








Examining the inheritance of ecological awareness of the Muria Strait Community through toponyms studies

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Abstract. The study of toponymy provides insights into human life, the natural environment, and the relationship between the two. The applications of toponymy studies are numerous and diverse, encompassing contexts as diverse as ecology and history, as well as disaster mitigation. In addition, the results of toponymic studies can be used to identify the various strategies that societies have developed to cope with challenges, including the spread of ecological awareness. The aim of these studies is to obtain information on the resilience of Muria communities in the context of various crises, especially those related to their environment and climate change. Considering the above, this study utilizes an ethnopedological approach in archaeological-historical research with the aim of gaining insight into the enduring ecological consciousness of the Muria community. Through the ethnopedological approach, it can be seen that the ecological awareness of the Muria people is represented in several village names whose meanings are closely related to the morphology and environmental conditions of the Muria Strait area, such as *tanjung*, *karang*, *banyu*, *tlogo*, *sumber*, *jati*, *wono*, *undaan*, and other toponyms. Toponymic data on villages along the former Muria Strait is expected to contribute to a broader understanding and become a valuable component of a knowledge system that can inform crisis management strategies, particularly those currently affecting Muria communities

Keywords: Ecological Awareness, Muria Strait, Toponymy, Inheritae.

1 Introduction

The climate crisis has resulted in a range of disasters that threaten the sustainability of life on the north coast of Java, particularly in the region between Demak and Rembang in Central Java Province, which was formerly an ancient sea area [1]. A report on land subsidence in Sayung subdistrict (Demak region) showed a high rate of 7.43 cm/year, with an average of 3.09 cm/year [2]. Furthermore, the potential for abrasion has also resulted in tidal inundation in an

area of 32,210 hectares in Demak District, and approximately 97 hectares in Jepara [3]. The multiple environmental changes resulting from climate change and groundwater use, — which can also contribute to significant land subsidence— undoubtedly pose numerous challenges and prompt residents to adapt quickly to a range of potential disasters in the present and future.

The impact of abrasion in the Demak region is a significant threat to the sustainability of local communities, with one of the most pressing concerns being the loss of homes. In 1999, at least 268 families were compelled to relocate from Tambaksari and Rejosari hamlets to Gemulak village in Sayung subdistrict. It is evident that alterations to the coastline have an impact on the livelihoods of local communities. The impact of tidal floods can be observed across a range of sectors, including physical conditions and infrastructure, economic, and social conditions [4]. The impact of abrasion in coastal areas on local communities is significant, particularly in terms of economic growth. Nonetheless, recent developments have highlighted potential sustainability issues associated with these areas. The issue of abrasion is a significant concern in Indonesia, with a substantial body of research examining its underlying causes and consequences [5]. Nevertheless, while research into the causes and consequences of abrasion is of great importance, it is equally crucial to recognise and uphold the values that have enabled communities to endure and adapt to the challenges of abrasion and land subsidence.

The former Selat Muria community has demonstrated the ability to adapt to a range of potential disasters in an area where geomorphic processes have undergone significant changes over millions of years and are likely to continue these changes. The way Selat Muria community gives names to different areas around them is an example of the community's resilience and ability to adapt to its environment. In addition, this practice also shows the community's awareness and respect for their natural environment, which can be defined as ecological awareness. Ecology itself means the study of the relationship between humans and nature, with particular emphasis on the integration of the natural sciences and the humanities through an interdisciplinary approach [6].

Furthermore, the data obtained from this toponym research can elucidate the manner in how the community transmits ecological awareness to future generations. The transfer of knowledge regarding the surrounding natural and social environment is of paramount importance for the sustainability of the community. Furthermore, toponymy can facilitate the process of building community resilience, particularly in relation to disaster threat and recovery [7], [8]. Toponyms encompass a plethora of information pertinent to a multitude of disciplines, including geomorphology, hydrology, vegetation, land use, human activities and expectations, [9] as well as past events such as disasters [10]. Consequently, the transfer of ecological knowledge through toponyms — as practised by the Muria Strait Community — encompasses a multitude of additional aspects of knowledge, including geomorphology, hydrology, vegetation, land use, human activities and expectations. Such knowledge can be employed in the construction of resilience for future generations. Considering

this toponymic phenomenon, an in-depth study was undertaken to investigate the inheritance of local values among the Muria Strait Community.

