



Nemu Gelang Wewengkon Desa lan Karang Paumahan of Bayung Gede as an Ecology-Based Local Wisdom

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Abstract—Bali has unique methods to preserve environment sustainability, for example: folklore, legend, tale, custom and concept that contain prohibition to do particular activities that could damage the environment. One of the ancient villages (*Bali Aga*) that has ecology friendly concept is Bayung Gede. This article tries to find how an ecology-based local wisdom evocation can sustain the environment in a growing rural area, especially in Bayung Gede. This article uses a qualitative method through observation and interview. *Nemu Gelang* refers to the layered green open space arrangement, which has architecture-profane and sacred functionality, on almost entire direction forms a series of layered “green barrier” which is called “*Nemu Gelang*. The existence of these layered open spaces, in the traditional settlements known as “*Nemu Gelang Desa*” (the center of *desa adat*/indigenous village where *Paumahan*/settlements and *Pura Kahyangan Tiga*/3 village’s cardinal temples are located), while in the realm of the indigenous village area is called “*Nemu Gelang Wewengkon Desa Adat*”. Beyond the architectural functions, of the existence of these green open spaces remain sustainable for the future because: (i) Some are sacred (on all *Setra*/Graves and the Mertiwi temples) and (ii) all trees should not be hewn down and protected by *Awig-Awig* (village’s custom) certain with sanctions. The indigenous villagers of Bayung Gede strive to establish a harmony relationship with these green outdoor/spaces by obeying prohibition and *Awig-Awig*, and the final hope is that nature will provide protection and welfare for them. Although there are progress and development that changes the village physically, the society of Bayung Gede can sustain their environment through local wisdom evocation.

Keywords: ecology; local wisdom; environment; settlement

1. Introduction

Nemu Gelang refers to a concept of green space arrangement, which aims to establish a balance of nature in the form of a spread of “Green open space” – based village’s facilities that functioned sacred and profanity in the whole direction, circular/around the *Paumahan*/ traditional settlements and *Wewengkon*/village area Bayung Gede.

This has the following characteristics: (i) layered, namely the layer that encircles traditional settlements (*Nemu Gelang Karang Paumahan*) and layers in the sphere of *Wewengkon* or indigenous village area (*Nemu Gelang Wewengkon Desa*). These two layers of the sphere are not contradictory/dichotomy, but rather a complete whole entity that

complements each other in context creating harmony of the relationship between the villagers with nature/environment, (ii) not only have profane function, but also sacred function as a place of ritual and certain rites and (iii) scattered and surrounding the *paumahan*/ traditional settlement and *Wewengkon*/ village area.

This architectural concept was constructed by four components, namely: (i) *Umah Nabuan* Concept (Wasp Nest), (ii) Green open space - village’s facilities, (iii) *Pangkung-Pangkung* (ravine) and (iv) *Mertiwi Temples*.

Greening is a real action that is considered effective and easy to carry out in reducing the negative impacts of existing environmental problems. Through reforestation, environmental problems such as flooding, air pollution and lack of clean water can be reduced in frequency. On a micro scale, greening can be done by

providing Green Open Space (Riyanto and Subekti, 2023).

Most of components that form *Nemu Gelang* are green open space which have several benefits. Ecological benefits of green open spaces are: green open spaces support the ecosystem ranging from maintenance of biodiversity to the regulation of climate, pollution control, wind control, noise control and barrier. (Haq, 2011; Siregar, 2014; Matilda, 2016; Rakhshandehroo, et.al, 2017).

Green open space also has social and wellness benefits, such as: improves relaxation and restoration, improves functioning of the immune system, enhances physical activity, improves fitness and reduces obesity (Haq, 2011; Rakhshandehroo, et.al, 2017).

The objective of this research is to understand the role of Bayung Gede village's local wisdom, especially *Nemu Gelang*, to maintain resilience of local community to preserve their village's environment sustainability and live in harmony with nature. The benefits are being able to be as source of information and example, so that this concept can be applied to other area that faces changes, such as rapid growth and environment deterioration.

