roles, while harmony means strengthening each other's positions and roles in creating a harmonious and reinforcing relationship. This fundamental concept is the mindset or initial understanding of Balinese ethnic communities shaping and creating linear and *sanga mandala* spatial plans.

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Revision after Peer Review (ID:14823307)-2 reports-The Paradigm of Antithesis and Harmony as the Dualism of Pattern Fundamental in Architecture of Residential Houses in Bali, Indonesia

Anthony Robinson <revision.hrpub@gmail.com>

Thu, Apr 29, 2021 at 10:05 AM

To: merta wijaya <amritavijaya@gmail.com>

Dear I Kadek Merta Wijaya,

Thank you for your kind email.

We have received your revised paper and the signed publication agreement. If further revision is not required, you will expect an Acceptance Letter in a week.

Best Regards

Anthony Robinson
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Anthony Robinson <revision.hrpub@gmail.com>
To: merta wijaya <amritavijaya@gmail.com>

Fri, May 7, 2021 at 10:07 AM

Dear I Kadek Merta Wijaya,

We have received your revised paper. We would be grateful to you if you could take into account all the comments and recommendations of the referees and explain what you have done for defects specified in the two review reports in a cover letter. Attached are two cover letter samples for your reference. All the revisions should be highlighted. Looking forward to hearing from you soon.

Best Regards

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2 attachments



Cover letter_sample1.pdf
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Cover letter_sample2.pdf
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Dear Reviewer,

Attached is the paper xxx

We appreciate your efforts in reviewing it and we hope we could achieve the high standards of HRPub.

Read below our answers

Best regards,

General Comments	While I find the article interesting, I had difficulties reading it due to grammatical and vocabulary inaccuracies. I tried correcting some of them, but I think that overall, the article should undergo a very through editorial review to improve grammar and vocabulary.	A professional review was provided
	Also, it is not exactly clear to me how the authors arrived at their conclusions that “the regional forest fragmentation was strongly influenced by geomorphological and hydrological conditions over the time rather than anthropogenic factors”	We did not could support this conclusion with the arguments in the text and we opted for retrieving it with no prejudice to the paper understanding.
Advantage & Disdvantage	The article is quite technical and it appears that the research was performed with diligence and care. However, the technicality of it (including numerous acronyms), along with poor grammar makes it difficult to follow.	A professional review was provided and all acronyms, except one for metrics, were retrieved.
How to improve	Thorough grammatical and vocabulary review is needed.	A professional review was provided.
	The originality of findings should be stated more clearly.	We related our findings with the conservation public policies needs.
	The figures are nice put should have higher resolution.	We replacted them but it was little increasing resolution in Fig 1 and 2 due to the image source. Figs 3 and 4 (that show the analysis) are in high resolution.

I have followed your kind suggestion, and carefully addressed all the comments of both reviewers when in my revision. Please see the following explanation:

Reviewer 1:

1. The nine principles of PDK should be elaborated a little more.
More explanations and examples have been added.
2. Sampling technique should be mentioned.
Sampling technique has been revised and described in statistical terms.
3. There are many grammatical errors.
The paper has been proofread through the service of a professional agency.
Special attention has been paid to the marked sentences in the reviewer reports.
4. Mediating variable is not touched upon in the conclusion.
This has been added to the conclusion.

Reviewer 2

1. Review section 2.2 and add more explanation clarity to paragraph 2.
Section 2.2 has been revised. Due to the lack of clarity of paragraph 2, as the reviewer suggested, it is now removed from the paper. New contents are added for better coherence in the section. References are deleted and added as necessary; in addition, the order has been rearranged based on the appearance order in the paper.
2. In paragraph 3-
Although this comment is not clear, I have revised section 2.2 as a whole and therefore, paragraph 3 has also been included in this revision.
3. In section 3.3 is there another way to describe scoring?... Standardized in the following manner?
Standardized description has replaced the original wording in describing scoring.

I have also used the Online Manuscript Tracking System to sign the Publication Agreement, as you said in the email.

Please see the attached file for the revised manuscript. I have attached both the file with and without tracking notes. Please use either file.



I Kadek Merta Wijaya <amritavijaya@gmail.com>

Revision after Peer Review (ID:14823307)-2 reports-The Paradigm of Antithesis and Harmony as the Dualism of Pattern Fundamental in Architecture of Residential Houses in Bali, Indonesia

merta wijaya <amritavijaya@gmail.com>
To: Anthony Robinson <revision.hrpub@gmail.com>

Sun, May 9, 2021 at 7:04 AM

Dear Anthony Robinson

This revision result that equipped with the correction highlight...

Best Regards

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The Paradigm of Antithesis And Harmony As The Dualism of Pattern Fundamental In Architecture of Residential Houses In Bali, Indonesia

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Abstract Residential architecture in Bali consists of housing in the highlands with a linear pattern (*luan-teben* pattern) and lowlands with a *sanga mandala* pattern. The two residential ways form the building masses' configuration with *natah* (plaza or open space) as the building masses' binding space. The zoning system of building masses creates a dualism relationship pattern that contains *Utama* (high value) and *nista* (low value) meanings. The dualism relationship forms a building mass configuration with different building functions and characteristics. The purpose of this study is to examine the importance of the relationship between two building masses in high and lowland residential in the diametric and middle space aspects as the intermediate space or the second node of the diametrical building. The research method used in the study of the meaning of dualism was a qualitative content analysis of the perspective on; (1) space user characteristics; (2) the aspects of the function accommodated; (3) the philosophical background of the user community; and (4) the dynamics of change. The study focuses on highland settlements (Pinggan Village and Pengotan Village) and lowland settlements. This research found: (1) universal meaning based on the general conception of the direction of the sun rising and setting; (2) local purpose from the concept of respect for ancestors in the context of figures and places of origin; (3) the meaning of the antithesis in the context of hierarchy and spatial function; and (4) the meaning of harmony in the context of mutually reinforcing relationships.

Keywords antithesis and harmony; dualism pattern; *luan-teben* pattern; *sanga mandala* pattern; universal and local concepts

1. Introduction

The residential architectural layout of Balinese ethnic communities - highland and lowland residential architecture, has a linear residential and nine patterns (nine-zone

residential pattern) [1]–[5]. Linear housing patterns usually occur in mountain settlements. Those are still vernacular with the same social level, uniformity of residential formation, oriented to the concept of ancestry and nature—the cosmology of dualism, namely *Luan* (high value) and *Teben* (low value). Linear housing patterns tend to form a central space in the middle of a critical area in an elongated shape. There are no boundaries or territories between family housings, so this extended pattern repeats itself from macro housing to residential cluster units. Each residence consists of three zones: the holy place zone, the residential zone, and the outer zone. This picture occurred in Pinggan and Pengotan villages [5]–[8]. Dualism pattern in the highland, namely the main building (*Bale Meten* or *Bale Saka Roras*) and supporting facilities (*Bale Sakanem*). The nine-zone residential pattern is formed based on the building mass configuration, including a building mass pattern towards the middle and influenced their respective roles and functions and the spatial hierarchy of highest value and lowest value zones. The highland settlement pattern has one orientation concept or the high value and low-value axes. In contrast, the lowland settlement has two crosses of natural and ritual axes. The natural axis is in the form of the rising and setting of the sun's direction and the ritual axis towards the mountain (generally Mount Agung) and the sea's movement.

Bali's residential architectural layout was influenced by the understanding of the ethnic community, especially cosmology knowledge. Knowledge of natural cosmology - mountains and sea; sunrise and sunset - knowledge of the Balinese ethnic community respecting nature as the source of life and maintaining harmony and balance in nature. Bali's residential architecture based on the culture of living in the Balinese ethnic community, based on the concept of animism and dynamism, interprets this universe as having a soul or spirit, besides humans as God's creative soul and body. The images of animism and dynamism in Indonesian civilization as ancient belief concepts [9]–[12]. Emphasis on human contact with nature, resulting in a habitat pattern that is typically towards mountains or higher ground in the

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highland settlement. This concept developed in lowland settlements with a complicated life and incorporated natural and ritual aspects in spatial layout. Understanding the cosmology concept is born from the vernacular society's perspective on the existence of deceased ancestors. Respect for older people as a figure who protects their children, people who have died and resided in high places, and people who have death providing safety and well-being to the surviving family. The concept of belief where the person who has died is in the sky, the sky has a meaning as higher space or place, and elevated position on earth is generally a mountain or land higher from other lands [1], [4], [5], [13]–[20].

Understanding the phenomena above is a fundamental conception in shaping residential patterns in highland areas. This understanding also affects residential spatial planning in lowland areas by adding the concept of a natural axis, namely the direction of the sun's rising and setting [14], [21]. The idea of the sun and its direction of movement is the basis of philosophy in spatial planning, which is to provide a life for living things through symbols of the beginning (hope, birth) and the end (death) as a natural cycle of human life.

The background of the concept that underlies the layout of both high and lowlands has not been studied. These studies are only limited to identifying these concepts, not finding the meaning behind the layout's idea. The cosmology of vernacular living space in Indonesia has been done a lot, but fundamental studies are still minimal. The research focuses on studying the concept of belief in ancestors or gods who reside at the top of mountains or high places as part of the vernacular spatial [7], [22]–[29]. Others study the concept of the direction of the rising and setting of the sun in the vernacular settlement [26], [30]–[34]. These studies generally lead to studies identifying housing and orientation patterns that have been previously defined and developed so far in vernacular settlements. The background of this spatial pattern is still being studied. The dualism pattern way is fascinating to learn because it will produce a fundamental understanding of the settlement layout of Balinese ethnic communities in the dynamics of increasingly modern housing developments. Spatial planning development due to human settlements demands a functional space and contemporary trends in society regarding residential spatial planning. The pattern cannot be avoided; what can be done is to understand the fundamentals of residential spatial planning so that the substance (core) and supporting (peripheral) elements are known.

The aspects mentioned above influence the culture of living, which is oriented to the cosmological and physical contextual aspects of land, not only occurs in Indonesia but outside Indonesia the concept of a culture of living. Sacred and profane cosmology is a dualism in spatial settlement planning. According to Ashdown that there is a paradox between sacred and secular spaces in their value orientation. The orientation of the value of the holy area is influenced by substantial (ritual) and situational (religious experience) encounters. The value of sacredness fades when the ritual

meetings decrease, and space can increase sacredness while maintaining these aspects of the ritual. The sacred and profane show that space's dualism[35]. According to García & Belmonte, the orientation of the Hellenic community settlements in the Mediterranean Iron Age was towards mountains, forests, and springs. There is dualism in the spatial orientation in Hellenic community settlements. Namely, there are two settlement orientations, namely (1) based on aspects of local wisdom; and (2) based on fundamental needs (aspects of a place to get a living, clothing, and food).[36] Another research conducted by Zhou et al. states that settlement orientation is not based on rituals but is influenced by aspects of the physical environment. Such settlements in Dong in China experience migration and adapt to their physical environment, namely Mountain, Water, Forest, and Paddy fields. Territory forms direct payments - main settlements and secondary settlements - peripheral settlements that develop and adapt to their environmental conditions.[37] From the study above, it can be concluded that there is a dualism of settlement orientation, namely, primary orientation and peripheral orientation.

The research examines the fundamental concepts of residential spatial planning for communities in the highlands and lowlands. This whole concept is the basis for people's thinking in arranging their living space based on historical review and the contextual environment. The method used in this study is qualitative content analysis, and the object of the study is on highland settlements (Pinggan and Pengotan Village) and lowland settlements that are in Denpasar City. The locus of different character studies was conducted based on (1) vocabulary and traditional also contemporary territories; (2) understand the spatial structure of vernacular society and modern society; (3) there are varied findings so that the results are more substantial; and (4) the character of the occupancy in each different village, which is in mountainous areas that is still having a vernacular name, while the lowland areas are contemporary. The differences in this object's character produce exciting and varied findings, so that general and interpretive conclusions become fundamental findings. Content research emphasizes the interpretation of the content presented or contained in the study object and conducts a dialogue with relevant approaches to logically account for research results.

