

Dewasa Ngundaginin: Cultural History of Balinese Concept of Time and Transformation of Balinese Traditional Architect (*Undagi*) From Pre-Colonial to Contemporary Era

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Abstract

This study examines how traditional Balinese architects (*undagi*) have used time from classical to contemporary times. The study aims to understand Balinese culture, specifically the architectural interpretation of time, with an emphasis on *undagi*'s practises today. Modern Bali's cultural evolution is reflected in the temporal paradigm shift. The study takes a cultural history approach to create a historiography the social cultural transformation of concept of time in Bali based on government authority and *undagi* as architectural design labour. The research uses a diachronic system to trace the changes in time from pre-colonial Bali (8th-19th AD), and colonial (19-20 century AD) to contemporary Bali (20th-21st century AD). The research shows that the concept of space and time that is fused in the *undagi* practice changes when one of its elements, time, undergoes operational changes. The concept of time as a cultural foundation changes the entire cultural fabric of a region and directly transforms the profession of traditional *undagi*-architects as creators of the traditional spatial layout of a region. This research explains the correlation between the changing concept of time and its influence on the *undagi* profession, as a cultural preservation effort to preserve the decadent *undagi* tradition in Bali. This research contributes

to research in architectural history, cultural history, cultural preservation discourse and culture-based design. Previous research on the concept of time in Bali that correlates between time, humans and its social consequences in the perspective of cultural anthropology and ritual. Few studies have examined the relationship between time and traditional Balinese *undagi* practise as traditional architecture builder in contemporary Bali. Comprehending space-time understanding is essential to comprehending culture from the past to the present.

Keyword: *Undagi Bali*, Bali Concept of time, Transformation, Cultural preservation, Cultural History.

Introduction

Throughout history, various societies have consistently perceived time as a dynamic and subjective concept. In the context of globalization, the concept of time has assumed a universal significance. The temporal positioning within the context of the present globalized globe can be traced back to the historical period of colonialism (Nanni, 2020). The aforementioned phenomenon has resulted in a prevailing inclination towards the gradual obsolescence of the conventional notion of time across many global cultures. The phenomenon of disappearance can be understood as an indication of the erosion of the fundamental underpinnings of a regional culture, specifically its inherited temporal perspective that has been passed down through successive generations (Ascher, 2018).

Bali, an Indonesian province, exemplifies a locality that upholds its perception of time while simultaneously engaging in extensive interactions with the global world. The Balinese calendrical system, due to its intricate nature, serves as a tool of power and influence within society, rather than being a culturally neutral entity accessible to all individuals (Gell, 2021). The Balinese calendar serves as a cultural mechanism that symbolizes the notion of time by dividing it into discrete units. Its purpose is not to quantify or aggregate time, but rather to depict and define it, capturing its various social, intellectual, and religious implications (Geertz, 2017,

p. 391). When considering the concept of time, it is crucial to acknowledge two key aspects regarding the understanding of duration. Firstly, in Balinese culture, duration is perceived as cyclical, while individuals remain cognizant of the irreversible progression of time. Secondly, this comprehension of duration extends beyond Balinese rituals and is pervasive throughout various facets of their culture (Covarrubias, 2018; Howe, 1981, p. 223). The Balinese people adhere to three distinct calendars, namely the widely used Gregorian calendar, the Indian lunisolar Saka calendar, and the Pawukon calendar. The final period encompasses a duration of 210 days and is organized into ten distinct week systems that operate simultaneously, rather than being structured based on traditional weekly and monthly divisions. These entities consist of a series of consecutive numerical values from 1 to 10, each representing a distinct unit of time. They are commonly referred to by their designations derived from the Sanskrit language. A single day possesses ten designations in accordance with these ten frameworks. The amalgamation of these celestial phenomena holds significance in delineating favorable and unfavorable periods for specific endeavors, such as construction, fishing, academic pursuits, and other religious practices (Mishra, 2020, pp. 27–28).

The correlation between architecture and the concept of time in Bali is an interesting discussion in the midst of Bali's spatial chaos in urban development (Cuthbert, 2012) and current spatial issues (Wardana, 2019). In the time before colonization, growth in architecture was marked by careful attention to the timing of building. To do this, the right days had to be carefully chosen for things like clearing land and opening buildings. But there was a big change from the colonial era to the modern era when the idea of international time came about. This led to changes in how architecture was done. This event had an effect on more than just Balinese architecture. It also affected the *undagi*, who are in charge of keeping traditional Balinese building knowledge and skills alive. The *undagi*, who is also called the traditional architect-builder, knows a lot about architectural rites and how to carry them out. In the Balinese

building handbook, there are detailed descriptions of many aspects of construction and design, including the size, shape, direction of orientation, and placement of buildings in relation to other structures. The manual also gives suggestions on the type of people from what social background should be hired to build certain kinds of buildings (Davison, 2014). One of the abilities of an *undagi* in practice as a traditional architect in Bali is to master the concept of time to determine the best day to carry out construction-related activities (Kagami, 1988; Macrae & Parker, 2002); termed 'dewasa ngundaginini'. It is a cultural concept in building traditional architecture based on good and auspicious day by an *undagi* (Wardha, 1989; Widana, 2022). This research explains the correlation between the changing concept of time and its influence on the *undagi* profession, as a cultural preservation effort to preserve the decadent *undagi* tradition in Bali (Achmadi, 2016; Dwijendra & Adhika, 2022; Macrae & Parker, 2002; Noorwatha & Santosa, 2023; Pranajaya et al., 2020).