2. Method

This research uses descriptive qualitative method (Moleong, 2018). The descriptive method aims to describe the existence of *Nemu Gelang Concept* and other local wisdom related to this concept. Research data collection techniques are done by observation, interviews, and literature review related to *Nemu Gelang*, green open space and ecology sustainability.

3. Results and Discussion

Nemu Gelang Karang Paumahan

Nemu Gelang Karang Paumahan is a concept which refers to circular configuration of open green space that surrounding the settlement area of the villages. This configuration consists of 2 components. Component 1, consists of village's facilities, such as - *Setra Ari-Ari* (placenta cemetery), *Tegal Suung*, *Setra Gede* (main cemetery), *Setra Pengerancab*, *Karang Sisian* and *Karang Lumbaran*. Component 2, consists of *Pangkung Dalem* (ravine) that forms *Umah Nabuan*.

Component 1 of Nemu Gelang Karang Paumahan: Village's Facilities as Green Open Space

Village's facilities refers to the layout and function of the village facilities as a green open space, in the form of traditional village facilities with sacred and profane functions (Gelebet, 1986; Meganada, 1990; Runa, 2018; Uthama, 2015; Adiputra, 1999). Each of these facilities are placed in accordance with the sacred values and functions or profane function of various facilities of the village as a green open space without

ignoring the sacred and profane functions.

Facilities of the village in the form of green open space with sacred/religious functions following the spread pattern in *karang paumahan/* traditional settlements and *Wewengkon/* Indigenous village areas are as follows:

- (1) *Tegal Suung* (literally means silence garden) in the north of the traditional settlement, as the place for *Mendak/* pick up or *mundut/* carrying *Tirtha/* holy water from Ulun Danu Batur temple for the ceremony of *Ngusaba Desa/* Village Festival offering in Pura Desa Bayung Gede.
- (2) *Tegal Suci* (literally means sacred garden) in the northeast, as the place of the rites of *Meanin* (continued ritual of *beatnem/* burial ceremony with a goal to increase the status of the spirit to become *Sang Pitaa*), and the place where the *pitaa* (ancestral spirit) was "picked up" to be placed in *Sanggah* as *Dewa Hyang* (ancestral deity) in the Rite of *Metuun*.
- (3) *Karang Lumbaran* in the south, as a place of the ritual of *Sabha Lumbaran* for animals and pets health and wellbeing.

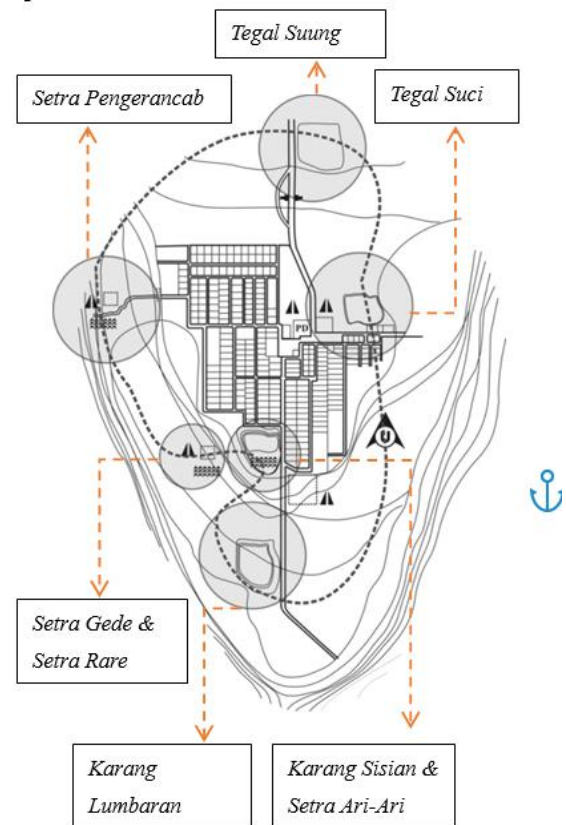


Figure 1. Configuration of green open space facilities of Bayung Gede Village
Source: Adiputra, 2017