2. Materials and Methods

This study uses a qualitative method of content analysis on the concepts that are the basis for Balinese community housing in the high and lowlands areas. This method emphasizes the interpretation of phenomena that occur in an empirical context and textual thoughts, both of which experience a conceptual dialogue to formulate a meaning behind these phenomena [38]–[41]. The phenomena studied are the Balinese people's residential arrangements who live in the high and lowlands and their settlements' development

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dynamics. The approach or paradigm used in this study is (1) historical community settlements in mountainous and lowland areas; (2) the belief system of the local community; (3) understanding of universal concepts; (4) function and user community of the building or space; and (5) residential development dynamics.

The analysis technique used in a model [42] divides the research process into two major stages: empirical and conceptual. Practical deals with phenomena related to conceptual housing and its dynamics and concepts as a synthesis stage by interpreting these findings. The steps of this research are: (1) identifying the idea of occupancy at the locus; (2) studying binary relationships in the diametrical context; (3) understanding the character of each building or space; (4) having a dialogue on general or universal understandings; and (5) formulating the meaning of dualism pattern as the basis for forming linear housing system and nine zones pattern. The technique of analyzing data is through a coding system translated as finding themes for further dialogue with universal theories—data obtained through observation and interviews in an unstructured manner to find relevant and naturalistic information. In addition to compliance, consultations are also a tool to get data in this study; the results of interviews are analyzed (coding) to formulate themes of findings.

3. Research Result

3.1. Dualism Pattern in Highland Residential Architecture Spatial Layout

The spatial pattern of highland Bali residential architecture has a linear way, uniformity of building habits, and shapes. The architectural forms influence people who do not have a social status level. The spatial way of residential architecture comes from religious and profane orientations, a fundamental local concept shaping the residential layout in the highlands. Uniformity in form as a social aspect and a local idea in cultural values affect residential spatial planning [43]–[46]. The consistency of sacred and profane dualism concepts forms a dualism pattern. Dualism pattern identical to binary diametric as an arrangement or hierarchy of two conflicting spaces in a diametric relationship [47]. The constructed space hierarchy produces a spatial zoning system, namely the holy place zone, the residential zone, and the outer zone (the outside of the yard area). The residential site comes from two building masses' configurations as mutually oriented towards the plaza. Each cluster consists of rows of shelters composed of 8 to 10 houses; without being limited by a wall (fence) for each dwelling, only the land's height distinguishes between one residence and another. There is no family relationship in the form of a "blood" relationship between one dwelling and another—the images of residential architectural layouts in Pinggan and Pengotan villages. The linear patterned housings are grouped into residential clusters, each housing

in the cluster has no "blood" relationship [5], [6], [8].

One residential unit in Pinggan and Pengotan Village village has three zones: the *sanggah* (temple) zone, the residential zone, and the outer zone. Inside, the residential from a configuration of two building masses (*Bale Saka Roras/Bale Adat* and *Sakanem*) facing each other and oriented towards the centre space. The dualism pattern is the determined concept through an orientation towards Puncak Penulisan Temple in Pinggan Village and Pura Tuluk Biyu in Pengotan Village. Which places the sacred place zone (*Sanggah*) in this direction as a direction or pole of holy value, which local people call the *Kaja* direction (spiritual path). The sacred opposition direction is *lebuh* (space in front of gate residential), which access the residence. There is an entrance as a sign of the binary opposition's order—the worship zone towards God and ancestors in the main direction to Bukit Penulisan Temple. Relationship means the community relationship between Pinggan Villages and Pengotan Village respects the ancestors who resided in Pura Bukit Tulisan and Pura Tuluk Biyu. The concept of belief in ancestors in rural communities in mountainous areas affects the concept of spatial orientation as a sacred direction [18], [19], [48], [49]. The firm past between Pinggan Village and the Puncak Penulisan Temple and the Pengotan Village community with the Tuluk Biyu Temple forms a residential spatial layout by placing a holy place or *Sanggah* the Puncak Penulisan Temple. The binary opposition from the direction of *Kaja* (sacred) is *lebuh* (space in front of the front yard of the house), usually as an accessible room and area for physical activities (non-spiritual). In the residential zone, there are two building masses designated for parents or girls and boys. Buildings intended for parents or girls occupy the sacred direction or the *Kaja* direction (the primary path) as a form of respect for parents and girls. Family members need to be protected and respected. (see figure 1 and figure 2). Dualism patterns come from the middle space existence and the sky's direction. *Natah* is a physical symbol where humans live, and the sky symbolizes the gods or ancestors' dwelling place. [21], [50], [51].

Patterns from another dualism are the direction of sunrise (*Kangin*) and sunset (*Kelod*). The religious order (*Kangin*) is towards Pura Ulun Danu Batur in Pinggan Village and Bukit Abang in Pengotan Village, while the opposition is in the opposite direction. This direction by the placement of *pelinggih* (worship elements) to the ancestors oriented towards the *Kangin*. Ulun Danu Batur temple is a place for the *Moksa* (level of human perfection) of King Sri Aji Jayapangus, an ancestor or someone highly respected by the community [8]. Meanwhile, as the place of origin for Pengotan Village people, Bukit Abang is now before the Panji Sakti expedition [5]. This description shows that the main direction (sacred/*Kangin*) on the concept is prioritized or respected and has a historical relationship with the population concerned. Meanwhile, the opposition to this direction is more in order of physical value.

The orientation with sacred values in Pinggan and

Pengotan villages forms a macro spatial layout on a residential scale. The direction of *Kaja* as a dualism pattern has a primary (religious) value by placing the holy places (*Pura Desa* and *Puseh*) in the order of *Kaja* in Pinggan Village and Pengotan Village. Opposition from this

direction has a profane value occupied by elements of *Pura Dalem* and *Setra* or graves. *Pura Desa* and *Pura Puseh* are symbols of the house's soul, while *Pura Dalem* and graves are symbols of the house's body.

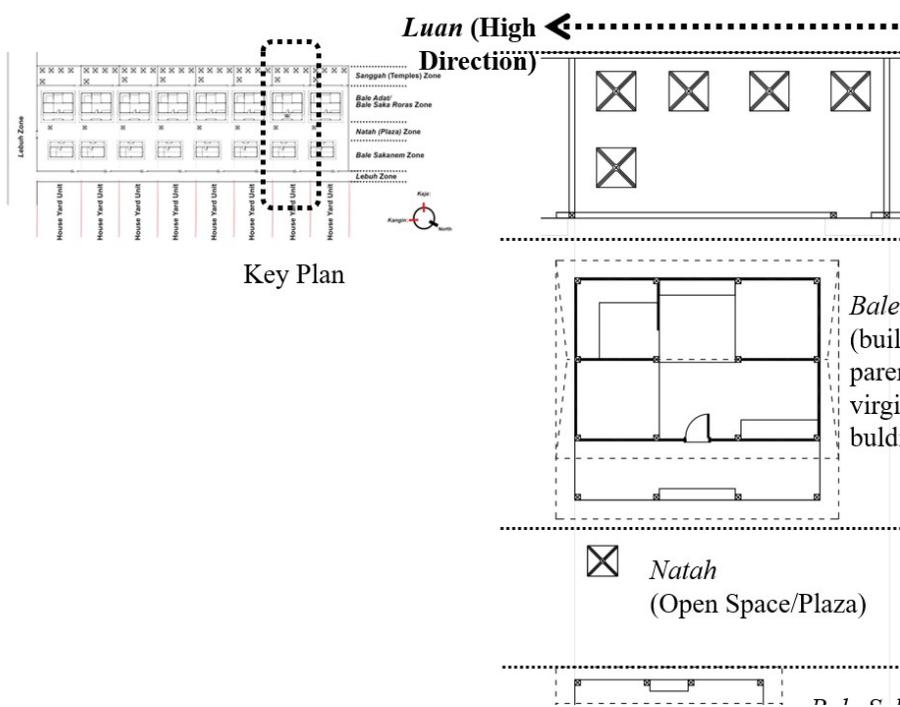


Figure 1. Dualism Pattern in Pinggan Village Residential

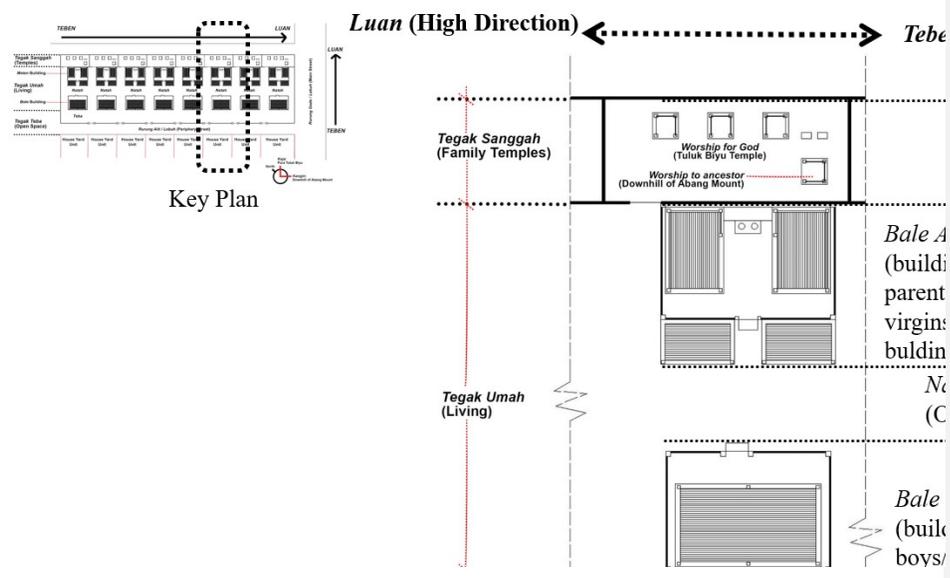


Figure 2. Dualism Pattern in Pengotan Village Residential

The dualism pattern concept influences the shape transformation of a house or building mass and its spatial structure. The direction that tends to be maintained is building mass and space that does not experience additional building abundance in the *Kaja* and *Kangin* directions. *Kaja* and *Kangin* indicate that this direction symbolizes the soul, the residential entity, and the dwelling's strength in Pinggan and Pengotan villages.