Previous research on the concept of time in Bali that correlates between time, humans and its social consequences in the perspective of cultural anthropology such as (Bloch, 1977; Covarrubias, 2018; Friederich, 1876; Geertz, 2017; Ginaya, 2018; Goris, 1933, 1960; Howe, 1981); and ritual (Suamba & Mudana, 2018). Few studies have examined the relationship between time and traditional Balinese *undagi* practise as traditional architecture builder in contemporary Bali. Why is this practise important? comprehending space-time is essential to comprehending culture from the past to the present. Traditional architects have inherited the idea and been responsible for its evolution. This study examines how traditional Balinese architects (*undagi*) have used time from classical to contemporary times. The study aims to understand Balinese culture, specifically the architectural interpretation of time, with an emphasis on *undagi* practises today. Modern Bali's cultural evolution is reflected in the temporal paradigm shift.

1. Method

The evolving sense of time in Balinese cultural history and its impact on *undagi* architects is the focus of this study. The study takes a cultural history approach to create a historiography the social cultural transformation of concept of time in Bali based on government authority and *undagi* as architectural design labour. The research uses a diachronic system to trace the changes in time from pre-colonial Bali (8th-19th), and colonial (19-20) to contemporary Bali (20th-21st century). The research uses traditional Balinese writings including *lontar*, *paswara*, *piagem*, and *prasasti* as local historical documents and modern historical documents, such as books, book sections, journals, newspapers, magazines, brochures, and the web by foreign and local authors, are used to strengthen understanding of the transformation of the Balinese *undagi* concept of time. Modern texts will be prepared and examined internally (content analysis) and externally (validity, time, and reliability). All text data will be tested for validity through critical analysis and triangulated through interviews with academics and contemporary *undagi*.

2. Transformation of Balinese Undagi Time Concept from Pre-Colonial to Contemporary

2.1. Pre-Colonial Bali

The figure of the *undagi* or in ancient Balinese called 'undahagi', is recorded in the Sukawana A1 inscription. (882 AD) mentions the figure of 'undahagi' as a 'master builder' to be one of the professions taxed by the kingdom (Goris, 1954a, p. 53). Bebetin A1 Inscription (896 AD) dan Batuan Inscription (1022 AD) mentions the figure of *undagi lancang* (master boatbuilder), *undagi batu* (stone craftsman) and *undagi pangarung* (tunnelling experts) (Goris, 1954a, pp. 55 & 97). Trunyan A1 Inscription (891 M), B1 (911 AD) and Batuan Inscription (1022 AD) mentions the term 'undahagi kayu' (woodworker)." (Goris, 1954a, pp. 56, 58, 97). Serai A1 Inscription (966 M) dan A2 (993 M) mentions the term "undahagi prakara" (maker of equipment and tools) (Goris, 1954a, pp. 70 & 80); and the Ujung Inscription (1040 AD) mentions the term 'wudahagi' (royal official in charge of timber)" (Goris, 1954a, p. 107). *Undagi* in the pre-colonial

period were specialists needed by the community for the manufacture of buildings made of wood such as houses or sacred buildings as well as other equipment. (Ardika & Beratha, 2015, p. 38).

Undagi in ancient Bali were paid for their services and received money when the work was completed, at an agreed amount. The kingdom would tax the income of the *undagi* based on religious ceremonies at the royal shrine. It is recorded that *undagi kayu* (carpenter) were taxed 4 *piling* per unit for the maintenance of the Sanghyang in Turunan shrine (Goris, 1954b). Bali in the ninth century was already using a gold currency system with an exchange rate of 1 *suwarna*=1 *tahil*=16; *masa*=64 *kupang*; 1 *tahil*=1/16 *kati*. The gold currency if converted by weight will get the amount of 1 *suwarna*=0.038601 kg gold; 1 *masa*=0,002412 kg gold; 1 *kupang*=0,000603 kg gold (Stutterheim, 1940, p. 17); while 1 *piling*=1/6 *masaka* (Marzuki, 2016).

In addition to working for their own livelihoods, *undagi* in ancient Bali were sometimes commissioned by the kingdom (*ayahan negara*) to look after the kingdom's buildings and shrines. When doing 'ayahan negara' work the *undagi* would be supported by the state through food aid. Due to the important function of the building infrastructure to support the operational system of the kingdom, the *undagi* were gradually incorporated into the government structure as royal officials (Ardika & Beratha, 2015; Moojen, 1919).

