Local wisdom of communities around the forest and its implementation in the development of nature tourism on outer ring road of Lake Toba

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Abstract. Nature tourism can also act as one of the drivers of regional development and can be a window for efforts to introduce the potential of natural resources, values and culture owned by a country or a region. Therefore, the development of natural tourism is required to be able to mix forms of natural tourism that are attractive but unique and cover all aspects of locality in it. The purpose of this study was to examine the potential of local wisdom owned by the community around the forest and the implementation of local wisdom in the development of natural tourism along the outer ring of Lake Toba on the Merck Section. This research method is a form of descriptive qualitative research with information and data from various representative sources. The results of the study indicate that existing local wisdom includes wisdom that is tangible (textual, buildings, and objects of cultural heritage) and intangible (advice delivered orally and is passed down from generation to generation, and chanting or poetry that has traditional teaching values). These wise values are found in various sources such as the traditional house of the Karo Tribe in the Dokan Cultural Village, the Penusur Sira Ritual and the Joroh Joroh tourist attraction. The forms of implementation of local wisdom in the development of nature tourism include the application of an attitude of togetherness (mutual cooperation), kinship, courtesy, hospitality, concern for others, harmony with nature, problem solving system, active work, obedient to people and leaders, educational culture, conservation culture, concern for the environment, and values related to a culture of healthy living in the management of nature tourism.

1. Introduction
The development of the tourism industry by utilizing existing tourism resources as a source of economic activity is increasing. Natural tourism activities are also increasingly contributing to an effort to improve the economy of a region. Currently, one of the promising forms of tourism development is the development of ecotourism-based tourism. According to [1], ecotourism is a form of tourism that fosters a learning experience and appreciation of the natural environment, or some of its components, in accordance with the cultural context of the related environment. This requires a management model with best practices in synergy with environmental and socio-cultural aspects in a sustainable manner. The development of natural tourism should be carried out in a way that remains oriented towards improving the quality of its natural resources and seeking proper management operations.

After the development of tourism, social problems often arise in the community. The same applies to cultural and environmental aspects. Therefore, efforts to develop tourism from tourism that is oriented
towards large numbers of visitors (mass tourism) to alternative tourism (replacement) is a wise step to realize sustainable tourism. As a substitute for tourism development, the development of ecotourism models is considered very appropriate and requires the support of all parties.

One of the weaknesses of the tourism industry sector in North Sumatra is the relatively homogeneous tourism product and inadequate supporting infrastructure. The tourism products provided by each region tend to be the same, the artificial scenic spots provided are relatively not unique, and aspects of local wisdom are neglected in the development of ecotourism. This also happened in the National Super Priority Destination Area of Lake Toba. Lake Toba is one of the largest caldera lakes in the world, located in Sumatera Utara Province, 176 km to the west of Medan City. Lake Toba is the largest lake in Southeast Asia (90 x 30 km2) and is also the largest quaternary volcanic-tectonic caldera (giant volcanic crater) in the world. This caldera was formed by a collapsing process after the eruption of the ancient Toba Volcano, then filled with rainwater [2]. One area that has great potential is the Merek District, which is located on the circumference of the Lake Toba area, with an altitude of 920-1260 meters above sea level. The river that crosses the Merek District area is the Sipisopiso Waterfall River which flows towards Lake Toba. Merek District has an area of 125.51 km².

To overcome the weaknesses above, it is necessary to develop a natural tourism development model that is in synergy with the local culture and environment. One of the potential sources that deserve to be collaborated in tourism development is the potential of local wisdom. According to [3], the potential of local wisdom is the ability to adapt by regulating and cultivating natural and cultural influences that are the driving force behind the transformation and creation of sustainable natural tourism. Evidence of local wisdom can be found in material archaeological records from pre-history and early history. Likewise, in the outer ring area of Lake Toba, the Merek segment has local wisdom.

Therefore, this research aim to identify the potentials of local wisdom and the practices of implementing local wisdom in the development of ecotourism by communities around the forest along the outer ring of Lake Toba on the Merek segment, Sumatera Utara Province.

