

Mount Bromo Will Take Care of Us: Tenggerese Religious-Ecological Knowledge, Challenge of Modern Reason, and Disaster Mitigation in Postcolonial Times

Ikwan Setiawan,* Albert Tallapessy,** and Andang Subaharianto***


This article aims to discuss the religious-ecological knowledge of the Tenggerese community on the slope of Mount Bromo, Probolinggo (East Java, Indonesia) and its contribution to disaster mitigation. Within the framework of traditional ecological knowledge, we will analyze field data from 2011 until 2016. The results of this study show that many Tenggerese people believe Mount Bromo to be the axis of religion and its surrounding area to be a sacred place. They also believe in and practice several religious-ecological customs in understanding volcanic eruptions and various natural signs. For them, an eruption is a supernatural process involving gods and goddesses that takes place to improve living conditions. However, living in postcolonial times with modern cultures and capitalistic agricultural practices has made some Tenggerese people question and challenge religious authorities when they experience the economic damage caused by volcanic eruptions. Religious authorities can handle the challenge by invoking the concept of communal harmony. Further, we argue, government agencies may incorporate Tenggerese religious-ecological knowledge into disaster mitigation practices. They can combine modern mitigation mechanisms with such wisdom. This hybrid mitigation model may facilitate the coordination of government agencies with traditional leaders to prepare strategically before a disaster strikes as well as implement tactical actions when a disaster occurs.

Keywords: religious-ecological knowledge, Tenggerese, Mount Bromo, postcolonial times, disaster mitigation

* English Department, Faculty of Humanities, University of Jember, Jl. Kalimantan No.37 Jember Jember East Java 68121, Indonesia
Corresponding author's e-mail: ikwansetiawan.sastra@unej.ac.id

 <https://orcid.org/0000-0002-4488-0631>

** English Department, Faculty of Humanities, University of Jember, Jl. Kalimantan No.37 Jember Jember East Java 68121, Indonesia
e-mail: albert@unej.ac.id

 <https://orcid.org/0000-0001-6091-2544>

*** Indonesian Department, Faculty of Humanities, University of Jember, Jl. Kalimantan No.37 Jember Jember East Java 68121, Indonesia
e-mail: andang.sastra@unej.ac.id

 <https://orcid.org/0000-0002-3139-1150>

Introduction

When Mount Bromo—an active volcano and a popular tourist destination in Probolinggo, East Java, Indonesia—erupted for nine months from October 2010 to July 2011, the governmental disaster agency asked Tenggerese people—in local terms, *wong Tengger*—to evacuate to a shelter in order to avoid disastrous impacts. Not all of them accepted the evacuation process, and many chose to remain in their homes. The displaced residents did not stay in the shelter tents for long either; they chose to return to their homes to clean up the volcanic ash and check on their livestock—such as cows and goats—in the *tegal* (farming fields). These decisions were not in accordance with the principles of disaster mitigation, which prioritize the safety of residents. However, it would be wrong to blame the Tenggerese people, because they based their decisions on religious beliefs passed down through the generations. They also needed to visit their homes to save their livestock and clean their houses of volcanic ash. Therefore, as Judith Schlehe (2011) argues, to understand disasters and their impacts, we must be able to read the dynamics that arise as a result of the existence of a religious/traditional perspective in the midst of modernity. It is important to reread about Tenggerese religious beliefs regarding Mount Bromo as the source of religious-ecological knowledge. Such knowledge plays a strategic role in communal life and can be a part of the disaster mitigation process.

The significance of understanding Indonesian people's cosmological beliefs regarding volcanic eruptions, even though most are well versed in modern culture and knowledge, has received serious attention from several scholars. Some studies of the eruption in Java show the complexity and dynamics of local residents' perceptions of cosmological beliefs based on their respected spiritual leaders' words and natural signs. On the one hand these perceptions can be beneficial, but on the other they can cause serious problems in disaster mitigation efforts, especially with regard to the evacuation process. Katherine Donovan *et al.* (2012) argue that local beliefs among residents around Mount Merapi could create problems in disaster mitigation if the public is not given a comprehensive explanation. Therefore, people in disaster-affected areas need to get disaster education. In addition, government agencies need to improve facilities for disaster mitigation, including evacuating affected residents. Taking a more positive tone, Edi Widodo and Hastuti (2019) believe that the government should incorporate local community knowledge about the Merapi eruption into disaster mitigation efforts so that residents can be more receptive to evacuation activities. Learning from Mount Kelud and Mount Merapi, Eko Hariyono and Solaiman Liliarsari (2018) propose the integration of local knowledge into policy and the modern mechanisms of disaster mitigation in dealing with eruptions, because residents are more familiar with local terms. Ernesto Schwartz-Marin

et al. (2020) believe that what is needed in disaster mitigation during Mount Merapi eruptions is not only modern management but also good communication and synchronization of various knowledge, government officials, and NGOs as well as practical actions to protect residents. With the hope of enriching studies related to local knowledge about mountains and the possibility of integrating them into disaster mitigation, this paper aims to discuss Tenggerese religious-ecological knowledge related to Mount Bromo and its surrounding area that is manifested in various rituals. We argue that the religious-ecological knowledge of Tenggerese, including knowledge of natural disasters and sacred areas, comes from their ancestors' religious belief in the cosmological relationship between humans, nature, and supernatural power. Such knowledge needs to be disseminated to the public, so that the disaster mitigation actions carried out by the government when Mount Bromo erupts will not create resistance among the Tenggerese people. Public participation is needed for the success of disaster mitigation and management (Berke *et al.* 1993; Reddy 2000; Winchester 2000; Luna 2001; Lindsay 2003; Pearce 2003; Doberstein 2009). One of the factors in effective disaster mitigation is knowing what people in a community understand about disasters based on their religious beliefs and empirical views. For this reason, this study will analyze Tenggerese knowledge about Bromo eruptions and the natural environment. In addition, we will discuss some possible shifts in knowledge in the context of modern life.

Some theoretical perspectives on traditional ecological knowledge (TEK) have contributed significantly to this study. TEK is a body of knowledge based on cosmological beliefs in local or non-industrial societies—many of them indigenous and tribal communities—which emphasizes human relations with the environment and other living things derived from experience. It functions as: (a) a source of management systems for agricultural, livestock, natural resource, conservation, and climate change work used in the past and transmitted verbally into the present; (b) a system of values and ethics that underlie human actions related to the environment and all its contents; and (c) encapsulating the important aspects that contribute to shaping cultural identity (da Cunha and de Almeida 2000; Menzies and Butler 2006, 2; Houde 2007; Berkes 2008; Vinyeta and Lynn 2013; Whyte 2013). What is interesting about this understanding is the recognition of the inseparable relationship between humans and other living beings as well as the environment that shapes culture.