The objective of this study is to encourage the preservation of local culture with the intention of having a positive impact on the community. The research, entitled 'Examining the Inheritance of Ecological Awareness of the Muria Strait Community through Toponym Studies', employs an ethnopedological approach for the analysis of historical data and toponyms. The study addresses three key areas: a) Toponymy as part of the knowledge system in culture, b) Toponymy as a product of ecological awareness of the Community around the Muria Strait, and c) Inheritance of ecological awareness and value of Muria toponymic data.

2 Literature Review

2.1 Toponym

The naming of a place, which is frequently termed toponym, represents a fundamental aspect of knowledge. The naming of a place is a deliberate and motivated process that is influenced by numerous factors. This process aligns with the circumstances of the community that inhabits that place [11]. The study of toponyms (also known as toponymy) is closely related to several other disciplines, including linguistics, anthropology, geography, history and cultural studies. Based on the above, toponymy can be defined as a scientific field that deals with the naming of geographical areas in relation to the aforementioned disciplines [12].

Wibowo's analysis of various expert opinions on toponyms makes it clear that toponyms explain how people perceive and interpret space, how they orient themselves in it, how they delineate the boundaries of identity – whether they enter the space of individual and collective experiences and projects – and how cultural value systems determine what is important and provide clues to interpret the existence of space in the present. In other words, toponymy places certain locations within the domain of 'cultural circulation'. This transforms space into a subject of knowledge that can be 'explored' and 'read' [13].

The above explanation leads to the conclusion that toponyms are ideas, actions and human works in the context of community life that are made human through learning. Toponyms can be seen both as a result of learning and as a way in which society learns. Furthermore, the inheritance of this knowledge (toponyms) can be seen as an effort to survive, which are actions that are instinctual or reflexive, but also occur in the absence of conscious awareness. Therefore, toponyms are close to culture and are a part of it.

2.2 Culture

In examining the concept of culture, it is important to consider the seven universal elements of culture. This research proposes that the term "culture" includes not only the collective practices and beliefs of a society, but also the processes through which these are learned and transmitted. As explained by Koentjaraningrat in his book *Introduction to Anthropology* (Pangantar

Antropologi), culture is a whole system of ideas, actions, and human works in the context of community life that is made human by learning [14]. In the view of Koentjaraningrat, the term "culture" encompasses virtually all human activities, as only a small proportion of these actions are instinctual or reflexive, or occur in the absence of conscious aware [14].

Although culture and biology are often considered distinct domains, there is growing evidence that cultural factors can influence biological processes. The majority of our conscious behaviors are acquired through learning and interaction with other members of our culture. Even responses to our purely biological needs (e.g., eating, coughing, defecating) are often influenced by our culture [15]. For example, all humans require sustenance in the form of food. In the absence of sufficient intake, starvation ensues. Thus, the act of eating is a fundamental biological imperative. However, the specific characteristics of this act, including the quantity consumed, the timing of intake, the social context, and the accepted norms and rules surrounding it, are all shaped by cultural influences. A substantial proportion of the discourse surrounding the concept of culture in recent years has focused on the distinction between culture and human behavior. For an extended period, numerous anthropologists were content with defining culture as behavior, a distinctive attribute of the human species, acquired through learning, and transmitted from one individual, group, or generation to another through social inheritance mechanisms [16].

2.3 Ecological awareness

A review of historical studies indicates that the evolution of ecological awareness is shaped by the nature and characteristics of social relationships. These, in turn, influence the form and scope of human intervention in natural systems [17]. An individual's or a community's ecological awareness can be gauged by examining several key factors, two of which are the knowledge and social systems that have been developed. For example, this may be observed in poetry [18] and toponyms [19]. The findings indicate that there are multiple forms of ecological awareness. Jaska posited that at least three types of ecological awareness can be identified: colloquial awareness, ideological awareness, and scientific awareness [20].

An individual who demonstrates environmental awareness is able to interpret the relationship between environmental quality, sustainability, and contemporary human behavior [21]. Ecological awareness manifests as both a conceptual and a practical phenomenon. This observation aligns with Shukurov's assertion that environmental awareness is an integral aspect of culture [17]. The proximity of ecological awareness to culture is further elucidated by Winter's assertion that ecological awareness is a spiritual or religious consciousness. When the concept of the human soul is understood as a mode of consciousness in which individuals feel a sense of belonging and connectedness to the cosmos as a whole, it becomes evident that ecological awareness is spiritual consciousness in its most fundamental sense [22]. Ecological awareness itself encourages the emergence of moral obligation in the form of attention to the consequences of individual behavior on the environment, so that individual behavior leads to

saving the environment and responsibility for preserving the environment [21].

