

# **Smong means more than tsunami: The understanding of tsunami in the Indonesian context**

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**Abstract.** *Smong* is an indigenous knowledge related to the tsunami. The word of *smong* comes from the Devayan language of Simeulue and refers to the complex of earthquake/sea receding/giant wave that is typical of tsunami events in Indonesia. Now their pride in the word *smong* has spread to Aceh and is being adopted in their efforts to adapt to earthquake and tsunami disasters. Simeuluean people, grateful to their nation for the reconstruction after 2004 and want to grow their pride in *smong* to a national level. They wanted to make a gift of *smong* to be owned by the Indonesian people. To do this, they feel this study initiates that the word *smong* should be part of the narrative in Indonesian as the basis for a new understanding of the tsunami disaster by Indonesian people. Initiating the word *smong* in Indonesian vocabulary does not mean removing the word tsunami that now an international word. But the acceptance of *smong* should be a source of pride in the protection of our greatest wealth of people.

## **1 Introduction**

A tsunami is a rare but potentially devastating natural hazard that may impact a large proportion of the world's coastal population. To the extent that the public has any awareness of the tsunami phenomenon, they have traditionally been associated with the islands and rim of the Pacific Ocean, where their origin was attributed to large, distant, underwater earthquakes [1]. While the preponderance of tsunami is initiated in the Pacific [2], the tsunami on 26 December 2004 provided a tragic reminder that the Indian Ocean is also a source of tsunami hazards, with the Sunda Megathrust, in particular, generating irregular but devastating tsunami [3–5].

Over the past 2000 years, there have been 716,548 deaths attributed to tsunamis from these two oceans [1]. The largest death toll from a single event is concentrated in Aceh, Indonesia, where more than 230,000 people were killed by the 2004 Indian Ocean tsunami [1,6,7].

However, Indonesia's tsunami exposure is not limited to the oceanic tsunami; in addition to being bookended by tsunamigenic oceans, extensive faulting under the smaller water bodies between the archipelago's exposes a large proportion of the country's coastline to near- or mid-field tsunami. In this seismically intense environment, every coastal community in Indonesia with 16,056 islands [8] will have been required to confront the reality of tsunami at some stage, and it is important both locally and

nationally to understand how local communities accepted and perceived tsunami events in helping them to make decisions and actions about future similar situations.

Unfortunately, the periodicity of tsunami is highly irregular, with gaps of many hundreds, even thousands of years, not being uncommon. Over these extensive timeframes, community knowledge of the concept of the tsunami may atrophy with traditional stories or songs sequestered in arcane folklore and not the subject of everyday risk-management conversations. Confoundingly, the occurrence of a large event such as the 2004 Indian Ocean tsunami does not mean Indonesian's will now be safe for hundreds of years [9] and Palu and Donggala tsunami of September 2018 show[10].

The tsunami experiences in Indonesia have impacted community understanding of the phenomenon and have also contributed to the significant change in scientific paradigms of disaster [11,12]. Provoked by the 2004 tsunami, a range of scientific disciplines have sought to refine our understanding of the cause, timing, impacts, and future potential for tsunami in Indonesia and potentially elsewhere [4]. The finding that many locations on the Indian Ocean coast areas of Indonesia have been impacted upon by several tsunamis [4,13] has focused attention on gaps in scientific understanding as well as disaster risk reduction (DRR) processes calls for dramatic improvement in disaster education [14].

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These sentiments have elicited strong policy support at a national and international level, with the United Nations International Strategy for Disaster Reduction (UNISDR) identifying the nexus between the occurrence of natural hazards and their impact on physical, social, economic, and environmental vulnerabilities of exposed populations [15]. The complexity of the tsunami hazard, i.e., that it can be triggered by a range of factors not limited to the submarine earthquake and that it can impact different sections of coast in different ways, contributes to its potential for causing deaths and social and economic destruction [12]. This could also be pointed from what had happened in Palu, Donggala, and the tsunami in Sunda Strait on 24 December 2018[16–19].