Nonetheless, we need to position TEK contextually, particularly in responding to various political, economic, cultural, and ecological changes. Over the past few decades there has been a change in the perspective of local communities as a result of the expansion in the market economy, which encourages them to somewhat ignore TEK (Gómez-Baggethun *et al.* 2013; Ikeke 2015). On the other hand, market capitalism, which drives

massive exploitation of natural resources, accelerates the probability of an ecological crisis (Leigh 2005; Zhang 2013; Tilzey 2016; Moore 2017). Recognizing this destructive threat, many indigenous communities have organized social movements to resist the exploitation of their natural environment (Takeshita 2001; Todd 2003; Albro 2005; Merlan 2005; Powell 2006; Fischer 2007; Fenelon and Hall 2008; Ryan 2008; Murillo 2009; Wane 2009; Horst 2010; Jones 2010; Walter 2010; Theriault 2011; Powless 2012; Mistry *et al.* 2015; Morden 2015; Tekayak 2016; Bessant and Watts 2017). There are also growing efforts to integrate TEK and new knowledge and technology in responding to climate change (Nyong *et al.* 2007; Green and Raygorodetsky 2010; Lauer and Aswani 2010; Orlove *et al.* 2010; Speranza *et al.* 2010), mapping and classifying natural resources (Hernandez-Stefanoni *et al.* 2006; Naidoo and Hill 2006; Halme and Bodmer 2007; Lauer and Aswani 2008), managing natural resources (Kaschula *et al.* 2005; Rist and Dahdouh-Guebas 2006; Ulluwishewa *et al.* 2008), enriching biodiversity for medicinal plants (Dahlberg and Trygger 2009), conserving the natural environment (Critchley *et al.* 1994; Adoukonou-Sagbadja *et al.* 2006; Herrmann 2006; Marie *et al.* 2009), improving agriculture (Gladwin 1989; den Biggelaar 1991; Chandler 1991; Groenfeldt 1991; Browder 1995), planning natural disaster mitigation (McAdoo *et al.* 2009; Mercer and Kelman 2010; Mercer *et al.* 2010), and ensuring the success of development projects (Woodley 1991; Laurie *et al.* 2005; Sen 2005).

Researchers have discussed Tenggerese environmental knowledge from a variety of theoretical perspectives. Jati Batoro (2012) argues that Tenggerese residents use land functionally, including areas for dwelling, agriculture, conservation, ecotourism, and sacred sites. TEK is applied for environmental conservation in *terasiring* (sloping terraces), a traditional agricultural system combined with plant borders, stall locations separated from houses, and Casuarina trees planted in traditional arrangements. Tenggerese residents depend on plant resources for their livelihood, and they have good knowledge about the plant diversity surrounding them. Sony Sukmawan *et al.* (2017) found some Tenggerese ecological knowledge in the form of ideas, attitudes, and actions, including (i) the simultaneous effort of time and space in harmonious conditions; (ii) the presence of multi-vocal time and space representing the physical and psychological realm which needs to be invited, entertained, and glorified; and (iii) efforts to harmonize time-humans-space mediated by *slametan*, a traditional rite that holds the traditional knowledge system for the prevention of, protection from, and recovery from imbalance in natural conditions. Tenggerese mythology also contains various forms of environmental knowledge values such as respect, compassion, and concern for nature; cosmic solidarity; responsibility for nature; not harming others; and leading a simple life in harmony with the environment (Sony Sukmawan and M. Andhy Nurmansyah 2012).

Taking a different angle, in this study we will focus on the religious-ecological knowledge that is believed in and implemented by many Tenggerese people in the context of their encounter with modern cultures. Historically, since the Dutch colonial era Tenggerese communities have engaged in commercial vegetable agriculture, which has brought them financial profits and enabled the consumption of modern industrial products (Hefner 1990). Indeed, Mount Bromo is the center of Tenggerese rituals, and the land around it is called *hila-hila*, or sacred land. Tenggerese people practice ancestral rituals. However, they also engage in market-oriented agriculture, receive a modern education, and are involved in Bromo tourism. For this reason, we also use the theory of post-colonialism (Bhabha 1994), which views postcolonial societies as having a complicated process of mimicry and mockery of modern cultures because they do not passively mimic but rather appropriate modern culture to fit into local frameworks and interests. They also do not completely abandon their belief in their ancestral religion. This dynamic process of mimicry and mockery produces a hybridity in which local communities bring modern cultures into their imagination, beliefs, and practices but still negotiate local cultures. However, the cultural in-betweenness and ambivalence experienced by Tenggerese residents also enable them to challenge the establishment of religious-ecological knowledge.

We will use the above theoretical framework to analyze primary data from our field research in the Tengger region, especially Sukapura District, Probolinggo Regency, in 2011–12 and 2015–16. Data collection was carried out by conducting in-depth interviews and participatory observation. We analyzed the collected data by applying the theoretical framework with the aim of revealing the position of Mount Bromo in the axis of Tenggerese cosmological belief. First, we will explain Bromo's cosmological position in the religious system and social life of the communities. This analysis is important to understand how ecological knowledge is not only believed in but also manifested in cultural activities. Second, we will uncover the Tenggerese worldview on the volcanic process in Mount Bromo, especially related to the economic losses and disruption that must be suffered when commercial crops are damaged by eruptions. Third, in the midst of such problems, it is important to understand the Tenggerese mechanism for maintaining harmony with nature. Fourth, we will criticize the challenge of modern reason against Tenggerese ecological-religious knowledge in the midst of the market capitalism that has penetrated the heart of mountain life. In the final section, we will explore the possibility of incorporating Tenggerese ecological-religious knowledge into disaster mitigation. In the midst of modernity and postcoloniality, the Tenggerese local culture can be a signifier for a dynamic collaboration of ancestral beliefs and modern knowledge when dealing with disasters.

Mount Bromo as the Axis of the Tenggerese Religion

Tenggerese communities—in Probolinggo, Pasuruan, Malang, and Lumajang—believe in the concept of *sakketurunan*, “one descendant” of Rara Anteng and Jaka Seger. The term “Tengger” comes from Rara Anteng (*Teng-*) and Jaka Seger (*-ger*). Tenggerese mythology contains a story about Rara Anteng and Jaka Seger, who inhabited the Bromo area, where they prayed to God in *segara wedi* (the sea or the place of sand before Mount Bromo) to be given descendants. Because of their promise to sacrifice their last son, Hong Pukulun (a local term for the god who controls all parts of the universe, including human life) gifted Rara Anteng and Jaka Seger 25 children. Based on this myth, we can see the religious relationships between humans, the natural environment, and Hong Pukulun as the basis of Tenggerese life from the past to the present. Such relationships have formed the life principles of Tenggerese people and have allowed them to survive despite the various problems they face in their mountainous environment. They have positioned nature as an integral part of life as well as an intermediary between them and Hong Pukulun. According to local beliefs, the gods in Bromo are supernatural agents that can help to grant the Tenggerese people’s pleas after purifying them of all wrong and sin. Meanwhile, humans must work and carry out rituals in the hope that God will provide them with prosperity. Tenggerese people believe that when humans fulfill their oaths or commitments, everything will run smoothly.