The order or zone that usually undergoes a change or transformation of space and the shape of the building mass is the direction of *Kelod* and *Kauh*. *Kelod* and *Kauh* area as development new buildings in residential dwellings and toilets in the profane order. There are additional buildings with contemporary architectural styles in a secular direction on the residential scale. (see figure 3)

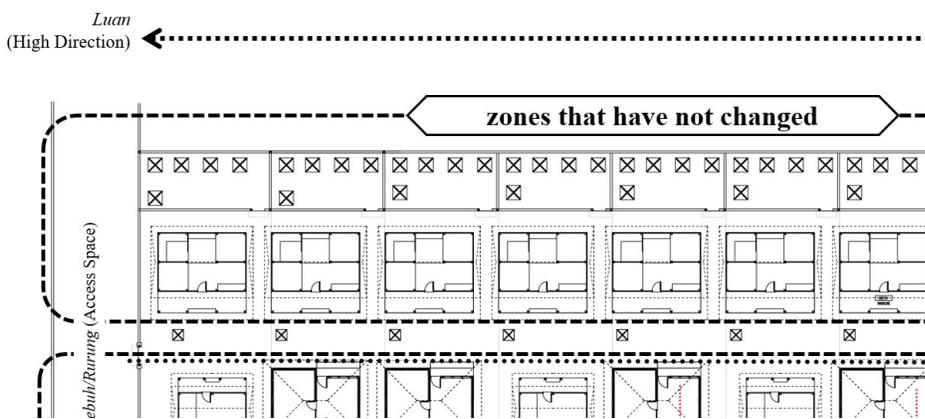


Figure 3. Zones That are Subject to Change in Pinggan Village

3.2. Dualism Pattern in Lowland Residential Architecture Spatial Layout

The nine zones concept affects the spatial layout of Balinese ethnic dwellings in lowland areas [14], [15], [52], [53]. The residential site zoning system divides the house yard into nine zones; each zone has a hierarchy of space, from the highest to the lowest. The designation of each order of freedom does manifest in the mass of the building and open space. The configuration of the building mass forms a pattern that has oriented toward the plaza. [21], [51], [52]. The plaza's existence affects the occupancy pattern in a yard towards the middle (space), the facade of the building mass facing the middle space. This concept comes from the crossing of the idea of religious orientation (*Kaja* and *Kangin* direction) and profane (*Kelod* and *Kauh* direction), which is called the natural axis and the ritual axis [27], [54]–[56]. The natural axis is interpreted as the orbital movement of the sun rising and setting, while the ritual axis is the direction of the mountains and the sea. The intersection of these two axes forms a spatial layout with a hierarchy of **high value and low-value** spaces. The pattern consists of (1) the holy place zone (*Sanggah*); (2) *Bale Meten* building zone; (3) the *Bale Dangin* building zone; (4) *Bale Delod* building zone; (5) *Bale Dauh* building zone; (6) the area of the *Pelinggih Penunggun Karang* (holy statue); (7) the kitchen building zone; (8) *Jineng* (rice storage) building zone; (9) pig pen zone; (10) *Natah* (open space or plaza) zone; and (11) the entrance zone or *Angkul-angkul*. The placement of the masses and length in a residential yard is influenced by the orientation and hierarchy of sacred (high value) and profane (low value). These holy and unholy conceptions

reinforce each other and form a dualism pattern as the basis for developing the nine patterns concept. Dualism pattern is a relationship between two opposing poles but creates a harmonious and balanced relationship.

There is a dualism pattern on the ritual axis between *Bale Daja* or *Bale Meten* (sacred direction) and *Bale Delod* (profane order). The two buildings are facing each other and the plaza as the binding of the two periods. The dualism consists of sacred and secular levels through an orientation direction of the house's user or occupant. The holy or central order is in the *Bale Meten* or *Bale Daja* direction, while the profane order is in the *Bale Delod* building. *Bale Daja* or *Bale Meten* is a building used by parents or elders in the family concerned or designated as a place for unmarried girls [50], [52], [57], [58]. *Bale Daja* or *Bale Meten*'s function and user characters show that parents mean someone who needs to be respected by their existence and represent the ancestors. Unmarried girls have a meaning as a symbol that is still holy or not tarnished, and it is necessary to maintain their presence by placing them in a closed *Bale Daja* building. Respect for ancestors and things that have sacred values are in a divine direction and zone. It is opposite the *Bale Delod*, which functioned as a bedroom for the boy to maintain the house's existence. The meaning of "guarding" is marked by the semi-open *Bale Delod* building and as a place for men. So, the dualism pattern relationship between *Bale Daja* and *Bale Delod* has the meaning "soul" and "body"; between soul and body does not negate but strengthen. *Bale Daja* and *Bale Delod* mean that each has a role and function through spatial planning based on its characteristics. (see figure 4)

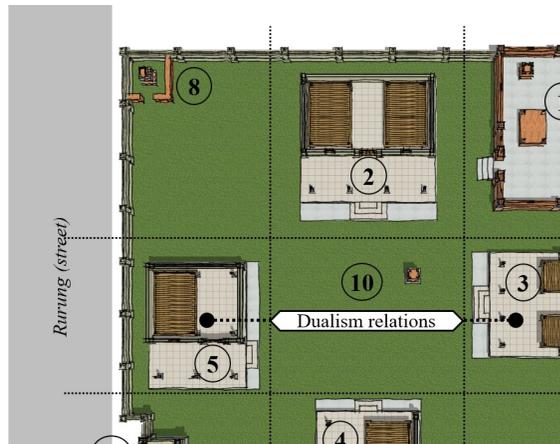


Figure 4. Dualism Pattern Relationship between *Bale Daja* and *Bale Delod*

Another dualism is between *Bale Dangin* and *Bale Dauh*, each of which is in the **high-value zone** or the direction of the sun rising and *nista* (low value) or the direction of the sun setting. *Bale Dangin* functions as a building for carrying out human ceremonial activities, namely marriage, *otonan* (Balinese birthday), and funerals. This building's orientation is in the rising sun's direction and the building's path facing the plaza. The order of the sun rising is a symbol of new hope or new life. A person's death is not the end of life but is the beginning of new birth, marriage as the beginning of running a married life, and the *otonan* (Balinese version of birthday) ceremony as a prayer for the better. Hope and a new life through religious traditions at *Bale Dangin* are placed in the **high-value zone** as the beginning of life. The *Bale Dauh* building functions as a living room or a boy's residence. *Bale Dauh* is used to receive guests during traditional ceremonies, orientation towards the middle space, and rising sun. *Bale Dauh* aims to direct the guests' eyes to watch the *manusa yadnya* ceremony held at *Bale Dangin*. So, it can be concluded that the dualism pattern *Bale Dangin* and *Bale Dauh* have a meaning as a new future hope direction and neutralize negative influences on the sun set's guide (*kauh*). The relationship between these two directions or poles has a significant role. It strengthens each other to achieve a level of balance in the occupancy of Balinese

ethnic houses. (see figure 5)

The shrine building or the *Sanggah* and the kitchen building or the *Paon* are dualism pattern pairs formed diagonally. The shrine zone is in the highest value zone, and the *Paon* or the kitchen is in the *Nista Ning Nista* zone (the lowest value). Their existence in a nine patterned spatial structure plays a significant role and strengthens one another. Building a holy place is a symbol of holiness associated with divinity, and people who enter the room must meet the sacred space's requirements. Manifestations, in the form of freedom, mark sacred spaces as religious identities; this manifestation is in the form of a hierophant [56], [59]–[62]. It is different from the kitchen building or the *paon* building used as a place for cooking, but symbolically has a meaning as a smelter or destroyer of opposing forces. The kitchen has a substance as a neutralizer of opposing forces that enter the yard and object. The dualism relationship between the two elements has a significant role in creating and maintaining an intangible balance in the yard. (see figure 6)



Figure 5. Dualism Pattern Relationship Between *Bale Dangin* and *Bale Dauh*



Figure 6. Dualism Pattern Relationship Between *Sanggah* and *Paon*

Natah has an essential role in safety during disaster mitigation; when an earthquake occurs, as an open space, it becomes a destination for an escape from earthquakes [21]. However, in rituals, the area used *mecaru* ceremonies - a ceremony to neutralize natural forces under the human realm or the invisible world in the human realm. The *mecaru* symbolic and valuable as a space for balance, namely, harmonization between

tangible and intangible areas and areas for disaster mitigation. Balanced space, the plaza becomes a knot space in a patterned layout, with its centre in the middle of the yard. The opposition from the middle area is the sky, which symbolically is the place where the gods reside who give gifts to earthly creatures. They receive assistance from heaven (the gods); space must first be neutralized through ceremonial activities to receive holy

revelations in a clean container. There is an understanding of the sky as the space of the gods. The dualism pattern context between *akasa* (sky) and *pertiwi* (earth/*natah*) has an inseparable relationship, both of which influence each other in maintaining symbolic balance and benefit in the nine patterned spatial layouts. Before a religious ceremony is carried out in the yard of a Balinese ethnic residence, a tradition is carried out in the middle space to clean the *bhuta* world (invisible power) so that revelations that are sent down from the sky or above can be adequately received without being disturbed by *bhuta* elements. (see figure 7).

The development of lowland residential spatial planning transforms (form and function addition) in each zoning. The occurs due to economic growth, the

increasing need for space, and the trend in the development of traditional Balinese architecture towards neo-traditional or contemporary [5]. This development is dominated by the masses of buildings in the defiled or offensive zone, while the primary or sacred site does not experience significant changes. The addition of new space functions or facilities generally occurs in these zones. Zones and building masses fixed based on their position and role are *sangah* (holy place), *Bale Daja*, and *Bale Dangin*. The dualism pattern is very clearly visible from its spatial structure development; the space with the **high value** still retains its value. The one with the *nista* value undergoes a transformation based on the development of the era and space requirements.

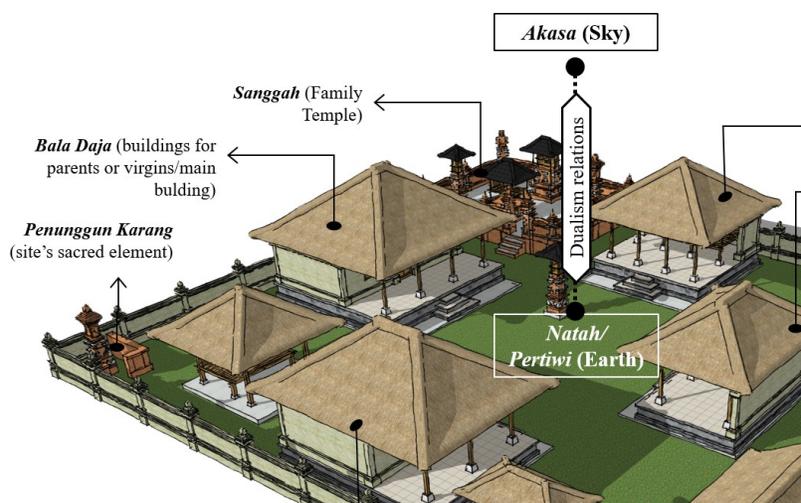


Figure 7. Dualism Pattern Relationship Between *Akasa* and *Pertiwi/Natah*

3.3. Synthesis: Universal Concepts and Local Concepts, Antithetic and Harmonious Dualism

The Balinese ethnic community has a culture of living through a residential layout based on universal and local dualism patterns. The universal concept is usually the direction of the rising and setting of the sun. This polar dualism uses the sun to have a philosophical meaning as the source of life through the rays and light it produces. The sun does pair with the earth, which serves as a place for all living things to grow and thrive (world) (Paramadhyaksa, 2016). The sunrise and sunset direction are also the basis in Balinese ethnic living space, sunrise as a symbol of hope (soul) and sunset as a symbol of smelter (physical nature). In vernacular settlements in

Indonesia, the territories that use the sun in their layout are the settlements of Dusun Segantar [29], Torajan residence [34], Kajang traditional residence [31], Singengu Village residence [32], and the residence of Kepencar Village [33]. In Bali, the direction of the sun's rising and the setting is a natural symbol in the placement of *Bale Dangin* and *Bale Dauh*. The sun's increasing focus has the meaning of the *utama* direction (sacred or high value). The sun's setting is *nista* (profane or low value)—the sun's philosophy's perspective and understanding influence Balinese ethnic residential buildings' layout in the lowlands. The local concept as the basis for the formation of Balinese ethnic residential architectural forms has different variants. The belief system of each resident influences this variant. Strong relationships with ancestors and place of origin are the

direction of the primary residential orientation. The emotional connection between residents who occupy the house with the principle of orientation is believed to respect their ancestors. This local concept, as the direction of *Kaja* orientation, usually placed buildings that correlate with religiosity. This concept does use in forming a residential architectural layout for ethnic Balinese mountains and lowlands settlements.

The dualism pattern relationship in the architectural layout of the Balinese ethnic settlements has the meaning of dualism, antithesis, and harmony. The antithesis definition is that a high-value zone and low value mark the dualism pattern existence. Zones and directions that are of high value correlate with sacred, religious, and something glorified and respected; on the other hand, the value of *the nista* (low value) is in the form of a profane building a fusing and neutralizing role. During its development, spaces in the *nista* (low value) direction experienced more changes and additions to contemporary buildings than in the main path. Remain and changed becomes an antithesis or conflict between the two orientation poles in symbolic meaning and dynamic formation. In other perceptions, these two elements become harmonious concepts. Two parts mean that both strengthen in presenting a symbolically balanced space. This balance does achieve through ritual activities and roles, in which the two areas have their respective roles and have different rituals with the aim of spatial harmonization. So, that dualism pattern has an antithetic relationship from value and meaning and a harmonious relationship or mutually reinforcing each other's roles to create spatial balance.

