Semiotic study of settlement’s spatial pattern in Kuningan Regency, West Java

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Abstract. This study discusses how people in Kuningan Regency divided into indigenous and immigrant communities interpret human relations with nature as well as changes in the context of the natural environment identified through the configuration of the components of the settlements. The observed natural environments include water, land, forest, and mountains, while the settlement components include houses, village halls, mosques, cemeteries, and rice fields. The data used in this study is qualitative data from various literature, maps, observations, and in-depth interviews. The method used in this study is the method of interpretation to reveal the meaning behind the spatial pattern of settlement as a unity of signs. The results reveal that the influence of water and land was more dominant in nature-depended traditional settlement and transition settlement. Meanwhile, forests and mountains did not have a major impact on the spatial patterns of all three categories of settlements.

Keywords: Spatial Pattern, Sundanese Philosophy, Semiotics, Settlement, Cultural Geography.

1. Introduction

The discussions about the relationship between humans and nature have been debated for years, especially in various geographical studies (KÖSZEGI et al, 2015). The development of humanistic thinking in geography gives an effect on the study of the man-land relationship tradition by emphasizing the “human” element without neglecting the “environment” (Robinson, 2007). The core of the thought lies not in the environmental phenomenon, but on the thing that is truly believed and perceived by the human to the environment so that the critical aspect in the human-environmental relationship lies in the thinking of man himself.

This development prompts questions about how humans react or behave to their environment, both natural and social. The discussion of human reactions and behavior is useful in describing the meaning of the natural environment in which one lives specifically to measure the “degree” of human-environmental relations (Hardin, 2009). Through the theory of determinism, one or more factors that affect the characteristics of a society or an individual can be interpreted through the cultural ecology model (Fekadu, 2014).

This model shows that aspects of the life of a society are valued based on environmental parameters (Milton, 2002). In contrast, an alternative point of view on environmental limitations through historical and cultural factors indicates that there are other possibilities that humans can choose from. The possibilism view claims that although nature has always limited man, historical and cultural factors
suggest that there are other possibilities for man to choose from. The scholars argue that the difference between one culture and another is not influenced by environmental factors, but is the result of a specific historical course of a society. This shows that the scholars interpreted culture as a result of environmental selection (Mairs, 2007).

Humans are always adapting and active in their environment (Anshory, 2008). As the 2nd largest ethnic group in Indonesia, the Sundanese uphold the preservation of nature. This is because most of the traditional (primordial) communities depend on nature through agricultural activities (Angelsen, 2011). For them, natural resources such as water, land, and forests are gifts that must be maintained so that they can continue to be utilized. This condition can only occur with dualistic harmony. Dualistic is anything that is a binary pair and contradicts one another. This view is prominent in the culture of agricultural farmers in Indonesia, one of which is the Sundanese culture.

Tritangtu (unity of three) philosophy as the foundation of the Sundanese cosmology becomes the basis in various aspects of life which is realized in the spatial pattern of settlement (residence). This philosophy is transcendent: the unity of nature between heaven, earth, and humans (metacosm). Heaven is a ‘Kawasa’ (impression) with humans as the thought, the earth is ‘Kawasa’ which has meaning as growing plants for human welfare. Sundanese culture symbolizes the sky as water, man as stone, and earth as land. Thus, the unity of three is manifested metacosm, the macrocosm, and microcosm.

The concept of Tritangtu is a ‘marriage’ of a pair of basic oppositions in all respects. This opposition is a division of ‘men’ and ‘women’. This marriage wheals a third entity, the ‘child’. This ambivalent concept of ‘child’ contains elements of ‘man’ and ‘woman’ and is a middle world that serves as the medium of the two oppositions (Sumardjo, 2011). In the discourse of cultural landscapes, the residence is positioned as an “alternative, more holistic means of expressing human beings-in-the-world” (Wylie, 2007). The discussion about the pattern is studied through aspects of form and meaning. A form is created as a symbol of ideology and represents the human thought in accommodating an activity and function that is interpreted as a particular meaning (Salura, 2007). While the meaning as being interpreted through a form in the spatial pattern is closely related to daily life.

Kuningan Regency has a strong interaction between man and nature. It is characterized by the great potential in the agricultural sector as the main livelihood. This is strongly supported by good soil fertility. Besides, as one of the areas that were once part of the power of Parahyangan (ancestors), cannot be separated from the influence of Kesultanan (Sultanate) Cirebon (Ekadjati, 2003). Cirebon culture which is a blend of elements of Java and Sunda brings influence in socio-cultural aspects in this region. This phenomenon implies that the Kuningan regency is more open that allows the occurrence of cultural penetration from outside into the region.