2. Methods
The research was carried out along the Lake Toba Outer Ring Road Merek section, Sumatera Utara Province. This research was conducted in December 2020 to April 2021. The populace of Merek sub-district in 2019 is around 21,944 individuals with 5,149 family heads [4]. Geographically located between 2°58′15″N, 98°26′48″E to 3°00′01″N 98°27′27″E, with area 414.44 Ha. With a place elevation of 1476–1562 m above sea level with a slope of 2.5–37.5%, has rainfall 1,126-1,849 mm/year, Average temperature annual 17.25°C and 89% Humidity [5].

2.1. Data source
The scope of this research includes forms of activities, traditions and culture that have the potential of local wisdom values, the values of local wisdom found and practices of implementing local wisdom in the management and development of natural tourism. The data collected in the form of primary data and secondary data. Primary data were obtained from field observations in the form of observations and interviews with stakeholders (community, tourism managers, community leaders and visitors). Secondary data is taken from various sources, both government agencies, libraries and online literature to complement data that are not available in the field.

2.2. Data Analysis
Data analysis was carried out using several stages and components, namely reduction, data presentation, and conclusion drawing/verification. Data analysis was carried out using the [6] method, the stages are:
1. Data collection, means that the data obtained from the field is written in the form of a detailed description or report.
2. Data reduction, defined as the process of selecting, focusing on simplifying, abstracting, and transforming “rough” data that emerges from written notes in the field. Data reduction is a form of analysis that sharpens, categorizes, directs, discards unnecessary, and organizes data in such a way that final conclusions can be drawn and verified.

3. Presentation of data, defined to see an overview of the whole or certain parts of the research to avoid collecting data that would be difficult to handle.

4. Drawing conclusions or verification, drawing conclusions is very important, because from data collection, a qualitative analyzer begins to look for the meaning of things, then notes regularities, how patterns, explanations, and possible configurations, causal paths and preposition.

3. Result and Discussion

3.1. Local Wisdom of Communities Around the Forest

The potential of local wisdom contained in natural tourism objects is analyzed by [7], which divides forms of local wisdom that can be categorized into two aspects, namely tangible and intangible local wisdom. Besides the value of local wisdom in several tourist attractions, the surrounding community can still be said to be dependent on the forest. For example, people still look for firewood, bamboo and other non-timber forest products from the forest.

3.1.1. Sources of Local Wisdom

a. People's habits and beliefs

The Karo tribe is an indigenous tribe that lives in Kodonkodon Village which occupies Merek District and other villages in Karo Regency. There are several other tribes including the Toba, Javanese, Simalungun, Pakpak and other immigrant tribes. The customs and beliefs that exist in Kodonkodon Village are habits and beliefs that originate from Tanah Karo. This can be indicated by the habits and behavior of the people of Kodonkodon Village who use the Karo language in their daily life. Likewise with other applicable local customs and provisions.

In ancient times, the ancestors of the people of Kodonkodon Village believed in the existence of their ancestral spirits which they believed existed. These spirits are present in various forms which can be large wood, stone, springs or rivers. As time goes by, the times are more advanced and the existence of religion makes their beliefs fade and gradually disappear, even many local people do not believe in things that smell supernatural. Although the community does not believe in the existence of ancestral spirits, it does not mean that the people of Kodonkodon Village have lost or forgotten places that were sacred by their ancestors. At the research location, there is still one place that is still sacred and respected by the local community as "Pulu Balang".

In Indonesian, Pulu Balang is defined as "guardian of kuta" or "guardian of the city" (village guard), which they describe as their ancestor in the form of a stone which is highly respected by the people of Kodonkodon Village. In ancient times, Kodon Kodon Village had experienced a very long drought. That's where the community performs rituals or traditional ceremonies called traditional ercibal ceremonies. This ceremony aims to ask the spirits of their ancestors who they think can fulfill their request for rain. When the ceremony was over, they would wait a few days, then it rained. In carrying out the ercibal ceremony, the community asks the ancestral spirits to grant their request by giving offerings to the ancestral spirits in the form of betel, gambier, lime, tobacco, cimpa and salt, which they believe can be a medium to grant their request.

b. The importance of forests to local communities

Because the distance between the village and the forest is very close, only about 300 meters, the community is more dependent on the forest. Almost every day the community interacts with the forest because the community's main livelihood is farming. This makes the people of Kodon Kodon Village very dependent on non-timber forest products to meet their needs to develop agricultural cultivation and
increase crop yields. The use of forest products by the people of Kodon Kodon Village has been carried out for generations, even if compared to the use in the previous period, it has now been greatly reduced. This can be seen from the results of the testimony of the elderly in Kodon Kodon Village who said that when they build houses or huts, they take the building materials from the forest.