3 Methodology

The research is based on archaeological-historical research, which is further strengthened by an ethnopedagogical approach. This approach was chosen due to the need to analyze diversity in the data studied, which includes primary sources (history) and toponyms. The stages of research implementation are based on three stages: observation, descriptive, and explanatory [23]. The function of toponymy in archaeology has been defined by Munandar (2016) as follows [24]:

- Can explain the meaning of names and the background (reasons) for past societies by giving certain names to a site or monument.
- Support regional historiography or local history research.
- Provide a starting point for further archaeological research.
- Can help to provide additional information about the existence of the site at the time.

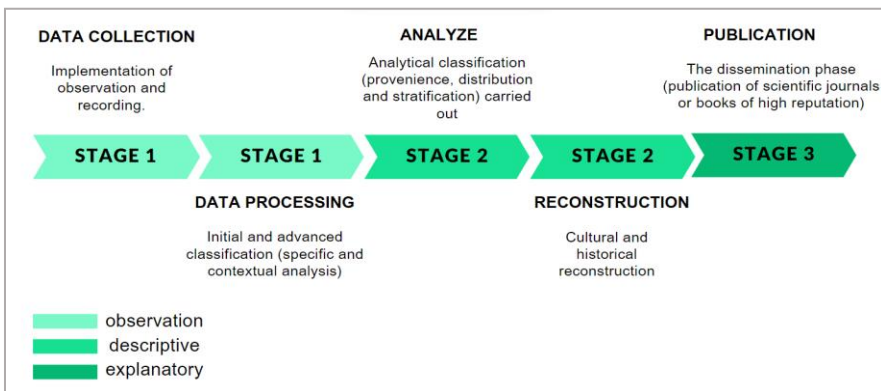


Fig. 1. Stages of research Source: modified from Pusat Penelitian Arkeologi Nasional [23].

Ethnopedagogical data analysis is based on the description and classification of toponymic types presented by Capra et al. (2015) [25], there are at least several categories of toponymy (place names) based on certain characteristics. These categories include:

- a. Soil (SC): meanings that clearly reflect the general behaviour and/or characteristics of soil, such as texture, fertility, colour, and permeability;
- b. Soil/geology (SGC): meanings that directly and/or indirectly relate to geological and pedo-geological features such as rocky soil, rock type, and general colour;
- c. Soil/morphology (SMC): Related to morphological and pedo-morphological features such as the relief's shape, the position of the soil, morphological types, appearance.

- d. Morphology/vegetation (MVC): meaning that describes the relationship between morphology and vegetation (type of plant species and its location on the relief).
- e. Morphology/fauna (MFC): Meanings that refer clearly to morphology and fauna, such as types of animals and their location along the relief;
- f. Vegetation (VC): related to vegetation and/or specific (peculiar) plant species.
- g. Soil cover/land use (SLC) describes the relationship between soil cover, vegetation, and land use, such as the type of land use and main crop types used for that purpose.

4 Result and Discussion

4.1 Toponymy as part of the knowledge system in culture

A place begins to exist when people have given the name of the area or region. This name is usually based on the perspective of natural landscape, meaning, language evolution, and how they live or hope [26]. knowledge about toponymy is a common need where toponymy is part of the local experience that plays a strategic role in connecting human interaction with the environment [27]. Toponym is present as basic human knowledge of local wisdom for cultural knowledge. Humans in giving regional identity tend to be based on knowledge from the results of landscape appearance, population area, administration, and geographical construction appearance. For naming an area, this is a cultural heritage to identify the development of human civilization in the region. The naming generally uses local languages that have elements of customs, history, and even beliefs.

Efforts to increase historical awareness from the results of toponymy where as an identity, the region does not appear suddenly, but through a process of thought or history in the past with certain considerations. Experiences that are still practiced or inherited by a community can help them build resilience because a variety of local wisdom is also able to provide psychological and inner strength that can make people have resilience [7]. Local and traditional knowledge also contributes to increasing public awareness of the emergence of the community's own culture. So that the inheritance of information about local knowledge can be done thoroughly including toponymy. The study of the toponym of naming places for the common people is still considered unimportant, but this actual study can describe the characteristics of the community in the past, both in terms of philosophy, history, social, and geographical conditions.