The man-land relationship as a cultural identity of the Kuningan people can be seen through the ritual of ‘Seren Taun – Ngajayak’. This ritual is a harvest thanksgiving ritual from the Sundanese agrarian community which is carried out after every harvest (A & Widiastuti, 2014). Seren Taun consists of two words, ‘Nyerenkeun’ (replace, deliver) and ‘Taun’ (year). This procession is a form of cooperation to offer crops as a form of gratitude for the people. The process of ‘Ngajayak’ or ‘Mapag’ pare (picking up rice) is a procession of picking up rice seeds and crops from the villages in the Cigugur Sundanese Customary Unit to the core area called ‘Paseban’. However, the ‘Seren Taun’ ritual has a varied sequence of processions in different places and communities.

The physical and historical environmental factors owned by Kuningan Regency make the spatial pattern of settlement space an interesting topic to be studied. This study discusses how the inhabitants of Kuningan (indigenous people and immigrants) interpret the relationship of humans with nature identified through the spatial pattern of settlement. the humanistic approach is used through semiotics (the study of signs and meanings) (Aitken & Valentine, 2006). The meaning of space by various groups is emphasized in an overlapping of the landscape stories. This research lies to the two basic questions:
(1) How do the residents perceive the natural environment? (2) How is the relationship between the natural environment and the spatial pattern of settlements?

2. **Research Methodology**

2.1. Location of Research

This study was conducted in three administrative village areas: (1) Tarikolot Village as the representative of the category of traditional settlements depend on nature; (2) Karang Tengah Village as the category of transitional settlements; And (3) Kuningan Village, as the category of modern urban settlements.

The observed settlement group includes one settlement segment determined by a village hall and the main road that connects the village hall with other settlement components (houses, mosques, cemeteries, and rice fields). The following map shows three points of the research location in three different villages.

![Research Location](image)

**Figure 1. Research Location**

2.2. Conceptual Framework

This research discusses how the perception of the population in the Kuningan Regency area of the natural environment which includes water, land, forests, and mountains in their daily life through the spatial configuration of settlement elements that include houses, village halls, mosques, cemeteries, and rice fields. Social dynamics result in the possibility of different meanings within each social group. This difference raises a heterogeneous meaning in the relationship between humans and the environment (Adian, 2006). Thus, the settlements are categorized according to their social units.

An understanding of people’s perceptions in interpreting the natural environment is retrieved through the study of textbook literature, journals, and previous research. Researchers look for categories
that form a pattern (Creswell, 2013). The process starts from pre-understanding built by collecting related information from various literature and maps as a unit of research analysis. Another data source is in-depth interviews with informants who are considered to be able to represent each category of settlement. The settlements as a unit of analysis are grouped into three categories:

Table 1. Category of Settlements

<table>
<thead>
<tr>
<th>Model</th>
<th>Traditional settlements</th>
<th>Transitional settlements</th>
<th>Modern urban settlements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominant Ethnic Group</td>
<td>Sundanese</td>
<td>Sundanese</td>
<td>Mix Sundanese Javanese</td>
</tr>
<tr>
<td>Dominant Livelihood</td>
<td>Agriculture</td>
<td>Agriculture</td>
<td>Agriculture</td>
</tr>
<tr>
<td>Water Processing</td>
<td>Simple (natural water</td>
<td>Complex (natural water</td>
<td>Complex (Modern water</td>
</tr>
<tr>
<td>Technology</td>
<td>resources used directly</td>
<td>resources used for</td>
<td>treatment processing</td>
</tr>
<tr>
<td></td>
<td>for rice fields and</td>
<td>households using</td>
<td>systems for households</td>
</tr>
<tr>
<td></td>
<td>households)</td>
<td>irrigation systems)</td>
<td>needs)</td>
</tr>
<tr>
<td>Availability of City</td>
<td>Not available</td>
<td>Available</td>
<td>Available</td>
</tr>
<tr>
<td>Transport</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Steps of data collecting for this research are:

a. Literature Studies. From the results of literature studies, the following categorization of settlements was identified. This study emphasizes the differences in how indigenous (Sundanese) and immigrants (Java and other ethnic groups) interpret their settlement space. This data collection method is carried out by examining library sources such as books, journals, and previous research theses to obtain relevant theories and can be used in assessing settlement spatial patterns.

b. Field Observation. This step is exploratory which aims to assess the suitability of settlement categories through field findings and allows for revision of categories including the selection of prospective informants before conducting interviews.

c. In-depth Interview. After obtaining a description of the research location, an in-depth interview was conducted using the question-and-answer method to parties who could provide explanations as informants related to in-depth research. The parties referred to are people who best represent their group in a settlement, such as a village head or ethnic leader.

d. Documentation. Carried out by taking pictures, videos, and voice recordings during field observations and in-depth interviews. Documentation is very important in qualitative research because it is evidence of validity and a complementary source in conducting data analysis (Rahardjo, 2017).

