

Paper:

Disaster Storytelling: Extending the Memory of the Community Toward Disaster Preparedness from Myth, Scientific Explanation, and Popular Culture

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Disasters are likely to regularly occur in Indonesia since it is geographically located in the area known as the Ring of Fire, and is surrounded by many volcanoes, which float above several constantly moving pieces of tectonic plates. Disaster cycles transcend over generations and can be very long. Thus, it is very important to convey knowledge on disasters across generations since this information will affect the possibility of human survival should a disaster occur. How can we convey this information across generations? Are myths more effective than scientific explanations, or is it the other way around? Should we use both? How does a myth look like in our modern times? This study describes a number of myths – originating in several Indonesian locations, such as Yogyakarta, Palu, Sigi, Donggala, Banten, and Simeulue – so that a common thread can be drawn to obtain an effective way of conveying myths to future generations. From survivors' stories of disasters, it seems that these accounts depend on their prior knowledge. Thus, it is important for the local story to be understood, so that it stays in the memory of the community, and can be narrated as a part of their everyday life. Thus, in accordance with the local community's culture, it is essential to provide appropriate educational media on the risks of disasters and efforts to save themselves, should a disaster actually occur.

Keywords: myth, disaster preparedness, scientific explanation, popular culture, next generation

1. Introduction

Human beings' disaster preparedness actually relies on their individual learning processes. The knowledge that accumulates could be a useful tool for community survival, when a disaster happens. Thus, knowledge accumulation, and thereafter, how to share or pass it on to the next generation becomes a critical issue. How can this be done? What is the most effective way to share information? This might not be an easy task nor will it have a

single answer. Thus, learning from other nations or communities would be an important and strategic way for extending human memory.

Indonesia geographically lies in the area known as the Ring of Fire, surrounded by many volcanoes which float above several pieces of tectonic plates that are constantly moving. It seems that geological formations are still progressing, and from the very beginning have been creating impacts, both big and small, almost every time. Sulistiyono et al. stated that the most recognizable volcano is located along the arc of the Pacific Ring of Fire, a friction line between three tectonic plates. Indonesia is on the path of the world's most active earthquake because it is surrounded by the Pacific Ring of Fire, and is on three collisions of continental plates, namely, Indo-Australia from the south, Eurasia from the north, and the Pacific from the east. On the one hand, this geographical condition makes Southeast Asia a region prone to volcanic eruptions, earthquakes, and tsunamis. On the other hand, it makes Indonesia a fertile and biologically productive area with mineral materials [1].

We found that every phenomenon has its own cycle, which is regularly repeated in various time spans, ranging from 5 yearly, 25 yearly, 50 yearly, 75 yearly, or more. For example, the eruption of Merapi Mountain in Java was a major eruption that occurred at intervals of 35–50 years. Other major eruptions occurred in 1786, 1822, 1872, 1930, and 1976 [2]. Since the long-time span could extend across generations, the stories about it, too, have passed through generations. These would flow, and different articulations and information would be added over the course of time, and reach our time with various versions, thus becoming a woven narrative embedded in every culture.

If we talk about earthquakes, for instance, the older generations' experiences of the happenings, or knowledge derived from their parents, might give us a very different explanation from the information that we get from the news today. What we have today is rather straight forward information, formulated more with numbers and qualitative data, merely about the exact coordinates of the happening, its depth, and then its magnitude to indicate its strength. Sometimes, we have it in the form of visual in-



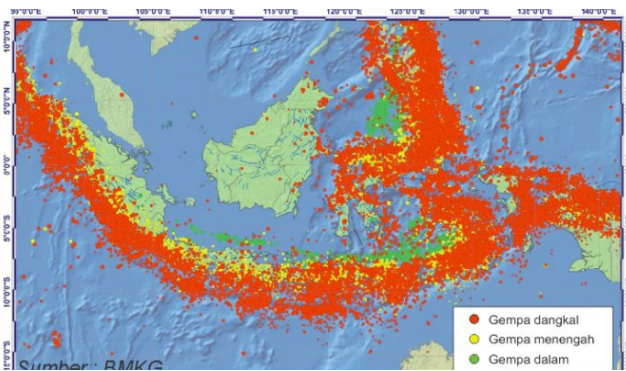


Fig. 1. Earthquake map (seismicity) in Indonesia during the period 1973–2010 [3].

formation, shown on a map with dots in different colors, indicating locations and strengths. We are so familiar with this kind of a format to explain earthquakes (**Fig. 1**). Even more, we could get accumulative information over a period of time, or the whole data in a single diagram.