Kusumo, the 25th child of Rara Anteng and Jaka Seger, was a beloved figure, so the courage of his parents to sacrifice him was a very tough test. Their love for their child made Rara Anteng and Jaka Seger deny the oath that had been pledged in *segara wedi*. They refused to sacrifice Kusumo. Feeling betrayed, the gods of Bromo spilled anger: the volcano erupted, lightning struck, lava raged like a burst of fire from a dragon’s head, and there were floods and landslides. Rara Anteng and Jaka Seger’s betrayal of their oath to a supernatural power was proof of the courage of humans to ignore sacred agreements for the sake of worldly love. Knowing the oath of his parents and because he did not want to see his family destroyed, Kusumo sacrificed himself by throwing himself into the Bromo crater. His sacrifice affirms that all forms of supernatural power must be manifested in concrete actions such as ritual offerings and a willingness to share in the fortunes of fellow Tenggerese residents and fellow humans. This story about Kusumo is believed to underlie the birth of Kasada, an annual ritual of offering crops and livestock to the crater of Mount Bromo (Sutarto 2002).

Interestingly, the old inscription *Prameswara Pura*, found in 2002 in Sapikerep Village, Sukapura Subdistrict, Probolinggo, mentions that Sri Maharaja Kertanegara (King of Singasari, 1254–92) gave a community that lived on the slope of Mount Bromo land

with *perdikan* status. This land was exempt from tax due to the community's religion being different from Hinduism and Buddhism. However, the residents were given some religious tasks of conducting prayers and rituals to defend Bromo and its surroundings as a sacred area, *hila-hila*. If they neglected these tasks, they would be cursed with being eaten by wild animals and hit by floods, thunder, or volcanic eruption. *Prameswara Pura* was similar to the messages in the myth of Rara Anteng and Jaka Seger. Thus, it can be said that the myth was a symbolic creation related to the life order that must be obeyed by Tenggerese communities in the four regencies. In this context, the forces of nature become punishers for non-compliance or religious betrayal by Tenggerese individuals or communities.

We have our own interpretation of the Rara Anteng and Jaka Seger myth. The early members of the Tenggerese communities were special humans who had spiritual strength (*anteng*, inward calm) as well as physical prowess (*seger*, healthy and energetic). They had an excellent understanding of the supernatural power that controlled the universe. They saw Mount Bromo as the representation of this power on Earth because it could support a variety of forest vegetation, soil fertility, and abundance of clean air as well as destroy when it erupted. Bromo became a cosmological axis in their efforts to communicate with Hong Pukulun in order to live safely and prosperously. Communication could be facilitated when humans had an inner calm, a quality that was attached to a female figure. This spiritual quality could enable early Tenggerese residents to read various natural signs and create rituals as a form of vertical obedience to supernatural authority. Physical conditions were quite extreme, with cold temperatures and steep slopes as well as various kinds of natural threats, encouraging early Tenggerese people to develop skills and physical strength. Following this interpretation, the term "Tengger" is a meeting point between spirituality and the physical cultures of humans, both of which are required to live in the Bromo area.

In this conception, Bromo is an intermediary that bridges the gap between humans and the natural environment and gods. It is Tenggerese people's way of understanding their relationship with the natural environment and gods that gives rise to symbolic creativity with religious content in the form of prayers/mantras, rituals, and oral traditions. Adopting the ideas of Clifford Geertz (1973), symbolic creativity in the form of rituals, offerings, and mantras that respect the existence of Bromo is a human way to concretize abstract beliefs so they can be more easily understood by community members. The myth of Rara Anteng and Jaka Seger was the result of narrative-symbolic creativity to emphasize the primacy of the Bromo region and the relations between humans as well as the human-nature-supernatural axis in Tenggerese life. The cosmological belief constructs local knowledge about the primacy of Bromo and the surrounding area as *hila-hila*,

which must be maintained and cared for, for the sake of the lives of Tenggerese communities as well as all humans. The “dialogue” with Bromo through ritual becomes an important cultural process to negotiate Tenggerese people’s needs.

According to Tenggerese religious beliefs, Mount Bromo plays several important roles. First, it is the home of *leluhur ngaluhur*—the spirits of predecessors who have transformed into gods—who guard the life and region of Tengger. Based on this belief, Mount Bromo is a glorified holy palace because it is a cosmic space where the power of gods becomes represented by Hong Pukulun in *hila-hila*. Therefore, Tenggerese people do not dare to say or do bad things on this mountain and its surrounding area. Even though an eruption is dangerous, they will not blame Bromo. The belief in the existence of gods leads Tenggerese people to practice rituals at Bromo. Second, Mount Bromo’s crater is a place for the purification of sins of the Tenggerese people who have died. It is believed that the spirits will be purified in the crater and then delivered to the summit of Mount Semeru and flown to heaven. Third, Bromo is a place of purification for the mistakes made by mankind throughout the earth, not just Tenggerese communities—a reflection of a universal cosmological awareness. Bromo plays a strategic role for all human beings and other creatures, *sak lumahe bumi sak kurepe langit* (for all creatures on the earth and under the sky). Kusumo’s sacrifice is symbolic of his effort to purify and improve the order of human life. Fourth, Bromo and the surrounding area are *hila-hila*, which require good behavior, attitudes, and outlook of life on the part of their inhabitants. Tenggerese people believe that the sanctity of the land can be felt to this day. When Tenggerese residents engage in a taboo act, such as premarital sex or adultery, it is believed that the community where the act took place will suffer an epidemic. So, as long as they are still undergoing Kasada and other rituals, Bromo will always protect Tenggerese people and bring happiness and prosperity. The belief in the sanctity of Mount Bromo as one of the cosmological centers is a manifestation of Tenggerese religious belief, which emphasizes good relations with all creatures on Earth, with nature, and with supernatural powers, including Hong Pukulun. The religious practice, as mentioned in the *Prameswara Pura* inscription, is a manifestation of the *Shiva-Sugata* teachings, which are believed by *dhukun pandita*—religious and cultural leaders in Tenggerese villages—to be the early religion of Tenggerese people. This syncretism of Hinduism and Buddhism was a hallmark from the Singasari era to Majapahit. This means that in the kingdom era, Tenggerese people had the creative intelligence to read and synthesize some major religions to serve as their religious identity. Belief in Mount Bromo became a religious identity that distinguished Tenggerese people from other residents in the era of the Singasari and Majapahit kingdoms. When in the seventeenth century the Islamic Mataram army began to expand into East Java, Tenggerese com-

munities were still loyal to *Shiva-Sugata*.