The in-depth interviews verbatim and other qualitative data are processed and analyzed into a descriptive narrative of the effect of the natural environment on the spatial patterns of settlements in the Kuningan Regency. The following is a scheme that describes the conceptual framework.
2.3. Interpretation and Map Producing

The interpretation method in this study uses the concept of hermeneutics which always involves two dimensions: language as events and language as sign systems (semiotics) through an interpretation of the text (Adian, 2006). In geographic science, signs are not only letters, numbers, or graphic symbols, but also signs found on maps, fields, and actions which can be related to the concept of social formation and symbolic landscape approaches as a geographic view of signs (Backhaus & Murungi, 2009). Geographers equate landscape with text: try to understand the landscape as a written text.

In practice, hermeneutics as a method uses text as a place for interpretation by the reader and each reader has his interpretation (subjective). Therefore, the text acts as an entity that has its internal structure and the interpretation of the text is no longer a discourse between the writer and the reader, but between the text and the reader through the meaning contained in the text with several references.

At the map-making stage, the integration of qualitative geographic methods will provide a more comprehensive explanation. After the data is collected from various sources, geocoding and georeferencing techniques are carried out to obtain the spatial features of the qualitative information in the shape of points, lines, and areas. Geocoding is the process of converting location descriptions (such as coordinates, addresses, or name of places) to locations on the earth's surface, while georeferencing is the process of transforming scanned maps or aerial photographs and satellite imagery so that they can be identified somewhere on the earth's surface with using spatial data processing software (ESRI, 2017). The spatial data processing software used in this study is ArcGIS Pro 2.7.

This study aims to uncover the meaning behind the spatial pattern of settlement as multiple signs. Technically, the interpretation of social and historical space makes the study of geography not only show symptoms and patterns but also explain the structure and processes that take place in space (Dear & Flusty, 2002). Overall, the interpretation method above includes four main elements (Setiadi, 2011):

a. The researcher as an interpreter;

b. Settlement’s spatial patterns as traces of human action or text;
c. Human interaction with the natural environment as a form of human action in producing space;

d. Kuningan residents as the actors.

The interpretation process in this study is described as follows.

**Figure 3. Method of Interpretation**

2.4. Previous Research

Research on settlements and aspects of form and meaning in it is a topic that is researched across disciplines by several scientific fields. The scientific fields with the most themes on settlement patterns include architectural engineering, civil engineering, and regional planning techniques.

The difference between this study compared to several previous studies lies in the emphasis on the observed aspects, in which geography as a science that studies the relationship between humans and the environment and the pattern of their distribution on earth raises the perception of Kuningan residents towards the natural environment as a meaning that is manifested in the pattern of residential spaces as a form. The following are some similar previous studies regarding the spatial pattern of settlements.

3. Results and Discussion

The results of interviews regarding perceptions of the natural environment were processed and analyzed using the triangulation and interpretation methods. Then we get an overview of Kuningan residents’ perceptions of the natural environment.

Then the influence of the natural environment on the spatial pattern of settlement is interpreted by linking the perceptions (meaning) of the informants regarding the natural environment to the physical appearance (form) of the pattern.
<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Publication</th>
<th>Year</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>K. Fekadu</td>
<td>The Paradox in Environmental Determinism and Possibilism</td>
<td>Journal</td>
<td>2014</td>
<td>Department of Geography and Environmental Studies, Arba Minch University, Ethiopia.</td>
</tr>
<tr>
<td>KŐSZEGI, et. al</td>
<td>Human-Environment Relationships in Modern and Postmodern Geography</td>
<td>Journal</td>
<td>2015</td>
<td>Department of Physical Geography, Eötvös Loránd University, Budapest</td>
</tr>
<tr>
<td>Kustianingrum, D., et. al</td>
<td>Kajian Pola Penataan Massa &amp; Tipologi Bentuk Bangunan Kampung Adat Dukuh di Garut, Jawa Barat (Study of Mass Arrangement &amp; Typology Patterns of Building in the Traditional Village of Dukuh in Garut, West Java)</td>
<td>Journal</td>
<td>2013</td>
<td>Faculty of Civil Engineering and Planning, National Insitute of Technology</td>
</tr>
<tr>
<td>Primadewi, S.</td>
<td>Inkulturasi Arsitektur Tradisional Bali Dalam Pola Spasial Rumah Etnis Tionghoa di Desa Adat Carangsari, Badung (Inculturation of Balinese Traditional Architecture in Spatial Patterns of Chinese Ethnic Houses in Carangsari Traditional Village, Badung)</td>
<td>Journal</td>
<td>2013</td>
<td>Faculty of Engineering, Mahasaraswati Denpasar University</td>
</tr>
<tr>
<td>Raaphorst, K., et. al</td>
<td>Reading Landscape Design Representations as Aa Interplay of Validity, Readability and Interactivity: A Framework For</td>
<td>Journal</td>
<td>2020</td>
<td>Landscape Architecture Group, Wageningen University</td>
</tr>
</tbody>
</table>
3.1. Perceptions to the Natural Environment

The informants’ perceptions were analyzed regarding four natural elements: water, land, forests, and mountains. The following table shows the informants who were interviewed.