Before the Europeans came to Indonesia, especially in ancient Bali era (VIII-XII century AD), people used *wariga* manuscript to keep track of the Saka calendar, which came from India and was passed down through Java. The Balinese thought that these manuscript were an important part of their large body of knowledge because the manuscripts talked about different aspects of the idea of time. The main goal of this body of knowledge is to explain how the interconnected patterns of diurnal periods affect things. Within a certain circle, each day has its own name, set of characteristics, symbolic meanings, color meanings, ruling Gods, and other similar things. The full description of each of the 210 days in the *wuku* cycle comes from adding up the details of the days in the smaller cycles that run along with it.

A certain group of days are known for having a lot of important events that happen at the same time. When people do everyday reading, the *tika* is the main tool they use. There is a diagram or picture on this tool that shows where coincidences happen over the course of the 210-day cycle. As an alternative, people can choose the *palelintangan*, which is used more often. The *palelintangan* uses pictures to help people remember the 35 days that make up the five-day and seven-day rounds put together (see fig.2). It is important to note that this trend happens six times in a *wuku* cycle (Proudfoot, 2007).



Figure 1. Gunung Kawi Temple by Ancient Balinese *Undagi*

Source: Author, 2021

The correlation between time and the work of *undagi* is shown in the paired statue allegedly embodying King Udayana and his consort Gunapriyadharmapatni in the 11th century AD that is still preserved in the Puncak Penulisan Temple (Tegeh Kahoripan) on the backrest there is a short inscription, which reads

“—saka 993 bulan posa....., —da rggas pasar wijayamanggala (ta)-- (la), —mpu bga anatah// (In the saka year 933 (1011 AD) of the fifth month, the first day after the full moon, at the time of the wijaya manggala market, at that time, he Mpu Bga chiselled) (Setiawan, 2021)

At Sibi Agung Temple, Gianyar, a short inscription was also found chiselled on the back of a statue also made by Mpu Bga and Kaki Nami, which was written:

Saka 945 phalguna masa titihi dwa, dasi pasar manggala irika dewasa sire mpu bha ta ya mwah sire mpu nami, ta ya mijil aken sang hyang kaki sangsara (In the year 945 saka (1026 AD), the eighth month, the second day of the twelfth month, coinciding with the market day in manggala, Mpu Bga and Kaki nami, issued (made) Sang Hyang Kaki Sangsara (Setiawan, 2021)

The concept of time and *undagi* in ancient Bali, although without any information about the correlation between the concept of time and the amount of money obtained for compensation. However, the inscription data shows how the figure of the undagi was recognised by society and the kingdom, part of the royal system, as an object of taxation and recorded authorship on works using the Saka calendar. When the ancient Balinese kingdom was conquered by the Majapahit kingdom from East Java, occurring in 1343 AD, the ancient Balinese concept of time was maintained but adjusted to the festivals celebrated by Majapahit (Proudfoot, 2007, p. 101). The transition of power from ancient Bali to Majapahit Bali led to the rebellion of the ancient Balinese after the last palace of ancient Bali was controlled by Majapahit (Ardika et al., 2013; Hanna, 2016). One of the Majapahit vassal king's restoration programmes in Bali was to renovate the Besakih temple (Sirikan, 1957); and also, Dasar Bhuana Gelgel Temple as a symbol of unification (Wirawan, 2011). In general, the change of the top of the government has an impact on the need to build new architecture or renovate architecture due to war. During the Majapahit period in Bali, the architectural development process utilised 'undagi' from Java since Majapahit itself had its own architectural specialities compared to ancient Bali (Wijaya, 2014). At that time there was a transfer of knowledge between Javanese *undagi* regarding the knowledge and technicalities of Majapahit architecture; and Balinese *undagi* who were better versed in local materials and geographical investigations. The position of Balinese *undagi* as a colonised kingdom was certainly subordinate to Javanese *undagi* who

were included as first-class citizens during the Bali-Majapahit period. The Kitab Adi-Agama categorised the *undagi* into the

Asta Candala group, which is a group outside the lowest caste. The book also determined the amount of the fine for *undagi* who defaulted at 4000 *kepeng*. (Djilantik & Oka, 1909).