- (4) *Karang Sisian* in the southwest, as a place of the ritual of *Karang Sisian*, a rite to "prosecute" married couples who violate customary rules that prohibit cousin marriage. The married couple should live here for the rest of their life.
- (5) *Setra Gede* (main cemetery), *Setra Rare* (cemetery for child) and *Setra Ari-Ari* (cemetery for placenta) in the southwest, all three were associated with the *beatanem* ritual (a burial ceremony) at Pura Dalem Prajapati.
- (6) *Setra Pengerancab* in the west. This cemetery is associated with the *beatanem* ritual for the deceased body of an unnatural death (*Salahpati* and *Ulahpati*), physical or mental disability.

The configuration of the village's green open space facilities in the traditional residential environment of Bayung Gede Village is adjusted to the allocation of sacred functions as seen in the **Figure 1**.

Component 2 of *Nemu Gelang Karang Paumahan: Umah Nabuan and Pangkung Dalem*

According to village's legend, *Umah Nabuan* or Wasp Nest was adopted by *Jero dukuh* and his followers (the elders of Bayung Gede village) at the suggestion of the goddess Ulun Danu Batur to arrange the order of traditional settlements in indigenous villages (Adiputra, 2017). The adoption of the *Umah Nabuan* is characterized by:

- (1) One entrance/ portal to the traditional settlement, known as *Pemangkalan Kaja* and one main access/ road is called *Margi Agung*.
- (2) The center of the Wasp nest or the *Umah Nabuan* is *Paumahan* - traditional settlement in the middle and surrounded by deep ravine.
- (3) "The wall" of *Umah Nabuan* or wasp nest is closest *Pangkung Dalem* to the traditional settlement of Bayung Gede village.

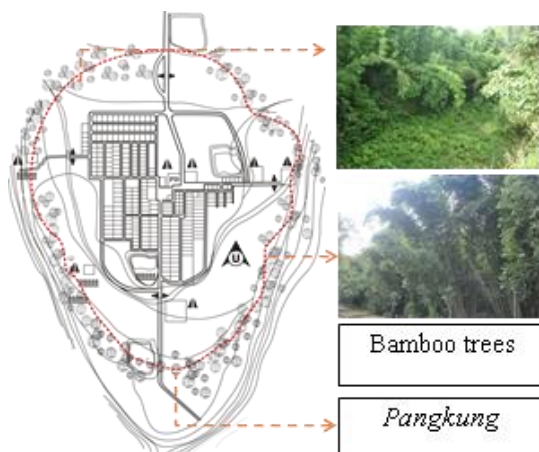


Figure 2. *Pangkung* that forms *Umah Nabuan* (wasp nest) concept
 Source: Adiputra, 2017

The *Pangkung/* ravine is overgrown by dense bamboo trees along the ravine and surrounds traditional settlements. These bamboo trees are protected with *perarem Awig-Awig* (custom rules). The trees should not be felled without permission from the *Dulun Desa* and only *truna* (male bachelors) who have been through a self-cleansing ceremony that is allowed to cut trees/ bamboo for ceremonial purposes /raw materials to repair temples.

Nemu Gelang Wewengkon Desa

Nemu Gelang Wewengkon Desa refers to green open space configuration that surrounding the outer territory of Bayung Gede. This configuration consists of 2 components, *Outer pangkung* and *Pura Mertiwi*.

Outer Pangkung (ravine)

There are 3 layers of *Pangkung* (ravine) in bayung Gede. The 3 *pangkung* found in Bayung Gede can be categorized into two types on the basis of distance and layout. First is *Pangkung Dalem* (inner ravine) which is closest to the *Paumahan/* traditional settlements as the wall of *Umah Nabuan* (wasp nest), while the other *pangkung* are outside the *paumahan/* settlement, but still in *Wewengkon Desa* (village territory). Each *pangkung* (ravine) is continuous and connected and form a line in which *Krama/* villagers of Bayung Gede called it "*Nemu Gelang*".