<table>
<thead>
<tr>
<th>Settlements Category</th>
<th>Village</th>
<th>Name</th>
<th>Gender</th>
<th>Age</th>
<th>Occupation</th>
<th>Residence Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional settlements depend on nature</td>
<td>Tarikolot</td>
<td>Oyi</td>
<td>Female</td>
<td>53</td>
<td>Farmer, broom maker</td>
<td>Indigenous</td>
</tr>
<tr>
<td>Transitional settlements</td>
<td>Karang Tengah</td>
<td>Jaid</td>
<td>Male</td>
<td>66</td>
<td>Village Head</td>
<td>Indigenous</td>
</tr>
<tr>
<td>Modern urban settlements</td>
<td>Kuningan</td>
<td>Wisnu Utama</td>
<td>Male</td>
<td>44</td>
<td>Electronics merchant</td>
<td>Immigrant (Java)</td>
</tr>
</tbody>
</table>

3.1.1. Water

Interview with Informant 1 showed that water is the main source of life. The main source of water where he lives comes from the Kertawinangun spring. Besides, the informants considered that rivers are a source of water reserves during the dry season.


Translation:

“Yes, water is called ‘Amerta’. If there is no water, you cannot bathe, wash, cook, and so on... It is used. When the dry season comes, we often bathe there (river). Washing clothes over there, when the well is dry.”

This statement shows that the role of water is very essential in their life (‘Amerta’ means eternal). This is supported by the results of the interview with Informant 2 which revealed that water is one of the important elements that make up a village.

“Kalo ciri khas Karang Tengah itu ada sejarah Cibuni. Cibuni itu yang dikatakan aer dari mata aer ke sini (kampung) lalu membludak dan sekarang tuh masih bagus aernya dan masih jadi sumber aer utama masyarakat di sini.” (Udaya, 2017)

Translation:

“The characteristic of Karang Tengah is the history of ‘Cibuni’, which is said to be water from a spring here (village) and then booming and now the water is still good and is still the main water source for the people here.”

The word ‘Cibuni’ has a meaning, ‘Ci’ means water or a source of light, and ‘Buni’ means hidden. In the village of Karang Tengah, there is an abundant shower that comes out of the ‘Cibuni’ spring known as Four Showers (‘Pancuran Empat’) because it has four tubes from one spring. The ‘Cibuni’ spring is hidden. This can be identified by the layout of four showers hidden in a forest-covered residential area consisting of large, deliberately forested trees.
In Sundanese traditional value, the features of the ‘Pancuran Empat’ layout forms have the same meaning in the value of ‘Kabuyutan’ (a transcendent system that includes heaven, earth, and humans) which are represented through elements of the forest, water, and stone artifacts (Sumardjo, 2011).

Although the formal appearance of the shower building has undergone modernization (permanent building), the Kabuyutan element can still be identified from the forest cover which consists of large trees that are intentionally forested. A different thing is shown by Informant 3 who revealed that the main water source where he lives comes from the processing of the Kuningan Regency PDAM.

“Kita di sini pakencya air PAM... Kali mah di sini itu di belakang, tapi udah ga di pake buat apa-apa. Paling kalo banjir (saluran), itu.” (Utama, 2017)

**Translation:**

“We are here using processed water... The river is in the behind there, but it's not used for anything. Except for the floods (channel).”

This statement shows that the informants no longer depend directly on natural water sources. This function is replaced by modern technology water treatment originating from the Municipal Water Treatment System (PDAM) to fulfill daily water needs.

3.1.2. Land/Soil

Informant 1 showed that land has a main function as rice fields.

“Tanah biasanya buat taneman, itu ya bisa sawah, kebon juga bisa... Itu sana nih dari ini perbatasan sini (menunjuk ke arah utara) yang sebelah kulon.” (Oyi, 2017)

**Translation:**

“The land is usually used for crops such as rice fields and gardens... From this border (from the north) to the west.”

The soil has a function as a medium for crops both for rice fields and gardens. This is supported by literature that in Sundanese traditional value, the land has a sacred meaning and acts as a complement with water as ‘Eusi’ (content) (Sumardjo, 2011). The land is interpreted as the tomb of Nyi Pohaci or known as Dewi Sri (Goddess of paddy) which is the source of various food plants for human survival (Sumardjo, 2011). This sacred meaning is manifested through the ‘Mapag Sri’ (customary ritual) as part of the ‘Seren Taun’ ritual which is characteristic of Sundanese rituals in Kuningan Regency, as stated by Informant 1.