Basically, people living around the forest are allowed or allowed to take materials from the forest, as long as they don't take materials from protected forests. Forest products used by the people of Kodon Kodon Village are humus, medicinal plants, firewood, wild boar, bamboo, rattan and others. The people of Kodon Kodon Village have a large population and are dominated by farmers, but the topsoil is taken only for personal use and not for sale. In [8] it was reported that the Karo people collect medicinal plants from nearby forests, fields, home gardens or buy them from local suppliers, one of which is in Merek, Berastagi and Dolat Rayat.

3.1.2. Local Wisdom Values. In Merek District, most of the locations, activities and traditions that are the source of local wisdom are still preserved and still exist.

| Table 1. An ecotourism object based on the value of local wisdom |
|---------------------------------------------------------------|
| No | Nature Tourism Component | Component | Accessibility | Support | Note |
|----|---------------------------|-----------|---------------|---------|------|
| 1  | Cultural tourism attractions, namely the traditional traditional house of the Karo Batak tribe (Rumah Siwaluh Jabu) which is 250 years old, also has natural resources in the form of landscapes. | There is adequate transportation access to get to the ecotourism object. | There is a village head office that only 5 houses left can be a source of information related to the tourist attraction. | Until now, there are many has collapsed and no restoration has been carried out. | The ritual was carried out 28 years ago and was carried out again in the framework of the Dokan Arts Festival 3 in 2017. |
| 2  | Cultural tourism attractions, namely the Penusur Sira ritual, there are also landscapes in Dokan Village. | There is adequate transportation access to get to the ecotourism object. | There is a village head's office that can be used as a source of information related to the ritual of the vermin. | Until now, the ritual has been carried out 28 years ago and was carried out again in the framework of the Dokan Arts Festival 3 in 2017. | The ritual was carried out 28 years ago and was carried out again in the framework of the Dokan Arts Festival 3 in 2017. |
| 3  | Cultural tourism attractions in the form of archaeological sites, namely Joroh-joroh (ancestor statues) and natural resources in the form of springs. | Access to the ecotourism object is rather difficult because the road is quite steep and can only be passed by motorbikes. | There is a village head office that can be used as a source of information regarding the tourist attraction. | Joroh-joroh (ancestor statue) tourist attraction located in Kodon-Kodon Village. Many Karo people or tourists from outside the area come to this tourist attraction to just see and report to the even perform rituals. And under the object coming there is also a sacred tourist attraction. | The ritual was carried out 28 years ago and was carried out again in the framework of the Dokan Arts Festival 3 in 2017. |

The people of Kodon Kodon Village are a handful of people in Karo Regency whose activities still depend on the existence of the forest. The people of Kodon Kodon Village still maintain the existence of the forest and they carry out forest management in a sustainable manner. This is in line with the concept of sustainable forest management, which the concept emphasizes and maintains a balance between the 3 main pillars, namely ecology, economy and socio-culture. In accordance with [9], cultural
landscapes have an important role in controlling forests. The form of the cultural landscape that synergizes with nature is a form of manifestation of local wisdom that guides the community to live in harmony with the forest.

a. Joroh Joroh Tour

This tourist attraction is located in the village of Kodon Kodon, Merek District. The tourist attraction is a stone that is believed to be the ancestor of the local community. This tourist attraction is also used as a ritual place to ask for safety, success and health. The value of local wisdom contained in the cultural site is a sense of togetherness and kinship that arises when the villagers of Kodon Kodon come to perform rituals such as asking for blessings, health and so on. The villagers of Kodon Kodon also take great care of the site. They build infrastructure in the form of roads independently so that access to these places can be passed easily by visitors.

