

SANGA MANDALA CONCEPT OF ARCHITECTURAL INTERIOR ZONING IN BALI'S MODERN HOUSE

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Abstract. *Sanga Mandala* is a concept of interior zoning in traditional Balinese house architecture divided into nine zones to create a harmonious environment. This study found that the interior zoning of modern house architecture in Bali is designed to meet practical, pragmatic and profane needs and provide comfort and spiritual tranquillity. This study aims to understand the philosophy and formulate changes to the *Sanga Mandala* concept model in the zoning of interior architecture of modern houses in Bali. The method used is qualitative research, a case study model that analyses 1) The interior zoning of modern Bali houses using the *Sanga Mandala* concept and 2) *Sanga Mandala* analysis using a semiotic approach to Balinese philosophy. The research results show that the *Sanga Mandala* concept is still applied in the interior architecture of modern houses in Bali but is used flexibly and multifunctionally. The facts prove that the *Sanggah* in the *Sanga Mandala* zoning is still placed in the *Utamaning Utama* zone as a symbol of respect to the Gods and ancestors. This is the traditional philosophy of *Tri Hita Karana* in *Sanga Mandala*, which is to create a harmonious relationship between Gods, humans and the universe.

Keywords: *Architectural interior, modern house, Sanga Mandala, traditional house, zoning design.*

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1. Introduction

Architectures in Indonesia are often identified as 'unique' (Adiyanto, 2020). When you look at the interior of Balinese architecture, it seems mystical and fantastic. Bali has long been known as a world tourist destination with its culture full of ethnic and artistic designs, including the interior concept of modern house architecture, which can adapt to the concept of traditional Balinese house architecture and nature is the centre of orientation.

Currently, modern humans tend to think about nature when planning development. Understanding that human nature is unlimited so that the environment worsens until human desires are achieved is contrary to traditional humans who think about the environment in building planning (Sabrina *et al.*, 2019).

Balinese architecture has shifted to align with modern cultural influences. The island has successfully blended its traditional architectural styles with the requirements of contemporary living. The Balinese have actively participated in this transformation, adhering to universal traditional religious principles. As a result, Bali has created a distinctive architectural style that sets it apart from other countries (Kusuma & Tanuwidjaja, 2014).

The change from traditional to modern culture has impacted the loss of Balinese cultural values and identity, which is increasingly fading. Therefore, maintaining the *Sanga Mandala* concept in the zoning system of traditional Balinese architecture is part of a valuable cultural heritage that can be passed on to the next generation.

In this context, traditional house architecture in Bali is greatly influenced by the people's beliefs, culture and geography. It is clear that the design concept in modern architecture has undergone significant changes and is different from modern home architecture in any country in the world. There are accusations that the modern house architecture design concept in Bali has damaged the Balinese environment and culture because it no longer adopts local wisdom embedded in the Balinese people's routine life activities.

In the city of Denpasar and Gianyar, as a barometer of modern cities in Bali, various modern house architectures attempt to adapt to the concept of traditional Balinese house architecture, which refers to vernacular architecture, as evidenced by the use of plastering (Figure 1) and *Angkul-angkul* (Figure 2) which are visible. Visuals can be observed from outside the building (see white circle). This indicates that traditional concepts and Hindu philosophy have been adapted to modern times.



Figure 1. Modern house architecture in Bali still applies construction or plastering on the second floor and elements of traditional Balinese architecture

Source: Authors, 2024



Figure 2. The vernacular architecture of modern-minimalist houses in Bali still applies *Angkul-angkul* and traditional Balinese architectural elements

Source: <https://www.tanahlotbali.com/blog/rumah-minimalis-bali-2-lantai.html> Retrieved 28.06.2024

Therefore, in this study, we want to prove that the *Sanga Mandala* concept in the interior zoning of traditional Balinese house architecture can be applied to

environmentally friendly design concepts, balance and harmony in the interior zoning concept of modern house architecture in Bali. Thus, changes to the architectural zoning system are urgent to research, considering that the *Sanga Mandala* concept is a national asset as local wisdom differs from those in other countries.

The *Sanga Mandala* concept is the basic principle of architectural zoning in Bali because this concept is related to the environment and the life activities of Balinese people. In modern house architecture in Bali, the *Mandala* concept is still very relevant to research. It is possible to modify the interior zoning concept of modern architecture to create balance and harmony. The problem in this research is how the *Sanga Mandala* principle is used in the interior zoning of modern house architecture in Bali.

Table 1. Previous research on *Sanga Mandala*'s interior zoning in modern house architecture in Bali in the realm of vernacular architecture and tropical natural environments

Title	Description	Authors & Sources
<i>Konsepsi Tri Mandala dan Sanga Mandala dalam Tatanan Arsitektur Tradisional Bali</i> (The Concept of <i>Tri Mandala</i> and <i>Sanga Mandala</i> in the Order of Traditional Balinese Architecture)	Traditional Balinese architecture has two conceptions regarding zoning in traditional Balinese building sites. These two conceptions are the <i>Tri Mandala</i> conception and the <i>Sanga Mandala</i> conception. In Balinese Hindu belief, the directions associated with the mountains and the sea and the sunrise and sunset hold specific spiritual significance. The directions of the mountains (<i>Kaja</i>) and the sea (<i>Kelod</i>) are considered sacred, while the directions of the sunrise (<i>Kangin</i>) and sunset (<i>Kauh</i>) are seen as profane. These directional pairs, <i>Kaja-Kelod</i> and <i>Kangin-Kauh</i> , are integral to the cultural order of Balinese Hindu society. This conception is more of an applied conception, which is widely applied in the macrocosmic orientation of the island of Bali, regional spatial planning and the orientation of various traditional Balinese buildings. The <i>Kaja-Kelod</i> and <i>Kangin-Kauh</i> axes form the basis of the <i>Sanga Mandala</i> .	I Gusti Agung Bagus Suryada (August 2020), Udayana University (Suryada, 2020)
Traditional Balinese Architecture: From Cosmic to Modern	Balinese architecture often considers climate, natural conditions and the social environment. However, contemporary building designs have shifted their focus from cosmic factors to modern considerations such as tourism, commercialisation and lifestyle. This shift has influenced spatial planning, building orientation, architectural appearance, interior design and local architectural regulations. Guidelines are needed to preserve the authenticity of Balinese architecture, which is rich in spiritual meaning and local traditions. These guidelines should specify Balinese architectural designs that integrate aesthetics, comfort, technology and spirituality, ensuring that Balinese architecture can thrive in modern times without losing its traditional values.	Ronald Hasudungan Irianto Sitinjak, Laksmi Kusuma Wardani and Poppy Firtatwentyna Nilasari (2020), SHS Web of Conferences 76, 01047 (Sitinjak <i>et al.</i> , 2020)

Title	Description	Authors & Sources
Contemporary Bali House Design Based on the <i>Tri Mandala</i> Concept	In the contemporary Balinese house design concept, it is found that room functions such as bedrooms, kitchens and dining rooms, according to the needs of today's society, can be added in Bale Meten and Paon. Meanwhile, additional requirements can be added through a Souvenir Shop in the <i>Madya</i> Zone or <i>Natah</i> (yard) Section. It is necessary to adjust natural ventilation and lighting after changing the house.	Kusuma and Tanuwidjaja (2014), <i>Seminar Rumah Tradisional: Transformasi Nilai-nilai Tradisional dalam Arsitektur Masa Kini</i> (Kusuma & Tanuwidjaja, 2014)
Building Orientation on Traditional Balinese Culture	Traditional Balinese architecture emphasises harmony between humans and their environment and aims to protect people from environmental disasters. Consequently, building designs in Bali should adhere to the <i>Tri Hita Karana</i> concept.	Gusti Bagus Wijaya Kusuma (2003), <i>Humanities</i> 15(1) (Kusuma, 2003)
<i>Pengaruh Penerapan Konsep Sanga Mandala pada Bangunan Arsitektur Bali</i> (The Influence of the Application of the <i>Sanga Mandala</i> Concept on Balinese Architectural Buildings)	The <i>Sanga Mandala</i> concept combines natural and religious ideas. It helps people serve their heritage and protect the environment. Using the <i>Sanga Mandala</i> concept for buildings helps traditional Balinese people understand how the environment works. This allows people to appreciate cultural heritage and protect the environment. The East-West religious axis provides the best lighting and air circulation for buildings.	Marizka Sabrina, Oka Sindu Pribadi, Dwi Rosnarti (2019), <i>Seminar Intelektual Muda #2, Sains, Teknologi dan Kultur dalam Peningkatan Kualitas Hidup dan Peradaban</i> (Sabrina et al., 2019)
Building, Architecture and Myth	Myth is making sense of an unreasonable world and finding meaning in apparent meaninglessness. Appreciating buildings and architecture as embodiments of myth is crucial. Understanding and valuing the sacred elements that define and support the functioning of society and incorporating these sacred values and even deities into architectural forms is a significant and ongoing responsibility of architecture, including interior design.	Edward Samuel (2019), <i>Architecture, Culture, and Spirituality Symposium (ACSF 11)</i> (Samuel, 2019)
Traditional and Vernacular Architecture in Bali	Explorations of small villages like <i>Pengotan</i> uncover intricate architecture featuring sacred and profane zones clustered around temples, residential areas and cemeteries. The emphasis on family units within sacred spaces and the strict observance of the <i>Luan</i> concept highlight the complexities of traditional Balinese architecture. However, rapid modernisation and the expanding tourism industry threaten to preserve this architectural heritage. It is crucial to balance the demands of modernisation and tourism with the need for environmental sustainability to protect this cultural heritage.	Öznur Baskaya (2024), <i>Journal of a Sustainable Global South</i> 8(1) (Baskaya, 2024)