This kind of information provides our minds with some knowledge, but since it does not really touch our hearts, it is also easy to forget. It is very much like watching the news on TV. We are flooded with information that comes and goes so fast that it does not really stay in our mind or even touch our hearts. We become overwhelmed and immune to such information, in a moment it is forgotten rather than remembered.

2. Living on the Ever-Shaking Ground

2.1. After Disasters: Myths from the Past Appear Again as Explanations

When an earthquake hit Yogyakarta in 2006, the southern part of the area, which was closer to the coastline was severely damaged. Some villages along the Opak River were also severely damaged. However, this earthquake did not include a tsunami. Then, there was a scientific explanation that it was caused by the subduction of a tectonic plate, and we also became aware of the geological crack, along the Opak River. Then, as we began to recall our memories, the myth of the Queen of the South came alive once again.

The Queen of the South (called Nyi Roro Kidul) was a mighty figure, who supported the Java King, especially the Yogyakarta Sultan/King. The Queen's blessings were always with the Sultan, and often, it was even mentioned that the Queen of the South was the spiritual wife of every Sultan. The connection of the Southern Ocean and the Merapi Volcano – considered a sacred imaginary axis – is also significant. Further, this is about the awareness that Yogyakarta's location was between the active volcano in the north and the subduction of tectonic plates in the south. The Opak River was believed to be the highway through which the queen's chariot traveled up and down, from the volcano to the ocean. Hence, people were not



Fig. 2. The settlement is located along the banks of the Opak River [4].

supposed to use that highway as a settlement. Once that myth was forgotten, settlements were built along the river (**Fig. 2**). However, we now know that Opak river was formed by a geological crack.

Recently Eko Yulianto, an expert from Indonesian Institute of Science (LIPI), discovered that around 400 years ago there was a big earthquake followed by a tsunami [5]. There is a myth related to the establishment of the Yogyakarta kingdom. When its founder Sutawijaya was meditating, the sound of the ocean's boiling awakened the Queen of the South. Although Sutawijaya was not a descendant of an aristocratic family, he asked for the Queen's blessings to become a king. During the ensuing dialogue between Sutawijaya and the Queen of the South, a deal was reached that she would always support the king of Yogyakarta. Eko Yulianto has also stated that the stories and reports about the ancient tsunami are very clearly written in Java island's legendary manuscript, Babad Tanah Jawi [6]. While the myth still exists as part of the people's culture, through it, Eko Yulianto was trying to convey that a huge tsunami had also actually occurred.

After a big tsunami struck Palu, Sigi, and Donggala in Sulawesi Island on September 28, 2018, based on collective memories, people began to recall the oral literature of the Kaili Tribe in Central Sulawesi, which contains ancient poems about the past, namely, Kayori traditions in the Kaili language. There is a local belief, which mentions that there will be an earthquake if mistakes are committed. Since earthquakes are believed to be due to the behavior of humans, such as not obeying traditions, the seas will rise and earthquakes will occur if sins are committed [7]. Now, Kayori is understood only by older people, and even the Kaili language is now spoken by very few people. There is also the word "Nalodo" which means suck by



Source: Author's documentation, 2019

Fig. 3. The remains of a building after the liquefaction by a big Earthquake that hit Palu.

the mud or went down to the earth, whereas “Nalonjo” means swampy or muddy. Prior to the 80’s, since local people still had an understanding of the dangers of living in these areas, no one was willing to build houses or even do farming in areas such as Petobo, Balaroa, or Jono Oge. However, owing to recent urban development, many people coming from other places, not knowing anything about the local myths began to settle in the area [8]. Later that area was severely demolished by liquefaction (**Fig. 3**).

In Banten, West Java, there is a story from older people which states that when the water comes, it rises slowly, not fast, but when it pulls back, it is speedy, which causes severe damage. While some people will not be safe, others will be safe, especially, those living up in the mountains. Around 100 m above sea level, there is a “Kampung” named Sindang Laut (Sindang = stop by, Laut = the sea), which means that “the sea stopped by.” There are still some boulders washed ashore from which it can be imagined how strong the tsunami was, at that time. People still remembered the story when the tsunami happened in 2018, and ran avoiding that area.