From the facts above, there are several potential local wisdoms that exist. The potentials of local wisdom can still be developed and implemented in the management of natural tourism objects in the area in a sustainable manner. Moreover, the people around Lake Toba are already accustomed to depending on nature for their lives, especially Lake Toba. In accordance with the statement of [10] that the public perception of the existence of Lake Toba is a source of life. That means Lake Toba is a source of sustenance, a source of livelihood such as a fishing spot, a place to put floating net cages and as a support for tourism activities.

b. The ritual of curing sira in Dokan Village

One of the uniqueness of Dokan Village is the existence of rituals in the village. The ritual at that time was Penusur Sira. The ritual means to complain and ask for instructions about the good or bad of certain events or things to God Almighty. To see these things, these people use a medium in the form of salt or also called sira. Sira is called Sira Sendawa, as for the purpose of the sira, the people consider it an antidote or talisman to protect their village. Sira media is made of clay shaped like a jar, usually the Karo people call it by the name taboo, which is placed on the ceiling of a traditional Karo traditional house. The people of Dokan Village hold the Penusur Sira ritual as a religious ceremony. That's why
this ritual is rarely performed. Because only when needed for a reason or with a specific purpose. If the problem in the village cannot be resolved or there is no way out anymore, then this ritual is carried out.

The essence of the Penusur Sira ritual is to solve a problem or to find a final decision that is difficult to solve or solve. In one community, every village has rules or also called customs. These regulations must be implemented or implemented by the local community. For example, if in a village there is a problem that cannot be solved personally, a ritual will be held to solve the problem. Every problem or disaster that befell the village, the rituals carried out will also have different ways of solving it. The forms of problems that occur, for example, are crop failures, disaster outbreaks and others. The local community, especially traditional leaders, will take steps to carry out the ritual.

In the ritual of the sira, there is the value of creativity and the value of cultural preservation. This can be seen when the ritual is completed, which is an effort to preserve the cultural values in it. In the ritual there is also the value of local wisdom in the form of educational orientation. This was found when the ritual was held, where the younger generation received lessons and advice from parents and community leaders in the ritual. However, with the development of the times, there were cultural changes in Dokan Village. The Penusur sira ritual which was previously carried out by the people of Dokan Village is now no longer carried out since the development of religion and the implementation of a modern government system in Dokan Village. It is unfortunate that there is a phenomenon where the sources of local wisdom have begun to disappear in Dokan Village. [11] explained that the next generation no longer recognizes the ritual of penesur sira, but they can still implement the values that exist in the ritual of pengusur sira.

c. Karo traditional house in Dokan Cultural Village

Dokan Cultural Village is located in Merek District, Karo Regency, about 20 kilometers from Kabanjahe City. If from the city of Medan the distance is approximately 95 kilometers. The topography of Dokan Village in general is a highland area. The micro-climate with more wet months and good soil fertility affect the economic activities of the community where the majority of Dokan Village people make a living as farmers.

In the process of establishing a traditional house in Dokan Village, there are still rules that need to be obeyed, for example the position of the existence of a river in the vicinity. They still follow these rules because they still hold fast to the teachings of their predecessors who still believe in the unseen things that can have a bad effect on them. Abstinences and prohibitions in this case have the consequence of sanctions in the form of punishment from their ancestral spirits, so that people still obey these customary regulations.

The Karo traditional house has a symbol of a woman who is cross-legged with both hands catching as if she is worshipping God. The door symbolizes the shape of a woman's womb. This door symbolizes the meaning of the cycle of life. In addition to the meaning of the womb, this door was also used as a place where women who were about to give birth held on to the outside of the house. The uniqueness of the Karo traditional house can be seen in terms of the building which is quite old which has several levels of roofs. The size of the largest house is 10x30 meters, larger than the houses of other Batak tribes. This traditional house can accommodate up to 12 heads of household with a capacity of up to 60 people. The purpose of making a house in the form of a stilt is to avoid threats that come from wild animals in the vicinity that can interfere with their safety. The lower part of the house is used as a place for livestock and branches/wooden branches that will be used for cooking.
Figure 2. Karo traditional house located in Dokan Cultural Village

It is called the Siwaluh Jabu traditional house because in the house there are only 8 heads of households (Jabu) who live side by side in harmony. In terms of the building, the Karo traditional house is made of logs, boards, bamboo, all of which are obtained from forest products. The roof of the house is made of fibers without any material made of nails or wire. The working method is still using traditional methods that have been passed down from generation to generation from the past. The legacy left by the Karo people's culture is in the form of the Karo traditional house which is a symbol of the establishment of a village. If there is a house footprint, then the construction of the house will be determined by village elders or people who are respected in the village according to the agreed time. Building materials that are in the forest, these materials cannot be taken home just like that, but there are requirements that must be carried out through traditional events led by traditional leaders.