This does not mean that there were no efforts to proselytize Islam in the Tenggerese community. There is an oral story passed down from generation to generation about the people of Grinting Village (now Wonokerto Village), Sukapura, who became the target of proselytization. It tells of the efforts of Ki Dadap Putih, a Muslim preacher, to teach Islam in this village. Due to opposition from Tenggerese *dhukun pandita*, which resulted in the death of Ki Dadap Putih and his followers, the Islamic mission did not continue beyond Wonokerto; it did not reach the upper villages, such as Ngadas and Ngadisari (Kosim *et al.* 2013, 67). In the second stage, the Islamic mission was carried out by Raden Samino and Raden Saminndro, both from Kediri. They advocated for Islam through marriage and traditional arts. Raden Samino married a daughter of the Wonokerto village head and founded a traditional art group consisting of local residents (Kosim *et al.* 2013, 68). However, not all Tenggerese residents wanted to convert to Islam. One such person was Keti, a *dhukun pandita* who decided to move to Ngadas Village, Malang. Before moving, he made an agreement with Raden Samino that the Islamic mission could reach only Wonokerto and not the Tengger villages above it, namely, Ngadas, Jetak, Wonoroto, and Ngadisari in Sukapura District, Probolinggo. However, there were some teachings of Islam that were adopted by the Tenggerese tradition, such as circumcision, and burying the body rather than cremating it (the head of the dead body points toward Mount Bromo, not toward the north as in the Islamic tradition).

When the majority of Tenggerese people converted to Hinduism in 1973, they did not give up their faith in Mount Bromo. Historically, the process of converting the majority of the Tenggerese community to Hinduism cannot be separated from the regulation of the New Order regime, which required every citizen or community to believe in and practice one of the country's official religions: Islam, Catholicism, Christianity, Buddhism, and Hinduism. The state did not consider Tenggerese religious beliefs to be an official religion, so the Tenggerese people had to choose one of the five official religions. The idea behind this regulation was to remove Communist ideology from Indonesia. When the people did not believe in one of the official religions, they were labeled as non-religious, atheist, or Communist. The label of Communism would certainly cause deep trauma, because of the 1965 bloody tragedy—which was also experienced by many Tenggerese people who were accused of being members or sympathizers of Partai Komunis Indonesia (Indonesian Communist Party). The trauma of the 1965 tragedy, in which many Tenggerese were killed by civilian troops at the direction of the military apparatus, forced people to choose one of the official religions required and recognized by the New Order regime. Initially many of them turned to Buddhism, since it had similarities with Tenggerese religious beliefs in terms of the relationship between

humans and God, fellow living beings, and nature. However, the majority of Tenggerese people came to believe that Buddhism was incompatible with their religious beliefs. So, in 1973, in a meeting of *dhukun pandita*, it was agreed that Tenggerese people would convert to Hinduism. This decision was based on the similarity of Hindu rituals and mantras with those conducted and chanted by *dhukun pandita*. Again, this agreement was a political choice in that Tenggerese people chose to become Hindus based on concerns over the next generation: the Communist stigma for citizens who did not believe in one of the official religions could endanger their lives.

When Mount Bromo Erupts: *The Ancestors Are Having Sacred Celebrations*

Local knowledge and scientific knowledge are different when it comes to interpreting a truth. In the case of scientific knowledge, a truth requires empirical research that can be widely accepted by the academic community. Meanwhile, local knowledge originates from the empirical experiences of people who position the relationship between humans, the universe, and God as the truth. The discrepancy also highlights differences in the ways of looking at a problem. The Tenggerese belief in the sanctity of Bromo and the surrounding area, and its implementation in rituals and mantras passed down through the generations, have led Tenggerese people to develop local knowledge about volcanic eruptions that is different from scientific knowledge. In other words, we cannot say that Tenggerese knowledge is not a truth simply because it cannot be measured by modern epistemic logic. Instead, we must place this knowledge in an ontological turn (Heywood 2017), which emphasizes that the world and knowledge about it may vary beyond the understanding of modern Western logic.

For Tenggerese communities, Bromo's eruptions are routine activities that need not be feared. Information from previous generations about Bromo's eruptions and the absence of records about victims during ancient eruptions have led to this lack of worry. In fact, most local residents did not want to evacuate during Bromo's eruption in 2010–11. Such decisions in disaster mitigation management are considered dangerous because unexpected events can occur. Before discussing how we should treat Tenggerese knowledge, it is important to understand some of the Tenggerese knowledge related to Bromo.

First, Mount Bromo's eruptions are natural events; they are viewed as *leluhur ngaluhur duwe gawe* ("the gods are having sacred celebrations" or "building or repairing their holy palace"). This ecological belief creates a positive attitude toward the volcano, since sacred celebrations or building a palace have implications of goodness. It means

that *leluhur ngaluhur* (spirits of ancestors that have transformed into gods) have an interest not only in maintaining the palace in good condition, but also in the life of Tenggerese people, who always send prayers and offerings. It is impossible for *leluhur ngaluhur* to let disasters have a tragic impact on people's lives. Therefore, at the beginning of a Bromo eruption, *dhukun pandita* conduct a ritual to reject *bala* (disaster), as a request to prevent events that will destroy life in this region.

Second, Mount Bromo is viewed as the protector of Tenggerese communities in the four regencies. People believe that their ancestors who transformed into gods live on Bromo, so it is impossible for an eruption to injure or kill Tenggerese residents, who always give offerings. For them, an eruption of Bromo seems frenetic externally—with government agencies and media present in full force—while they themselves are calm. While Tenggerese communities still carry out Kasada and other rituals, they believe that Bromo's eruption will not endanger their lives. Of course, this belief cannot be explained by scientific reason. Following Vladimir Propp (1984), we do not need to find truth in local knowledge that is based on modern scientific reason, because society has its own worldview.

Third, it is believed that the gods at Bromo will provide guidance to the coordinator of *dhukun pandita*¹⁾ regarding an eruption, including its severity, because he is capable of dealing with supernatural powers. When facing an eruption that is estimated to last a long time, the coordinator of *dhukun pandita* will conduct *semedi*, a sacred meditation, after fulfilling several requirements, such as offering certain prayers. In his *semedi*, he will ask for instructions from the gods at Bromo about the eruption and what to do. After getting instructions, the coordinator will communicate and discuss with all *dhukun pandita* and village officials in the Tengger region to immediately conduct rituals as ordered by the gods. The ability to communicate with this supernatural power confirms that the chosen Tenggerese individuals are able to transform the ability of their predecessors to appeal to the gods. Usually, after the *dhukun pandita*'s instructions, residents and village officials do what the gods have ordered and the eruption slowly stops. Thus, *dhukun pandita* actually may become agents of disaster mitigation. This means that *dhukun pandita* can instruct Tenggerese residents because their words are trusted. If the coordinator of *dhukun pandita* asks the residents to evacuate, they will flee; otherwise they will stay at home.

Fourth, Tenggerese people believe in the concept of *dilironi*. This means “Hong

1) The coordinator of *dhukun pandita* is the leader of all *dhukun pandita* from Tenggerese villages in Probolinggo, Pasuruan, Malang, and Lumajang. A communal process is carried out by all *dhukun pandita* to elect one of them based on his capacity to understand religious teachings and traditional customs as well as his ability to recite mantras without reading the text.