**Translation:**

“Two years ago there was a new head of the village.”
“Last year we did a ‘Mapag Sri’ with the new village head.”

Meanwhile, Informant 2 stated the function of the land as follows:

“Tanah, itu fungsiya utamanya untuk pertanian khususnya sawah. Jadi istilahnya itu taneuh bahe ngetan, itu artinya tanah yang bagus untuk pertanian, itu tanah yang agak miring sedikit menghadap ke timur.” (Udaya, 2017)

Translation:

“Land has a main function for agriculture, especially rice fields. So it is referred to as ‘Taneuh Bahe Ngetan’ which means land that is good for agriculture is sloping slightly to the east.”

The term ‘Taneuh Bahe Ngetan’ means that the selection of land for agriculture is based on the direction and slope of the land. Based on the theory, such land conditions are ideal places for settlement and agriculture (Ardi, 2008). Rationally, this can be interpreted that areas with a slope of the land to the east get more sunlight in the morning which is beneficial for human health and fertility of crops.

Meanwhile, the results of interviews with Informant 3 indicate that the land functions as commercial land for trade.

“Oh buat modal usaha. Kalo di sini kan nyari sewa (tanah) gitu ya yang bagus prospeknya (untuk perdagangan).” (Utama, 2017)

Translation:

“This is for business assets. We are looking for rent (land) with good prospects (for trade).”

Statement from Informant 3 indicates that the selection of land is based on the rental price and feasibility aspects of the location. This is because most of the population in the city has a livelihood as traders or as owners of shop-houses that are rented out for business (non-agricultural) activities. The choice of residence location is based on the orientation of accessibility and economic benefits. Most of the shop owners in Kuningan City are not indigenous people who come from outside Kuningan Regency.

3.1.3. Forest

The perception of all informants regarding forests has the similarity that there is no taboo regarding prohibited forests.

“Ini sekitaran sawah. (hutan) udah ga ada...Nih dari rumah ini sawah (menunjuk ke arah utara) terus ke itu lagi, desa lagi, perbatasan lagi desa Sarewu. Ke sana lagi perbatasan Kuningan.” (Oyi, 2017)

Translation:

“This is around the rice fields. It (forest) no longer exists... From this house to the rice fields (pointing north) then that way again, to the border of Sarewu village. Towards the Kuningan border.”


Translation:

“Nothing, there is no forest here. So, it's not forbidden. The only thing that is not allowed, don't try to cut down protected trees such as pine, which are protected by the government and should not be disturbed.”

Translation:
“The forest seems like it doesn't exist already, right? Here and there they have become houses and shops.”

The statements of the three informants which indicate that forests do not have taboos such as the prohibition of entering the forest are very different from the meaning of forests in Sundanese people in the Kanekes (Baduy ethnic group) who still hold traditions related to prohibited forests (Sumardjo, 2011). This condition is because currently there are very few forests in the area where the informants live. Besides, in the historical aspect, the influence of Javanese culture in Kuningan also has an impact on the loss of the meaning of prohibited forest (Widyandini, Suprapti, & Rukayah, 2012).

3.1.4. Mountain
In Sundanese and Javanese culture, mountains are a sacred physical formation (Sumardjo, 2011). The literature explains that in Sundanese traditional society, forests and mountains are natural entities that are interpreted as sacred simultaneously (Putra, 2010). The forest is believed to be the residence of the ‘Parahyang’ (ancestors) so that it is sacred (Sumardjo, 2011). Meanwhile, mountains are defined as places to gain natural knowledge based on the transcendent dimension called ‘Tapa di Mandala’ (Putra, 2010).

The results of interviews with the three informants indicate that Mount Ciremai currently does not have a specific sacred value as sacred by the Cigugur Wiwitan Sundanese (indigenous community) who call themselves ‘Urang Gunung’ (Tendi, 2015).


Translation:
“Not on the mountain. Here, mostly in the rice fields.”

“The ritual is not there (the mountain). We go to the rice fields, to the mountains there are no people.”

“Wah ga tau kalo itu, kayanya juga ga ada ya.” (Utama, 2017)

Translation:
“Wah, I don't know about that, there's nothing like that in here.”

The statements of the three informants indicate that the concept of ‘Tapa di Mandala’ has been lost or at least not widely known by the public. The sacred value of the mountain has now shifted and even disappeared over time. This is influenced by the inclusion of modern value into the society in Kuningan Regency which increasingly opens the boundaries of space in society to change a single society with a single culture (bonded) towards a borderless society.