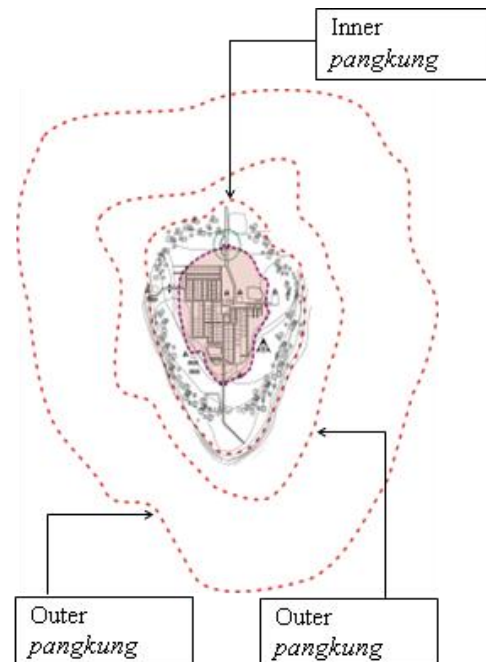


Figure 3. Three layer of *Pangkung* (ravine) in Bayung Gede
 Source: Adiputra, 2017

Pura Mertiwi

Pura Mertiwi is a relic of megalithic traditions, not belonging to the category *Kahyangan Desa* (cardinal temples) as religious indicators of the existence of a traditional village, also not *Pura Swagina/ pura penghulu/* temple for certain profession either temple for clan/ *Soroh/ Dadia*. In principle, this temple is only a bamboo or dry tree called "*tuwed*" that is plugged on the ground and considered as sacred. The existence of *Pura Mertiwi* without the wall, lies in the expanse of green grass and large trees. The two elements of the outer space of this *pura mertiwi* turned out to be green open spaces. In terms of layout, *Eight Mertiwi* temples were deliberately built by the ancestors of the people of the Bayung Gede by means of spreading the temples on eight directions of the wind.

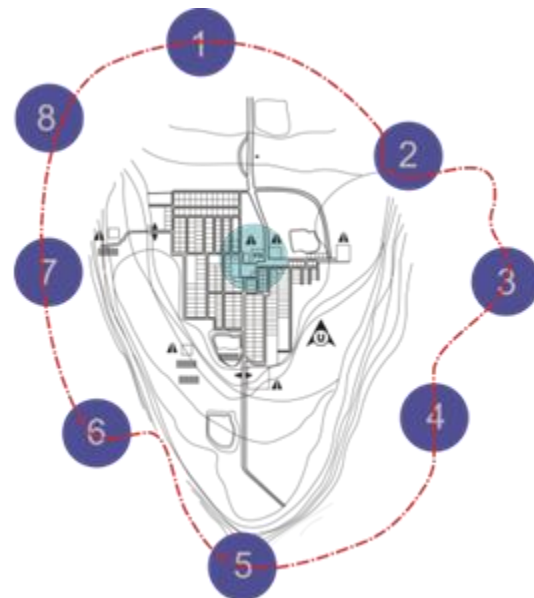
Thus, the *Pura Mertiwi* from ecological perspective is an open space green with profane function, and the dissemination on village territory related to the implementation of rituals (sacred functions). The eight *pura mertiwi* temples are as follows.