Figure 2. Balinese *Tika*-left and *Pelelintangan* Calendar - right

Source: (Covarrubias, 2018)-left; (Vickers, 2012)-right

During the Bali-Majapahit period *lontar* based traditional architectural guidelines began to be widely used. It was intended to accelerate the transfer of Majapahit architectural knowledge to the local ancient Balinese *undagi*. Therefore, the Majapahit architectural philosophy quickly spread throughout Bali (Wiryani, 1982). During the ancient Balinese period, Bali was visited by a Balinese architectural reformer, such as: Mpu Kuturan from Kahuripan Kingdom, East-Java, who came in the 9th century AD and introduced the concept of *Meru* building architecture and *Tri Kahyangan* concept (Bale Agung, Puseh and Dalem Temple placement in every village) as the building blocks of the village. Mpu Kuturan even introduced the *lontar Ashta Kosali* manuscripts as architectural guidelines. Danghyang Nirartha who also form East Java who taught the people and *undagi* in Bali the philosophy and technicalities of Balinese-Majapahit architecture and spread the *lontar Ashta Bhumi* manuscripts (Windhu, 1984). Therefore, the royal *undagi* of the Middle Balinese period, both from Samprangan, Gelgel and Klungkung were dominated by *Brahmins* (descendants of Danghyang Nirartha) as they had access to architectural manuals and also had the authority to

perform the ritual inauguration of newly completed buildings (Rubinstein, 1996). The lower caste communities initially learnt from the *Brahmins*, then taught their children and grandchildren while still placing the *Brahmins* as the highest authority in the architecture (A. A. G. P. Agung & Musta, 1991, p. 12). *Lontar* based traditional Balinese architectural guidelines formulated by the Brahmins descendants of Danghyang Nirartha, the construction of architecture must follow the auspicious day (*dewasa ayu*) in construction, as well as in other processions until occupied (Budihardjo, 1986).



Figure 3. The work of the *Undagi* in Balinese-Majapahit Era

Source: (Wijaya, 2014, p. 142)

The sole hegemony of power on the island of Bali which was previously located in Gelgel in nowadays Klungkung regency; as a continuation of Majapahit power in Bali, fell due to a rebellion by I Gusti Agung Maruti a patih of the Gelgel kingdom to King Gelgel Dalem in Made, recorded in history I Gusti Agung Maruti occupied the Sweca Linggarsapura Gelgel Palace in 1686 AD (Ardika et al., 2013). This situation gave rise to small kingdoms that were formerly duchies led by *patih* under Gelgel Kingdom. The kingdom of Karangasem emerged in 1661 AD, Buleleng 1695 AD, Mengwi 1700 AD, followed by Tabanan, Badung, Bangli, Payangan, Gianyar and Jembrana (A. A. K. Agung, 1991). The emergence of these small kingdoms gradually led to competing hegemonies and identities, one of the reasons for the variety

of Balinese architectural styles based on the strengthening of each kingdom's identity. The *undagi* of each kingdom competed to show their best work, but the *undagi* of Gelgel (Klungkung) remained the centre of artistry and were often called upon to build the architecture of other kingdoms (A. A. K. Agung, 1991).

2.2. Bali in Colonial Era

In the early years of the 20th century AD the island's political situation underwent a fundamental change due to the defeat of the Balinese kingdoms of Badung and Tabanan (1906) culminating in Klungkung (1908); which led to full political control by the Dutch (Nordholt, 1994; Pringle, 2004). The political change from traditional kingdom to foreign colonialism led to major social structure changes especially among the *undagi*. The conquest of Bali by the Dutch in the early 20th century and the introduction of the colonial government brought with it the construction of offices and houses by the Public Works Department of different types, which gradually became standardised for the upper classes and in smaller sizes penetrated into the complex life of the Balinese, especially in the cities. Traditional Balinese architecture remains for temples and the construction of ceremonial buildings in private compounds. But for the common people, the cosmopolitan standards imposed by the Public Works Department became dominant (Djelantik A., 1995). During the colonial period *undagi* were marginalised in infrastructure development, with the Dutch government favouring modern architectural approaches. In the pre-colonial period *undagi* were organised into groups (*sekehe undagi*) in each village of each Balinese kingdom led by a chairman (*kelihan undagi*). The task of the *kelihan undagi* within the royal structure was to mobilise artisans to maintain and build the royal architecture. For this purpose, each *sekehe* was given a number of rice fields to cultivate as the king's wage to the *undagi*, while the *kelihan undagi* received the royal wage. The *undagi*, in addition to doing the work of the artisans, also managed the rice fields for the daily life of their families (Moojen, 1919). The Dutch newspaper *de Locomotief* of 22 June 1921 reported on the existence of

undagi and the existence of *undagi* groups (*sekehe*) during the colonial era in Klungkung, which were previously sponsored by the kingdom by being given rice fields. The state of the *undagi* groups is diminishing, each group is also shrinking in membership, with members deciding to work for themselves on a wage basis. The wage of an *undagi* as either a carpenter for buildings or a carver at that time, especially in Tejakula (north Bali) was around 0.50 guilders for a day's work (BKI, 1934, p. 15).