Title	Description	Authors & Sources
<i>Konsepsi Vernakular dan Tradisional dalam Konteks Arsitektur Perkotaan</i> (Vernacular and Traditional Concepts in the Context of Urban Architecture)	In developing countries, buildings with an international or Western look can be seen as a new form of colonialism. So, there needs to be a form that the public will accept. This form should show how social conditions affect people. This formation represents local identity and imagination for the future (Dovey, 2008). Traditional architecture must be adapted to the urban context. Findley (2005) says it can become a new arena for cultural power struggles.	Yohannes Firzal (March 2018), <i>Seminar Peng-konteks-an Nusantara (Semarnusa) IPLBI</i> (Firzal, 2018)
Architectural Research: Incorporating Myth and Science	The modern period emphasised intellectual, instrumental and organic understandings of humans, focusing primarily on physical and spatial planning without considering representational actions. However, it is essential to acknowledge that reality's symbolic and emotional aspects are just as important, if not more so, than physical tools. Buildings represent culture and their creation goes beyond scientific explanations, incorporating elements that may not be immediately apparent. The fusion of myth and science forms a robust foundation in architecture.	Julia Williams Robinson (1990). <i>Journal of Architectural Education</i> 44(1) (Robinson, 1990)
The Local Wisdom Study of Luan And Teben Concept on Balinese Ethnic Houses Case Study: Balinese Ethnic Houses in Denpasar, Bali.	<i>Sanga Mandala</i> is a concept used in Balinese houses to divide the layout into nine zones. <i>Sanga Mandala</i> is formed by the intersection of two main axes: the ritual and the natural. The axes have two ends-mountain and sea directions. As time passed, the <i>Sanga Mandala</i> concept was used to design buildings and zoning plans. This helped people adapt to changes in household size, modern thinking and trends. The zoning system in traditional Balinese architecture still has zones for sacred and ritual functions. This can be seen in Denpasar as people there have modern ideas.	I Kadek Merta Wijaya (2020), <i>Local Wisdom</i> , 12(2) (Wijaya, 2020)
Building Orientation; Enhancing Nature with Nature	A north-south orientation is recommended for tropical regions to optimise cooling from prevailing winds and minimise excess sunlight that can lead to overheating. If site constraints make it challenging to achieve this orientation, additional measures should be implemented to prevent the building from overheating. This study considers the orientation functional, practical and contemporary.	John James Anumah, Lesado Anumah (2017), <i>Journal of Applied Sciences & Environmental Sustainability</i> 3(7) (Anumah & Anumah, 2017)

This literature review summary relates to the state of the arts. The essence is that the *Sanga Mandala* concept represents the interior zoning concept of traditional Balinese house architecture. This concept is oriented towards Bali's tropical natural environment. The concept of sacred directions called *Kaja-Kelod* (mountain direction-sea direction) and *Kangin-Kauh* (sunrise direction-sunset direction) are each interpreted as directions

with sacred value. *The Kaja-Kelod* and *Kangin-Kauh* axes form the basis of the *Sanga Mandala*. The *Sanga Mandala* concept is a mandatory requirement in the interior zoning of traditional Balinese house architecture.

Based on previous research, similarities were found between *Sanga Mandala*'s studies in traditional house architecture and modern houses. The novelty that differentiates it from previous research is the application of the *Sanga Mandala* to 1) Interior zoning of modern house architecture in urban housing complexes; 2) A Semiotic study method for observing and interpreting sacred zoning signs with symbolic meaning and profane functional zoning.

This study suggests that the zoning system in modern Balinese houses is based on the *Sanga Mandala* concept. Modern interior zoning is based on practical building site analysis. It is not based on the sun's movement or wind direction. Architects and interior designers must follow the zoning arrangements in modern architectural interiors.

2. Theoretical Review

Bali has a spirit of place in designing residential homes and this is adapted to the culture where they are located under the genius locus (Schulz, 1968). There is also a genius locus in Bali which makes the Balinese spirit of place to architecture as follows:

2.1. The Sanga Mandala Concept in Traditional Architectural Interior Zoning in Bali

Sanga Mandala is one of the local pieces of wisdom for the Balinese people. The concept of direction used is oriented towards the earth's axis, namely *Segara* (sea)-mountain (towards the mountain, it is called *Kaja* and towards *Segara/Laut* (sea), it is called *Kelod* (Darmawan *et al.*, 2022).

Balance with nature is reflected in the Balinese Hindu cultural concept known as *Tri Hita Karana*, namely that the three sources of happiness in Balinese Hindu culture consist of Gods, humans and nature, which must be in harmony. This condition includes the cultural values and philosophy of *Tri Hita Karana* in improving the quality of life (achieving spiritual happiness and physical well-being) (Peters *et al.*, 2013). *Tri Hita Karana* has been a belief for generations and this philosophical concept gave birth to *Tri Angga*, *Tri Loka* and *Tri Mandala*. In the context of *Sanga Mandala*, these three philosophies are the basis for formulating the *Sanga Mandala* model.

These three philosophies are the basic concepts of the *Sanga Mandala*. Traditional Balinese architecture has two conceptions regarding zoning in traditional Balinese building sites. These two conceptions are the *Tri Mandala* conception and the *Sanga Mandala* conception (Suryada, 2020).

Sanga Mandala is a concept that organises the layout of lowland Balinese houses into nine zones based on the intersection of two main axes: the ritual and natural axes. These axes have two poles: *Ulu/Luan* (mountain direction) and *Teben* (sea direction). Although the zoning system has evolved to accommodate modern developments, it still adheres to traditional Balinese architectural principles, particularly in preserving zones for sacred and ritual functions. This blend of traditional and modern influences is evident in places like Denpasar (Wijaya, 2020).

In the context of architectural interior, the understanding of cardinal orientation in Bali is somewhat different and unique. For example, the roof's position is not always the same if it is in North Bali. If you look at the spatial layout, *Kaja* is usually symbolised by

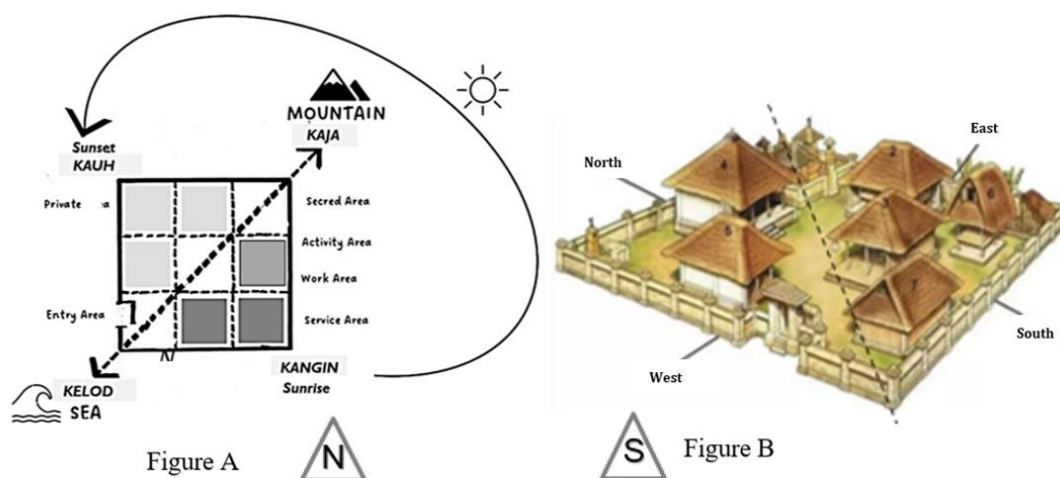
a mountain, namely the direction the mountain is located. For people from southern Bali, *Kaja* has the same meaning as north because the mountain is in the north, but for people from northern Bali, *Kaja* can refer to the south because the position of the mountain is in the south. *The Kelod* is the opposite of the north. *Kelod* is south, oriented towards the sea. If we return to the Balinese spatial concept, *Kelod* indicates a position opposite the mountain. If it is in the North Bali area, *Kelod* will refer to the north direction on the compass (Suarcani, 2020).