Pukulun will compensate them for all losses after the eruption.” During the nine-month eruption in 2010–11 they suffered considerable material losses, because the vegetables they had planted were damaged due to volcanic materials. However, most chose to stay at home; they lived on their savings, ate corn as a substitute for rice, and sold livestock. The eruption was viewed as a natural event and the will of Hong Pukulun, so Tenggerese communities accepted that they had to patiently suffer through the difficulties caused by it. A *dhukun pandita* of Ngadisari Village symbolically compared the nine-month eruption to a pregnant woman:

This long eruption has taught us quite a valuable lesson. Like a nine-month pregnant woman, Bromo was born again with a ‘new face.’ For us, this is a ‘new birth.’ We must be able to maintain this new birth so that Bromo can provide good and useful things to the community. Indeed, our noble ancestors were building palaces or having big celebrations, so we could not carry out many rituals at that time. When the celebrations were done, the eruption stopped by itself. The important thing is that there were no casualties.²⁾

Indeed, in the past, Tenggerese residents have suffered no casualties due to an eruption. Not even a chicken has died. According to the ancients, before they ate rice and when they still planted corn without vegetables, every time after a Bromo eruption the harvest of taro and corn was abundant. In other words, *Hong Pukulun njaluk sak usum* (God does not give crops during one planting season). After an eruption residents usually benefit financially, from both upland agricultural products and tourism. The proof is that after an eruption, more and more foreign and domestic tourists come. Even though they have not been able to grow potatoes and carrots with much success, farmers have started planting onions, and those are doing well. In fact, many caterpillar pests that were found before the eruption are no longer there.³⁾

Such a belief is a form of religious-ecological knowledge based on the experiences and oral utterances of ancestors. With the concept of *dilironi*, at least, Tenggerese people feel calm and optimistic that the disaster will end with happiness. From an agricultural perspective, this is natural because the volcanic ash that covers the land (fields) brings fertility to the soil, in addition to killing pests such as caterpillars. For Tenggerese people, such experiences are viewed as “hidden blessings” from the eruption, so it is natural that they remain patient. In terms of tourism, based on our observations in the last week of July 2011, there were many foreign tourists who came, in addition to domestic

2) Interview with Sutomo, *dhukun pandita* of Ngadisari Village, Sukapura Subdistrict, Probolinggo Regency, July 29, 2011.

3) Interview with Sutomo, *dhukun pandita* of Ngadisari Village, Sukapura Subdistrict, Probolinggo Regency, July 29, 2011.

tourists. Most of them used jeep transportation services managed by Tenggerese operators to enjoy Bromo after the eruption. All hotels in the Bromo area were full. This was a reasonable situation, because July to August 2011 is peak season, when many foreign and domestic tourists visit. However, locals still saw the tourism boom as a form of prosperity gifted by Hong Pukulun after the hardship of the long eruption. The attitude of always accepting whatever is given by Bromo indicates that Tenggerese people are able to integrate their thoughts and actions with their surroundings.

Maintaining Inter-Cosmos Relationships through Rituals

There are many rituals in Tenggerese tradition, from private-/family-oriented to communal ones. Among the prominent rituals are Entas-entas, Walagara, Unan-unan, and Kasada. Entas-entas, the final death ceremony carried out by the family, involves burning a doll made of shrubs as a symbol of the dead body. The actual dead body is not burned, as in Hindu tradition. Even though Tenggerese believe in Hinduism, their funerals are similar to the Islamic tradition. What distinguishes Tenggerese from Islamic burial tradition is the position of the head of the dead body, which points toward the sacred Mount Bromo. Walagara is a marriage ritual. Unan-unan is a ritual held every five years, a kind of purification and salvation ritual for the village and the earth. Kasada is an annual ritual where people give offerings to Bromo's crater to invoke safety and prosperity.

For Tenggerese people, rituals are a medium for developing relations between humans and Hong Pukulun, humans and gods, humans and fellow humans, as well as humans and nature. This inter-cosmos relationship is at the core of Tenggerese religious tradition. In Tenggerese belief, there are three things that can make humans happy: (1) always having a harmonious relationship with the Creator, Hong Pukulun; (2) fostering harmonious relations with fellow beings, human and otherwise; and (3) maintaining a balance with nature. If humans can believe in and carry out all three in their daily lives, they will become truly human beings. The name of God should not be used to hurt nature, other humans, or other creatures. Also, the creatures that live in *pedanyangan*—lands overgrown with large trees and sacred for rituals in a village—are well prayed for. The creatures in *pedanyangan*, the ancestral spirits, are believed to guard the residents and deliver their prayers to the gods at Bromo and Hong Pukulun. Therefore, once a month, especially on Friday night, Tenggerese people give *sesajen*—sacred offerings—to their ancestors in their homes. In the morning they go to the tomb of their parents, to *pedanyangan*, or to the *segara wedi* (sea of sand; a large sandy area near Mount Bromo) to conduct rituals. In addition, in every ritual, both personal and communal, Tenggerese

people pray for the good of nature.

What is interesting to explore further in Tenggerese belief is the primacy of relations between humans, nature, and supernatural powers, like the Rara Anteng and Jaka Seger myth. In other words, we find similarities of teachings in Tenggerese legends and religions from ancient times until the present. Tenggerese people have been consistent in carrying out the teachings of the Rara Anteng and Jaka Seger myth and religion, especially in respecting the natural environment, non-human beings, gods, and God. They position nature and non-human inhabitants on an equal footing. Harmonious relations with fellow creatures are certainly not like the category of *shirk*, a belief that creatures or objects have the same power as God, a belief that is now widely misunderstood and used as a weapon to overthrow indigenous communities. Tenggerese people have reached a level of understanding where all beings on this earth must be positioned on an equal footing with humans, rather than humans being dominant. The relationship is not anthropocentric; rather, the three entities of humans, nature, and supernatural powers must be able to realize a harmonious relationship. It becomes natural that with regard to supernatural beings—both the ancestors' spirit in *pedanyangan* and the guardian creature of sacred places in the Bromo area—Tenggerese people try to pay their respects by giving prayers and offerings.

Religious belief in the ancestors' spirits in *pedanyangan* is a form of Tenggerese ecological knowledge. In all *pedanyangan*, there are large spruce trees. It is believed that the spirits of the village guardians are located in those trees. When the residents carry out rituals related to village guardians, they do not dare to cut down the trees. The opposite would certainly happen if they no longer believed in the existence of guardian spirits in *pedanyangan*. Likewise, greedy humans with sophisticated tools cut down large trees in Sumatra and Kalimantan Islands to set up oil palm plantations or coal mines. The passing down of beliefs from generation to generation has led Tenggerese communities to always take care of their *pedanyangan* as well as pray for their ancestors' spirit and visit it for rituals. At the very least, they still respect and maintain the presence of large trees in *pedanyangan* and contribute to the availability of water reserves.