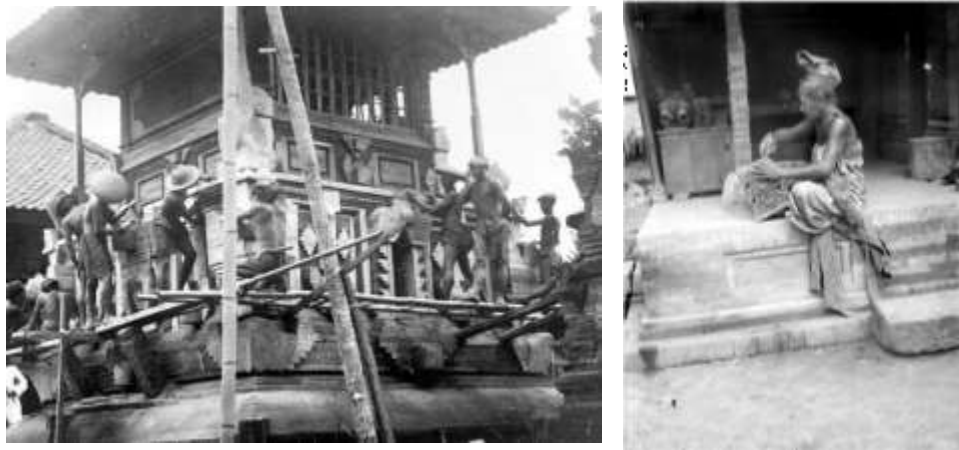


Figure 4. Balinese *Undagi* in Early Colonial 1930

Source: ANRI, KIT Bali 742/16 (left) and collectie.wereldmuseum.nl; Object Number: TM-10017706 (right)

The concept of modern time in Bali was introduced by the colonial government in order to prepare Bali as an international tourism destination, by introducing and standardising the international time system on the activities of the people who were traditionally based on the saka and pawukon calendar (McGraw, 2013). It is a historical fact that in 1908 the Dutch installed a very large clock at a crossroads in Denpasar, its alarm sounding in a measured manner, precisely to mark school and working hours. (McGraw, 2013, p. 24; Schendel & Nordholt, 2001). The establishment of international time in Bali by the colonial government changed the social fabric of Denpasar as the location of the 'colonial clock'. However, as the centre of

government, it gradually resonated throughout the island, eventually impacting on Bali's overall cultural practices.

The transformation of the concept of time changed the perception of Balinese people, changing their art forms and work ethic. The metronomic pieces of the clock did not produce musical effects. Instead, a contradictory process took place; with the introduction of western time, Balinese musical temporality became more metrically fluid, and more refined with the advent of *gamelan kebyar* music (McGraw, 2013). The Dutch Tourism Bureau (KPM) also published a calendar with Balinese ornaments for the purpose of tourism promotion. (Vickers, 2013). The Gregorian calendar is also used as a reference by workers in the tourism sector in addition to the clock at the crossroads. Because the hotel business is a business with a high multiplayer effect related to pick-up/transportation, reservation, work duration, meal hours, supply chain, tours and performances, the working climate is gradually influenced by colonial 'time' (see fig. 5).



**Figure 5. Colonial clock at Denpasar main intersection (left)
Modern calendar KPM 1931 (right)**

Source: KITLV (left) Peppel, n.d. (right)

During the colonial period, not only were *undagi* and builders introduced to the concept of labour and working time, they were also introduced to modern technology and project management. Builders from all over Bali were involved in a colonial government project to renovate a large Balinese temple that had been destroyed in the 1917 earthquake. It was agreed that the daily rate for craftsmen, including *undagi*, would be 400 Chinese *kepeng* (Stuart-Fox,

2022, p. 301). However, the Dutch architect PAJ. Moojen as the person in charge was very confused and disappointed with the performance of the builders who seemed to lack coordination and also the high disparity between the prices of the same materials. Therefore, at the discretion of the Assistant Resident of South Bali AJL. Couvreur appointed the famous *undagi* from Badung I Gusti Made Gede of Made as the daily supervisor and Raden Soetatmo as the overseer (Stuart-Fox, 2022). During the colonial period, Balinese *undagi* worked to adapt to the modern working climate in the construction of architectural projects that were limited by time, work duration and deadlines. Hence the decadence of the Balinese *undagi* who were previously part of the royal government structure, a priest architect became a labour worker with predetermined working hours, which would determine the calculation of wages (Interview with I Nyoman Gede Maha Putra, 2023).

During the transition from pre-colonial to colonial times the *undagi* still struggled between work for the kingdom (*ayahan negara*), work in the rice fields for the daily economy due to being a member of the *undagi* group (*sekehe*) and also private work for additional income. People who owned *pengayah* (helper) rice fields (not private property but only as cultivators; usually owned by the village (*pelaba desa*) or a particular temple (*pelaba pura*)); not only had to pay the tax, but also assisted the king in building residences, etc. (BKI, 1918, p. 38). The concept of the *undagi*'s working time is crucial in relation to their professionalism. The *undagi* certainly prioritised the *ayahan negara* as it had legal consequences and put aside other work. However, Bali's political situation from the 16th to 19th centuries was dominated by wars between kingdoms (Nordholt, 2006), The state of the kingdom also disrupted the concept of working time for the *undagi*. Therefore, on the side of the *undagi* who were predominantly *sudra* caste, the fall of the system to the kingdom gave political advantages to the *sudras* and *asta candala* (the lowest position caste) from the oppressive bondage of the state and the arrogance of the kings and nobles. (Wit, 1914, pp. 192–193).