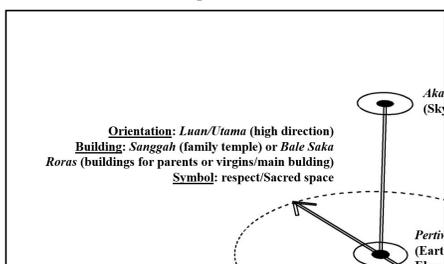


Figure 8. Dualism Pattern Concept in Highland Settlements

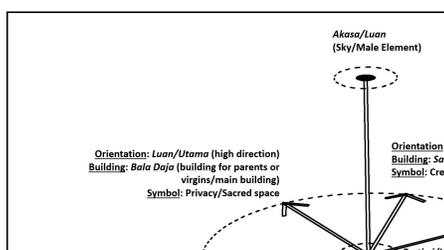


Figure 9. Dualism Pattern Concept in Lowland Settlements

4. Conclusions

Understanding the Balinese ethnic community in managing their residential space is based on a local and universal perspective that produces a dualism pattern. In the form of local and universal concepts, dualism pattern has their respective functions and roles and have their meaning and philosophy. The function aspect relates to each binary's space use divided into sacred or high value and profane or low value. The holy has a relationship with religiosity and privacy. The profane has a nonreligious and communal connection. The sacred concept relates to the meaning of the soul and the profane with a physical sense. Aspects of each pole's roles (high and low) have their respective roles and, of course, are different. However, it aims to create a harmonious relationship between the two aspects in carrying out its function. They do not cancel each other out but reinforce each other in creating a spatial balance (harmony). In the dynamics of the spatial development of ethnic Balinese residences, spaces that undergo changes and increase in building mass, namely areas with low value and buildings or architecture that have a relationship with religiosity and religion, do not experience significant changes. Antithesis and harmony as dualistic philosophies from dualism patterns are fundamental concepts in giving birth to the spatial idea of Balinese ethnic settlements in the high and low areas. Antithesis in spatial planning means different functions and roles, while harmony means strengthening each other's positions and roles in creating a harmonious and reinforcing relationship. This fundamental concept is the mindset or initial understanding of Balinese ethnic communities shaping and creating linear and nine spatial plans.

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I Kadek Merta Wijaya <amritavijaya@gmail.com>

Revision after Peer Review (ID:14823307)-2 reports-The Paradigm of Antithesis and Harmony as the Dualism of Pattern Fundamental in Architecture of Residential Houses in Bali, Indonesia

Anthony Robinson <revision.hrpub@gmail.com>
To: merta wijaya <amritavijaya@gmail.com>

Sun, May 9, 2021 at 2:50 PM

Dear I Kadek Merta Wijaya,

Your revised paper has been sent to the reviewer for a second review. Once we receive the feedback, we will contact you. Keep in touch.

Best Regards

Anthony Robinson
Editorial Assistant
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Horizon Research Publishing, USA
<http://www.hrpub.org>

[Quoted text hidden]

Acceptance Letter & Advice of Payment (ID:14823307)-The Paradigm of Antithesis and Harmony as the Dualism of Pattern Fundamental in Architecture of Residential Houses in Bali, Indonesia

Anthony Robinson <revision.hrpub@gmail.com>
To: merta wijaya <amritavijaya@gmail.com>

Tue, May 25, 2021 at 2:51 PM

Dear I Kadek Merta Wijaya,

Your paper has been accepted for publication. Herewith attached is the Acceptance Letter.

The publication fee is \$480. Below are Wire Transfer instructions.

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Acceptance Letter

Dear I Kadek Merta Wijaya,

Congratulations! As a result of the reviews and revisions, we are pleased to inform you that your following paper has been accepted for publication.

Paper Title: The Paradigm of Antithesis And Harmony As The Dualism of Pattern Fundamental In Architecture of Residential Houses In Bali, Indonesia

Paper ID: 14823307

Contributor (s): I Kadek Merta Wijaya

It is scheduled for publication on Civil Engineering and Architecture, Vol 9, No 4.

The publication fee \$ 480 should be paid within 2 weeks.

Should you have any questions, please feel free to let us know by quoting your **Paper ID** in any future inquiries.

Best wishes,





I Kadek Merta Wijaya <amritavijaya@gmail.com>

Acceptance Letter & Advice of Payment (ID:14823307)-The Paradigm of Antithesis and Harmony as the Dualism of Pattern Fundamental in Architecture of Residential Houses in Bali, Indonesia

merta wijaya <amritavijaya@gmail.com>
To: Anthony Robinson <revision.hrpub@gmail.com>

Thu, Jun 3, 2021 at 10:31 AM

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I Kadek Merta Wijaya, S.T., M.Sc.

Department of Architecture, Faculty of Engineering and Planning, Universitas Warmadewa, Indonesia

On 25 May 2021, at 14.51, Anthony Robinson <revision.hrpub@gmail.com> wrote:

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Acceptance Letter & Advice of Payment (ID:14823307)-The Paradigm of Antithesis and Harmony as the Dualism of Pattern Fundamental in Architecture of Residential Houses in Bali, Indonesia

Anthony Robinson <revision.hrpub@gmail.com>
To: merta wijaya <amritavijaya@gmail.com>

Fri, Jun 4, 2021 at 9:46 AM

Dear I Kadek Merta Wijaya,

Thank you for your email.

\$35.00 is the commission charge which will be charged from our bank. The total amount you need to transfer is \$515.
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Acceptance Letter & Advice of Payment (ID:14823307)-The Paradigm of Antithesis and Harmony as the Dualism of Pattern Fundamental in Architecture of Residential Houses in Bali, Indonesia

Anthony Robinson <revision.hrpub@gmail.com>
To: I Kadek Merta Wijaya <amritavijaya@gmail.com>

Mon, Jun 7, 2021 at 9:30 AM

Dear I Kadek Merta Wijaya,

Thank you for your interest in publishing your work in HRPUB.
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Anthony Robinson
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I Kadek Merta Wijaya <amritavijaya@gmail.com>

Urgent!!!-Proof Reading before Publication (ID:14823307)-The Paradigm of Antithesis and Harmony as the Dualism of Pattern Fundamental in Architecture of Residential Houses in Bali, Indonesia

Anthony Robinson <revision.hrpub@gmail.com>
To: I Kadek Merta Wijaya <amritavijaya@gmail.com>

Wed, Jun 16, 2021 at 4:51 PM

Dear I Kadek Merta Wijaya,

Your manuscript has been accepted for publication. Also, you get a chance of checking the attached paper before it's released.

However, to meet the general publication criteria, we would like you to revise your manuscript according to the following comments again.

1. Many references are non-English. Please translate.

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I Kadek Merta Wijaya <amritavijaya@gmail.com>
To: Anthony Robinson <revision.hrpub@gmail.com>

Thu, Jun 17, 2021 at 12:26 PM

Dear Anthony Robinson,

I send a revised manuscript based on the comments that have been sent to me.

Best Regards

I Kadek Merta Wijaya, S.T., M.Sc.

Department of Architecture, Faculty of Engineering and Planning, Warmadewa University
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The Paradigm of Antithesis and Harmony as the Dualism of Pattern Fundamental in Architecture of Residential Houses in Bali, Indonesia

I Kadek Merta Wijaya

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Abstract Residential architecture in Bali consists of housing in the highlands with a linear pattern (*luan-teben* pattern) and lowlands with a *sanga mandala* pattern. The two residential ways form the building masses' configuration with *natah* (plaza or open space) as the building masses' binding space. The zoning system of building masses creates a dualism relationship pattern that contains *Utama* (high value) and *nista* (low value) meanings. The dualism relationship forms a building mass configuration with different building functions and characteristics. The purpose of this study is to examine the importance of the relationship between two building masses in high and lowland residential in the diametric and middle space aspects as the intermediate space or the second node of the diametrical building. The research method used in the study of the meaning of dualism was a qualitative content analysis of the perspective on; (1) space user characteristics; (2) the aspects of the function accommodated; (3) the philosophical background of the user community; and (4) the dynamics of change. The study focuses on highland settlements (Pinggan Village and Pengotan Village) and lowland settlements. This research found: (1) universal meaning based on the general conception of the direction of the sun rising and setting; (2) local purpose from the concept of respect for ancestors in the context of figures and places of origin; (3) the meaning of the antithesis in the context of hierarchy and spatial function; and (4) the meaning of harmony in the context of

mutually reinforcing relationships.

Keywords Antithesis and Harmony, Dualism Pattern, *Luan-Teben* Pattern, *Sanga Mandala* Pattern, Universal and Local Concepts

1. Introduction

The residential architectural layout of Balinese ethnic communities - highland and lowland residential architecture, has a linear residential and nine patterns (nine-zone residential pattern) [1]–[5]. Linear housing patterns usually occur in mountain settlements. Those are still vernacular with the same social level, uniformity of residential formation, oriented to the concept of ancestry and nature – the cosmology of dualism, namely *Luan* (high value) and *Teben* (low value). Linear housing patterns tend to form a central space in the middle of a critical area in an elongated shape. There are no boundaries or territories between family housings, so this extended pattern repeats itself from macro housing to residential cluster units. Each residence consists of three zones: the holy place zone, the residential zone, and the outer zone. This picture occurred in Pinggan and Pengotan villages [5]–[8]. Dualism pattern in the highland, namely the main building (*Bale Meten* or *Bale Saka Roras*) and supporting facilities (*Bale Sakanem*).

The nine-zone residential pattern is formed based on the building mass configuration, including a building mass pattern towards the middle and influenced their respective roles and functions and the spatial hierarchy of highest value and lowest value zones. The highland settlement pattern has one orientation concept or the high value and low-value axes. In contrast, the lowland settlement has two crosses of natural and ritual axes. The natural axis is in the form of the rising and setting of the sun's direction and the ritual axis towards the mountain (generally Mount Agung) and the sea's movement.

Bali's residential architectural layout was influenced by the understanding of the ethnic community, especially cosmology knowledge. Knowledge of natural cosmology - mountains and sea; sunrise and sunset - knowledge of the Balinese ethnic community respecting nature as the source of life and maintaining harmony and balance in nature. Bali's residential architecture based on the culture of living in the Balinese ethnic community, based on the concept of animism and dynamism, interprets this universe as having a soul or spirit, besides humans as God's creative soul and body. The images of animism and dynamism in Indonesian civilization as ancient belief concepts [9]–[12]. Emphasis on human contact with nature, resulting in a habitat pattern that is typically towards mountains or higher ground in the highland settlement. This concept developed in lowland settlements with a complicated life and incorporated natural and ritual aspects in spatial layout. Understanding the cosmology concept is born from the vernacular society's perspective on the existence of deceased ancestors. Respect for older people as a figure who protects their children, people who have died and resided in high places, and people who have death providing safety and well-being to the surviving family. The concept of belief where the person who has died is in the sky, the sky has a meaning as higher space or place, and elevated position on earth is generally a mountain or land higher from other lands [1], [4], [5], [13]–[20].

Understanding the phenomena above is a fundamental conception in shaping residential patterns in highland areas. This understanding also affects residential spatial planning in lowland areas by adding the concept of a natural axis, namely the direction of the sun's rising and setting [14], [21]. The idea of the sun and its direction of movement is the basis of philosophy in spatial planning, which is to provide a life for living things through symbols of the beginning (hope, birth) and the end (death) as a natural cycle of human life.