- (1) *Pura Mertiwi Naloah* in the north, related to the *Sabha Mosa* ritual of the Butha, a special ritual of sacred sacrifice for the *bhut*, or sentient beings under the human being so they will not disturb the village.
- (2) *Pura Mertiwi Dukuh*, the first place where *Jero dukuh* (ancestor of Bayung Gede villagers) built a settlement, located in the northeast part of the village, associated with the segment *Ngusaba Pura Desa* at *purnamaning kedasa* (full moon at 10th month according to Balinese calendar).
- (3) *Pura Mertiwi Selonding* is located in the eastern part of the village, a storage place of *Gong Selonding* (the beloved musical instrument of King Jaya Pangus, one of the Kings of the Warmadewa dynasty).
- (4) *Pura Mertiwi Bukit Mentik* is located in the southeast of the village, related to *Sabha Mosa ngatag* is a ritual for the fertility of trees or plants.
- (5) *Pura Mertiwi Sudhamala*, located in the south of the village, the source of the water serves as *tirtha/holy water* for various ceremonies in *Pura Dalem Pelampuan* and purify the participants (*sekeha truna* and *truni/traditional youth club*) of *Sabha Lampuan* ritual ("grown up" ritual).
- (6) *Pura Mertiwi Manik Kiasem* is located in the southwest of the village related to the ritual ceremony of *Sabha bantal*, ritual of offering to "*Jujungan Pura/ Sesuhunan pura*" (temple's deity)
- (7) *Pura Mertiwi Pengerancab* is located in the western part of the village, associated with the *beatanem* (burial ceremony) and *Meanin* (continued rite of *beatanem*), rituals for those who die unnatural death (*salahpati* and *ulahpati*)
- (8) *Pura Dalem Bintak* is located in the northwest of the village, as the place of the final segment of the

ritual *Sabha Lampuan* ("grown up" ritual) and breaking the past for the ritual participants.

Local wisdom in the village of Bayung Gede related to the environmental sustainability, is the eighth *Pura Mertiwi* is an open green space in the form of shrub and large trees where its existence is more sacred than *Pangkung* (ravine) because: (i) only *Sekeha truna deha* (unmarried men) and have done ritual *mebersih* (Self-cleansing) that is allowed to enter the *pura mertiwi* and (ii) the large trees are not to be felled at all. Thus, the implementation of ritual in the green open space *Pura mertiwi* is only done by the *Truna deha* (unmarried men).

The layout of *Pura Mertiwi* with its green open space lies in eight directions of the wind of Bayung Gede. The eight location of the *Pura Mertiwi* was deliberately spread out in the eight corners "as if" formed a continuous circuit and they call it the *Nemu Gelang*.



Legends:

1. *Pura Mertiwi Naloah*
2. *Pura Mertiwi Dukuh*
3. *Pura Mertiwi Selonding*
4. *Pura Mertiwi Bukit Mentik*
5. *Pura Mertiwi Sudhamala*
6. *Pura Mertiwi Manik Kiasem*
7. *Pura Mertiwi Pengerancab*
8. *Pura Mertiwi Mertiwi Bintak*

Figure 4. *Pura Mertiwi* position and configuration

Source: Adiputra, 2017

4. Conclusion

Nemu Gelang is local wisdom regarding spatial configuration of Bayung Gede. This local wisdom consists of 2 layers. The first layer or outer layer is *Nemu Gelang Wewengkos Desa* and the second layer or inner layer is *Nemu Gelang Karang Paumahan*. *Nemu Gelang Wewengkon Desa* consists of two components: *pangkung* (ravine) and 8 *Pura Mertiwi*. *Nemu Gelang Karang Paumahan* consists of village's facilities in the form green open space and *pangkung* (inner ravine).

All components that form *Nemu Gelang* have several characteristics: (1) as green open space (2) as sacred place for certain rituals or ritual segments, (3) the position spreads across all direction and forms a circular series (*Nemu Gelang*) and (4) have the principle of sustainability for the future, because all trees should not be felled and protected by the village *Awig-Awig* with customary sanctions.

Thus, the villagers of Bayung Gede sought to establish a harmonious relationship with these green open spaces by obeying the ban and *awig-awig adat*/village, and the final hope was that nature would provide protection and welfare for them.

Recommendation that can be offered is that the configuration of *Nemu Gelang* can be used as a model of spatial planning for growing rural area that facing rapid urbanisation, not to stop the growth but to restrain environmental deterioration by preserving green open space. This spatial configuration model with layered green belt of open space also can be used as development model for new housing area in urban area.

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