The Balinese principle of living in harmony with nature is embodied in Traditional Balinese architecture (Aryani & Tanuwidjaja, 2013). The basis is the concept of harmony between Gods (*Dewa-Dewa*), humans and nature. The study begins with an understanding of the way the Balinese people organise their lives. *Sanga Mandala* comes from two words in Sanskrit, namely *Sanga* and *Mandala*.

Sanga contains the meaning of 'number nine' or 'number of nine', while *Mandala* can be interpreted as 'area' or 'zone'. Combining these two words then forms the term *Sanga Mandala*, the name of a philosophical concept that is already popular and known in traditional Balinese architecture (Suryada, 2020).

The *Kaja-Kelod* (Mountain-sea) and *Kangin-Kauh* (Sunrise-sunset) axes greatly determine the position of the *Utama*/Top/spiritual zones in the *Sanga Mandala* (Figure 3). The development of this concept in traditional Balinese houses through the combination of two pairs of axes with a *Luan* and *Teben* orientation. The first axis is the *ritual* axis in the direction of sunrise and sunset and the other axis is the natural axis in the form of mountain and sea orientation/*Teben* (Wijaya, 2020). The *Sanga Mandala* concept is a collection of nine elements in Balinese Hindu belief that form the basis of thought in building a traditional house. The *Sanga Mandala* conception combines the *Kaja-Kelod* (*Teben*) conception as the natural axis and the *Kangin-Kauh* (*Luan*) axis as the *ritual* axis of Balinese Hindu society. In architectural theory, zoning is a series of regulations used as a reference for zoning when building a house.

Zoning in architectural design can also be described as established rules or guidelines. Zoning principles are needed to preserve or maintain architectural character. Usually, zoning principles for architectural design must be followed (InnoDez, 2021). This combination forms the basic concept of *Sanga Mandala* (Figures 3, 4), which divides traditional residential zoning into nine zones. The nine zones have a *Utama* (Top/Upward/Gods) and *Nista* (Bottom/Downward/devils) orientation.



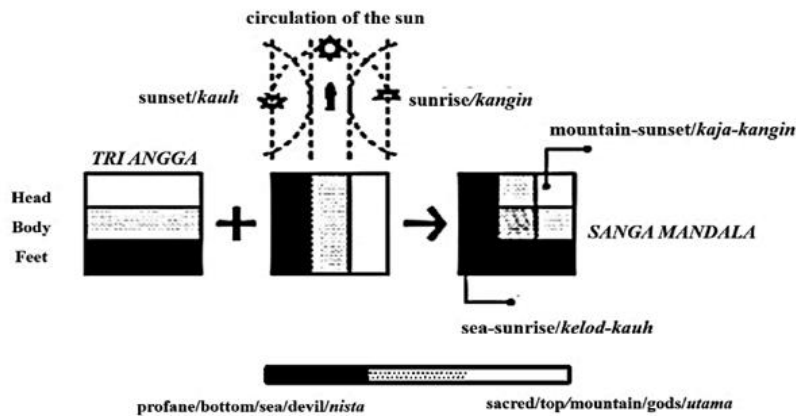


Figure C

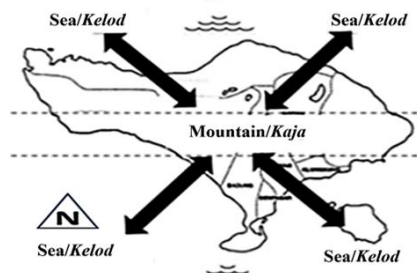


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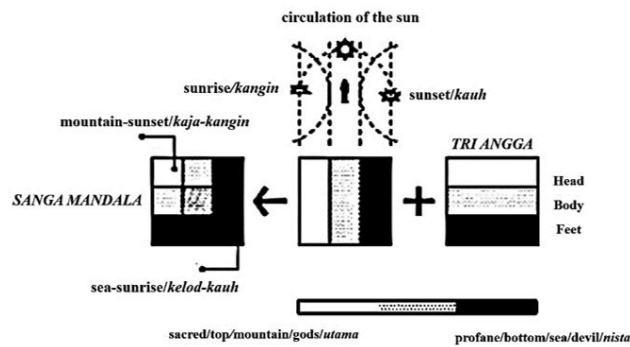


Figure C

Figure 3. The intersection of the *Kaja-Kelod* (Mountain-sea) and *Kangin-Kauh* (Sunrise-sunset) axes is the basic concept of *Sanga Mandala* zoning orientation. *Kaja* means north because the mountain is in the north, while in northern Bali, *Kaja* can be south because the mountain is in the south. *Kelod* is south and oriented towards the sea; it can also be the opposite

Source: Figure A. Javanese Mythology of Orientation in the 'Interior' Architecture of North *Sitihinggil* at the Keraton Yogyakarta, Indonesia (Supriyatna *et al.*, 2023);

Figure B. *Konsep Tata Ruang Sanga Mandala Paling Relevan* (Doktrinaya, 2020) and Figure C. *Arsitektur tradisional daerah Bali* (Gelebet & Puja, 2002)

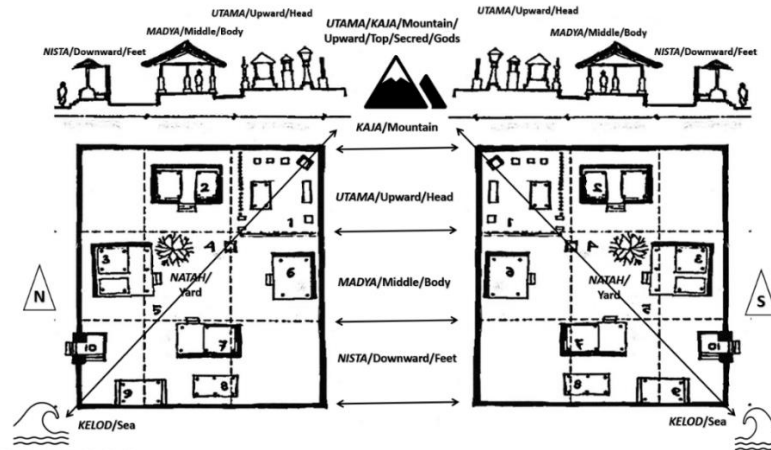


Figure 4. An interior zoning layout for traditional Balinese house architecture, which has houses located in North Bali and South Bali, is needed. *Kaja* (mountain orientation) is the *Utama/Top/Upward/Gods* (*Utamaning Utama*) in the *Sanga Mandala* concept. *Kelod* (sea orientation) is the *Nista/Bottom/Downward/devils* (*Nistaning Nista*)

Source: A Traditional Balinese Housing in Accordance to the Concept of *Tri Mandala* and *Sanga Mandala* (Aryani & Tanuwidjaja, 2013; Budihardjo, 1985; Aranha, 1991), adjusted for analysis needs

The main (*Utama*) direction is in the direction of *Kaja-kangin*, which is designated as a sanctuary zone (Figure 4, box no.1), while *Nista* is in *Kelod-Kauh* (Figure 4, box no.9 & 10) as the *Lebuh* or entrance to the yard. The space between the *Kaja-kangin* and *Kelod-Kauh* zones is called the “yard” or *Natah* (Figure 4) (Wijaya, 2020). According to Paramadhyaksa, *Natah* is a “yard” as a connecting point for the three great cosmic axes, namely *Kaja-Kelod* (mountain-sea), *Kangin-Kauh* axis (sunrise and sunset) and *Kangin-Kauh* axis (sunrise and sunset), *Pertiwi-akasa* (heaven-earth) axis (Paramadhyaksa, 2015).

There is a strong suspicion that the *Sanga Mandala* concept is similar to the *Feng Shui* concept. *Feng Shui* is a natural approach used for human welfare (Skinner, 2003). *Feng Shui* is applied in 9 magical cities, using systematic number calculations vertically and diagonally, with the number 15 (Koh, 2005). It is also similar to the concept of the imaginary mountain-sea line version of the Yogyakarta Palace in Java. Studying *Kaja-Kelod* in the concept of *Sanga Mandala* in Balinese Hindu culture (Susanta, 2017) has similarities with the orientation concept initiated by Sultan Hamengku Buwana I, who adheres to Islam. Only in Bali does not use imaginary lines (Supriyatna et al., 2023). This is rational because they have had cross-cultural support for each other.

The *Kangin-Kauh ritual* axis area, which was previously only differentiated as sacred and profane zones, later developed into three zones, namely the sacred (*Utama/Top/Upward/Upper/Main*) *Kangin* zone, the intermediate/middle (*Madya* zone) and the profane (*Nista/Downward/Bottom/Devils*) or *Kauh* zone. The application of these two axes simultaneously intersecting in the traditional Balinese cultural and architectural order ultimately resulted in the concept of zoning into nine zones or *Sanga Mandala* (Suryada, 2020).