The background of the concept that underlies the layout of both high and lowlands has not been studied. These studies are only limited to identifying these concepts, not finding the meaning behind the layout's idea. The cosmology of vernacular living space in Indonesia has been done a lot, but fundamental studies are still minimal. The research focuses on studying the concept of belief in ancestors or gods who reside at the top of mountains or high

places as part of the vernacular spatial [7], [22]–[29]. Others study the concept of the direction of the rising and setting of the sun in the vernacular settlement [26], [30]–[34]. These studies generally lead to studies identifying housing and orientation patterns that have been previously defined and developed so far in vernacular settlements. The background of this spatial pattern is still being studied. The dualism pattern way is fascinating to learn because it will produce a fundamental understanding of the settlement layout of Balinese ethnic communities in the dynamics of increasingly modern housing developments. Spatial planning development due to human settlements demands a functional space and contemporary trends in society regarding residential spatial planning. The pattern cannot be avoided; what can be done is to understand the fundamentals of residential spatial planning so that the substance (core) and supporting (peripheral) elements are known.

The aspects mentioned above influence the culture of living, which is oriented to the cosmological and physical contextual aspects of land, not only occurs in Indonesia but outside Indonesia the concept of a culture of living. Sacred and profane cosmology is a dualism in spatial settlement planning. According to Ashdown that there is a paradox between sacred and secular spaces in their value orientation. The orientation of the value of the holy area is influenced by substantial (ritual) and situational (religious experience) encounters. The value of sacredness fades when the ritual meetings decrease, and space can increase sacredness while maintaining these aspects of the ritual. The sacred and profane show that space's dualism [35]. According to García & Belmonte, the orientation of the Hellenic community settlements in the Mediterranean Iron Age was towards mountains, forests, and springs. There is dualism in the spatial orientation in Hellenic community settlements. Namely, there are two settlement orientations, namely (1) based on aspects of local wisdom; and (2) based on fundamental needs (aspects of a place to get a living, clothing, and food).[36] Another research conducted by Zhou et al. states that settlement orientation is not based on rituals but is influenced by aspects of the physical environment. Such settlements in Dong in China experience migration and adapt to their physical environment, namely Mountain, Water, Forest, and Paddy fields. Territory forms direct payments - main settlements and secondary settlements - peripheral settlements that develop and adapt to their environmental conditions [37]. From the study above, it can be concluded that there is a dualism of settlement orientation, namely, primary orientation and peripheral orientation.

The research examines the fundamental concepts of residential spatial planning for communities in the highlands and lowlands. This whole concept is the basis for people's thinking in arranging their living space based on historical review and the contextual environment. The method used in this study is qualitative content analysis,

and the object of the study is on highland settlements (Pinggan and Pengotan Village) and lowland settlements that are in Denpasar City. The locus of different character studies was conducted based on (1) vocabulary and traditional also contemporary territories; (2) understand the spatial structure of vernacular society and modern society; (3) there are varied findings so that the results are more substantial; and (4) the character of the occupancy in each different village, which is in mountainous areas that is still having a vernacular name, while the lowland areas are contemporary. The differences in this object's character produce exciting and varied findings, so that general and interpretive conclusions become fundamental findings. Content research emphasizes the interpretation of the content presented or contained in the study object and conducts a dialogue with relevant approaches to logically account for research results.

2. Materials and Methods

This study uses a qualitative method of content analysis on the concepts that are the basis for Balinese community housing in the high and lowlands areas. This method emphasizes the interpretation of phenomena that occur in an empirical context and textual thoughts, both of which experience a conceptual dialogue to formulate a meaning behind these phenomena [38]–[41]. The phenomena studied are the Balinese people's residential arrangements who live in the high and lowlands and their settlements' development dynamics. The approach or paradigm used in this study is (1) historical community settlements in mountainous and lowland areas; (2) the belief system of the local community; (3) understanding of universal concepts; (4) function and user community of the building or space; and (5) residential development dynamics.

The analysis technique used in a model [42] divides the research process into two major stages: empirical and conceptual. Practical deals with phenomena related to conceptual housing and its dynamics and concepts as a synthesis stage by interpreting these findings. The steps of this research are: (1) identifying the idea of occupancy at the locus; (2) studying binary relationships in the diametrical context; (3) understanding the character of each building or space; (4) having a dialogue on general or universal understandings; and (5) formulating the meaning of dualism pattern as the basis for forming linear housing system and nine zones pattern. The technique of analyzing data is through a coding system translated as finding themes for further dialogue with universal theories—data obtained through observation and interviews in an unstructured manner to find relevant and naturalistic information. In addition to compliance, consultations are also a tool to get data in this study; the results of interviews are analyzed (coding) to formulate themes of findings.

3. Research Result

3.1. Dualism Pattern in Highland Residential Architecture Spatial Layout

The spatial pattern of highland Bali residential architecture has a linear way, uniformity of building habits, and shapes. The architectural forms influence people who do not have a social status level. The spatial way of residential architecture comes from religious and profane orientations, a fundamental local concept shaping the residential layout in the highlands. Uniformity in form as a social aspect and a local idea in cultural values affects residential spatial planning [43]–[46]. The consistency of sacred and profane dualism concepts forms a dualism pattern. Dualism pattern identical to binary diametric as an arrangement or hierarchy of two conflicting spaces in a diametric relationship [47]. The constructed space hierarchy produces a spatial zoning system, namely the holy place zone, the residential zone, and the outer zone (the outside of the yard area). The residential site comes from two building masses' configurations as mutually oriented towards the plaza. Each cluster consists of rows of shelters composed of 8 to 10 houses; without being limited by a wall (fence) for each dwelling, only the land's height distinguishes between one residence and another. There is no family relationship in the form of a "blood" relationship between one dwelling and another—the images of residential architectural layouts in Pinggan and Pengotan villages. The linear patterned housings are grouped into residential clusters, each housing in the cluster has no "blood" relationship [5], [6], [8].

One residential unit in Pinggan and Pengotan Village village has three zones: the *sanggah* (temple) zone, the residential zone, and the outer zone. Inside, the residential from a configuration of two building masses (*Bale Saka Roras/Bale Adat* and *Sakanem*) facing each other and oriented towards the centre space. The dualism pattern is the determined concept through an orientation towards Puncak Penulisan Temple in Pinggan Village and Pura Tuluk Biyu in Pengotan Village, which places the sacred place zone (*Sanggah*) in this direction as a direction or pole of holy value, which local people call the *Kaja* direction (spiritual path). The sacred opposition direction is *lebuh* (space in front of gate residential), which access the residence. There is an entrance as a sign of the binary opposition's order—the worship zone towards God and ancestors in the main direction to Bukit Penulisan Temple. Relationship means the community relationship between Pinggan Villages and Pengotan Village respects the ancestors who resided in Pura Bukit Tulisan and Pura Tuluk Biyu. The concept of belief in ancestors in rural communities in mountainous areas affects the concept of spatial orientation as a sacred direction [18], [19], [48], [49]. The firm past between Pinggan Village and the Puncak Penulisan Temple and the Pengotan Village community

with the Tuluk Biyu Temple forms a residential spatial layout by placing a holy place or *Sanggah* the Puncak Penulisan Temple. The binary opposition from the direction of *Kaja* (sacred) is *lebu* (space in front of the front yard of the house), usually as an accessible room and area for physical activities (non-spiritual). In the residential zone, there are two building masses designated for parents or girls and boys. Buildings intended for parents or girls occupy the sacred direction or the *Kaja* direction (the primary path) as a form of respect for parents and girls. Family members need to be protected and respected. (see figure 1 and figure 2). Dualism patterns come from the middle space existence and the sky's direction. *Natah* is a physical symbol where humans live, and the sky symbolizes the gods or ancestors' dwelling place. [21], [50], [51].

Patterns from another dualism are the direction of sunrise (*Kangin*) and sunset (*Kelod*). The religious order (*Kangin*) is towards Pura Ulun Danu Batur in Pinggan Village and Bukit Abang in Pengotan Village, while the opposition is in the opposite direction. This direction by the placement

of *pelelingih* (worship elements) to the ancestors oriented towards the *Kangin*. Ulun Danu Batur temple is a place for the *Moksa* (level of human perfection) of King Sri Aji Jayapangus, an ancestor or someone highly respected by the community [8]. Meanwhile, as the place of origin for Pengotan Village people, Bukit Abang is now before the Panji Sakti expedition [5]. This description shows that the main direction (sacred/*Kangin*) on the concept is prioritized or respected and has a historical relationship with the population concerned. Meanwhile, the opposition to this direction is more in order of physical value.

The orientation with sacred values in Pinggan and Pengotan villages forms a macro spatial layout on a residential scale. The direction of *Kaja* as a dualism pattern has a primary (religious) value by placing the holy places (*Pura Desa* and *Puseh*) in the order of *Kaja* in Pinggan Village and Pengotan Village. Opposition from this direction has a profane value occupied by elements of *Pura Dalem* and *Setra* or graves. *Pura Desa* and *Pura Puseh* are symbols of the house's soul, while *Pura Dalem* and graves are symbols of the house's body.