3.2. The Influence of Natural Environment on Settlement’s Spatial Patterns
The Interpretation of the forms and meanings in the pattern of settlement space is carried out at the Macro-level (the unitary group of settlements against the natural environment entity) and the Meso-level (configuration of settlement components in one settlement group).
3.2.1. Water Spring as the Major Factor in Formation of Settlements

Springs as the main source of life for the Sundanese people influence the pattern of settlement space at the Macro-level, the location of a group of settlements to the location of the spring that is on the lower contour than the springs come out.

![Figure 5. Position of Villages to the Springs](image)

As explained by Informant 1, the main water source of Tarikolot Village comes from the Kertawinangun spring.


**Translation:**

“This is from there from the rando bawah from the spring. Kertawinangun. Each village usually has a water source. Called tap water, clean water.”

The crosscheck result of the topographic map shows that the village of Tarikolot is located in a lower position in the northern part of the Kertawinangun spring which is located in the village of Kertawinangun. Literature shows that the arrangement of the settlement in the village of Tarikolot contains elements of the philosophy of ‘Lemah Cai’ and ‘Luhur Handap’. The concept of ‘Lemah Cai’ implies that the formation of a settlement requires two complementary elements, land (‘Lemah’) and water (‘Cai’). Meanwhile, the concept of ‘Luhur Handap’ means that those in ‘Luhur’ (above) have a higher value (Salura, 2007). This depicts that the role of water in everyday life is ‘Luhur’ (high).

Similar conditions also exist in Karang Tengah Village and Kuningan City. As explained by Informant 2 regarding perceptions of water in the previous section, Karang Tengah Village is located to the east of the ‘Cibuni’ spring which has a higher topography. The results of the interview with
Informant 3 also support that the water comes from the Cigugur-Cipari Municipal Water Treatment (PDAM) which is located in the northwest of Kuningan City.

“PAM-nya ya, itu katanya dari daerah Cigugur.” (Utama, 2017)

Translation:

“Water treatment, people say from the Cigugur area.”

Topographically, Cigugur Village is in the northwest with a higher contour than Kuningan City. This shows that even though Kuningan Village experienced a development into a city, its relationship with water sources still contains elements of ‘Lemah Cai’ and ‘Luhur Handap’.

3.2.2. River as the Unifier and Separator of the Settlement Area

Apart from being a source of water, rivers also have another role in the layout of a village. At the Macro-level, the river acts as a unifier for the settlement area. The results of interviews with Informant 1 indicate that their settlement area was surrounded by rivers with other settlement groups.

Figure 6. Location of Tarikolot Settlements to River and Kabuyutan Division


Translation:

“The water is over there (pointing east and west). There it is called saradan, rice field, garden, pond (pointing to the east). Over there, it is called Cikoneng, the Suhud river.”

This statement indicates that the area where the informant lives is in the area where the river meets. At the Meso-level, the river acts as a separator for different parts of the settlement. This is supported by Informant 2.

“Sungai itu dipake biasanya untuk membagi daerah di Desa Karang Tengah menjadi tiga bagian, bagian hulu, tengah, hilir... Ini fungsinya untuk memudahkan (pembagian) warga. Balai desa dan masjid itu selalu di depan awal masuk desa. Maksudnya itu desa dipimpin oleh seorang kuwu.” (Udaya, 2017)

Translation:

“The river is used to divide the area in Karang Tengah Village into three parts: upstream, middle, downstream ... This serves to facilitate the division of territory by residents. The village hall and mosque are always in front of the village entry point. It means that the village is led by a village head.”

Figure 7. Location of Karang Tengah Settlements to River and Kabuyutan Division

In traditional value, the division of the house to the river follows a triple pattern (‘Tri Tangtu’) known as ‘Kabuyutan’. The upstream part is the ‘Kabuyutan Resi’ (head of religion), the middle part is the ‘Kabuyutan Rama’ (traditional head), and the downstream is the ‘Kabuyutan Ratu’ (head of government) (Sumardjo, 2011). Therefore, the location of the village hall and mosque is always at the front (upstream).

The results of field observations show that the Tarikolot Village Hall was built opposite the mosque, while the Karang Tengah Village Hall was built next to the mosque. The arrangement of the village hall and mosque’s location which are close together means that government activities cannot be far from the mosque (religion).
This provides an understanding that everything determined through deliberation by the government (‘Umaro’) must be based on religion (Islam). Therefore, referring to the concept of division of Kabuyutan Resi, Rama, and Ratu, the integration of government’s elements of (‘Ratu’) into religious elements (‘Resi’) shows that the value of life adopted by the Sundanese people always refer to religious value (Islam), including governmental aspect.

Besides, mosques and village halls also mean unifying residents. This condition is seen in major religious events such as Eid al-Fitr, Eid al-Adha, and the Islamic New Year (Hijriyah). Another activity that illustrates the unity of the residents in village forums.