A traditional Balinese house in one yard consists of several building masses, namely the holy place and pavilion: *Bale Daja*, *Bale Daging*, *Bale Dauh*, *Bale Delod* (kitchen) and *Jineng* (rice storage). The building is centred on *Natah* (plaza) (Figure 5). A wall surrounds the yard’s boundary or what is usually called a *Penyengker* and an

entrance is called an *Angkul-angkul*. That is the position of the building based on its level in the *Sanga Mandala* spatial structure.

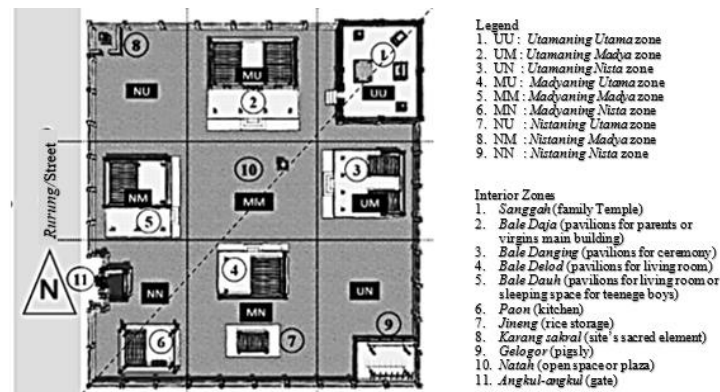


Figure 5. Residential layout with *Sanga Mandala* concept (Wijaya *et al.*, 2022). The zoning number for Figure 5 is different from Figure 4, but the essence of the function is the same

Source: Author's analysis (2024)

2.2. Study of Interior Zoning for Modern Architecture Houses in Bali

Spatial orientation is only based on the location of the building in the contextual environmental site analysis, especially concerning the path of the sun, wind, traffic patterns, noise, scenery and surrounding views (Rengel, 2012). This can be assessed from interior zoning arrangements, which are freer and less bound by local traditional factors (Figure 6). This concept differs from the *Sanga Mandala* concept, although there are similarities. In the interior zoning system, universal modern Western house architecture does not recognise the sacred or holy place zoning system (Figure 7), nor does the *Kaja-Kelod* orientation, so this has an impact on changes to the zoning system while still adhering to the *Sanga Mandala* orientation.

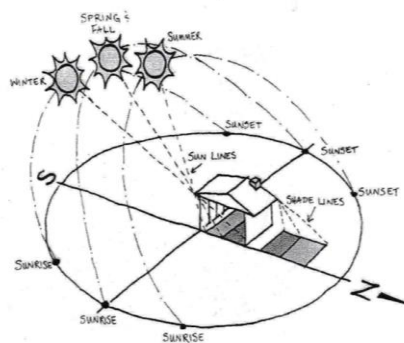


Figure 6. Site analysis theory, in the case of modern architectural interior orientation, does not recognise the orientation towards the mountains or the sea

Source: The Interior Plan. Concept and Exercises (Rengel, 2012)

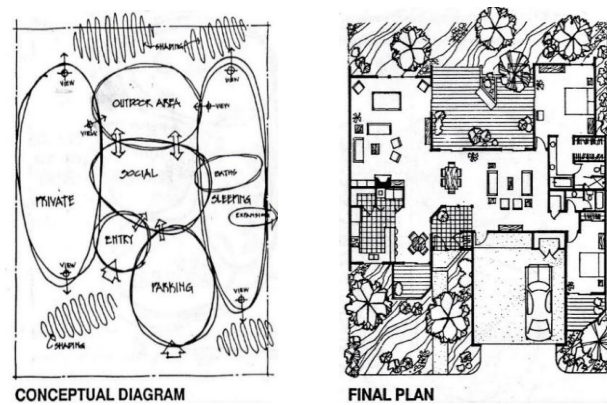


Figure 7. Conceptual diagram analysis and final plan of the modern house concept as a reference theory
Source: Designing Interiors (Kilmer & Kilmer, 2024)

Balinese architecture seems to have changed the direction of modern culture's orientation (Kusuma & Tanuwidjaja, 2014). This can be seen in Denpasar, one of the areas in Bali where the interior design of residential buildings is believed to have been adapted to the *Sanga Mandala* concept. *Sanga Mandala* has distinctive characteristics in that there is a houseyard and several groups of buildings (*bale-bale*), the concept of nine plots and a combination of eight cardinal directions/*Asta Dala* and one centre/centre point guiding the spatial form (Indriani, 2018). The interior zoning arrangement underwent adaptation to suit the conditions of the space functions, but the *Sanga Mandala* concept became the reference. Figure 8 shows the difference between the concept of applying traditional Balinese zoning and the concept of zoning in modern (universal) houses.

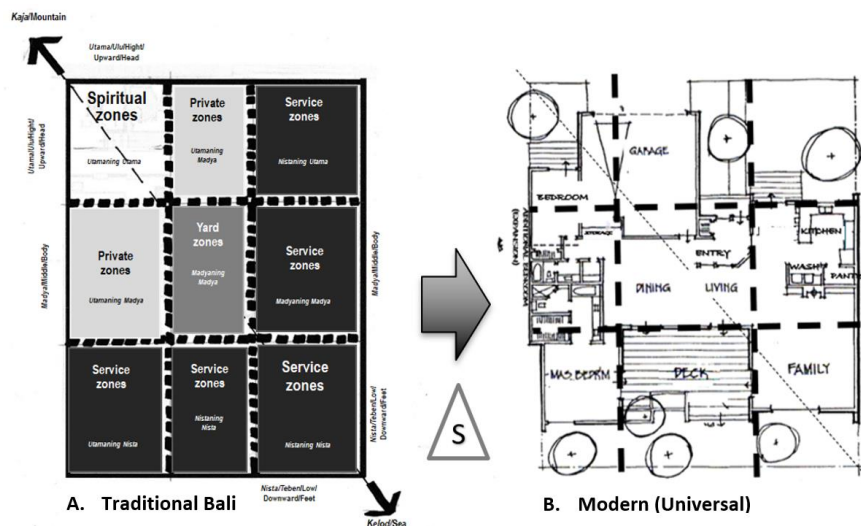


Figure 8. The *Sanga Mandala* in interior zoning traditional house concept in Bali (Figure A) applied to interior zoning theory in modern house architecture (Figure B)

Source: Figure A: Authors, 2024; Figure B: Plan drawing adapted from a case study adapted from preliminary plan analysis in Designing Interiors (Kilmer & Kilmer, 2024)

In Bali, there is a tendency to choose vernacular architecture, namely modern architecture that adapts to traditional architectural concepts (Praganingrum & Suryatmaja, 2017) with a background of tradition, natural environment and religion. In

this context, modernisation and the rapidly growing tourism industry challenge preserving the heritage of architectural interior zoning. Vernacular architecture is the right choice (rethinking design) for the interior zoning of modern house architecture in Bali.

3. Research Methods

The method used is qualitative research, a case study model that analyses: 1) The layout of the interior zones of modern Balinese houses that use the *Sanga Mandala* concept; 2) *Sanga Mandala* is examined using philosophy-based semiotics. The analytical method borrows the systematics formulated by Vaux and Wang (2021), then adapts and reprocesses it according to the case study of this research. The design of case study research typically involves qualitative methods. Case studies are suitable for evaluating and understanding various aspects of research problems (Adiyanto, 2020; Vaux & Wang, 2021). This research is based on understanding case studies as the primary method in qualitative research, especially to explain complex phenomena in authentic contexts (Siregar & Murhayati, 2024).

The use of the case study method in this qualitative research operationally has four fundamental reasons: 1) Case studies in qualitative research are used to observe complex and contextual phenomena. The transition from traditional to modern culture is strongly suspected to impact the application of interior zoning in residential architecture in Bali. 2) Researchers can also delve more specifically and uniquely into the phenomena, patterns of relationships and visual facts occurring in Bali; 3) Researchers can also adjust the research design by observing the situation's development and the research needs; 4) Often, findings from case studies have practical relevance to reality, particularly the *Sanga Mandala* case in Bali. The case study results can be used to inform models, concepts and practices that are more relevant to the cultural conditions of Bali.

The researchers can gain a holistic understanding by examining three case studies of houses in Bali. This is because the three selected case studies differ in location and region in Bali, are inhabited by Balinese people, adhere to Hinduism, engage in professional work in Bali and the houses have a *Sanggah* (sacred place); thus, it is assumed they can represent modern (vernacular) houses in Bali. The study of the philosophical values of *Tri Hita Karana* in *Sanga Mandala* is analysed using a semiotic approach.

