Identification of cosmological values in the spatial order of public buildings in Kampong Naga, West Java

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Abstract. Kampong Naga is one of the traditional villages in Indonesia that still preserves the environment and tradition naturally, while many traditional villages in Indonesia have been eroded by time and lost its original architectural forms that respond to nature and their beliefs. Kampong Naga, located in Tasikmalaya, West Java, is an embodiment of environmental and vernacular architectural arrangements that have been built and maintained for generations by the people. One of the powerful features of vernacular architecture is the existence of cosmological values in their landscapes and layout, both macro (village area) and micro (house). This study uses qualitative methods by processing primary and secondary data to identify Kampong Naga's public buildings' cosmological values such as the Mosque, Balai Adat, Public Baths, and Rice Mill based on the cosmos, castes, cultural customs, shapes, ornament, and the spatial order.

1. Introduction
Kampong Naga is one of Indonesia's traditional villages that still preserve the environment and traditional buildings naturally. Kampong Naga villagers always maintain and obey the customs that have been their ancestors passed down generation to generation. They maintain a balance of life between nature, humans, and God by customs and cultural values applied in everyday life. Therefore, this area has not experienced much change; its life is always sophisticated, based on traditions that refer to unity and peace [1].

One of Kampong Naga vernacular architecture's vital features is the existence of cosmological values in their landscapes and building design. The Kampong Naga Village is surrounded by rice fields and forbidden forests and the Ciwulan River that flows across this village (See Figure 1).

Kampong Naga people are guided by the traditions of their ancestors in living their lives. They hold to values, norms, knowledge, and rules that are lived as a belief. If it is violated, it will be disastrous. With this fact, the people of the Kampong Naga village always obey the things that have been determined. This is in accordance with Fischer's theory that restrictions or prohibitions are imposed to prevent humans from committing a prohibited act [2].
People's obedience to this knowledge also applies to their attitude in preserving the environment. Efforts to make adjustments to the environment are based on the existing knowledge system. This traditional knowledge is obtained without going through formal education. In line with this, Suparlan [3] said humans could determine the appropriate action by the wishes to be achieved through life experience. This knowledge oriented towards environmental sustainability is under the concept of cultural values from C. Kluckhohn concerning the essence of human relations with the universe [4]. This concept explains the human view of the natural environment, such as nature as something powerful so that humans, in essence, can only give up without trying much; nature as something that can be opposed by humans and obliges humans always to try to conquer nature, and humans can only try to find harmony with nature [5].

Cosmology itself define as the study of the structure and history of the large-scale universe. In particular, it deals with the origin and evolution of a subject, which is then studied in astronomy, philosophy, and religion [6]. Cosmology is not astronomy, which divides the entire universe into galaxies, stars, planets, moons, then study them one by one, but put them all together branches and twigs the tree of science to get a comprehensive picture regarding the universe. Cosmology studies space and time, investigates the origins of all material filling in nature, studies important cosmic events, including the origin of life and possible intelligence development [7].

This research would identify cosmological values based on the cosmos, castes, cultural customs, shapes, ornament, and spatial order of the public buildings in Kampong Naga. It is important to identify their cosmological value's consistency in their public building's spatial and environmental concept that will determine the quality of the space in each of these buildings. The following are the public buildings discussed in this study, including The Mosque, Balai Adat, Public Baths, and Rice Mill (See Figures 2-5).
2. Purposes
This study will analyse how vernacular architecture, mostly Public Buildings in Kampong Naga, such as mosque, balai adat, public bath, and rice mill, designed using cosmological values. The cosmological values will be focused on the cosmos, caste, cultural customs, form, architectural ornamentation, and spatial order on a public building.

3. Research methodology
To obtain an identification of the cosmological values in Kampong Naga, the approach used is qualitative methodology. The qualitative method's characteristics are the natural setting is a direct source for the research, data collection is in the form of words of pictures, and the particular interest in the participants' thoughts [8]. Therefore, this research was investigated through the following methods: a) library research, b) observation, open-ended response interview, archival documentation, and (c) macro and microanalysis.

The researcher used the library research to find out cosmological concept, the part of sacred and universe, such as movement of the sun, upper-lower world, and so on. After the data is collected, we try to identify these cosmological concepts based on spatial buildings and environmental order and orientation. The final steps are analysing the macro and micro site through comparing the findings to the cosmological concept both environment and public buildings spatial order.

4. Results and discussion
Kampong Naga, with an area of 10 hectares uses 1.5 hectares of its territory used for villages. These settlements consist of 105 houses located in the valley surrounded by protected forest with contoured soil conditions.

4.1. The cosmological values of contour leveling
Kampong Naga village adjust to the existing contour to have several levels of altitude and contour differences to maintain the existence of differences in the cosmology of the world up and down. The upper world includes heirlooms (Bumi Ageung), worship area (mosque), and dwellings. The conditions of the terraced contours are due to the location of this village is at the valley. A landslide restraining system known as Sengkedan is used to prevent landslide in the village with its contoured terrace. The Sengkedan system is also used in the rice fields [9].