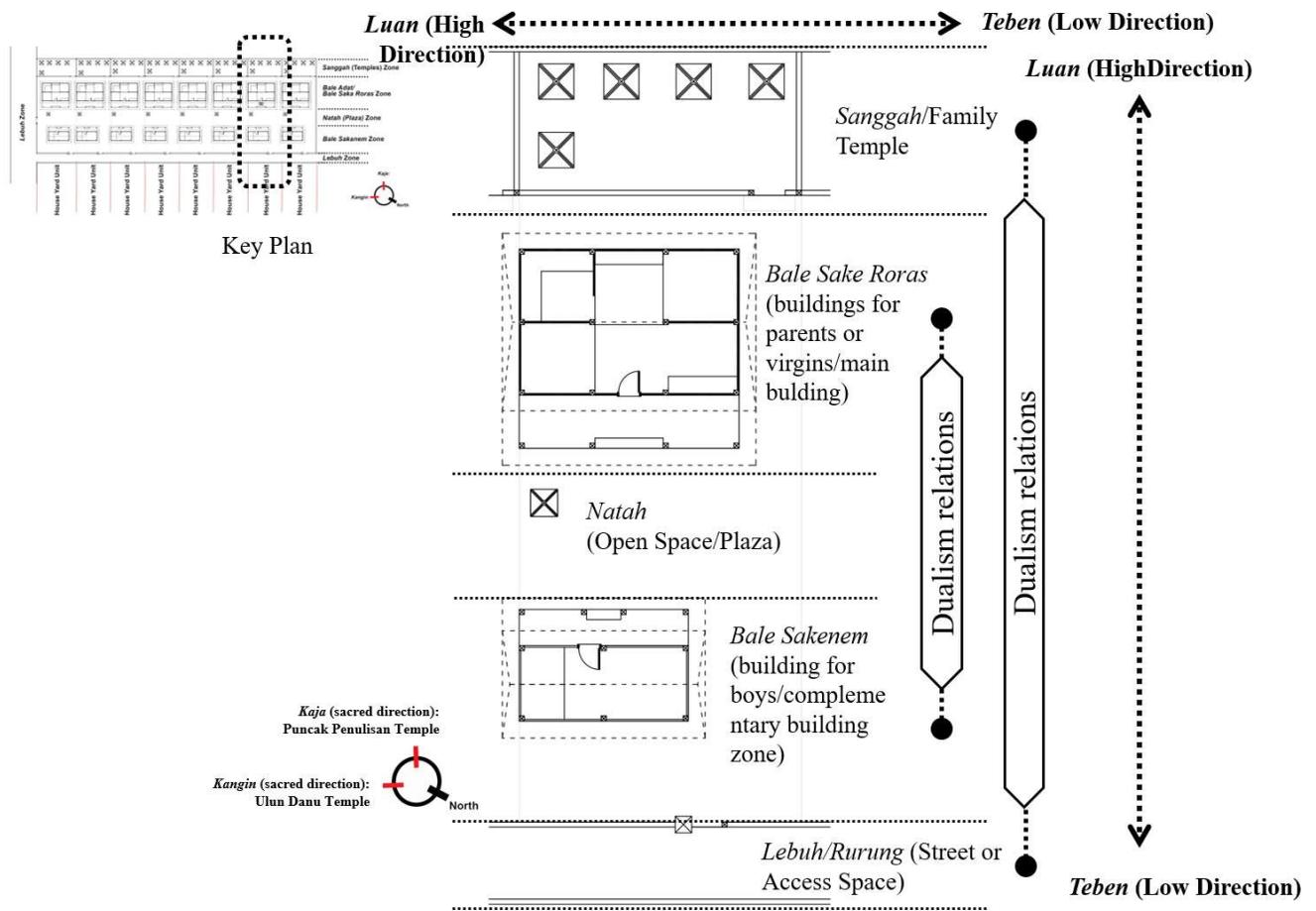


Figure 1. Dualism Pattern in Pinggan Village Residential

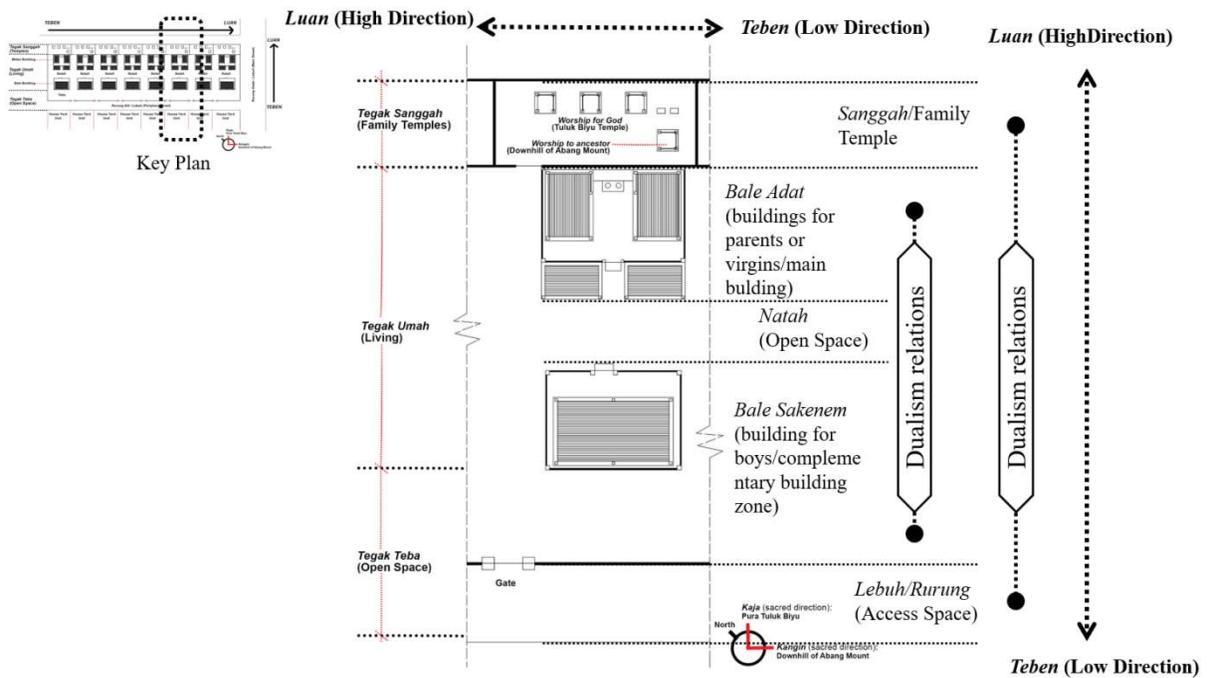


Figure 2. Dualism Pattern in Pengotan Village Residential

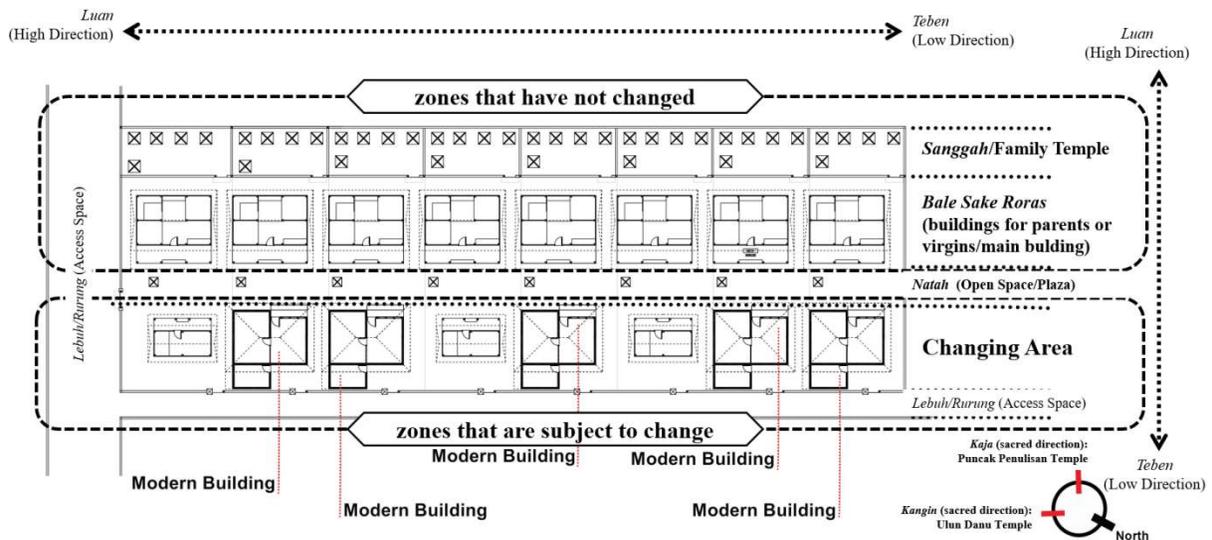


Figure 3. Zones That are Subject to Change in Pinggan Village

The dualism pattern concept influences the shape transformation of a house or building mass and its spatial structure. The direction that tends to be maintained is building mass and space that does not experience additional building abundance in the *Kaja* and *Kangin* directions. *Kaja* and *Kangin* indicate that this direction symbolizes the soul, the residential entity, and the dwelling's strength in Pinggan and Pengotan villages. The order or zone that usually undergoes a change or transformation of space and the shape of the building mass is the direction of *Kelod* and *Kauh*. *Kelod* and *Kauh* area as development new buildings in residential dwellings and toilets in the profane order. There are additional buildings with contemporary architectural styles in a secular direction on the residential

scale. (see figure 3)

3.2. Dualism Pattern in Lowland Residential Architecture Spatial Layout

The nine zones concept affects the spatial layout of Balinese ethnic dwellings in lowland areas [14], [15], [52], [53]. The residential site zoning system divides the house yard into nine zones; each zone has a hierarchy of space, from the highest to the lowest. The designation of each order of freedom does manifest in the mass of the building and open space. The configuration of the building mass forms a pattern that has oriented toward the plaza. [21], [51], [52]. The plaza's existence affects the occupancy pattern in

a yard towards the middle (space), the facade of the building mass facing the middle space. This concept comes from the crossing of the idea of religious orientation (*Kaja* and *Kangin* direction) and profane (*Kelod* and *Kauh* direction), which is called the natural axis and the ritual axis [27], [54]–[56]. The natural axis is interpreted as the orbital movement of the sun rising and setting, while the ritual axis is the direction of the mountains and the sea. The intersection of these two axes forms a spatial layout with a hierarchy of high value and low-value spaces. The pattern consists of (1) the holy place zone (*Sanggah*); (2) *Bale Meten* building zone; (3) the *Bale Dangin* building zone; (4) *Bale Delod* building zone; (5) *Bale Dauh* building zone; (6) the area of the *Pelinggih Penunggun Karang* (holy statue); (7) the kitchen building zone; (8) *Jineng* (rice storage) building zone; (9) pig pen zone; (10) *Natah* (open space or plaza) zone; and (11) the entrance zone or *Angkul-angkul*. The placement of the masses and length in a residential yard is influenced by the orientation and hierarchy of sacred (high value) and profane (low value). These holy and unholy conceptions reinforce each other and form a dualism pattern as the basis for developing the nine patterns concept. Dualism pattern is a relationship between two opposing poles but creates a harmonious and balanced relationship.

There is a dualism pattern on the ritual axis between *Bale*

Daja or *Bale Meten* (sacred direction) and *Bale Delod* (profane order). The two buildings are facing each other and the plaza as the binding of the two periods. The dualism consists of sacred and secular levels through an orientation direction of the house's user or occupant. The holy or central order is in the *Bale Meten* or *Bale Daja* direction, while the profane order is in the *Bale Delod* building. *Bale Daja* or *Bale Meten* is a building used by parents or elders in the family concerned or designated as a place for unmarried girls [50], [52], [57], [58]. *Bale Daja* or *Bale Meten*'s function and user characters show that parents mean someone who needs to be respected by their existence and represent the ancestors. Unmarried girls have a meaning as a symbol that is still holy or not tarnished, and it is necessary to maintain their presence by placing them in a closed *Bale Daja* building. Respect for ancestors and things that have sacred values *is are* in a divine direction and zone. It is opposite the *Bale Delod*, which functioned as a bedroom for the boy to maintain the house's existence. The meaning of "guarding" is marked by the semi-open *Bale Delod* building and as a place for men. So, the dualism pattern relationship between *Bale Daja* and *Bale Delod* has the meaning "soul" and "body"; between soul and body does not negate but strengthen. *Bale Daja* and *Bale Delod* mean that each has a role and function through spatial planning based on its characteristics. (see figure 4)

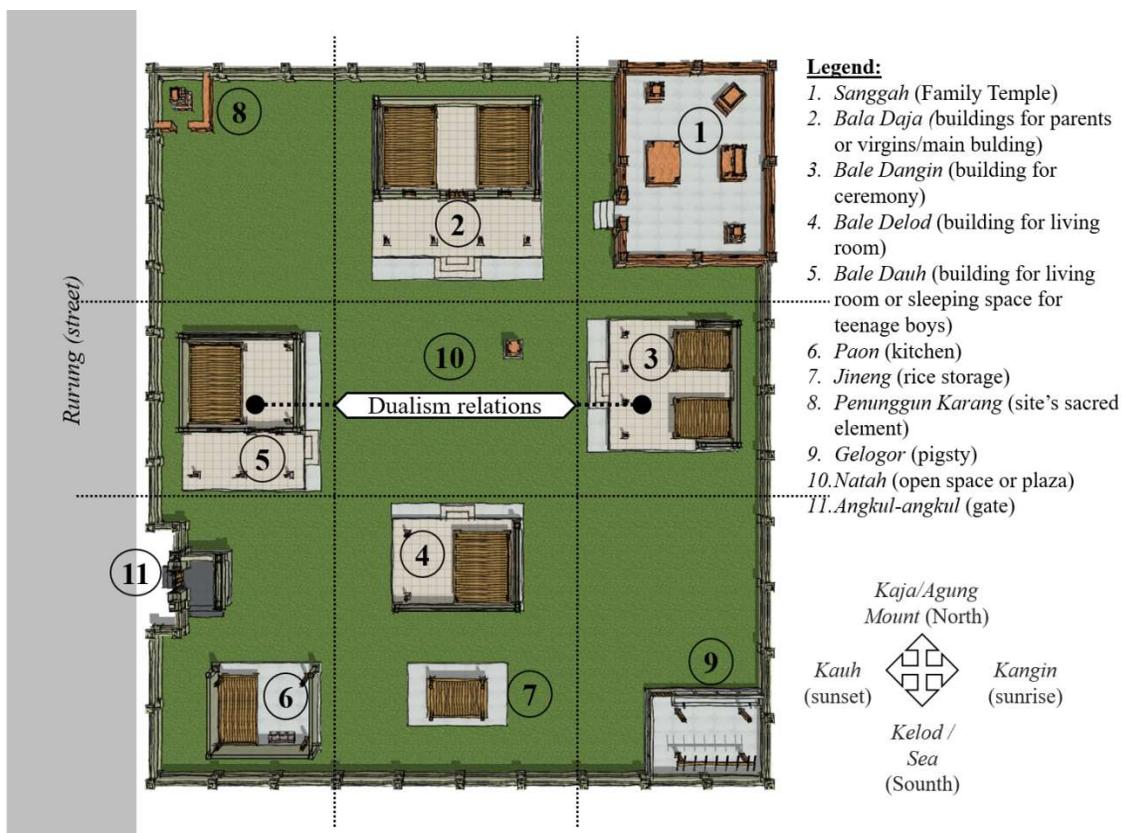


Figure 4. Dualism Pattern Relationship between *Bale Daja* and *Bale Delod*

Another dualism is between *Bale Dangin* and *Bale Dauh*, each of which is in the high-value zone or the direction of