The philosophical values embodied in signs (signifiers) and their application in *Sanga Mandala* are examined one by one in detail using a semiotic approach until an easily understandable interpretation of meaning is obtained. In the case of *Sanga Mandala* signs in the interior of modern house architecture in Bali, there is a gap between the concepts of traditional and modern house architecture, necessitating a model solution to achieve a balance between traditional symbolic signs in the *Sanga Mandala* concept and their application in the interior design of modern house architecture. Therefore, semiotics is a suitable tool for analysing *Sanga Mandala*.

Semiotics is the science of signs (Noth, 1995). This interpretation of meaning focuses on the production of signs and involves semiotics, the doctrine of signs, that is, the science of signs (Peirce, 1977) (Figure 9). Traditional principles reveal that the compatibility of semiotic understanding between Peirce's proposed triadic sign model and Saussure's proposed Dyadic sign model is considered appropriate (Peirce, 1977). However, in interpreting the sign's meaning, a textual approach is needed for the signifier

and a contextual approach for the signified. This approach seeks to find the meaning of texts in context across various disciplines (House, 2006), including sign analysis in *Sanga Mandala* semiotics (Figure 9).

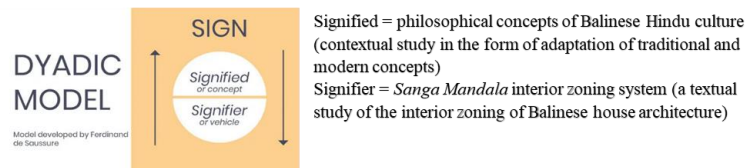


Figure 9. Dyadic sign model in semiotic analysis

Source: Game of Dyadic Model: Understanding the Dyadic Model, Signs, Signified and signifiers (Vashisth, 2020), Handbook of Semiotics (Noth, 1995) and applied in the *Sanga Mandala* semiotic case study analysed by the Authors, 2024

Many signs in *Sanga Mandala* can be interpreted, with several visual signs being primary, namely the term *Sanga Mandala* (nine zones) and the cardinal directions (*Kaja-Kelod*). The movement of the sun (*Kangin-Kauh*), imaginary lines, *Sanggah* and *Natah* are sacred signs in the philosophical context of *Tri Hita Karana*. In this study, not all signs at the level of Balinese Hindu philosophy are discussed. Visual signs directly (essentially) related to the concept of *Sanga Mandala* are interpreted comprehensively through semiotic logic analysis (Supriyatna-Mz, 2004).

In this research, data collection techniques were carried out in three ways, namely 1) Physical documentation (Adiyanto, 2020; Vaux & Wang, 2021) by conducting photography activities and drawing plans obtained from sources; 2) Informal interviews by conducting direct interviews and also through telephone communication with sources; 3) Secondary research: tracking information from websites and literature specifically discussing *Sanga Mandala*, vernacular architecture and modern houses.

4. Results And Discussion

4.1. Findings of Modern Architectural Interior Zoning in Bali

In this discussion, three case studies of modern (vernacular) residential interior architecture were selected in three different locations: A case study of house “A” in Denpasar, a case study of house “B” in Gianyar and a case study of house “C”, in Badung. The three case studies are assumed to represent modern houses in the Bali region.

The following criteria were used to select the case studies: 1) The house has a modern architectural (vernacular) style, located in Bali; 2) The house has a special place marked by a *Sanggah* (*pemerajan*) located in the Northeast (Setem, 2021), facing the Mountain in the North, in the main zone of the *Sanga Mandala* concept and its form can be seen from outside the house (Figures 10 A, 10 B, 10 C).



Figure A in Denpasar

Figure B in Gianyar

Figure C in Badung

Figure 10. Three visuals of sacred places of “*Sangah*” (see the white circle) in three locations in Bali
Source: Authors (2024)

4.1.1. Case study of House “A”: Application of the *Sanga Mandala* Concept to a Modern House in East Denpasar, Bali

The case study selected a modern house architecture with two floors in East Denpasar City, Bali. If observed from the visual diagram data in the form of a floor plan, the *Sanga Mandala* concept is not entirely applied. Still, the holy place as a sacred or spiritual space in the concept of nine zones is visible in the 1st-floor plan (see red circle) in the case study of a modern house owned by Mr. “A” in Denpasar Bali (Figure 11). The owner of the house is a Balinese artist.

Based on the study of the zoning diagram, there have been several functional changes in space in the interior zoning of modern-vernacular architecture in Bali. The *Sanga Mandala* concept applied to the interior zoning of modern-vernacular house architecture in Bali has not only maintained its existence but has been appreciated and understood by modern society towards a future that is more peaceful, calm and always united with nature.

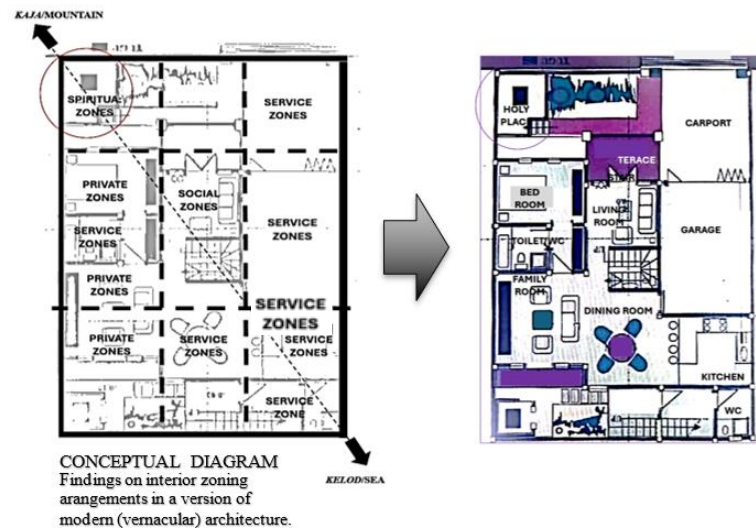


Figure 11. Schematic diagram of the analysis results of the application of the *Sanga Mandala* concept in the architectural zoning of modern-vernacular houses in Denpasar Bali for the case study of house A on the 1st floor

Source: Author’s analysis results (2024)

The charm or advantage of the orientation of the *Utama*/Top/Upward or spiritual zone in the *Sanga Mandala* is that it is always placed opposite the layout of the kitchen, warehouse, toilet/WC in the bottom/Downward or *Nista* zone (*Nistaning Nista*) which is oriented towards the sea and is profane as a comparison. The interior zoning system in Bali prioritises sacred places (spiritual zones) at the front, in the *Utama*/Top/Upward or spiritual zone (*Utamaning Utama*), which is oriented towards the sacred mountain. In essence, in the interior zoning of modern home architecture, the *Sanga Mandala* concept is still used consistently, even though it is not fully implemented. This indicates that Balinese people are still very obedient and obedient to traditions originating from the Hindu religion they follow.

The zoning layout for the architectural interior of this modern house on the second floor is almost the same and each zoning has space. There is no main zone because the main zone is located on the 1st floor. The *Natah* zone (yard zone) is used as a private zone; what is unique is that the *Natah* zone can be partially used as a service zone and converted into a studio and balcony (Figure 12).

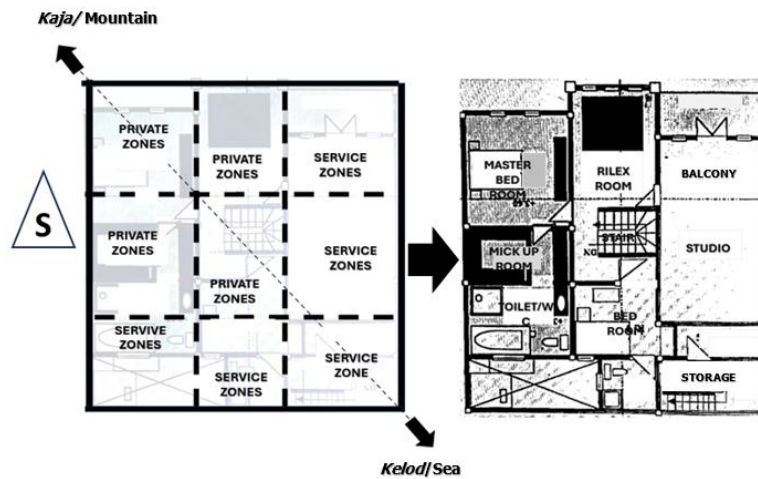


Figure 12. Schematic diagram of the results of the analysis of the application of the *Sanga Mandala* concept in the architectural zoning of modern-vernacular houses in Denpasar Bali for the case study of houses in Denpasar on the 2nd floor

Source: Author's analysis results (2024)

These concepts show that the relevance of philosophical values in modern architecture, which adapts to local wisdom in the zoning of traditional Balinese house architecture, can create harmony between humans, nature and Gods (*Dewa-Dewa*). The concept of sacred and profane zoning is essential in the layout of modern houses in Bali. In modern homes in Bali until 2024, *Sanga Mandala* has been adapted to modern lifestyles in the context of home architecture. Sacred zoning can be the main centre of the house.