In the Island of Simeulue, a famous bedtime story that every kid still remembers is the song and the narrative about the tsunami’s phenomena. The local word “Smong” is a pearl of wisdom trusted by the inhabitants of Simeulue and the surrounding small islands. The Simeulue community understands Smong as a natural phenomenon in the form of large waves from the sea, that arise after a large earthquake. The signs of the Smong’s arrival can be observed from the receding sea water shortly after a massive earthquake followed by a roar. When these signs appear, the people are taught to save themselves by moving away from the coast by heading to a higher ground like a hilltop. This sign is well understood by the Simuelue community based on stories from their parents and/or grandparents [9], and when the island was hit by an earthquake followed by tsunamis, only 7 people died from its population of 78,00 [10], since most of the people still remembered the Smong and knew what to do to stay safe. The knowledge implanted culturally through the bedtime story was advantageous. Syafwina, recognizing the importance of indigenous knowledge for disaster management said, “Please listen to this story about Smong: One day in the past, a village was sinking, that was what we have been told. Starting with an earthquake,

followed by giant waves, the whole village was instantly sinking. If a strong earthquake is followed by the lowering of sea water, it is called Smong. Please hurry to find a higher place. Please always remember the message and instructions based on the history of our ancestors. Smong is your bath, earthquake is your swing bed, thunderstorm is your music, thunderlight is your lamp” [11]. Borrero et al. [12] and Kurniasih et al. [9] revealed that the Simeulue community’s local wisdom in believing this story to be an early warning system for tsunamis was proven successful in saving them from two tsunami disasters.

2.2. The Spirit of Togetherness as the Most Important Social Capital for Physical Recovery and Regional Cooperation

While the spirit of togetherness as the most important social capital for physical reconstruction is essential as part of the post-disaster activity, maintaining the social structure such as the spirit of togetherness among the people is also equally important. The local people have embedded knowledge, skills, and cultural values that must be respected. Since these values and belief systems are part of the soul of the community, and along with other aids, form part of interregional cooperative networks, they should be kept, protected, or respected by outsiders. Assisting, supporting, or helping the community in a disaster situation is essential and significantly needed, but we have to know how far we could go, and how far our interventions could or should be given. We have to be aware that disaster situations are not a vacuum condition. While physical damages might be more visible, we have to be aware, and also consider non-physical conditions, such as sociological, cultural, or psychological situations. Values and belief systems, as mentioned above, could also be used positively to re-build the life of communities.

Our experience related to this, dates back to when the earthquake hit Yogyakarta on May 27, 2006. I feel fortunate to have been involved in village reconstruction in the Bantul area. There were two villages – Ngibikan, and then Botokenceng. In Ngibikan, 110 houses were built by the community themselves, funded by the Kompas newspaper, and later 25 houses in Botokenceng were supported by Citizens towards Overseas Disaster Emergency (CODE) from Kobe [13]. There are three basic rules for respecting the life of the community:

- Respect the lifestyles and habits of the people, and do not make changes forcefully. Remember that we are outsiders. We know only a small part of their lives.
- Respect their social structure. All the decisions must be made by the people themselves.
- No money should be involved, but everything must be done by the people themselves, working together to help each other as a community, since maintaining this social capital is very significant.



Fig. 4. The Labuan ritual on the Parangkusumo Beach [14].

2.3. The Ritual as an Extension of the Memory

There are rituals to commemorate the relationship with the power of nature, as part of the Yogyakarta kingdom's existence. The Labuan ritual is an offering to ask for safety and protection from disasters (**Fig. 4**). These rituals are held at 2 places – Mount Merapi and Parangkusumo Beach, which were believed to be the meeting points of Sutawijaya and the Queen of the South, at the beginning, when they first established contact, as mentioned previously. There is a traditional song called Pangkur that reminds people about the dynamics of nature: When the earth shakes, it destroys; houses collapse and the land cracks, and that is what is called an earthquake. It is caused by three things: land collapses, landslides, and volcanic eruptions, all of which, could cause danger and many casualties before the earthquake actually happens. Thus, it is always necessary to carefully construct strong houses that do not easily fall down [14].

The traditional rituals and songs can actually be seen as a message from the past to remind us about the dynamics of nature and how to prepare to face it. The problem is that such messages and rituals are only perceived as cultural expressions (from the past), and are not attractive to the younger generation, moreso because of the language barrier, given that songs like Pangkur are written in the Javanese language [14]. These kind of rituals were also recently challenged in some situations by certain communities, that considered them to be not in line with Islamic principles.

2.4. Reaching the Next Generation: Scientific Explanation, Would It Be Sufficient?

Learning from other countries' experiences of Disaster Risk Reduction (DRR), and the availability of infographics available with the internet of things, there is now plenty of information to share. While scientific information is more often used to explain what is happening, this school of thought should be more aware of the need to be proactive in building preparedness for the next generation. As compared to Japan, Indonesia is still in a rather early stage of building its DRR. It is in a stage of transition or rather in a suspended situation. I mean some of the stories from tradition have already been forgotten, but the



Source: Author's documentation, 2008

Fig. 5. Performing arts, a collaborative show supported by Padepokan Bagong Kussudiardja and Snuff Puppet from Melbourne.

modern way of explaining these, is not there. However, it seems that giving scientific information can only build knowledge in the mind, that would also be easy to forget. Thus, knowledge should also touch the heart, the deepest consciousness.