Meanwhile, in Kuningan City, the river is not used as a reference in determining the segment of settlement. From the results of field observations, it can be identified that the settlement structure in Kuningan Village forms a grid with the government hall, mosque, and banyan trees as the center or core. This is a characteristic of urban settlements where the structure is not directly affected by the physical environment.

3.2.3. Land as the Main Factor in Formation of Rice Fields and Cemeteries

Land in the Sundanese tradition is the main factor of the formation of settlements complemented by water. As explained in the perceptions of Informants 1 and 2 who use the land as rice fields, ‘Taneuh Bahe Nggetan’ is good soil for paddy as a main component of the settlement. Therefore, at the Macro-level, the location of the settlements decreases following the contours of the land.

In contrast, Informant 3 who uses the land as business capital, ‘Taneuh Bahe Nggetan’ has no effects on the residential area in Kuningan City. Meanwhile, at the Meso-level, the land has an influence on

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**Figure 8.** Spatial Structure of Settlements in Kuningan City Not Affected by River
the location of rice fields and cemeteries in a group of settlements. The position of rice fields in one settlement is made to follow the contour of the land facing east.

The image below shows that in Tarikolot Village the position of the rice fields is facing northeast, with the land contour decreasing to the north. With a relatively flat height, the tomb is placed on the ground parallel to the settlement. However, this position did not diminish the noble nature of the tomb.

**Figure 9. Location of Rice Fields and Cemeteries in Tarikolot Village Affected by the Land**

Meanwhile, in Karang Tengah Village, the position of the rice fields is made to follow the contour of the land, facing east. Also, the cemetery as a component of the settlement that is noble (holy) is on a higher contour. The location of the cemetery also complies with the slope and elevation of the ground. This contains the value of 'Luhur Handap', which means that the tomb as a special component of a settlement is located on a higher contour in a village (Kustianingrum, Sonjaya, & Ginanjar, 2013).

Rationally, this can be understood because the land with higher contours also prevents the tomb from being submerged in water in the event of heavy rains. This is supported by the results of the interview with Informant 2 which showed that the tomb was placed on higher ground. This land is the charitable (‘Wakaf’) land of an elder or an Islamic Priest (‘Kiyai’). The ‘Wakaf’ land is a barren land that cannot be used for farming.
Figure 10. Location of Rice Fields and Cemeteries in Karang Tengah Village Affected by the Land


Translation:

“In an example, this ‘Wakaf’ land belongs to someone, incidentally the land is barren and not used. So, it is used for burial.”

The statement indicates that these barren lands are usually located in the higher part of the village and are dry due to lack of water (not suitable for paddy). Therefore, the barren land was used as a cemetery. This shows that the arrangement of the location of the tomb is based on the wisdom that contains an empirical value (experience). ‘Wakaf’ land in Tarikolot which is used as a graveyard is on the side of the road. Despite having a relatively flat topography, the tomb still has sacred value.

Figure 11. Cemeteries at Karang Tengah (Left) and Tarikolot (Right)
The statement indicates that these barren lands are usually located in the higher part of the village and are dry due to lack of water (not suitable for paddy). Therefore, the barren land was used as a cemetery. This shows that the arrangement of the location of the tomb is based on the wisdom that contains an empirical value (experience). ‘Wakaf’ land in Tarikolot which is used as a graveyard is on the side of the road. Despite having a relatively flat topography, the tomb still has sacred value.

In contrast, the relatively flat land conditions in Kuningan City do not affect the settlement. This is because rice fields in the area have changed land use into a commercial area which is used as capital in the trade sector as one of the characteristics of urban activities. Besides, in general, there is no family or private cemetery behind the house.


Translation:

“There is no grave here. The tomb is located in Cigugur (pointing west). It’s called the Duga Public Cemetery.”

The statement indicates that the closest grave to Kuningan City is the Duga Public Cemetery (TPU) located in Cigugur Village, west of Kuningan City. The burial area in the city has been converted into a commercial area such as hotels and shophouses. Based on its location, Cigugur has a higher topography than Kuningan City. This shows that even though the grave is no longer found in the area of the city, the arrangement of the location of the burial area remains in a higher part of the settlement. This condition is a manifestation of the sublime concept of ‘Handap’.

**Figure 12.** Spatial Structure of Settlement in Kuningan City Not Affected by Land
3.2.4. Influences of Forest and Mountain on Spatial Pattern of Settlements

In traditional Sundanese society, forest and mountains were a unity of nature entity that was interpreted as sacred simultaneously. Both the forest and the mountains are noble (sacred) entities. The forest was believed to be the ‘Hyang’s’ (ancestors’) dwelling place to be sacrificed (Sumardjo, 2011). While the mountain was defined as a place of study of natural science based on the transcendent dimension called ‘Tapa di Mandala’ (Putra, 2010).