4.1.2. Case study of House "B": Application of the *Sanga Mandala* Concept to a Modern House in Gianyar, Bali

The case study is a modern two-storey house in Gianyar, Bali. The floor plan shows that the *Sanga Mandala* concept is not used throughout. The second case study is House "B", an artist and lecturer's home. The zoning diagram shows that modern-vernacular

architecture in Bali has changed over time. The *Sanga Mandala* concept has been used in modern-vernacular house architecture in Bali. It is seen as a way to live more peacefully, calmly and naturally.

The study of the zoning diagram shows that modern-vernacular architecture in Gianyar Bali has changed, but the *Sanga Mandala* concept is still used in modern architecture. This is a way to live in harmony with nature. In the *Sanga Mandala*, the spiritual zone is always opposite the *Nista* zone, which is profane and oriented towards the sea. In Bali, sacred places are at the front, in the *Utama*/Top/Upward/Upper or spiritual zone (*Utamaning Utama*), which is oriented towards the sacred mountain. This is similar to the *Sanga Mandala* concept used in modern home architecture, which shows that Balinese people are still very traditional. The second floor of this modern house has the same zoning layout as the first floor, with each zone having space. The *Natah* zone is a private space that can be used as a service zone and converted into a studio and balcony.

This two-storey house has a sacred space on the second floor, facing east towards the mountain. The sacred space is on the second floor, facing east, which represents a higher elevation towards Gods, a greater openness to nature and a more peaceful atmosphere during ceremonies. The *Sanga Mandala* concept has not been fully implemented, but the zoning diagram shows that modern-vernacular architecture in Bali has had several changes in spatial functions. The *Sanga Mandala* concept is used in the zoning of modern-vernacular architecture houses in Gianyar, where the owners are devout Hindu adherents and appreciate this concept. These concepts show the concept of sacred and profane zoning as the basis of the spatial layout of modern houses in Bali.

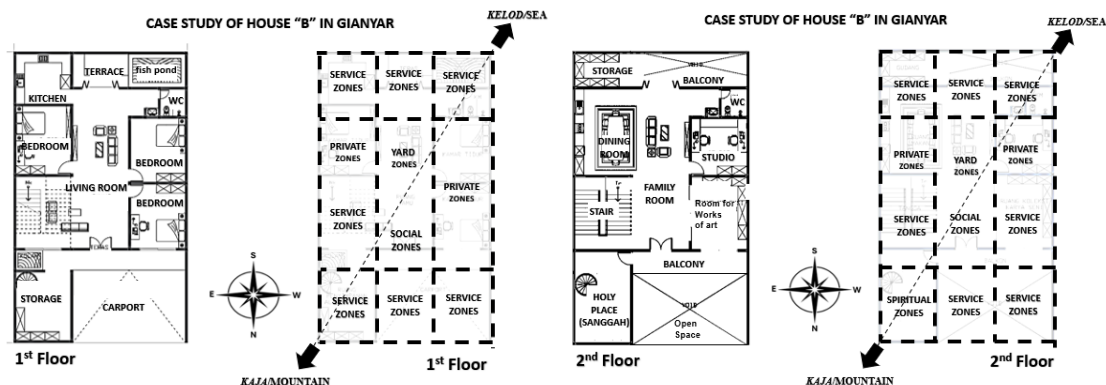


Figure 13. Schematic diagram of applying the *Sanga Mandala* concept in the architectural zoning of modern-vernacular houses in Gianyar, Bali, for the case study of house “B” on the 1st and 2nd floor

Source: Author’s analysis results (2024)

In modern houses in Bali, *Sanga Mandala* has been adapted to modern lifestyles in the context of home architecture. In the house called “B”, the sacred area (*Sangga*) is still the most essential part of the house (Figure 13). This is a way of showing respect to Gods (*Dewa-Dewa*) and those who came before us.

4.1.3. Case study of House “C”: Application of the *Sanga Mandala* Concept to a Modern House in Badung, Bali

The third case is house “C”, located in Badung, Bali, featuring a modern minimalist floor plan (Figure 14). The owner works as a hotel employee. This house “C” has two floors. Based on the analysis of the schematic diagram of the interior zoning of the modern house “C”, the *Sanga Mandala* concept has been flexibly applied according to

practical and functional needs, so the geometric zoning pattern (dashed lines) uses “imaginary lines” crossing different functional spaces, making the zones multifunctional. The sacred place (*Sanggah*) placed above (on the 2nd floor) indicates adherence to the *Sanga Mandala* zoning rules designed by the ancestors of the Balinese people. In a pragmatic context, the placement of zoning on the first floor prioritises private and social zones flexibly, without the *Sanggah*. It refers to the zoning arrangement of modern houses flexibly and multifunctionally (Figure 14).

The house marked “C” is unique because the *Sanggah* (a sacred place) is always on the second floor, in the main spiritual zone. This shows that the *Sanggah* is in the main spiritual zone on the eastern side, facing the mountain (*Kaja*). Putting the *sanggah* on the second floor has a deep religious meaning. In the modern version, the *sanggah* is on the second floor, which is quieter for traditional ceremonies. The toilets are in the middle of the *sanggah*, which is in the service zone of the modern version (Figure 14).

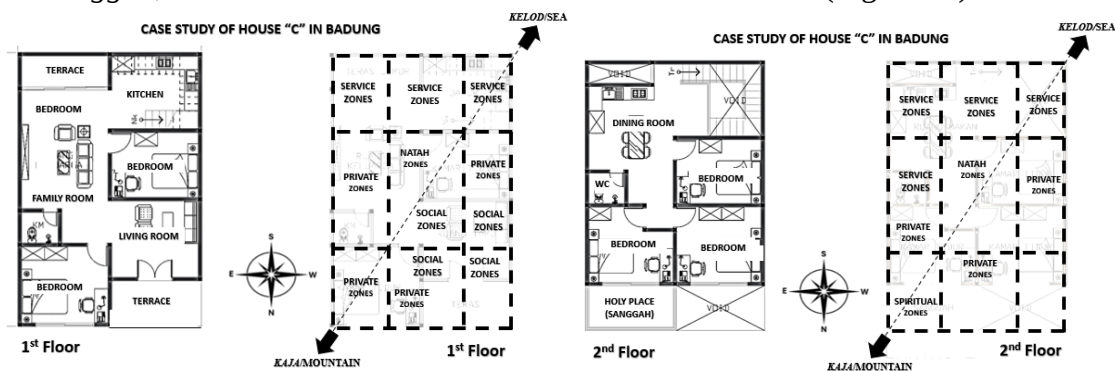


Figure 14. Schematic diagram in applying the *Sanga Mandala* concept in the zoning layout of modern house architecture in house “C” case study on the 1st and 2nd floor. The house is located in Badung, Bali

Source: Author’s analysis results (2024)

The *Natah*/Yard zones in the *Sanga Mandala* concept are used in modern houses. These zones are used in a modern and practical way and many different ways. Yard zones (*Natah*), service zones and private zones are part of the function of bedrooms.

This layout is efficient and can be used in many ways. It is located along a “virtual” line that includes the bedroom and dining room and does not include any social areas. Modern houses in Badung Bali do not use the traditional *Sanga Mandala* concept for their interior architecture, but the philosophy is still present. The design shows balance, harmony and a deep connection between humans and their environment, which shows that Bali’s philosophy is still relevant in modern architecture.

This object was chosen to represent modern houses in Bali, which tend to have similar designs, starting from the concept of vernacular architecture. It can even be called neo-vernacular architecture (Saidi *et al.*, 2019). The *Sanggah* is usually placed high up, even on the top floor, to represent a mountain, height, grandeur, ancestors or Gods. The kitchen, warehouse, bathroom and toilet are located towards the sea or *Kelod* in the *Nista* zone, categorised as a *Nista*/low/bottom zone and believed to be inhabited by spirits or devils. The open yard area, known as the *Natah* or Yard zone, is a flexible and multifunctional space that serves as a social area, even though it touches the private and service zones. The modern zoning concept, which is profane and pragmatic, serves as a family room, meeting room, studio and artwork storage and even touches an imaginary line with the main bedroom. How traditional Balinese houses are arranged significantly affects modern house designs in Bali.