But, these complexity events like the 2004 Indian Ocean tsunami show that there is no inevitability of destruction and chaos. Apart from indirect positive effects such as the stimulus to science [12,14,20] and the crystallization of international policy, the more holistic context for natural hazard (and tsunami in particular) research has provided an examination of direct examples of effective disaster mitigation practices.

Because of their context, these (rare) examples tend to be categorized as traditional or indigenous knowledge [21], and the good sense of remote local populations is lauded as instructive. Within the more holistic context promoted by UNISDR, however, understandings from indigenous knowledge and scientific research can perhaps be combined to develop a more comprehensive understanding of the natural hazard such that effective strategies could be generated and sustained to reduce or eliminate the risk of impacts. In many parts of Indonesia, the local communities have practiced their indigenous knowledge in reducing the worst impact of disasters.

## 2 Research purpose

This paper is based upon research into one famous example of indigenous knowledge that saved lives from the 2004 tsunami: Simeulue Island. The study discusses findings derived from two parallel research programs, particularly one compelling relating to the Simeulue community's awareness of the nature of tsunami risk and how to respond to it. A word to encompass the tsunami phenomenon is central to the Simeulue story. This study argues that, by extension, a new word for this most devastating of natural hazards should be the beginning of a new Indonesian narrative about disaster risk reduction. The word that saved people on Simeulue is *smong*.

## 3 Research method

This study presents results deriving from two parallel research programs focusing on Simeulue Island. Both applied a qualitative research model, with one focusing on semi-structured interviews with key personnel (current and ex-government officials) while the second conducted narrative interviews with members of the

general population. The data was collected in 2016 and 2017.

The data was analyzed using a variety of qualitative research approaches, including narrative analysis and ground theory. The interviews were transcribed and coded using qualitative research software (Nvivo™) to identify variously the key social/cognitive factors in the success of the people of Simeulue in 2004 and the system of information management used in the disaster risk reduction program during the 20<sup>th</sup> Century.

The analysis of more than 80 interview transcripts included the consideration of recurrent and repeated and shared concept themes, phrases, and observations from both emic and etic perspectives [22,23]. These have been examined and triangulated with a view to building middle-range theory [24,25] with cross-cultural applicability.

This paper refers to one theme that arose from the expressed concerns of individual interviewees and from the breadth of observations of the population in which the research effort was embedded.

## 4 Tsunami as a phenomenon and a name

The term tsunami has now gained international currency, a legacy of the frequency and length of historical documentation of the natural hazard. Japan appears to have the highest global frequency, with 25.2% of all tsunami events impacting the Japanese coast [1,7].

A hundred years ago, researchers began to use the term tsunami to describe the phenomena. According to Cartwright and Nakamura (2008), the first occurrence of the word tsunami was found in a journal kept by a retainer of the shogun Tokugawa Ieyasu [26]. In receiving news about the Sanriku earthquake of 2 December 1611, fishermen around the Sanriku region called it a tsunami, and they might have used the term because its effects were most evident when they arrived back at their harbor, only to find their villages had been washed away [26].

The term *tsunami* derives from two Japanese words and means harbor (*tsu*) and wave (*nami*) [1,7,27–29]. But the Japanese language also has other terms to describe tsunamis, such as *onami* (large wave), *shikai namisu* (waves rise in all direction), and *kaisho* (roaring and resounding sea) [26].

Many languages from countries with a strong maritime connection also has a special expression for this type of disaster coming from the sea such as tidal waves, seismic sea waves (English), *raz de mare*, *vagues sismiques* (French), *flutwellen* (German), *maremoto* (Spanish), *vloedgolf* (Holland), *hai-i* (Chinese), *loka* (Fijian) [7]. Subsequently, the Japanese term has been adopted worldwide, and many scholars and scientists have used tsunami to describe the phenomena despite the presence of many local alternatives.

The most commonly accepted definition by natural scientists of a tsunami is a wave or series of waves in a wave train generated by the sudden, vertical

displacement of a column of water [1]. This displacement could be due to seismic activity, explosive volcanism, landslides above or below water, asteroid impact, or certain meteorological phenomena [1,30]. Tsunamis could be generated in oceans, bays, lakes, rivers, or reservoirs, each of which lends its own character to the manifestation of the natural hazard [1].