the sun rising and *nista* (low value) or the direction of the sun setting. *Bale Dangin* functions as a building for carrying out human ceremonial activities, namely marriage, *otonan* (Balinese birthday), and funerals. This building's orientation is in the rising sun's direction and the building's path facing the plaza. The order of the sun rising is a symbol of new hope or new life. A person's death is not the end of life but is the beginning of new birth, marriage as the beginning of running a married life, and the *otonan* (Balinese version of birthday) ceremony as a prayer for the better. Hope and a new life through religious traditions at *Bale Dangin* are placed in the high-value zone as the beginning of life. The *Bale Dauh* building functions as a living room or a boy's residence. *Bale Dauh* is used to receive guests during traditional ceremonies, orientation towards the middle space, and rising sun. *Bale Dauh* aims to direct the guests' eyes to watch the *manusa yadnya* ceremony held at *Bale Dangin*. So, it can be concluded that the dualism pattern *Bale Dangin* and *Bale Dauh* have a meaning as a new future hope direction and neutralize negative influences on the sun set's guide (*kauh*). The relationship between these two directions or poles has a

significant role. It strengthens each other to achieve a level of balance in the occupancy of Balinese ethnic houses. (see figure 5)

The shrine building or the *Sanggah* and the kitchen building or the *Paon* are dualism pattern pairs formed diagonally. The shrine zone is in the highest value zone, and the *Paon* or the kitchen is in the *Nista Ning Nista* zone (the lowest value). Their existence in a nine patterned spatial structure plays a significant role and strengthens one another. Building a holy place is a symbol of holiness associated with divinity, and people who enter the room must meet the sacred space's requirements. Manifestations, in the form of freedom, mark sacred spaces as religious identities; this manifestation is in the form of a hierophant [56], [59]–[62]. It is different from the kitchen building or the *paon* building used as a place for cooking, but symbolically has a meaning as a smelter or destroyer of opposing forces. The kitchen has a substance as a neutralizer of opposing forces that enter the yard and object. The dualism relationship between the two elements has a significant role in creating and maintaining an intangible balance in the yard. (see figure 6)

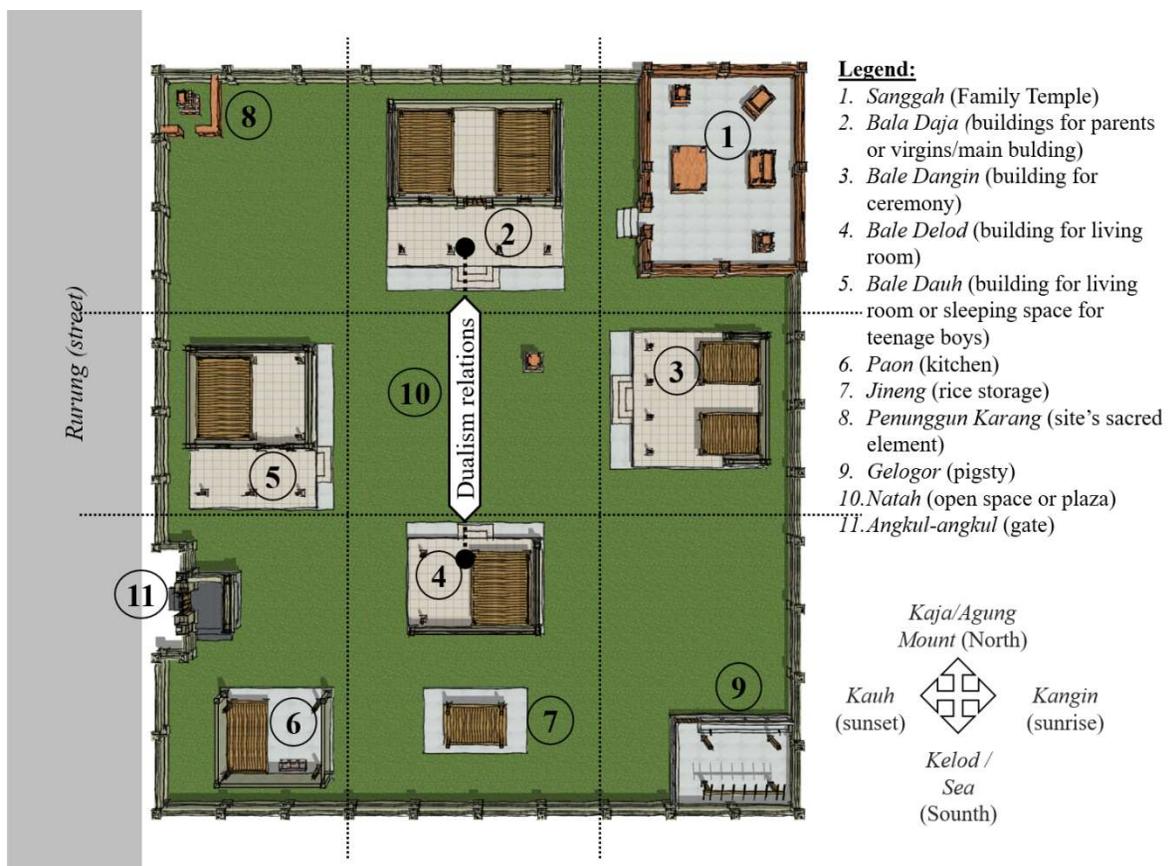


Figure 5. Dualism Pattern Relationship between *Bale Dangin* and *Bale Dauh*

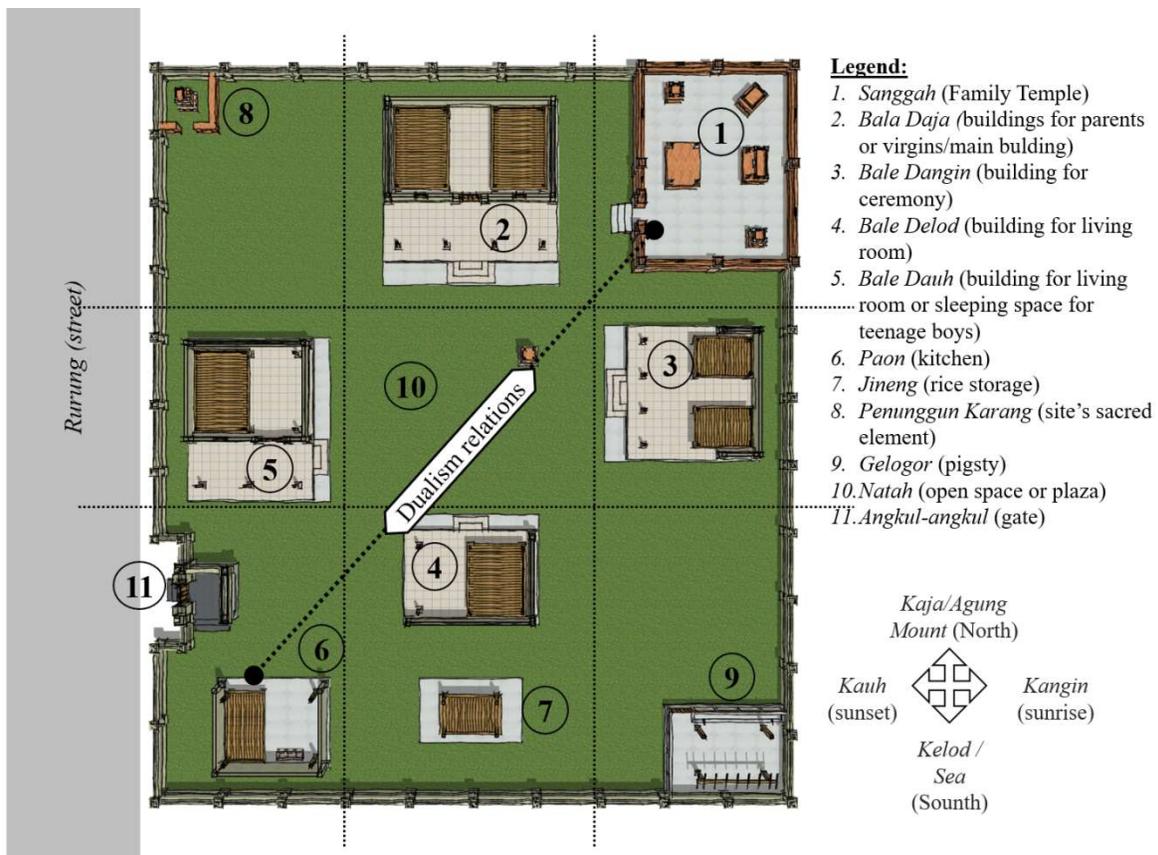


Figure 6. Dualism Pattern Relationship between Sanggah and Paon

Natah has an essential role in safety during disaster mitigation; when an earthquake occurs, as an open space, it becomes a destination for an escape from earthquakes [21]. However, in rituals, the area used *mecaru* ceremonies - a ceremony to neutralize natural forces under the human realm or the invisible world in the human realm. The *mecaru* symbolic and valuable as a space for balance, namely, harmonization between tangible and intangible areas and areas for disaster mitigation. Balanced space, the plaza becomes a knot space in a patterned layout, with its centre in the middle of the yard. The opposition from the middle area is the sky, which symbolically is the place where the gods reside who give gifts to earthly creatures. They receive assistance from heaven (the gods); space must first be neutralized through ceremonial activities to receive holy revelations in a clean container. There is an understanding of the sky as the space of the gods. The dualism pattern context between *akasa* (sky) and *pertiwi* (earth/*natah*) has an inseparable relationship, both of which influence each other in maintaining symbolic balance and benefit in the nine patterned spatial layouts. Before a religious ceremony is carried out in the yard of a Balinese

ethnic residence, a tradition is carried out in the middle space to clean the *bhuta* world (invisible power) so that revelations that are sent down from the sky or above can be adequately received without being disturbed by *bhuta* elements. (see figure 7).

The development of lowland residential spatial planning transforms (form and function addition) in each zoning. This occurs due to economic growth, the increasing need for space, and the trend in the development of traditional Balinese architecture towards neo-traditional or contemporary [5]. This development is dominated by the masses of buildings in the defiled or offensive zone, while the primary or sacred site does not experience significant changes. The addition of new space functions or facilities generally occurs in these zones. Zones and building masses fixed based on their position and role are *sanggah* (holy place), *Bale Daja*, and *Bale Dangin*. The dualism pattern is very clearly visible from its spatial structure development; the space with the high value still retains its value. The one with the *nista* value undergoes a transformation based on the development of the era and space requirements.