3. The Power of Myths and Pop Art as Media for Touching the Heart of the Culture

The difference between scientific explanations and myths is their ability to be understood by people. As against scientific explanations that can only be understood by people having enough background knowledge about something, myths can speak to all segments – across age groups and more – thus, touching people's hearts.

After the 2006 Yogyakarta earthquake, a group of artists from "Snuff Puppet," Australia – a kind of inter-regional collaboration in an art platform – worked with local artists and communities to prepare all the properties, and then staged a performance of puppets on a big scale in many public spaces [15] (**Fig. 5**). It was meant as a trauma healing process, but additionally, it was an attempt at offering "public education" related to the disaster.

It seems that the socio-cultural approach using art media or popular art forms could be an effective way of public education. It gives people information, raises awareness, and also provides entertainment. Such events will make the message stay longer in people's minds and hearts. Films, comics, and plays or shows are the other contemporary media used in media campaigns.

Today, we have many choices of media that can be utilized. Although it depends on the availability of resources, there are always creative people somewhere, who are willing to work or provide support during difficult situations. Thus, different forms of aids are significant, since they have the capacity to cure or restore social wounds or psychological trauma. In some conflict areas, such media could also be used.

3.1. Extending the Memory and Interregional Cooperation in Kebonharjo Village

Kebonharjo in Kulonprogo was selected as a pilot project for interregional collaboration. It was initiated



Source: Author's documentation, 2017

Fig. 6. Landslide in Kebonharjo Village, November 2017.

by the NGO Collaboration Center – Japan, facilitated by Duta Wacana Christian University (DWCU), with the main idea of building the village's DRR capacity based on the locality and local knowledge. Besides Kebonharjo being a village prone to landslides and droughts (**Fig. 6**), its soil characteristics and steep terrain also make it unique. In the course of future development, due to the tourism industry's expanding market, the inhabitants of this village could increase. Thus, awareness and knowledge about the geospatial conditions, are strongly needed. Moreover, upcoming inhabitants should be apprised about the experiences of this village. The NGO Collaboration Center – Japan, organized visiting workshops about the DRR, and also provided trip exposures to Japan to learn more from Japan. The DWCU has also done some research in compiling the local knowledge related to the disaster experience for preparing a kind of manual that can be used as a reference for the community.

The program to be carried out in Kebonharjo village is based on five measures or principles that should be applied when responding to a disaster, namely:

- To promptly inform about the incidence of the disaster
- To recognize indications leading to the incidence of disasters
- To take rapid and appropriate actions
- To continuously learn about disasters
- To enhance disaster preparedness

These five principles are implemented with the aim of reducing the severe impact that disasters could inflict upon human lives, particularly villagers in Kebonharjo. The activities founded on the five principles are not stand-alone activities that are separated from one another, but rather, are mutually interconnected into a single, integrated, and holistic cycle [16].

Thereafter, the five principles were combined with the local knowledge collected from the interviews with older people who had experienced disasters. But are we prepared? Would our preparedness be enough? Maybe, this cannot be answered, but we believe that sustaining this information is a must. In Kebonharjo, the community was



Source: Author's documentation, 2018

Fig. 7. A book and poster prepared by the community supported by DWCU and NGO Collaboration Center – Japan.

supported in compiling the oral history related to the disaster experiences of the village. The older people's memories were compiled and transformed into more practical accessible media, such as books and posters (**Fig. 7**). If their memories are not written down, there is a possibility of the knowledge getting lost, before it is passed on to the next generation. Information relating to the signs of disasters, and what should be done when these occur, should be known by everyone in the village. Posters are placed in strategic visible places, and in this case, it has been combined to function as a wall clock, that would always remind about the next disaster.

4. Conclusion

Based on survivors' stories of the disaster, it seems that it depends on their prior knowledge. In this connection, it is important for the local story to be understood, and to stay in the community's memory as it is told, as a part of their everyday life. Thus, following the local community's culture, it is essential to provide appropriate educational media on the risk of disasters and efforts to save themselves, if the disaster occurs. When parents narrate these local stories to children, it is most likely that their children will remember these stories till they become adults, and in the end, these memories will save them from disasters.