## 5 The 2004 Indian Ocean tsunami and the story of *smong*

On Sunday morning, 26 December 2004, an earthquake of  $M_w$  of 9.2, followed by a tsunami, devastated Aceh Province in Indonesia and other coastal countries around the Indian Ocean [31,32]. The epicenter of this earthquake was located 250 km Southwest of the Aceh and created a 1,500 km rupture along the Sunda megathrust [31]. Slippage along the fault of up to 20 meters resulted in a series of powerful waves that pounded the coastal areas along the Indian Ocean [33]. The tsunami violently swept up to 6 km inland in the provincial capital Banda Aceh and inundated over 500km of mainland Aceh's coast and nearby islands such as Simeulue [34]. More than 230,000 people were certainly killed, and an additional 93,285 people were declared missing [35]. Some 500,000 survivors lost their homes, while as many as 750,000 people lost their livelihood [35,36].

On that Sunday morning, 2004 Sahmadi<sup>†</sup> was a student living with friends in Banda Aceh. He and his friends were shocked by a massive earthquake. The quake went on for a long time, leaving them disoriented and afraid. As it came to an end, Sahmadi yelled '*Smong*,! *Smong*!' and urged them to run to high ground. But his friends didn't move. Instead, they started laughing at the word *smong* and called him a rural hillbilly. Before long, he persuaded them to evacuate to high ground with the result that they were among the survivors of the massive wave that destroyed Banda Aceh and killed more than 230,000 people.

Sahmadi comes from the island of Simeulue. It is the northernmost and lasts in the long chain of islands between Sumatra and the Sunda Megathrust. In 2004 it had a population of about 70,000 people and lay only 50 km from the tsunamigenic 9.2  $M_w$  earthquake. In the days following the disaster, during the communications blackout caused by the destruction of infrastructure, it was generally assumed that Simeulue was 'drowned', and those massive fatalities were to be expected. In fact, Sahmadi heard media reports that said as much. Against this background, surprise exceeded relief when it was found that in fact, there were hardly any fatalities on Simeulue at all. The most commonly quoted figure is seven, while locals dispute this and say six were killed by the earthquake and only three by the actual tsunami [37]. Anecdotes tell of the shock of Indonesian military helicopter pilots seeing thousands of people smiling and waving from the hills near the coast of Simeulue. The locals also say that when SBY (Susilo Bambang

Yudiyono), the former president of Indonesia, heard that so few had died, he said, "Impossible!".

But it clearly was 'possible', and before long, researchers were working beside aid workers to find out the secret of the survival of the people of Simeulue. What they found seemed simple; the locals have a traditional story about *smong* - the giant wave that follows an earthquake and recession of the seawater which runs up onto the land, destroying buildings and drowning everything in its path-. *Smong* is the word for this phenomenon in the local languages of Simeulue. Kähler describes the local language of Simeulue as 'syncretic', one that absorbs words and influences from interaction with other languages [38]. But the word *smong* does not occur in the many languages of the traders, travelers, and migrants that have influenced Simeulue, and it seems to be an entirely local invention. No-one knows exactly where the word came from or how long it has existed, and some locals report that it is an onomatopoeic process [39] and represents the deep booming explosion of the wave<sup>‡</sup>. The origin can only be speculative, but it is clear that the word was an important part of the culture of the island from the early 20th Century.