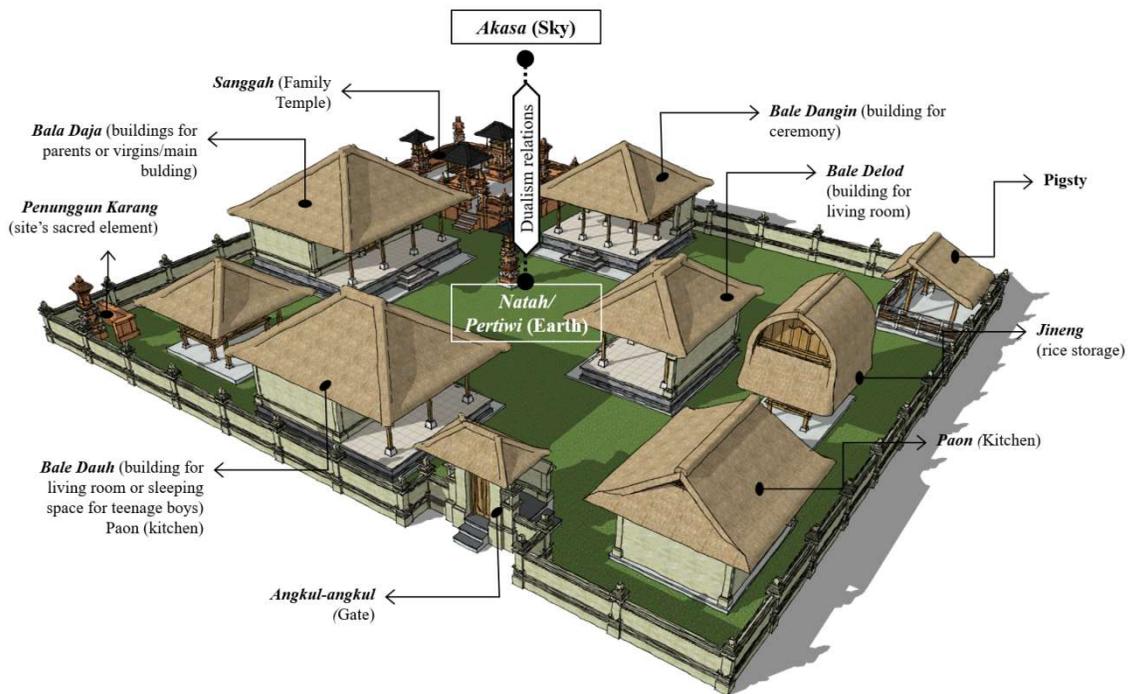


Figure 7. Dualism Pattern Relationship between *Akasa* and *Pertiwi/Natah*

3.3. Synthesis: Universal Concepts and Local Concepts, Antithetic and Harmonious Dualism

The Balinese ethnic community has a culture of living through a residential layout based on universal and local dualism patterns. The universal concept is usually the direction of the rising and setting of the sun. This polar dualism uses the sun to have a philosophical meaning as the source of life through the rays and light it produces. The sun does pair with the earth, which serves as a place for all living things to grow and thrive (world) (Paramadhyaksa, 2016). The sunrise and sunset direction are also the basis in Balinese ethnic living space, sunrise as a symbol of hope (soul) and sunset as a symbol of smelter (physical nature). In vernacular settlements in Indonesia, the territories that use the sun in their layout are the settlements of Dusun Segantar [29], Torajan residence [34], Kajang traditional residence [31], Singengu Village residence [32], and the residence of Kepencar Village [33]. In Bali, the direction of the sun's rising and the setting is a natural symbol in the placement of *Bale Dangin* and *Bale Dauh*. The sun's increasing focus has the meaning of the *utama* direction (sacred or high value). The sun's setting is *nista* (profane or low value)—the sun's philosophy's perspective and understanding influence Balinese ethnic residential buildings' layout in the lowlands. The local concept as the basis for the formation of Balinese ethnic residential architectural forms has different variants. The belief system of each resident influences this variant. Strong relationships with ancestors and place of origin are the direction of the primary residential orientation. The

emotional connection between residents who occupy the house with the principle of orientation is believed to respect their ancestors. This local concept, as the direction of *Kaja* orientation, usually placed buildings that correlate with religiosity. This concept does use in forming a residential architectural layout for ethnic Balinese mountains and lowlands settlements.

The dualism pattern relationship in the architectural layout of the Balinese ethnic settlements has the meaning of dualism, antithesis, and harmony. The antithesis definition is that a high-value zone and low value mark the dualism pattern existence. Zones and directions that are of high value correlate with sacred, religious, and something glorified and respected; on the other hand, the value of *the nista* (low value) is in the form of a profane building a fusing and neutralizing role. During its development, spaces in the *nista* (low value) direction experienced more changes and additions to contemporary buildings than in the main path. Remain and changed becomes an antithesis or conflict between the two orientation poles in symbolic meaning and dynamic formation. In other perceptions, these two elements become harmonious concepts. Two parts mean that both strengthen in presenting a symbolically balanced space. This balance does achieve through ritual activities and roles, in which the two areas have their respective roles and have different rituals with the aim of spatial harmonization. So, that dualism pattern has an antithetic relationship from value and meaning and a harmonious relationship or mutually reinforcing each other's roles to create spatial balance.

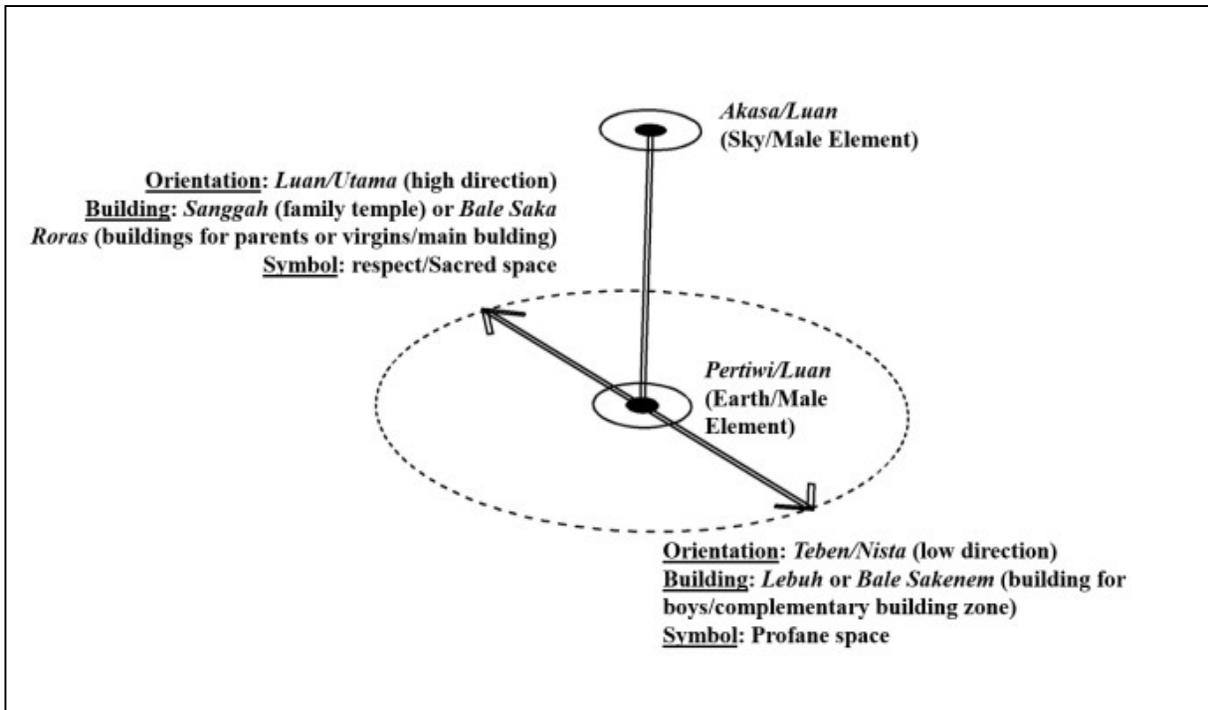


Figure 8. Dualism Pattern Concept in Highland Settlements

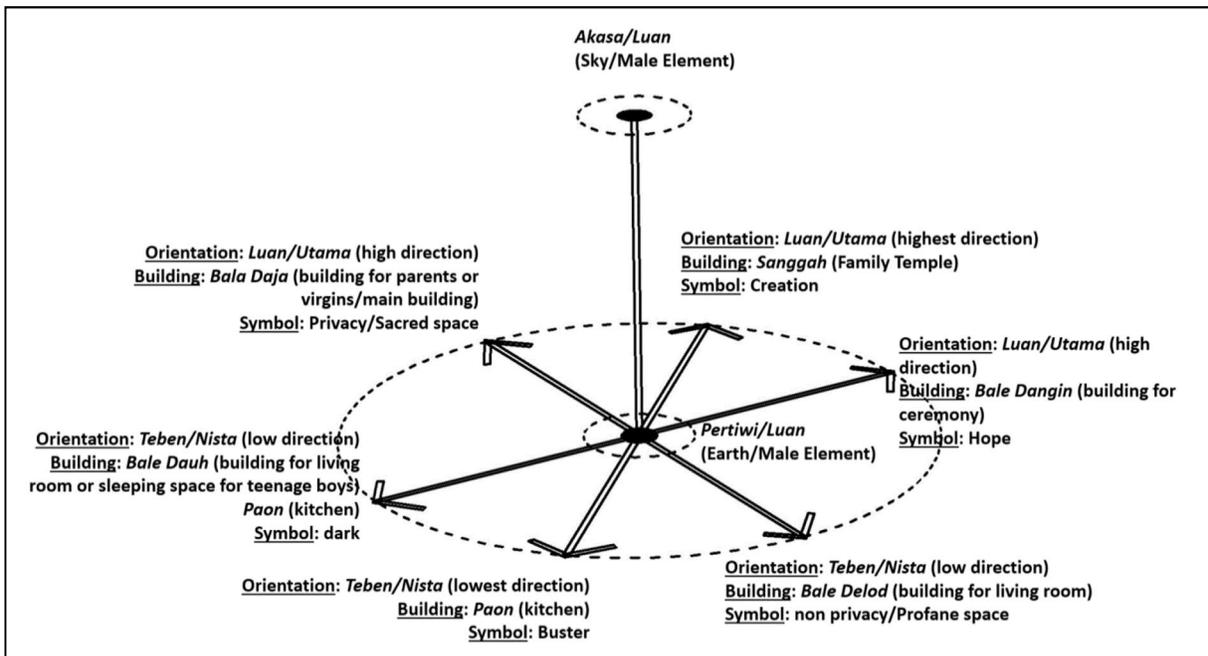


Figure 9. Dualism Pattern Concept in Lowland Settlements

4. Conclusions

Understanding the Balinese ethnic community in managing their residential space is based on a local and universal perspective that produces a dualism pattern. In the form of local and universal concepts, dualism pattern has their respective functions and roles and have their meaning and philosophy. The function aspect relates to

each binary's space use divided into sacred or high value and profane or low value. The holy has a relationship with religiosity and privacy. The profane has a nonreligious and communal connection. The sacred concept relates to the meaning of the soul and the profane with a physical sense. Aspects of each pole's roles (high and low) have their respective roles and, of course, are different. However, it aims to create a harmonious relationship between the two

aspects in carrying out its function. They do not cancel each other out but reinforce each other in creating a spatial balance (harmony). In the dynamics of the spatial development of ethnic Balinese residences, spaces that undergo changes and increase in building mass, namely areas with low value and buildings or architecture that have a relationship with religiosity and religion, do not experience significant changes. Antithesis and harmony as dualistic philosophies from dualism patterns are fundamental concepts in giving birth to the spatial idea of Balinese ethnic settlements in the high and low areas. Antithesis in spatial planning means different functions and roles, while harmony means strengthening each other's positions and roles in creating a harmonious and reinforcing relationship. This fundamental concept is the mindset or initial understanding of Balinese ethnic communities shaping and creating linear and nine spatial plans.

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