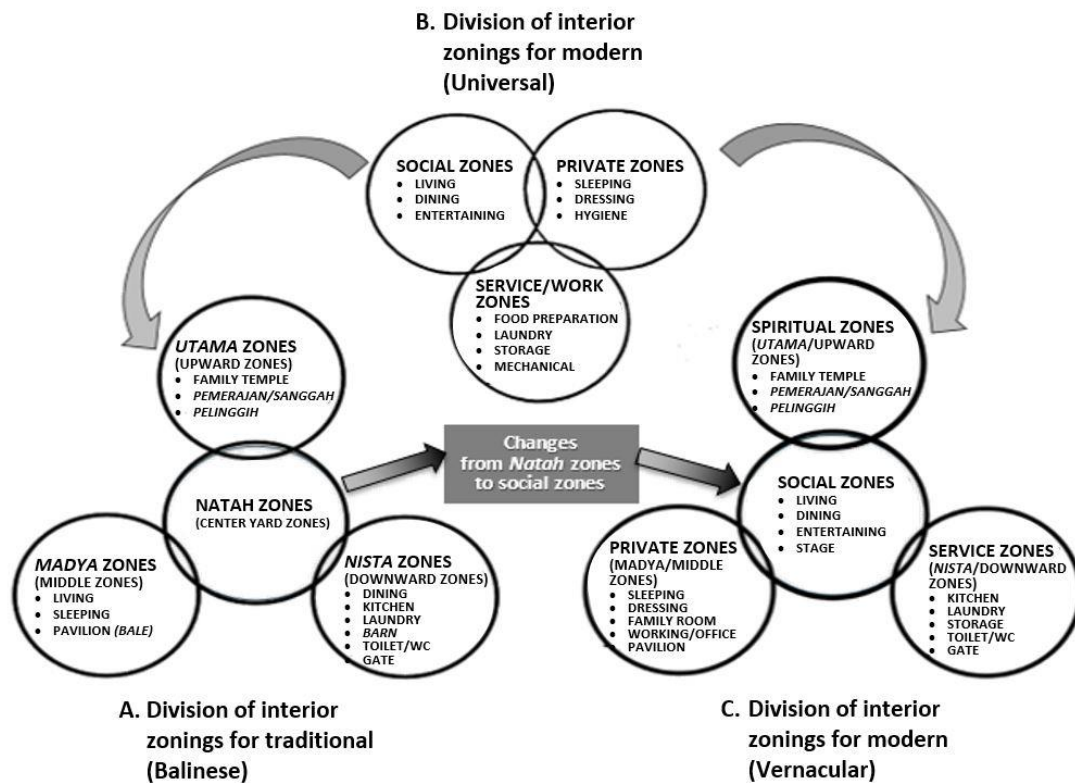


Figure 15. Schematic diagram that divides three interior zonings for modern (universal) house architecture (A) and interior zoning for traditional Balinese house architecture (B). Vernacular zoning arrangement resulting from Author's analysis (C)

Source: A. Designing Interiors (Kilmer & Kilmer, 2024); B: Obtained from The Balinese Ethnic Community's Perceptions in Regards to Modifications in Denpasar's Residential Building Spatial Planning (Wijaya *et al.*, 2022) and C: Results of Author's analysis (2024)

The study results prove that there has been a change in space placement in zoning. The unique feature of this zoning change is that it does not occur in the Upward zones/*Utama* zone as a sacred holy space and is still fanatically applied to the spiritual zone or *Utama*/Top/Upward/Upper zone in the context of vernacular architecture, traditional cultures inherently know how to construct the buildings they desire. Each architectural space reflects human needs (Trisno *et al.*, 2023). The solution is to utilise this space efficiently. Vernacular architecture, initially employed to support a rationalist approach to design, later served as a critique of that approach's outcomes. People in traditional cultures have an intrinsic understanding of how to build the houses they desire.

In this context, designs that the general public can accept result from accumulated changes that reflect symbolic functions that translate social conditions. This formation can represent local identity but also directs it as a form of imagination and production related to the future (Dovey, 2008). The essence is that vernacular architecture results from accumulated changes from traditional architecture as a local identity that adapts to modern architecture (Trisno & Lianto, 2021). Therefore, the architectural interior of the modern house in this study impacts the interior of the Balinese style of vernacular architecture, making it unique.

This schematic diagram model provides evidence that the interior zoning layout in modern house architecture still uses the *Sanga Mandala* concept, which originates from the interior design of traditional Balinese house architecture (Figure 15 C). The change

in space placement in the interior zoning system indicates that Balinese people understand how to preserve their great traditions and believe it to be a way to unite with nature. In semiotics, spiritual zones, which are very sacred as holy places and areas of worship, are the main ones in the interior zoning of house architecture in Bali.

4.2. Semiotic Analysis of the Sanga Mandala in the Interior Zoning of Modern Architecture in Bali

The concept of *Sanga Mandala* is to divide an area into nine zones in architectural interiors. The basic concept is based on *Tri Hita Karana*, *Tri Angga* and *Tri Mandala* as the basic philosophical guidelines for interior zoning in Bali. A logical semiotic study approach is required to analyse the *Sanga Mandala*. Semiotics, as the science of signs, aim to interpret signs with semiotic logic in qualitative research (Supriyatna-Mz, 2004) to capture their essence comprehensively.

4.2.1. Analysis of Meaning in the Concept of Sanga Mandala

In the context of semiotics, 1) *Tri Hita Karana* is a philosophy of nature (Siswanto, 2005). Philosophy of nature is a new essentialism (Ellis, 2014), which has become the essence of ancestral traditions in Bali as a guideline for *Sanga Mandala* zoning, especially in building harmonious and balanced relationships between humans and the spiritual aspects, social environment and the universe. The philosophy of *Tri Hita Karana* is revealed in three signifieds (textual) that can be interpreted based on signifiers (contextual-philosophical): a) *Prahyangan* is the harmonious relationship with Gods. *Sanga Mandala* is situated in the *Utama* zone as a symbol of spiritual life, belief and worship; b) *Pawongan* is a harmonious relationship with fellow humans. In the context of *Sanga Mandala*, it is situated in the *Madya* zone as a symbol of social and cultural life and interaction between individuals; c) *Palemahan* is the harmonious relationship with the surrounding environment (Peters et al., 2013) in the *Nista* zone;

2) In the context of *Tri Angga* Semiotics, it can be interpreted in three zones: the head zone (*Utama*), the body zone (*Madya*) and the foot zone (*Nista*), representing the concept of humans. In addition to the physical concept of humans, *Tri Angga* also rests on the concept of nature, namely the upper, middle and lower realms; in the environmental order: mountains, land and sea; in the architectural concept, roof, walls and foundation (Halim, 2016; Paketan, 2010). In the context of semiotics, *Tri Angga* represents the Balinese philosophy of worldview and societal values in the vertical relationship between the universe and spirituality;

3) *Tri Mandala* not only represents the physical spatial arrangement in the interior architecture of a house but also serves as a philosophical representation in daily life related to the four cardinal directions. The concept of *Kangin-Kauh* (east-west) and *Kaja-Kelod* (north-south) has given rise to the zoning concept of *Sanga Mandala*. These two concepts are supplemented by the position of the open area in the centre, *Natah*. The *Kaja-Kelod* zone, initially divided into sacred and profane zones, eventually divided into three zones. Based on the *Tri Mandala* concept, the three zones are *Utama Mandala*, *Madya Mandala* and *Nista Mandala*. In this context, the three fundamental areas in the *Tri Mandala* zoning system are: a) *Utama* (sacred), b) *Madya* (middle) and c) *Nista* (profane) (Sabrina et al., 2019). In understanding *Tri Mandala*, the philosophical principles of harmony and balance teach humans to live in harmony with nature, fellow humans and Gods to achieve perfection and inner peace. Based on three fundamental

studies, namely the *Tri Hita Karana*, *Tri Angga* and *Tri Mandala*, all three are representations accumulated in the concept of *Sanga Mandala* in the zoning layout of traditional Balinese architecture. Subsequently, the concept of *Sanga Mandala* and its semiotic sign meanings have been applied to the zoning layout of modern house architecture in Bali.

4.2.2. Analysis of Meaning in the Zoning System of Sanga Mandala

First, The *Utama* zone or upper zone is a spiritual zone, including the *Prahyangan* zone in *Tri Hita Karana*, a place of worship for highly respected, revered and exalted gods and ancestors. A sacred place that possesses positive and excellent energy. This *Utama* zone is divided into the *Utamaning Utama* (mainmost in the main), *Utamaning Madya* (mainmost in the middle) and *Utamaning Nista* (bottom-most main). The *Utamaning Utama* zone is the most sacred place oriented towards the north, specifically towards the mountain (*Kaja*). This means that mountains are considered high places and are believed to be the dwellings of Gods and ancestors. This zone is manifested in the form of *Sanggah* or *Mrajan* as a medium of interaction in harmoniously relating to Gods and their ancestors. Therefore, in the architecture of modern houses in Bali, the *Sanggah* or *Mrajan* building becomes the identity of applying the *Sanga Mandala* concept, which is always visible from outside every Balinese house.

Second, The *Madya* or middle zone, is a transitional zone connecting the sacred and profane worlds. It represents harmony between humans and the universe and serves as a place where daily social life manifests. A symbol of balance between the spiritual and material aspects of human life. A place of transformation, social interaction and togetherness. In this *Madya* zone, it is divided into *Madyaning Utama* (middlemost in the main), *Madyaning Madya* (middlemost in the middle) and *Madyaning Nista* (middlemost in the lowest). Based on philosophy, the *Madyaning Madya* zone is the central zone, an open courtyard and the orientation centre of all existing house buildings, referred to as *Natah* (Yard zones).