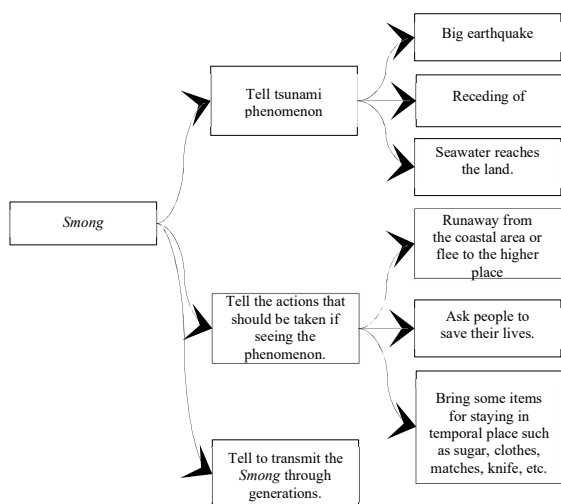
In the 20<sup>th</sup> Century, the history of *smong* pivots on a similar massive earthquake and tsunami. The *smong* occurred on Friday, 4 January 1907 [40]. This wave is reported to have been far larger than that in 2004 and killed a great many people, almost wiping out the entire population [39,41]. The survivors, those who, by luck or good judgment, ran to the nearby hills, felt compelled to urge their descendants to be ready for *smong*: if there is a big earthquake and the sea recedes, run to the mountains. This story is the basis of the 'kearifan smong' - the wisdom of *smong*- and it is the core of the possibility of saving the lives of everyone in Simeulue in 2004.

Upon examination, the story of *smong* is not simple but quite profound. First, it is probably the only word in any language specifically for the phenomenon now widely referred to as 'tsunami'. Coming from Devayan, the main language of Simeulue, *smong* specifically refers to the complex of earthquake/sea receding/giant wave that is typical of near-field tsunami events in Indonesia (see Figure 1). This clarity of meaning is not shared by other terms. In the English-speaking world, the common term for the massive wave event used to be 'tidal wave'. This was a clear misnomer insofar as the giant wave was not generated by or even related to the tide. As mentioned, the widespread adoption of the Japanese tsunami also incorporates a misnomer. 'Tsu' is the word for harbor, and 'nami' means wave. That is, 'tsunami' means 'harbor wave'. The term was adopted by fishermen returning from the sea, where they had not noticed any unusual wave activity, only to find the port and its town devastated by a large wave [26]. They concluded that the wave affected the harbor and hence the name. Of course, as the Indian Ocean tsunami event of 2004 shows, the wave affects entire coastlines and is not restricted to harbors and ports.

<sup>†</sup> Not his real name. Interview recorded 9 December 2016

<sup>‡</sup> Interview recorded 6 August 2017

In contrast, the word *smong* precisely refers to the phenomenon of a massive wave generated by an earthquake. This is much more than a linguistic nicety. Anthropologists have long demonstrated the important connections between language and culture' and the importance of efficiently sharing a concept or idea. In a discussion that pre-supposes aspects of Kahneman and Tversky's identification of the availability heuristic in human cognition [42], Brown and Lenneberg state that more nameable categories of phenomena are closer to the top of the human cognitive 'deck' [43]. These ideas still have currency in consideration of language and human perception, supporting the straightforward concept that the ready availability of an often-used term aids an individual's ability to access memories and process information about the defined phenomenon [44]. Simeulue appears to be one of the few places on earth where the culture specifically provides socio-cultural and individual space for the giant disastrous wave phenomenon. In interviews, people from Simeulue often express more than simply an 'awareness' or 'knowledge of *smong*; in attributing it to the reason for their survival in the 2004 tsunami [17].



**Fig. 1.** The summary of the *smong* means in *nafi-nafi*. Adapted from Rahman (2018) [45]

This ownership seems to be particularly strongly captured in the traditional songs of Simeulue, the *nandong*, the classic vehicle for the transmission of the *smong* story. The *nandong* is a traditional song format in the local language. A sort of Simeulue 'Blues', it commonly incorporates sad and mournful tales of love and loss, and a 'standard' is, of course, the massive loss of family and loved ones during the *smong* event in 1907. It is hard to imagine anyone hearing the *nandong smong* failing to remember its unsettling messages.

The *nandong* is performed at special events and is a staple at weddings where extended families and community members get together to celebrate. But it is also simply part of the weekly dialogue of families in their homes where grandma or grandpa might sing *nandong* with their grandchildren. More recently, local

musicians and historians have collaborated to record a more modern version of the traditional song [37]. Adding verses to the story while maintaining the original words in the style of popular music in Indonesia.