Based on the above exposition, it can be argued that the dissemination of information about toponyms as part of culture is a necessity. The lack of public attention to the meaning of naming a village causes the understanding of the history of its residence to become weak. This situation if left unattended can cause the history of a region to be forgotten, even extinct and lost. In addition, the name has also become a cultural artifact found in certain geographical areas.

The position of the data from the toponymy research results in an effort to raise awareness is that it can be an alternative instrument to convey the learning process in a structured way, not only conveying fear, but also knowledge related to changes in landscapes and disasters and how to cause them, so that a sense of respect for the relationship with nature is also created [28].

4.2 Toponymy as a product of Ecological Awareness of the Community around the Muria Strait

As part of culture in the form of a knowledge system, the study of place naming or toponymy can ultimately show that the basis for naming a place must be different. In general, place naming is often based on historical reviews and legends that have developed before. In addition to these two things, not a few place names are based on natural phenomena or environmental conditions that appear specifically. The existence of natural phenomena or environmental conditions that appear very dominant encourages people in a place to give a name that is unique to these conditions. This tendency shows the closeness between humans and the environment, which is eventually inscribed in the form of the name of the earth form (place). In line with the theory of toponymy studies, the tendency in naming and naming relationships represents how the reciprocal relationship (relationship) between humans and the environment, both physical and non-physical aspects around them [29].

The human tendency to give names by looking at a natural phenomenon or the environment will certainly not happen if humans (or a society) do not have the carrying capacity to recognize their environment. Or what is then understood as ecological awareness. The closeness between the environment and humans, as well as the relationship between the two that results in place naming indicates an awareness of the environment that has been going on well in the community. Ecological awareness is then realized in the form of place toponymy that has natural or environmental elements. In line with Kociszewska's (2014) explanation that ecological awareness is not only manifested in the form of actions, but also includes the embodiment of values and rules [30]. Including values that reflect the relationship between humans and nature and how they interact [17]. So it can be said that toponymy is the result of ecological awareness in individuals, populations, communities, and societies.

Table 1. Village names in Demak and Kudus districts.

Lingual Elements	Identification of Naming	Village Name	<i>Category Toponymy</i>
<i>Tanjung or Jung</i>	A term used to define a place at the edge of a mountain range that juts out into the sea.	Tanjunganyar, Tanjungkarang, Tanjungrejo, Bogotanjung, Tanjunganom, Tanjungsekar, Tanjungrejo, Jungsemi, Jungsari	<i>Soil/morphology (SMC)</i>

<i>Karang</i>	Areas that have a lot of sea coral or coral reefs	Karangrejo, Karangbogo, Karangmlati, Karangtowo, Karangasem, Karangrowo, dan Karangsari, Karanglegi, Karangmulyo, Karangsumber	<i>Soil/geology (SGC)</i>
<i>Tlogo</i>	Refers to a water source in the form of a lake, dam, or pond.	Tlogoboyo, Tlogopandogan, Tlogorejo, Tlogoasih, Tlogodowo, Tlogomojo, Tlogoayu, Tlogoarum, Tlogosari	<i>Soil/morphology (SMC)</i>
<i>Siti</i>	In Javanese terms it is defined as land	Sitiluhur, Sitimulyo, dan Sitirejo	<i>Soil (SC)</i>
<i>Tegal</i>	<i>Used to identify large areas of fields or forests</i>	<i>Tegalombo, Tegal Rejo, Tegalaram, Tegalmalang, Tegalsari, Tegalwero, Tegalharjo</i>	<i>Soil cover/land use (SLC)</i>

Source: Dusuki, 2008

Likewise, several village toponyms in the three districts of the Muria Strait area (Demak, Kudus and Pati districts) also represent the synthesis or experience of the people of the area with the environment (Muria Strait). Several village names in the three districts tend to use terms related to environmental conditions, indicating that ecological awareness was formed simultaneously with the formation of these social institutional units (villages). The closeness between the environment and people, and the relationship between the two that results in the naming of places, indicates that environmental awareness has been well developed in society. For example, the terms *tanjung*, *karang*, *tlogo*, *siti*, *tegal*, and *undaan* (see Table 1). These names are synonymous with environmental conditions in the form of water (sea, beach, and coast) and the condition of land contours. The toponyms of the villages along the Muria Strait show that in the past several areas or what are now villages in Demak, Kudus, and Pati were areas close to the coast or water.