Third, *Zona Nista*, the lowest area, is dirty and disgraceful. It is the abode of ghosts, profane and mundane. Philosophically, this zone serves as a dumping ground for negative energy or defilement. However, it will transform into a purer realm; the *Nista* zone is divided into *Nistaning Utama* (lowest in the main), *Nistaning Madya* (lowest in the middle) and *Nistaning Nista* (lowest below). The *Nistaning Nista* zone is the lowest, most despicable, ugly and orientated towards the south facing the sea (*Kelod*). This means the sea is seen as the place of demons and other astral beings. This zone is the dirtiest place, such as animal cages and toilets. A study of the *Sanga Mandala* zoning principles in Balinese modern architectural interiors has created an adapted zoning model that is flexible and multi-functional.

4.2.3. Findings of the Sanga Mandala Model in the Interior Zoning of Modern House Architecture in Bali

The philosophical values and application of *Sanga Mandala* are examined through three essential aspects using a semiotic analysis approach. As part of this research finding, the resulting conceptual model of zoning is presented in the table below (Table 2).

The way the spaces in the interior architecture of modern houses in Bali are arranged has changed. The *Sanga Mandala* concept is currently more flexible and can be

used for various functions, but it still follows zoning regulations. Designers, architects and homeowners cannot completely alter the arrangement; out of the nine zones, only the *Utamaning Utama* zone (the most sacred zone) cannot be combined with other space functions.

Table 2. *Sanga Mandala Zoning Model.* This is the formula for applying the *Sanga Mandala* concept from traditional Balinese house interiors' zoning layout to modern Balinese architecture

TRI HITA KARANA (The Spirit of Bali)	TRI ANGGA (Vertical)	TRI MANDALA (Orientation)	SANGA MANDALA ZONING (Horizontal)	SANGA MANDALA PHILOSOPHY (Traditional Balinese)	TRADITIONAL INTERIOR ARCHITECTURE & FUNCTIONS (Signifier)	SEMIOTICS ANALYSIS (Signified)	MODERN INTERIOR ARCHITECTURE & FUNCTIONS (Signifier)
PRAHYANGAN Heaven Spiritual Gods	HEAD Roof Upper <i>Ulu</i> Sunrise	UTAMA Main North (Realm of the Gods)	MOUNTAIN <i>KAJA</i> <i>Utamaning Utama</i> <i>Utamaning Madya</i> <i>Utamaning Nista</i>	TOP UPWARD UPPER ZONE SACRED PART This main zone is a place of worship for the gods/deities/ancestors who are greatly revered and respected	<i>SANGGAH MRAJAN</i> Family temple Holy places Main shrine Place of worship	SACRED ZONE The highest holy place, the shrine of the Gods and sacred ancestors, revered, honoured, worshipped, adored and possessing positive energy	SPIRITUAL ZONE (<i>Utamaning Utama</i>) <i>Sanggah Mrajan</i> Sacred place Main shrine Place of worship SOCIAL ZONE (<i>Utamaning Madya/ Utamaning Nista</i>) Garage Veranda Living room Balcony (flexibility and multifunctionality)
PAWONGAN Human Social Person	BODY Walls Middle	MADYA Middle Intermediate (Realm of humans)	HUMAN TRANSITION <i>Madyaning Utama</i> <i>Madyaning Madya</i> <i>Madyaning Nista</i>	CENTRE MIDDLE ZONE INTERMEDIATE PART <i>Madya</i> is a transition zone, a place of transition between the sacred world and the ordinary world. Represents harmony between humans and the universe, and become a place where harmony is realised in everyday life	<i>BALE-BALE</i> (PAVILIONS) <i>NATAH</i> (YARD-OPEN SPACE) Pavilion or villages association zone. Social activity centre and ceremony place. <i>Bale Daja</i> (Pavilions for parents or virgins main building), <i>Bale Danging</i> (Pavilions for the ceremony), <i>Bale Delod</i> (Pavilions for living room), <i>Bale Dauh</i> (Pavilions for living room or sleeping space for teenage boys)	TRANSITIONAL ZONE A connecting place between the sacred and the profane worlds. A symbol of balance between the spiritual and material aspects of human life. A place of transformation, social interaction and togetherness	SOCIAL ZONE (<i>Madyaning Utama/ Madya/ Natah</i>) Family room Living room Meeting room PRIVATE ZONE (<i>Madyaning Utama/ Madyaning Nista</i>) Bedroom Workspace Studio Toilet/WC (flexibility and multifunctionality)
PALEMAHAN Natural environment Ghost	FEET Foundation Bottom <i>Teben</i> Sunset	NISTA Nasty South Underworld (Realm of the ghost)	SEA <i>KELOD</i> <i>Nistaning Utama</i> <i>Nistaning Madya</i> <i>Nistaning Nista</i>	BOTTOM DOWNWARD ZONE PROFANE PART <i>Nista</i> is a profane place, open space Philosophically, it is a place or plaza for the disposal of negative or impure energy, although it will undergo a transformation into a purer realm	<i>PAON</i> (KITCHEN) <i>Jineng</i> (Rice storage) <i>Gelogor</i> (Pigsly) <i>Angkul-angkul</i> (Gate)	THE PROFANE ZONE The lowest, filthy place, despicable, the dwelling of ghosts, profane, worldly with negative energy	SERVICE ZONE (<i>Nistaning Utama/Nistaning Madya/Nistaning Nista</i>) Kitchen Warehouse Laundry room Bathroom Toilet Fish pond Balcony

Source: Formulation by Authors (2024)

The *Utamaning Madya* and *Utamaning Nista* zones are spiritual zones, so they can be used for other things, except for the *Nistaning Nista* zone (the most profane zone), which cannot be used for anything. As a private and social zone, the *Madya* zone can be used in many ways, including in the *Natah* zone (*Madyaning Madya*, the innermost zone). The *Madya* zone is a place where people can come together and interact, especially with their family members and it is also a place where people can achieve harmony. The *Nistaning Nista* zone is the most profane and can be used for spaces outside the *Utama* and *Madya* zones. The *Nista* zone can only be used for service spaces that fall within the service zone.

The way houses are arranged inside is still based on the *Sanga Mandala* idea, mainly how *Sanggah* or *Mrajan* is used as the visual symbol of *Sanga Mandala*. Although the arrangement of rooms and their functions can change, they still follow the principles of the *Sanga Mandala* idea, which is essential to the Balinese Hindu community. The *Sanga Mandala* concept is based on the cultural and philosophical values of *Tri Hita Karana*, which aims to improve quality of life and achieve spiritual happiness and physical well-being in a balanced way. While there have been changes in how spaces are used in modern house architecture, the traditional Balinese concept passed down from ancestors is still used.

5. Conclusion

This study shows that using the traditional *Sanga Mandala* concept in modern architecture is not a replacement for or cancellation of previous concepts. The *Sanga Mandala* concept is still applied flexibly and consistently, placing the spiritual zone in the *Utama*/Upper/Uppermost zone of the *Utamaning-Utama* zone. *Sanga Mandala*, guided by the imaginary *Kaja-Kelod* line pattern, is a unique local genius in the interior zoning of modern house architecture in Bali.

As for the interior zoning model for modern house architecture, even referred to as neo-vernacular, it includes the following four zoning areas: 1) Spiritual zone/*Kaja*/Gods; 2) Private zone/*Madya*/Human; 3) Social zone/*Natah*/Yard/Intermediate/Centre and 4) Service zone/*Nista*/Devils/Ghost/Lowest. The function of each room can change, especially in the service zone, although some can also be used for the social zone. These four zones combine traditional and modern architectural ideas known as vernacular interior architecture based on the *Sanga Mandala* concept. Visual evidence in the form of imaginary lines in the *Sanga Mandala*, the direction of mountains and the sea, the movement of the sun and the function of Yard zones are still used as part of the zoning system in modern houses in Bali. This shows that Balinese architecture can adapt to changing times.

The uniqueness lies in the spiritual zone (the sacred place, *Utamaning Utama* zone), where the *Sanggah* or *Mrajan* is a worship facility on the second floor. In traditional Balinese house architecture, this is not the case. This study shows that the *Sanga Mandala* concept in modern Bali houses is more flexible and can be used for different things. However, it still follows the *Tri Hita Karana* philosophy. Modern *Sanga Mandala* Balinese house interiors still use profoundly philosophical concepts. The Balinese people still follow the philosophical principles that their ancestors taught them. They do this to respect their ancestors and maintain harmony and balance between Gods, people and the universe. *Tri Hita Karana* is a philosophy of nature in Balinese cosmology, which is also reflected in the findings of the *Sanga Mandala* zoning model.

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