The close relationship of Tenggerese people with the natural environment is manifested also in mantras containing prayers to all natural elements that are chanted in every ritual, both for family and the community. *Bumi* (earth), *banyu* (water), *geni* (fire), *bayu* (wind), and *akasa* (atmosphere) are never forgotten by *dhukun pandita*. Tenggerese people practice the values contained in their ancient mantras by respecting nature and all its inhabitants. In fact, to pray to God for Earth's salvation, Tenggerese communities have Unan-unan. The ritual is also a way of purifying people and villages so they can avoid temptations and woes as well as get an abundance of sustenance. Religious beliefs

and their implementation, thus, are not centered on humans with all their economic and political interests. Instead, the oneness of humans, nature, and the supernatural is what makes people happy. Their willingness to merge themselves into this axis encourages Tenggerese people not to ignore various natural signs in their daily lives.

Reading Natural Signs from *Hila-hila*

The existence of land in the Bromo area as *hila-hila* also makes Tenggerese people believe in natural signs related to certain problems or events. Although Tenggerese communities are accustomed to modern education and tourism activities, they continue to believe in the sanctity of Bromo. One local myth is that the land of Bromo does not wish to receive any dead fetus that is a result of adultery committed by Tenggerese or non-Tenggerese people. If such a fetus is buried in the area, the consequences can be severe.

A fetus from adultery should not be buried carelessly. Those who pass by the grave of such a fetus that has been carelessly buried—usually unknowingly—suffer from severe illness, *isuk lara*, *awan mati* (sick in the morning, die during the day), like someone hit by *pagebluk*, a plague. In such conditions, *dhukun pandita* must conduct a ritual to summon the ancestors' spirit to ask for guidance on where the fetal grave is. When the grave is discovered, the person gradually recovers. These signs indicate that *hila-hila* cannot allow behavior by Tenggerese people that violates religious and moral beliefs. Bromo still demands proper treatment; it is not a place for the burial of a fetus without a proper purification ritual. Profane actions followed by savagery will anger the spirits of ancestors in *pedanyangan*, *leluhur ngaluhur*, Bromo, and, of course, Hong Pukulun. In this context, the sanctity of the Bromo area becomes the last fortress for showing the harmful consequences for a human who violates a taboo when *dhukun pandita* and formal leaders are unable to prevent them.

The areas around Mount Bromo always give natural signs when something bad occurs, such as the death of unidentified visitors or residents. When there is a fatality in the Bromo area, the weather in Ngadisari Village and its surroundings changes dramatically. Even though it may not be the rainy season, the weather turns ominous: dark clouds, mist, and rain mixed with thunder and lightning. Tenggerese inhabitants call the condition *timbreng*. They soon realize that someone has died in the Bromo area. National park officials who have an awareness of local knowledge act immediately, looking for the dead body. In this way, we can see the existence of strategic cooperation between Tenggerese people and national park officials through *timbreng*. The belief in natural

signs gives *dhukun pandita* opportunities to offer religious and ecological wisdom for the management of the Bromo-Tengger-Semeru National Park. Meanwhile, the national park officials can easily detect accidents experienced by tourists and residents. This proves that religious-ecological knowledge can contribute to modern work activities in terms of environment and tourism. With the acceptance of religious-ecological knowledge, at least *dhukun pandita*—even though they no longer have the right to manage the national park in the Mount Bromo area—still have a significant position. National park officials can adopt Tenggerese religious-ecological knowledge in managing Mount Bromo for environmental and tourism activities. They also need to offer local residents opportunities to participate in tourism activities, such as jeep rental, horse rental, food shops, and homestays.

In addition, in the area near the stairs where tourists go up and down to enjoy the Bromo crater, there is a sacred place where it is believed nobody should say anything bad because their words will return to harm them. For example, if there are tourists who curse the difficult terrain to reach the holy mountain, they will get “direct punishment” in the form of an accident. Modern logic would view this event as a myth or an accident that has nothing to do with the sanctity of the Bromo area. However, Tenggerese people view it as payback for their harsh words. As more tourists come to Bromo with a variety of motivations, there is space for supernatural powers to provide a valuable lesson: the mountain environment still has destructive power for those who say or do something bad. Through this natural mechanism, Tenggerese people send a message to tourists and the government that the Bromo area is still *hila-hila* with supernatural power that must be respected, even though in their view it is merely treated as a natural attraction that brings in money. The willingness of Tenggerese communities to continue giving offerings and prayers to areas considered sacred cosmologically indicates that they do not want to simply ignore the will of the earth, which is still full of mysteries, because of the potential destructive consequences. Nature is positioned as an integral aspect of human life and hope.

Religious-Ecological Knowledge in Postcolonial Times: *The Challenge of Modern Reason*

The majority of studies position Tenggerese people as traditional mountainous Javanese people who still faithfully maintain and carry out their ancestors’ religious teachings, believe in the harmony of the macrocosm and microcosm, and prioritize local wisdom about positive values (Sutarto 2003). However, in our opinion, research on Tenggerese

culture should also pay attention to the economic realities of agriculture and modernity, from colonial times to the present. Robert Hefner (1990), for example, critically examines the effect of implementing a market-oriented vegetable farming system in the Tengger region on the sociocultural life of the community, focusing on the post-1965 political tragedy. According to him, since the European colonial era Tenggerese people have cultivated vegetable plants. With the Green Revolution, Tenggerese farmers planted vegetable crops on a large scale during the New Order era, which provided them with an abundant income. The success of agriculture has made it easier for the Tenggerese community to access the modernity that has occurred on a national and regional scale. The community is getting used to consumer goods—from household appliances to televisions, motorcycles, and Japanese-made cars. In addition, the Green Revolution has changed some agrarian traditions: for instance, work in the fields that was originally done by relatives has turned into paid work. The practice of rituals, which in the past was intended only to carry out ancestral duties, has become a source of social pride, with rich people celebrating traditional rituals in a lavish way.

It is the acceptance of aspects of modernity into local life that makes Tenggerese people live in a cultural in-betweenness and hybridity. Cultural hybridity enables Tenggerese people to adopt modernity—but not completely, because they still believe in local customs. With this “in-between subjectivity,” Tenggerese communities are able to live in a dynamic world that is colored by modernity and ancestral tradition. This subjectivity applies also to Tenggerese youth. Despite their consumerism and the modern culture that they pick up from school and media narratives, the majority of Tenggerese youth still believe in and practice ancestral teachings, in the form of rituals as well as the wisdom of everyday life. However, this postcolonial condition has also given rise to several social actions that are contrary to religious beliefs. Some young people are daring to break taboos such as having premarital sex. It would be interesting to examine the influence of modern reasoning, especially reasoning related to agricultural economic interests, on the Tenggerese community’s belief in ecological-religious knowledge.