In regulating the layout of buildings in the village, the belief value is held that the higher areas are used for buildings that are considered sacred, such as the Bumi Ageng, The Mosque, and Balai Adat. Thus, the position of the building underneath is for buildings that are considered less sacred. The lower part of the village is presented by cattle sheds, fish ponds, communal water closets, and public baths.

Figure 6. Contour differences preserves with the sengkedan system of upper level and lower level.

Responding to the leveling contour in Kampong Naga (See Figure 6), all buildings use the pilotis structure or locally known by rumah panggung (See Figure 7). Figure 8 shown the implementation of rumah panggung or pilotis structure for the foundation structure to lift the building platform (60cm).
There are two kinds of rumah panggung structures in the land (houses and public buildings) and water surface, the pond area (public baths and rice mill).

![Image](https://example.com/image1)

**Figure 7.** Building design adapt to the contour leveling by using the *pilotis* structure.

4.2. *The cosmological values of form and building orientation*

The settlements and all buildings followed the patterns of Kampong Naga clustered and stretched from west to east with the orientation facing north and south, as well as the building form like the gable roof (suhunan) have the same direction to respond the orientation to the movement of the Sun. The Sun is a significant consideration in determining the zoning of the function of space, orientation, and building form in Kampong Naga.

This orientation to the Sun is closely related to farming, especially in planting rice, and they believe that following the Sun's orientation also affects health and safety, making the people of the village highly respect the Sun in all aspects of life. As for the building designs in Kampong Naga, all of them have identical shape and direction of placement, which are arranged based on their orientation to the Sun.

![Image](https://example.com/image2)

**Figure 8.** The *pelana* roof have the same form and direction for all buildings respond to sun orientation.

4.3. *The cosmological values of the public buildings*

According to existing regulations, building in the Kampong Naga must be in the form of a house on stilts, using wood and bamboo. Other provisions that must be obeyed are the house's direction, which must be stretched from east to west, while the door of the house faces from north to south.

The roof of the mosque and *balai adat* is "julang ngapak" with a roof covering in the form "eurih" leaves (grass) or *tepus* leaves, which are then covered by a palm fiber tied tightly. However, for public baths and rice mills, they use "jolopong" types of roofs. This material allows air circulation into the building through the roof that has cavities in its arrangement. The body (wall) material chosen is woven bamboo or wooden planks intended to equalize the strata, or simplicity of the people so that there are no social inequalities. At the foot or underworld, there is a cosmological view that the building must be in the form of a platform with the floor not touching the ground. In general, "kolong imah"
functions as a place for livestock, likewise in public buildings, this area functions as a fish pond (public baths and rice mill) (Table 1).

| Types of Public Buildings | Illustration | Types of Roof | Types of Feet |
|---------------------------|--------------|---------------|---------------|
| Mosque                    | ![Mosque Illustration] | Round stone (Natural stone taken from the river and directly used without chiseled) | Round stone (Natural stone taken from the river and directly used without chiseled) |
| Balai adat               | ![Balai adat Illustration] | Lisung stone (A stone that is shaped like a block and stands upright with a flat surface above is smaller than the surface below) | Lisung stone (A stone that is shaped like a block and stands upright with a flat surface above is smaller than the surface below) |
| Public baths             | ![Public baths Illustration] | Cube stone (block). This foundation is in the form of a cube installed perpendicular to the same top and bottom surface. | Cube stone (block). This foundation is in the form of a cube installed perpendicular to the same top and bottom surface. |
| Rice Mill                | ![Rice Mill Illustration] |                                            |                                            |

5. Conclusion
Kampong Naga people regulate the physical environment based on natural symbols, faith, and ancestral traditions. All cultural orders refer to beliefs and natural symbols associated with rules and prohibitions (abstinence) to be in harmony with nature. From the cosmological aspect perspective, there are three elements in public buildings: Kampong Naga, namely the upper world, the middle world, and the underworld. This analogy is similar to the human body with the head, torso (body), and legs. That according to belief, humans do not live in the heavenly realm or the heavenly realm (upper world) and cannot also live in the underworld. Therefore, humans live in the middle, namely, in the middle world. The concept is realized and symbolized in the form of buildings on stilts in real.

We found that cosmological values affect the macro and micro environmental arrangements. Consistency of building orientation concept shown in a public building (balai adat, mosque, public
baths, and rice mill). On the head (upper world), the horn on the jolang ngapak and jolopong is a symbol of the shape of "V," which is interpreted as peace. The roof of the jolang ngapak is symbolized like a bird spread wings that adopt from Sundanese religion and culture. In the body (middle world) as a whole of the body shape of this dwelling house does not have a specific philosophy, only from zoning that has a cosmology of cultural philosophy. On the feet (underworld) serves as a support for lifting the body (world middle), and the foundation is above the ground to form a space between the ground and floor. The foundation of "face to face" whose principle is due to reject earth energy, namely energy from the ground, is interpreted as a mountain analogous to earthquake and humidity.

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