4.3 Inheritance of ecological awareness and value of Muria toponymic data

The toponyms of the Muria Strait region are an integral part of the community's oral tradition. Once a name has been established by the community, it is immediately known orally, disseminated, approved by convention in the receiving community, and then becomes a place name [24]. Munandar (2016) explained that in general, toponymy – which was originally an oral discourse – was first recognized by the wider community without writing. It was only later that the name was recorded in traditional sources. Munandar's explanation is consistent with Wibowo's (2020) assertion, toponyms are the result of activities that transform space into a subject of knowledge that can be "explored" and "read" by the community [31]. Thus, we can see that the inheritance of toponyms

takes place in a unique process, namely, from oral to written, which is undoubtedly wrapped up in a historical story or event.

Since the inheritance of toponyms is frequently associated with a narrative or historical occurrence, thereby positioning toponym as a component of local communicative competence and indigenous knowledge. This knowledge plays a pivotal role in facilitating historical connections between human interaction and their environment, which is also related to the capacity of communities to survive [27]. Therefore, it can be proposed that the Muria Strait toponym may also serve as a potential source of data that could be utilized to enhance disaster mitigation strategies. The proposition demonstrates the value of the data pertaining to the toponym "Muria Strait." Furthermore, the value of the data is reinforced by the information it contains regarding geospheric conditions.

The geosphere is a substance that covers the Earth, extending from the lithosphere to the atmosphere, hydrosphere, pedosphere, biosphere, and anthroposphere (six spheres). The geosphere is composed of the following elements [32]:

- i. lithosphere or the outer rock of the earth, namely the skin of the earth,
- ii. atmosphere, is the air that covers the earth,
- iii. hydrosphere, is the water that covers the earth,
- iv. pedosphere, is the soil or nutrients or food that covers the earth both on land and in the sea,
- v. biosphere, is living things both plants, animals and humans that cover the earth,
- vi. anthroposphere, is human society with all its activities that covers the earth.

The geospheric data embedded within toponyms enables the formulation of contemporary disaster management strategies. One such application is the planning of land use in the context of disaster mitigation. Toponymic data can be utilized to identify potential evacuation routes and to inform the appropriate location or design of mitigation infrastructure. In addition to its utility in facilitating material planning, toponymic data can also be employed by policymakers to assess and select pertinent knowledge for integration with specific technologies or scientific disciplines. For example, in order to facilitate the development process of an appropriate technology or approach for building disaster awareness, it is essential to determine the level of community resilience. In such cases, toponymic data can be a valuable resource for understanding how local communicate about disaster risk reduction strategies and their level of preparedness in this regard [8], [10], [33].

Knowledge of toponyms can also be used to instill or pass on ecological awareness. Delivered by Bronfman, ecological awareness encourages the emergence of moral obligation in the form of attention to the consequences of individual behavior on the environment, so that individual behavior leads to saving the environment and responsibility for preserving the environment [21]. Knowledge of toponyms can also be used to teach or transmit ecological awareness as an effort to preserve the environment. This utilization can certainly be classified as the potential of the Muria toponymic data. By establishing a

connection between current reality and past conditions, the community can become a landscape for analyzing patterns of change, which can then be evaluated. Of course, this evaluation is done with a pro-environmental perspective, because ecological awareness can encourage individuals to save the environment and take responsibility for preserving the environment [21].

5 Conclusion

Toponyms are an integral part of the Muria people's cultural heritage, especially in the context of oral and written traditions. Some village names in the three districts tend to use terms related to environmental conditions, such as the terms *tanjung*, *karang*, *tlogo*, *siti*, *tegal*, and *undaan*. These names are synonymous with environmental conditions in the form of waters (sea, beach and coastal) and land contours. The value of Muria's toponymic data is undeniably capable of being a provision in growing community awareness, especially in the context of disaster mitigation efforts. Exploring this potential will undoubtedly result in more advanced and effective disaster management, both in the process of mitigation and recovery because some village toponymy also brings people in the former Muria Strait area to be able to recognize well the conditions and changes around their environment. The data generated from Muria toponymy research efforts can be a tool to teach a structured learning process on ecological and disaster awareness. This will facilitate the transfer of knowledge related to landscape change, disasters and their causes, and foster a sense of appreciation for nature. The Muria Strait is currently an area vulnerable to disasters, especially the continuing threat of sedimentation and land subsidence.

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