Indeed, the 2010–11 eruption has not changed their belief in the sacredness of Mount Bromo as the cosmological axis. However, there are a small number of residents who feel disturbed by the material losses they have had to bear: they are no longer able to grow potatoes, cabbage, or carrots. Those who usually enjoyed abundant blessings from vegetable farming had to *wrip prihatin* (live in apprehension) for the nine months of the eruption, and they used up their savings that should have gone toward shopping in the city or for ritual preparation. When we talked with some villagers in Ngadas Village, Sukapura Subdistrict, Probolinggo, they said that during the eruption of Bromo the major-

ity of Tenggerese people suffered losses in some form. Many Tenggerese farmers had planted potatoes that were growing well. Suddenly the plants were covered by ash and sand. Then the farmers planted potatoes again, and again the same thing happened. Many residents lamented their losses, but they still tried to survive, even if they had to borrow money from their relatives or neighbors. In Ngadirejo Village, which was worst affected by the eruption, there were some residents who moved to Jurang Kuwali in Malang Regency and Sempol in Bondowoso Regency to cultivate potatoes. This affirms the anxiety over finances caused by the nine-month eruption of Bromo. Tenggerese residents are used to gaining economic sustenance by selling potato, cabbage, onion, or carrot crops. With the proceeds, they can build city-style walled houses with furnishings—sofas, cupboards, and gas stoves, for example—as well as Japanese motorcycles and cars. They can also pay for school or college for their children in Probolinggo or other cities such as Malang, Jember, and Surabaya. In fact, an abundant harvest is cause for joy for Tenggerese people because it provides funds for rituals such as Entas-entas, Walagara, Unan-unan, and Kasada. Furthermore, the case of Ngadirejo residents planting vegetables in Jurang Kuwali Malang and Sempol Bondowoso shows that economic considerations and the need to fulfill life's necessities are urgent and ongoing; they cannot wait for the eruption to end. Tenggerese people are no longer traditional farmers who plant white corn as a staple food, as their ancestors did before Europeans introduced vegetables. Today's Tenggerese are used to enjoying white rice with side dishes of fish, chicken, and meat that are sold by *mlijo* (peddlers) from the lower regions. Of course, they need enough money to buy these commodities.

During the Mount Bromo eruption, vegetable farmers were not the only ones to experience losses. Another group that suffered was the jeep drivers serving the Penanjakan-Bromo route for foreign and domestic tourists who wanted to enjoy the sunrise. Jeep owners had to park their vehicles in their yards while cleaning up volcanic sand and ash every day. The amount of volcanic dust and sand on the slopes of Bromo reflected the feelings of those who were forced to wait patiently for the end of the eruption.

Tenggerese people need to engage in modern agriculture as well as tourism in order to meet their economic needs, while obeying their religious teachings and cooperating with the *dhukun pandita*. During the 2010–11 eruption this led to an inner turmoil and dissonance, because they had obeyed and carried out the religious teachings as instructed by *dhukun pandita* but still suffered economically. The disaster required them to postpone the satisfaction of their economic needs. Their suffering and anger due to material losses led a small number of Tenggerese people to blame the religious authorities. In Wonokerso Village, Sumber Subdistrict, Probolinggo, one resident experienced a trance

in which he asked a *dhukun pandita* to conduct a ritual to call the spirits of the ancestors at Bromo and ask them to stop the eruption.⁴⁾ At the insistence of the residents, a *dhukun pandita* performed a ritual—but the sand and ash continued to fall. The residents blamed the *dhukun pandita* to such an extent that he was afraid to leave his house for eight days. Then the coordinator of *dhukun pandita* came to Wonokerso, met the residents, and assured them there was nothing wrong with the rituals, mantras, and timing of Tenggerese rituals. He showed them the traditional way to determine the dates of Kasada, Unan-unan, and Karo—a ritual thanking Hong Pukulun for the creation of Jaka Seger, Rara Anteng, and their 25 children—in accordance with the Tenggerese calendar. He also emphasized that the community should be patient. He added that all losses would be compensated.

The resentment of Wonokerso residents makes sense from an economic perspective, because the villagers had spent a lot of money to grow the vegetables. They were not happy about losing money, even though it was due to a natural disaster. They demanded practical action to mitigate the damage from the Bromo eruption. When a Tenggerese who was in a trance said that Tenggerese people in Wonokerso should ask *dhukun pandita* to hold a ritual to invite the spirits of their ancestors to Bromo as a way to stop the volcanic ash and sand, they did so. Based on scientific logic, it would be impossible to stop the bursts of lava and volcanic ash through rituals of spirit calling. However, modern reasoning was displaced by the villagers' traditional belief in the sanctity and supernatural powers of the gods of Bromo, who could be asked for help when people were going through difficult times. In the context of a society that is familiar with Bromo-related teachings, this reasoning becomes rational.

Although Tenggerese residents in Wonokerso are used to watching television and have a modern education, they cannot abandon their religious beliefs completely because they do not want to take the chance of inviting tragedy and disaster into their lives. Their resentment toward *dhukun pandita* was unprecedented in Tenggerese life; *dhukun pandita* have always been highly respected. Furthermore, the embarrassing incident in Wonokerso—where the ash and sand continued despite the rituals—may be viewed as interference with religious authority. There was a fear that if the dissatisfaction and anger toward *dhukun pandita* was left unchecked, it could spread to other Tengger villages.

4) We got this story from an interview with Mujono, the coordinator of *dhukun pandita* in the Tengger area, on July 28, 2011. In mid-February 2014, Mujono passed away. All *dhukun pandita* in the Tengger area (Probolinggo, Pasuruan, Malang, and Lumajang) held a meeting in Senduro Subdistrict, Lumajang, on March 23, 2014. Based on the results of the deliberation, Sutomo—the *dhukun pandita* from Ngadisari Village, Sukapura Subdistrict, Probolinggo—became the new coordinator of *dhukun pandita*, a position he continues to hold as of this writing.

Therefore, the coordinator of *dhukun pandita* had to go to Wonokerso to clarify common misunderstandings and restore order as well as religious authority.

Indeed, the coordinator and all *dhukun pandita* carried a heavy burden and responsibility. Logically, the nine-month eruption was a natural consequence of the activity in the crater. The presence of officers from the Center for Volcanology and Geological Disaster Mitigation (Pusat Vulkanologi dan Mitigasi Bencana Geologis, PVMBG) in the Bromo area to monitor the eruption was a signal that the eruption of the holy mountain would indeed be long. However, *dhukun pandita* knew that the Tenggerese people needed a cultural explanation for the eruption that could be accepted by communal reasoning. This understanding guided the coordinator of *dhukun pandita* in performing rituals to communicate with the ancestral spirits, from whom he claimed to receive a holy whisper that all Tenggerese people should be “patient, cooperative, and harmonious.” To be patient was a cultural-normative request that was psychologically expected to quell people’s anger, even though the *dhukun pandita* could not provide a religious answer about the cause of the long eruption and the way to overcome it. It was also the most reasonable request, because when facing natural disasters the only thing humans can do is to be patient without blaming each other.