During colonial rule Bali experienced a change in the type of government system from traditional to modern controlled by the Dutch colonials through *Pax Neerlandica* politics (1908-1942); where Balinese culture and reality were 'redesigned' based on the wishes of the colonials (Nordholt,

1994, p. 94). One that came into direct contact with the *undagi* was the decision to reaffirm the caste system with the *Triwangsa* (*Brahmins*, *Ksatriyas* and *Wesyas*) caste as the main citizens while the rest were categorised as *sudras*. The *sudras* were required to do forced labour for 36 hours a year (Nordholt, 1994, p. 96; Robinson, 1995). This further constricted the working hours of the *sudra* caste *undagi*. The *sudra* caste *undagi* were forced to work physically on modern projects designed and supervised by the colonial authorities. Meanwhile, *Brahmin* caste *undagi* as dominant class (as in the pre-colonial era), *Ksatriya* and *Wesya* caste *undagi* categories, had more time to work on projects and were more diligent in implementing architectural guideline texts in their designs. As a result, Balinese *undagi* were divided into two categories: *Triwangsa undagi* and *sudra* caste *undagi* in the colonial era. This in its development in the contemporary era led to a fundamental change in the capabilities of the *undagi* who previously knew the entire construction process from design to inauguration rituals, to be partial; differentiated between *sulinggih* (*Brahmin* High priest), *pemangku* (lay priest), *undagi* (master-builder, designer, coordinator), *sangging/juru* (artisan or specialist), *tukang* (common builder) (Remawa et al., 2013, p. 157); *pengayah tukang* (helper) (Arthana et al., 2018).

The massive development by the colonial government, expatriates, and the needs of tourism at the beginning of the colonial era, in 1919, led to many parties offering designer-building services from Balinese, Javanese and Chinese *undagi*. I Made Pasek notes that the Balinese and Javanese *undagi* were eclipsed by the Chinese 'undagi' due to their ability to group together and open professional companies (Pasek, 1919, pp. 58–60). Not only had the Balinese *undagi* not mastered modern company administration, but they also seemed to have not equipped themselves with the development of modern society's needs in the latest architecture at that time. Anak Agung Made Djelantik noted in his autobiography that his new residence complex in Denpasar did not have a toilet, as the *undagi* hired did not know how to place a toilet in the layout of a Balinese house. (Djelantik, 1997, p. 42). The Balinese *undagi* of the colonial period until independence only acted as master

craftsmen in Balinese wooden structures and carvings, which were still subordinate to foreign architects.

2.3. Bali in Contemporary Era

In the early independence era (1954) it was also noted that there were still a handful of local parties actively working on development projects. In the 1954 Bali Provincial Monograph, there are building companies in Bali classified by foreign and Indonesian capital. Indonesian capital itself can be seen in the names of the companies with Hindu names and Balinese names, which are presumably owned by Balinese who employ local craftsmen including *undagi*. Of the twenty company names, five have Balinese or Hindu identities. Similarly, the list of names of furniture industry companies in Bali contains 3 names out of a total of 17 companies with explicit Balinese identity. Important entrepreneurs in Bali include the listed builders' contractors (*pemborong*) "Tjandi" (Singaradja), contractors (*Pemborong*) "Hastika (Singaradja) (Raka, 1955, p. 121). This explains that (1) the *undagi* are still strong in carrying out their traditions in architecture with difficulties in adjusting to the needs of modern society for modern architectural layouts (2) there are still few *undagi* who dare to be entrepreneurs to form companies and compete openly with entrepreneurs in other 'building' fields.

In other hand, the authorities in post-independence Bali realised that the concept of time was important in maintaining Balinese culture. Therefore, in 1948-1949, a meeting of priests (*Sulinggih*) decided to have Bambang Gde Rawi as the compiler of the 'modern' Balinese calendar and in 1950, Bambang Gde Rawi was appointed as the compiler (Setia, 2002).