However, this traditional house has now been developed not only to be occupied but also to become a commercial object such as an inn or hotel in nature tourism. As revealed by [12] The application of Neo-Vernacular architecture aims to revive the traditional house of Siwaluh Jabu which has been forgotten by many people.

3.2. Implementation Practices in the development of Nature Tourism

The form of ecotourism development practice based on local wisdom along the outer ring of Lake Toba on the Merek segment can be seen in Table 2 as follows:

| No | Value of Wisdom | Forms of Development Practice |
|----|-----------------|-------------------------------|
| 1  | Mutual cooperation (Gotong Royong) | The values of local wisdom found in traditional houses in the Dokan Cultural Village are the attitude of togetherness (gotong royong). As in Sipiso-piso Ecotourism, the community itself opens access to ecotourism with Gotong Royong. |
| 2  | Kinship | In the ritual of the sira, there are values of local wisdom in the form of welfare, politeness, the value of creativity and the value of cultural preservation. The ritual of sowing Salt to remove ugliness and bad luck from the house. In maintaining the nobility of the ancestors and the natural surroundings. The maintenance of this ritual is a form of natural tourist attraction that is side by side with community rituals. |
| 3  | Politeness | The value of local wisdom contained in the ecotourism object is a sense of togetherness and kinship that arises when the residents of Kodon Kodon village come to perform rituals such as asking for blessings, health and so on, the residents of Kodon Kodon village also take great care of the site, they build infrastructure in the form of roads, so that access to the place can be passed easily. |
| 4  | Hospitality | The values of local wisdom contained are also hospitality attitudes. This can be seen in the attitude of the villagers who are friendly to tourists who come to visit, and tourists are also allowed to stay overnight and even live with residents who live in the traditional house. Like in the Tongging area. |

According to [13] using local wisdom to promote tourism through the creative tourism process in order to create sustainable tourism development targeted at the community. A balance must be made in
terms of economy, society and the environment so that society, with this balance, can develop sustainable tourism.

The identity of a place can be seen from something that is familiar (familiar) from the place, and is widely known through searching for the characteristics of the identity of the city, both physical (tangible) and non-physical (intangible) elements. An area is said to have soul and character if the area still maintains cultural values and environmental aspects. The ability of a region to highlight the character and identity of the region, also affects the region and the area around it, known as local genius.

3.2.1. Mutual cooperation (Gotong Royong). The values of local wisdom found in the traditional house in the Dokan Tourism Village is an attitude of togetherness (gotong royong). In addition to traditional houses, there are still other relics, for example a tool for pounding rice which is commonly called a mortar where women usually pound rice in groups. Likewise with other activities such as pounding rice with a mortar, fetching water from the river and carrying out various rituals, all of which they do together (gotong royong). Sipiso-piso ecotourism is a waterfall part of the Lake Toba area which is included in the Indonesian National Tourism Strategy Area [14]. Starting with the Mutual Cooperation of the people of Tongging Village, Merek District, which opened access to Ecotourism.

According to [15] the principle of gotong royong has been proven to help the community in achieving its goals without fully relying on economic capital and interference from other parties, especially from the state. Therefore, various managements must be open to the values of local wisdom. This increasingly clearly shows that humans are social creatures, who often communicate with other individuals, nor can they carry out their own activities, without the help and assistance of others. The facts above are different from the view of [16] which states that the people of Lake Toba are no longer considering the implementation of gotong royong anymore. They forget that marsirimpa (a local term for gotong royong) can be used as a non-material resource to promote socio-economic development.

3.2.2. Kinship. The value of local wisdom contained in the ecotourism object is a sense of kinship that arises when the residents of Kodon Kodon Village come to perform rituals such as asking for blessings, health and so on. The residents of Kodon Kodon Village are also very careful about the site, they build infrastructure in the form of roads, so that access to the place can be passed easily. If you want to visit the place, you are required to bring offerings as a form of offering. The offerings themselves must come from the produce of the people of Kodon Kodon Village. If there is a new born child, it must be immediately brought to the place to avoid disease and calamity. To get to the place, tourists are required to go up the hill because the place is on the hill. The people of Kodon Kodon Village still believe in and carry out the traditions taught by their ancestors. The site is not managed by the government, but the people of Kodon Kodon Village are aware of it, so they are the ones who maintain and manage the place so that it can become the hallmark or identity of Kodon Kodon Village.