It is necessary for every community to compile and document their local folklore or myths related with disasters in a more serious manner, which could be transformed into more contemporary popular media such as songs, performances, poems, films, animations, comics, etc. Through this media the local story would be re-told more frequently and will reach as well as touch the hearts and stay deep in people's memories. Thus, the stories will stay alive through generations.

References:

- [1] S. T. Sulistiyono, Y. Rochwulaningsih, and H. Rinardi, "Peran masyarakat nusantara dalam konstruksi kawasan Asia Tenggara se-

bagai poros maritim dunia pada periode pramodern,” Jurnal Sejarah Citra Lekha, Vol.5, No.1, pp. 75-84, 2020 (in Indonesian).

- [2] “Mount Merapi,” <https://www.britannica.com/place/Mount-Merapi> [accessed October 20, 2020]
- [3] http://inatews2.bmkg.go.id/new/about_inatews.php?urt=3 [accessed July 25, 2020]
- [4] Google Earth, <https://earth.google.com/web/> [accessed October 20, 2020]
- [5] “Potensi Tsunami Selatan Jawa, Bagaimana Kisah Nyi Roro Kidul Beri Petunjuk Kebenarannya?,” <https://sains.kompas.com/read/2019/07/21/170700423/potensi-tsunami-selatan-jawa-bagaimana-kisah-ny-ro-ro-kidul-beri-petunjuk?page=all> (in Indonesian) [accessed July 26, 2020]
- [6] “Bukan Hoax! Ilmuwan LIPI Beberkan Fakta Mengejutkan Tentang Tsunami Purba Jawa,” <https://jurnalpresisi.pikiran-rakyat.com/nasional/pr-15854388/bukan-hoax-ilmuwan-lipi-beberkan-fakta-mengejutkan-tentang-tsunami-purba-jawa?page=2> (in Indonesian) [accessed October 20, 2020]
- [7] “Kayori, syair kuno peringatan bencana alam dari Palu,” <https://www.bbc.com/indonesia/media-50080408> (in Indonesian) [accessed July 26, 2020]
- [8] “Pesan Siaga Bencana di Indonesia, Kisah Nyi Roro Kidul hingga Syair Kuno Macapat dan Kayori,” <https://regional.kompas.com/read/2019/10/09/10220031/pesan-siaga-bencana-di-indonesia-kisah-ny-ro-ro-kidul-hingga-syair-kuno?page=all> (in Indonesian) [accessed July 26, 2020]
- [9] A. Kurniasih, J. Marin, and R. Setyawan, “Belajar dari Simeulue: Memahami sistem peringatan dini tsunami di Indonesia,” Jurnal Geosains dan Teknologi, Vol.3, No.1, pp. 21-30, 2020 (In Indonesian).
- [10] “Kearifan Lokal sebagai Sistem Peringatan Dini,” <https://www.kanal73.com/news/kearifan-lokal-sebagai-sistem-peringatan-dini/index.html> (in Indonesian) [accessed July 25, 2020]
- [11] Syafwina, “Recognizing indigenous knowledge for disaster management: Smong, early warning system from Simeulue Island, Aceh,” Procedia Environmental Science, Vol.20, pp. 573-582, 2014.
- [12] J. C. Borrero et al., “Field Survey of the March 28, 2005 Nias-Simeulue Earthquake and Tsunami,” Pure and Applied Geophysics, Vol.168, pp. 1075-1088, 2011.
- [13] <https://www.akdn.org/architecture/project/ngibikan-village-reconstruction> (in Indonesian) [accessed July 20, 2020]
- [14] <https://www.viva.co.id/berita/nasional/1238965-kisah-ny-ro-ro-kidul-hingga-syair-kuno-memuat-pesan-siaga-bencana> (in Indonesian) [accessed July 25, 2020]
- [15] <https://entertainment.kompas.com/read/2008/07/05/07250983/boneka-boneka.raksasa.siap.ramaikan.bantul> (in Indonesian) [accessed July 20, 2020]
- [16] L. Octavia and E. Prawoto, “Kesiapsiagaan desa terhadap bencana tanah longsor,” Jurnal Arsitektur Atrium, Vol.4, No.1, pp. 35-42, 2018 (in Indonesian).

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- “Membaca dan Memaknai Ruh Keberlanjutan dalam Arsitektur Vernakular,” Jurnal Arsitektur Komposisi, Vol.12, No.2, pp. 117-128, 2018 (in Indonesian).
- “Arsitektur Nusantara bukan Arsitektur Tradisional maupun Arsitektur Vernakular,” Jurnal Lingkungan Binaan Indonesia (JLBI), Vol.7, Issue 4, pp. 249-253, 2018 (in Indonesian).

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