However, we have some critical understandings about the mobilization of the need to be patient in the Tengger region. First, by using the statement, all *dhukun pandita* and village heads throughout the region could be freed from blame; residents would not be able to blame the authorities for not providing appropriate answers for their material losses due to the long eruption. The anger of the people based on the logic of the modern economy was again controlled by traditional reasoning. Moreover, culturally, people are already accustomed to the discourse of inter-community harmony because they still feel like a big family, descendants of Rara Anteng and Jaka Seger. Second, by mobilizing the discourse of patience among all Tenggerese people in four regencies, the religious authorities tried to reorganize or reorder cultural chaos or uncertainty toward religious authority. The state of disorder caused by natural disasters and the ideology of economic progress was reordered through the dissemination of a discourse that touched on the religious beliefs of residents as fellow brothers and sisters. The effort succeeded in controlling the minds of Tenggerese people who suffered extraordinary economic losses and minimized public anger. Accordingly, public resistance against the establishment of religion did not expand into a massive movement that could cause the destruction of people’s belief in ancestral teachings. Moreover, the return of Tenggerese people into an orderly condition—of social harmony and religious faith—also affirmed the return of religious authority into the lives of residents.

From the 2010–11 eruption, at least, we get some descriptions related to the mixing

of the perspectives of modernism—in this case of the economy—and religious-ecological knowledge in the lives of Tenggerese people. For market-oriented vegetable farmers who are used to living in the midst of economic prosperity and modernity, a natural disaster with long-term disruptive effects is a threat, although for religious reasons it is a kind of sacred activity. Anger at having to bear the economic burden is a form of modern reasoning that has developed in the minds of Tenggerese people. In the perspective of a modern economy, capital invested should yield the maximum profit and not a loss. Although only a temporary disappointment against *dhukun pandita*, this anger clearly shows a shift in religious thinking as a result of commercial considerations and the market economy in local life.

Transforming Tenggerese Religious-Ecological Knowledge into Disaster Mitigation Works

Although in particular conditions cultural in-betweenness creates a challenge to religious authority, it also indicates that the communities are able to accept modern knowledge and practices without completely abandoning their traditional culture. They still need religious-ecological knowledge to handle life in the midst of modernity. In a more constructive understanding, adopting the concept of postcolonial transformation (Ashcroft 2001), such local knowledge can be transformed into modern activities that are advantageous for Tenggerese communities, particularly in handling common problems such as the disastrous effects of a long eruption. Tenggerese religious-ecological knowledge can be applied to volcanology and disaster mitigation knowledge since Tenggerese communities have absorbed and practiced modernity in daily life. An absolute belief in religious-ecological knowledge can also have a negative impact, such as a distrust of the power of *dhukun pandita* that can lead to horizontal conflicts if the eruption is truly devastating. The ability and willingness to dynamically transform and negotiate local culture are key factors that can help indigenous communities survive in changing times (Smith 2006). Of course, for Tenggerese people this transformation principle requires dialogic openness between PVMBG, the National Disaster Management Agency (Badan Nasional Penanggulangan Bencana, BNPB), and the Local Disaster Management Agency (Badan Penanggulangan Bencana Daerah, BPBD), where each party cannot insist on its respective truth.

Adopting the ideas of Mercer *et al.* (2010), officials from volcanology and disaster mitigation must go beyond the dichotomy of local/traditional knowledge vs. modern knowledge so that religious leaders do not feel marginalized—even though they have

public trust. Marginalization of local knowledge, in many cases, only engenders problems in disaster mitigation because religious leaders and communities who have been living side by side with the mountain do not provide full support (Mercer and Kelman 2010). A willingness to go beyond the dichotomy is the initial step for conducting a dialogue aimed at involving *dhukun pandita* in disaster mitigation strategic work. Indeed, Tenggerese religious-ecological knowledge requires a special strategy because knowledge related to the eruption is not in the form of certain techniques that can be widely applied to disaster management. In the past, Tenggerese people had a technique of placing stones under the main pillar of the house to withstand volcanic earthquake shocks. However, this traditional technology-based architectural technique has been rarely applied since the economic prosperity from modern vegetable farming and tourism activities led to Tenggerese people building houses with walls and a solid foundation made of cement, sand, and stone.

Nevertheless, PVMBG, BNPB, and BPBD can develop constructive dialogue with *dhukun pandita*, village heads, and community leaders regarding volcanic activities and disaster mitigation. The dialogue should be directed toward understanding local people, with the aim of involving them in technical preparations to face an eruption. Concepts such as *duwe gawe*, “having a celebration or particular sacred activity,” for example, can be connected with the eruption activities recorded by a seismograph. *Dhukun pandita* can be asked for their opinions regarding the level of *duwe gawe* that is happening in Bromo as instructions from the gods. The results of the dialogue between religious-ecological knowledge and tremor records can be a starting point to set up early warning systems that can be socialized to the community through *dhukun pandita* in each village, including announcements of evacuation. Openness is key. If an eruption does not require Tenggerese residents to be evacuated to government facilities, the disaster agencies do not have to force them to leave their homes.

In addition, in the future, disaster mitigation institutions can collaborate with *dhukun pandita*, village officials, community leaders, and schoolteachers to document natural signs recorded in the memories of Tenggerese people to predict when Mount Bromo will erupt. Natural signs can be used as a reference for preparing the community early and measuring what will be needed during the period of evacuation. No less important is the use of mitigation discourse that does not contain destructive statements, because most Tenggerese people do not consider Bromo eruptions to be life threatening. Thus, the use of more acceptable and understandable terms in accordance with the Tenggerese worldview will facilitate socialization and instruction in disaster mitigation. A willingness to adopt local terms or concepts for disaster management and mitigation during eruptions will make the Tenggerese people feel cared for. Hopefully, they will also be willing to

transform their Bromo-related beliefs and knowledge in a flexible and dynamic manner in accordance with volcanic knowledge and disaster mitigation.

Conclusion

Learning from the nine-month eruption and its relationship with the temporary resistance against religious authority, we can find the transgression of dualism in the cultural mind of Tenggerese people. What we mean by cultural mind is the concept of regarding something as “ideal” or “not ideal” in connection with particular problems. On the one hand, the people are accustomed to a modern mindset in terms of agricultural economy, education, and tourism, without abandoning their local cultures. One of the implementations of their economic desire is their use of extremely sloping dry land for planting various vegetables. On the other hand, they do not completely apply modern reasoning in interpreting beliefs and carrying out ancestral traditions. The dualism of thought shows that Tenggerese people cannot be called either a completely traditional society or a completely modern society.

The implication is that Tenggerese religious-ecological knowledge related to Mount Bromo can no longer be seen as stagnant. Tenggerese people believe in the sanctity and sacredness of Mount Bromo and carry out rituals related to respect for supernatural powers and all creatures on Earth. However, their adoption of the market economy through vegetable harvesting and tourism gives Tenggerese people a new understanding of ecological knowledge. Cultural in-betweenness—practicing both traditional and modern cultures—at a constructive level can indeed facilitate the implementation of disaster mitigation mechanisms or natural resource management that combines modern and traditional work. The involvement of *dhukun pandita* as well as other local voices, on a practical level, can reduce the potential for misunderstanding and conflict, especially in times of disaster.

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