In ancient Sundanese culture, there was a division of forests in the mountain area into three categories, ‘Leuweung Larangan’ (prohibited forest), ‘Leuweung Tutupan’ (protected forest), and ‘Leuweung Baladaheun’ (inheritance forest). People of ‘Padukuhan’ Sunda occupy ‘Padukuhan Mandala’ (traditional village) which is generally located on a mountain, ridge, or wilderness area around a mountain peak (Putra, 2010).

![Division of Forest and Mountain in Ancient Sundanese Culture](image)

They occupy sacred forest areas (‘Leuweung Larangan’) to distinguish their positions and responsibilities from rural communities in general. Therefore, ‘Leuweung Larangan’ is a place that should not be touched by just anyone. Interview to Informant 3 revealed that in Karang Tengah village there was no community doing activities to the mountain.


Translation:

“In the past, people were here if they wanted to take wood, just cut it down. Now it's a ‘leuweung tutupan’ (protected forest), it's not worked on anymore… It doesn't exist, there is no forest here. So, it's not forbidden. Only those who are not allowed don't try to cut down protected trees such as pine, which are protected by the government, and should not be disturbed.”

This revealed that in the concept of ‘Tapa di Mandala’, Karang Tengah Village was not the group (a noble group in traditional Sundanese society). This concept has been lost or at least was no longer widely known by the people. This has implications for the meaning of forests and mountains that cannot be identified through settlement spatial patterns.

This indicates that the value of traditional Sundanese in Kuningan had undergone changes and shifts caused by historical factors and modernization. A brief explanation of the effect of the natural environment on the spatial pattern of settlements is presented in the following table.
Table 4. The Influence of Natural Environment on Spatial Pattern of Settlements

<table>
<thead>
<tr>
<th>Natural Entity</th>
<th>Traditional settlements depend on nature</th>
<th>Transitional settlements</th>
<th>Modern urban settlements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>1. Settlements are located on a contour that is lower than the contour where the springs come out</td>
<td>1. Settlements are located on a contour that is lower than the contour where the springs come out</td>
<td>Settlements are located on a contour that is lower than the contour where the springs come out</td>
</tr>
<tr>
<td></td>
<td>2. The settlement area is divided into three parts of river: upstream (<em>Kabuyutan Resi</em>), middle (<em>Kabuyutan Rama</em>), downstream (<em>Kabuyutan Ratu</em>)</td>
<td>2. The settlement area is divided into three parts of river: upstream (<em>Kabuyutan Resi</em>), middle (<em>Kabuyutan Rama</em>), downstream (<em>Kabuyutan Ratu</em>)</td>
<td></td>
</tr>
<tr>
<td>Land/Soil</td>
<td>1. The settlement position decreases along the contour</td>
<td>1. The settlement position decreases along the contour</td>
<td>Does not affect the spatial patterns</td>
</tr>
<tr>
<td></td>
<td>2. Rice fields are made downward complying with the contour</td>
<td>2. Rice fields are made downward complying with the contour</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Cemeteries were placed on land that was not cultivated for agriculture, usually on higher ground</td>
<td>3. Cemeteries were placed on land that was not cultivated for agriculture, usually on higher ground</td>
<td></td>
</tr>
<tr>
<td>Forest</td>
<td>Does not affect the spatial patterns</td>
<td>Does not affect the spatial patterns</td>
<td>Does not affect the spatial patterns</td>
</tr>
<tr>
<td>Mountain</td>
<td>Does not affect the spatial patterns</td>
<td>Does not affect the spatial patterns</td>
<td>Does not affect the spatial patterns</td>
</tr>
</tbody>
</table>

4. Conclusions

From the research results, it was concluded that the people of Kuningan have different perceptions of the natural environment. Indigenous people interpret water as the main source of life, which comes from springs and rivers. Soil is an important factor in agricultural activities that complement water. It is different from the immigrant community who interprets water as a source of life that comes from processing (PDAM) and land functions as commercial trade land.

However, both communities have the same perception of forests and mountains. There are no taboos regarding mountains and customary forests or prohibited forests. The influence of water and land is more dominant on traditional settlements that depend on nature and transitional settlements, where the rivers have roles as the unifier of the residential areas as well as separate them into three parts. The location of the three types of settlements towards springs is lower than that of springs.

The land has an influence on the location and direction towards the rice fields in traditional settlements that depend on nature and transitional settlements that comply with the contours and locations of higher tombs. Meanwhile, land has no influence on modern urban settlements, because rice fields and tombs have been converted into commercial areas. Forests and mountains also did not have a major impact on the spatial patterns of all three categories of settlements.
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