The original words of the 'nandong *smong*' extend beyond mere description of the phenomenon but draw the listener to ponder their personal relationship with nature, particularly the giant destructive wave. Table 1 below sets out four concluding lines from the *nandong*, first in the most widely used local language, Devayan, then Indonesian, and then English.

**Table 1.** The *smong* in nandong lyric which contains the metaphysical

Devayanesse	Indonesian	English
<i>Smong dumek-dumek mo</i>	<i>Smong mandi-mandimu</i>	<i>Smong</i> is your bath
<i>Linon uwak-uwak mo</i>	<i>Gempa ayunanmu</i>	Earthquake is your (rocking) cradle
<i>Kilek suluh-suluh mo</i>	<i>Kilat suluh-suluhmu</i>	Lightning is your torch
<i>Eklaik kedang-kedang mo</i>	<i>Petir gendang-gendangmu</i>	Thunder is your drum

Data source: re-performed on 8 January 2017, by a former Simeulue Regency leader who served from 2001 to 2006 [37,46]

## 6 Discussion

The sentences of the *smong* in nandong are extraordinary. While other parts of the *nandong* provide a warning about the *smong* and the need to run to the mountain after the signs of earthquake and sea recession, these four lines seem to encourage people to embrace natural hazards, with *smong* as merely the beginning. To 'get into' the *smong* as if it is your bath! Is a number of those interviewed stressed this clear metaphysical element? Mr. Haris<sup>§</sup> has a strong interest in the traditional music of Simeulue and described the 'smong dumek dumekmo' passage as being critically important and something young people need to understand; "It has philosophical meaning," he said.

This indicates the degree of sophistication of the 'wisdom of *smong*'. Through the telling of stories and singing of songs, every individual on the island has a readily accessible understanding of the physical manifestation of the natural hazard and a philosophical and metaphysical connection. These deep cognitive linkages pivot on the word *smong*.

On the other hand, the Simeuluean people could also be neglected to consider the disaster prevention or mitigation countermeasure held by related stakeholders due to already having their *smong* knowledge and

<sup>§</sup> Not his real name. Interview record 6 August 2017

feeling that *smong* could help them face the future disaster.

There is a definite metaphysical element that has to be verified to get into “the *smong* is your bath” that could be referred to the *nandong*. It does indeed go on to encourage people that the best thing to do in case of the *smong* is to run to the mountains. It is hard to imagine people hearing that *smong* lyric in *nandong* can fail to translate the *smong* DRR message [45].

The Simeuluean people seem very optimistic about the success of the *Smong* story in 2004, but there is a probability of the decreasing of the recognition of the *smong* story and DRR efforts. Even though the *smong* is much more than a word, it also had an extraordinary experience of saving lives. However, further development of the *smong* story as DRR efforts is needed because it is difficult to believe that the *smong* story can still be reliable and applicable to a future disaster.

*Smong* encapsulates the phenomenon, and the story of *smong* resonates with all the people of Simeulue. The word was universally known in 2004 and given a wide airing in national and international media throughout 2005.

In more recent years, the combination of ubiquitous digital media and entertainment and constant references to 'tsunami' may dilute the knowledge and interest in *smong* in Simeulue.

## 7 Conclusions

The *smong* story demonstrates the important connections between indigenous knowledge and DRR. This research has demonstrated that having a word that encapsulates the phenomenon and is widely known and accessible in the community is one practical example of operationalizing indigenous knowledge to save lives.

One way to address this threat is to grant the word *smong* the world recognition it deserves. As the word that encapsulates the giant destructive wave phenomenon, 'smong' should be recognized worldwide. And if not everywhere, at least in Indonesia as its 'homegrown' word for this natural phenomenon. Many people in Simeulue express their undying gratitude to the world who came to their aid to rebuild after their island was devastated. They wish to give something back, but they especially want to show their appreciation to their Indonesian countrymen. They wish to give the gift of *smong* in contributing to DRR.

Making 'smong' the Indonesia narrative for tsunami would not only be a huge gift to the people of Indonesia, but it would also be a fitting recognition of the remarkable resilience of the people of Simeulue.

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