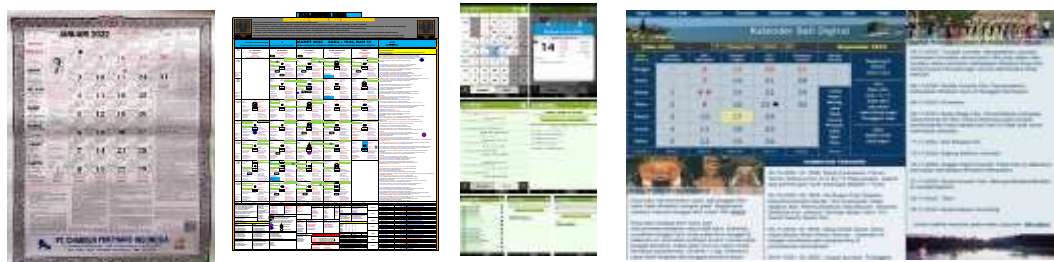


Figure 6. Modern Bali Calendar from Print, Web, Android and Whatsapp Versions

Sumber: tokopedia, IB Anom Awidya (2022), balimobi.com, kalenderbali.org

The 'Bambang Gede Rawi' printed calendar has become a brand of its own, followed by other competitors in terms of content, formulation techniques and visual appearance. In the contemporary era (2010s) the Balinese calendar has been available in the form of websites, mobile applications, software and even personalised services such as monthly horoscopes (*wacakan*) through whatsapp applications. Although contemporary Balinese are living in modern international time, the Balinese calendar is still used for ritual benchmarks, birthdays (*otonan*) and social community meetings in the *bale banjar* (hamlet). The Balinese digital calendar (m.kalenderbali.org) states that there are 14 good days to build a house, but not every month includes a full list of good days to build.

Table 1. 'Dewasa Ngundagin'in' to Build Home in 2024

Source: m.kalenderbali.org

No.	<i>Dewasa Ayu</i> (Auspicious day)	Meaning
1.	<i>Amerta Masa</i>	Good days for ritual ceremonies to the Gods (<i>Dewa Yadnya</i>), building, and farming
2.	<i>Dauh Ayu</i>	Good days for making customary rules (<i>awig-awig</i>), regulations or laws, good days for building a house
3.	<i>Dewasa Ngelayang</i>	Good days for building houses, making boats (<i>jukung</i>) and the like
4.	<i>Amertayoga</i>	A good day for building, earning a living, and starting a business.
5.	<i>Derman Bagia</i>	Good day to get married, build, start learning/practising, learn to dance
6.	<i>Kala Empas Mungguh</i>	Good day for building a house. Not good for picking fruits
7.	<i>Ayu Badra</i>	A good day to start a business, plant a crop, build a building
8.	<i>Dewasa Mentas</i>	Good days for making all kinds of sincere offerings (<i>yadnya</i>), purification ceremonies, giving advice, giving useful guidance, and good for building
9.	<i>Guntur Umah/Graha</i>	Good days for building or moving house

10.	<i>Siwa Sampurna</i>	Good days for all kinds of ceremonies, starting to study/practise, building all kinds of buildings
11.	<i>Sampi Gumarang Turun</i>	Good days for planting rice, corn, and building houses
12.	<i>Kala Graha</i>	Good days for building housing
13.	<i>Kamajaya</i>	Good day for adult marriage, building, making tools, starting to learn/train.
14.	<i>Ratu Ngemban Putra</i>	Good Day for building, appointing children (<i>sentana/meras</i>), inaugurating officers

In table 1. it is shown that there are *dewasa ngundagin* divided into 14 categorised as *dewasa ayu* (auspicious) and *dewasa ala* (unauspicious day) totalling 11 consisting of (1) *Agni Agung Doyan Basmi*, (2) *Agni Agung Patra Limutan*, (3) *Carik Walangati*, (4) *Geni Murub*, (5) *Gni Rawana Rangkep*, (6) *Kala Awus*, (7) *Kala Buingrau*, (8) *Kala Empas Turun*, (9) *Kala Rau*, (10) *Kala Sapuhau*, (11) *Lebur Awu*. In the past these types of days were avoided by the *undagi* to build, becoming holiday time for the *undagi*. In contemporary times where the concept of time is different, this type of unauspicious day is ignored more for adherence to deadlines and work duration.

In contemporary times, the *undagi*, traditionally the master builder who is authorised to design, build and commission, has been reduced to a builder (Arthana et al., 2018; Macrae & Parker, 2002). Therefore, the concept of working time does not follow the traditional concept of time. Contemporary *undagi* only use the time in the official calendar, which is divided into working days, international holidays (Sundays) and holidays set by the government. Contemporary *undagi* no longer follow the *dewasa ngundagin* as *undagi* did in the past. *Undagi* in the contemporary era are not only marginalised (Achmadi, 2016; Pranajaya et al., 2020); by modern designers and architects in construction, has an impact on how contemporary *undagi* view time. Contemporary *undagi* in field studies show how *undagi* services can be calculated based on work to completion (*borongan*) or daily. Some contemporary *undagi* have even opened businesses in the field of Balinese style architecture, becoming entrepreneurs who do not follow the *undagi* tradition at all, purely as entrepreneurs in the field of

Balinese architecture (interview I Wayan Balika Ika, 2023). The *undagi* tradition has evolved from being a specialised expert (in ancient Bali), to an artisan (colonial) but in the contemporary era *undagi* have evolved into entrepreneurs, even though they do not perform the rituals of being an *undagi*. A person who masters the knowledge of traditional Balinese architecture, has experience, human resources and managerial skills, can become an entrepreneur in the field of Balinese architecture, without having to become an *undagi*. This has two sides: the practice of traditional Balinese architecture develops and is preserved in its contemporary form. On the other hand, *undagi*, who have a long history in the Balinese creative tradition, are only a historical memory of the figure of the Balinese spatial builder, which gradually turns into a legend.