Since ancient times, the attitude of kinship has also been deeply embedded in the life of the Dokan community. Every time there is work in the village, they always do it together. Another name for this is "aron". Aron in its meaning is a group or group of people totaling 1-5 people. Among these people there are those who act as leaders or chairmen and the rest are members. At that time, if there was one job they always did it together in the aron group. The way they work is always moving from one place to another. Inside this aron also has rules or regulations that must be obeyed, for example by eating together. The food that must be served or served is the typical food of the Karo Tribe, which is often called cimpa. If one of the arons makes a mistake, they will be punished or warned. Along with the times and the development of the economy and the necessities of life, the aron group is now difficult to find, because many have changed to the wage system. This is also due to the demands of increasingly intensive agricultural cultivation activities that require more modern management.

In terms of developing natural tourism, this local wisdom can be a very good supporter. As stated by [17], ecotourism projects in the family, allow everyone to be fully informed and fully participate in management choices.
3.2.3. Politeness. In the ritual of the sira, there is also a meaning which is local wisdom. The basis of this ritual is carried out by the people of Dokan Village solely for the peace of the village. In the Penusur Sira ritual, it is still found the value of local wisdom in the form of politeness. This can be seen when the traditional leader enters the Mbelin Siwaluh Jabu traditional house and is greeted with accompaniment and music as a sign of welcome. [18] mention that discipline, courtesy, respect for older people and older people, faithful to responsibilities and courtesy in maintaining forest ecological processes to ensure the sustainability of ecotourism.

This politeness is the soul of the Karo community that has been inherited. [19] revealed that it was found that the local wisdom of Karo culture is the attitude and desire to do what is best for the community, since the taboo rules provide an overview for them on how to express dignified words and behave in noble deeds and how to avoid mentioning words. disgusting words and behaving politely. Rules become a control for social harmony to be maintained properly. Taboo rules are imposed not to make it difficult for people to communicate with each other, but to provide a sense of security and tranquility for them so that they can live in peace and harmony.

3.2.4. Hospitality. The values of local wisdom found in traditional houses are an attitude of togetherness (mutual cooperation), as well as an attitude of hospitality, this can be seen in the attitude of the villagers who are friendly to tourists who come to visit, and tourists are also allowed to stay overnight and even live with residents who live at home. This implementation practice has an impact on the management of Nature Tourism. Will give a good impression to visitors in enjoying the natural attractions in this area. Based on [20] the indicator of visitor satisfaction is 'Sapta Pesona' which consists of security, order, cleanliness, coolness, beauty, friendliness, and memories must be improved.

Such as in the Tongging area which is a strategic area in the Merek District. As stated by [21] Tongging is one of the tourist destinations on Lake Toba which is used as a tourist spot with natural beauty and adequate infrastructure for tourists such as hotels, restaurants, souvenir stalls, stalls selling food and drinks. light. Supporting facilities are also available in Tongging such as places of worship, public toilets, health facilities, parking lots and other supporting facilities. In addition to natural beauty and facilities, access to Tongging is also very easy to reach either by private vehicle or public transportation. This shows that Tongging deserves to be developed and has good prospects in the future.

4. Conclusions
Based on the results of the study, it can be concluded that there are several community activities and rituals in which there are local values, behaviors and traditions that have a dimension of wisdom. and ecotourism potential based on local wisdom. Existing local wisdom is tangible (textual, buildings, and objects of cultural heritage) and intangible (advice delivered orally and is passed down from generation to generation and in the form of expressions of gratitude and humming or poetry that has traditional teaching values). These wise values are found in various sources such as the traditional house of the Karo tribe in the Dokan Cultural Village, the Penusur Sira Ritual, the Joroh Joroh tourist attraction. The forms of implementation of local wisdom in tourism development include the application of an attitude of togetherness (mutual cooperation), a sense of kinship, politeness, hospitality, concern for others, harmony with nature, problem solving systems, work hard, obey people and leaders, educational culture, conservation culture, concern for the environment, and values related to a culture of healthy living in the management of nature tourism.

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