Conclusion

The correlation between the concept of time and the work practices of *undagi* reflects how fundamental changes to the concept of time change the order of cultural practices of the community. The Balinese concept of time, still preserved and maintained in practice, goes hand in hand with the international calendar. *Undagi*, an example of a traditional cultural actor and working class in Balinese architecture, transforms with the changing concept of time as its cultural foundation. The transformation of *undagi* is related to the changing concept of time, which in each era is influenced by the changing hegemony of power and the ruler's commitment to developing the concept of time according to his political motives. The concept of time in Pre-colonial Bali shows that the concept of time in Bali was a transfer of knowledge from Indian culture through Java and developed in Bali. Bali itself practices localization through the meaning of time rather than the mechanical and quantitative practice of the time. This practice causes building architecture to be subject to the type of day, distinguished between excellent and auspicious days, to avoid the risk of misuse of the type of time. Pre-colonial *undagi* worked according to the guidelines of time, not on the duration of labor and the amount of work product produced in that duration.

Changes in time directly resulted in the status of the *undagi* themselves. In ancient Bali, *undagi* worked as cultural actors with a primary position as builders and carers of the kingdom's infrastructure. In the Bali-Majapahit period, *undagi* transformed into architect-priests when the kingdom viewed architecture as a religiously charged instrument of life. In the pre-colonial period, despite using the same concept of time, the work practices of *undagi* differed concerning the power relations of the ruler and the ruler's motives for regulating his society. The ancient Balinese *undagi*, who were limited to being specialist laborers subject to time, became at the level of priests in Bali-Majapahit as the authority of the time. This distinction led to a sharp social class distinction and social distance between first-class citizens (*Triwangsa: Brahmana, Ksatria, and Wesya*) and *sudras* as second-class citizens, which differentiated the income and welfare of the *undagi*. *Brahmin class undagi*, who have access to religious texts, have the authority to regulate working time compared to *sudras*. The difference has different qualifications: the dominant *Triwangsa undagi* and the inferior *Sudra undagi*. The dominance of *Brahmin undagi* became strong, where access to religious knowledge was a determinant of public policy, and the concept of time became symbolic of capital in the triumphant *undagi*. The *sudra undagi*, because of their inferior position, joined to form a group (*sekehe*) facilitated by the kingdom.

The colonial era, where colonial rule replaced traditional royal rule, changed the traditional concept of time into international time. The change gradually undermined the *undagi's* position as cultural actors and master builders in traditional architecture. Both *Triwangsa* and *Sudra undagi* share the same fate, declining to the status of daily wage laborers. The *Triwangsa undagi*, who occupied a dominant position in the pre-colonial era, became inferior during the colonial period. Therefore, most *Brahmin undagi* relinquished their *undagi* title and focused on being priests. This change led to a disconnection of the *sudra undagi's* access to architectural guideline texts of religious value. The *sudra undagi* practically relied only on their experience and working knowledge. Hence, the development of traditional

architecture had become distant from the guiding texts of architecture. The *undagi* tradition began to break down with symptoms of *undagi* decadence throughout Bali in quality and quantity. In contemporary times, traditional time is maintained by hybridizing with international time. However, the *undagi* profession continues to follow the colonial work system and ignores the traditional concept of time at work. Undagi do not occupy their position as they did in pre-colonial times. Balinese architecture began to hybridize with modern architecture, which caused the knowledge and skills of *undagi* to be decadent and tend to disappear.

The research shows that the concept of space and time fused in *undagi* becomes altered when one of its elements, time, undergoes operational changes. The concept of time as the foundation of culture changes the entire cultural fabric of a region. It directly transforms the *undagi* profession as the creator of the traditional spatial layout of a region. Therefore, cultural preservation must pay more attention to the cultural foundation as the core of the culture, namely the concept of time, through exploring traditional calendars and other indigenous concepts of time. Such exploration is more fundamental in cultural preservation than raising cultural artifacts on the surface through appreciation, appropriation, adaptation, hybridization, and diversification. Because changes in the concept of time are directly related to power, it requires the awareness of the authorities and the commitment of the entire community to preserving and recontextualizing the concept of time in the context of cultural preservation.

Limitations and Further Study

The study prioritises the study of texts based on cultural history by conducting a validation process with field studies. Therefore, the actuality and reliability of the research is based on the extent to which the text can be obtained. Future research should go through an in-depth study of the knowledge transfer process from traditional to digital calendars, along with its implications for the community directly, through ethnographic studies and more empirical field studies.

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Authors' Contributions

Author 1 research idea, analyzed the data, and wrote the article, Author 2 analyzed the data and wrote the article, Author 3 data collecting dan wrote the article, Author 4 collect traditional source dan local worldview analysis, wrote the article.

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