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Natural Disasters and Social Turmoil Preceding the Java War, 1808—1825

Amirul Karimuddin
Departemen Sejarah, Universitas Gadjah Mada
amirulkarimuddin@mail.ugm.ac.id

Abstract

This research endeavors to find the relationship between natural disasters and social turmoils during the period preceding the Java War. Using historical method to examine the various data, it aims to find what natural disasters occurred in Java during this period, how they are interpreted, and how they influenced the social turmoils of the period. 19th century Java was a land engulfed in natural disasters, such as floods, draughts, earthquakes, and even volcanic eruptions. These disasters were often looked on as supernatural signs by the Javanese. Between 1808 and 1825, Javanese society faced increasing social, economic, and political pressure that led to various social turmoils brought about by various colonial governments. During this time, natural disasters often influenced social turmoils whether directly through material destruction they wrought which increased socio-economic pressure or indirectly through the Javanese' socio-cultural construction of them that excarcerbate social tension and fueled further turmoils.

Keywords:
Social history, environment, natural disaster, social turmoil.

Introduction

19th Century Java was a land mired in various natural disasters from volcanic eruptions and earthquakes to floods and droughts. They were caused by various geographical factors and resulted in the loss of lives and properties. Such disasters can prove to be socially and economically disruptive to Javanese society. Besides the material destruction they incurred, these disasters were also of great socio-cultural significance. Within Javanese conceptions, they were not just seen as natural occurrences, but also supernatural signs and portents. In this way, they directly or indirectly influenced Javanese society and the course of its history.

During the early 19th century, developments were taking place that would have a profound effect on Javanese history. The rise of the colonial government brought about a period of political upheaval, economic deterioration, and social turmoil. At the same time, various natural disasters engulfed the island. There was, for example, the eruption of Mount Kelud in 1811, the drought of 1821, and the eruption of Merapi in 1822. This article will focus on the relationship between these disasters and the social turmoil of south-central Java within this turbulent period between 1808 to 1825.

Within conventional historiography, nature is often considered to be a background factor, a stage upon which historical events took place. This article is an attempt to examine nature not just as a background factor but also part of a wider socio-cultural constructions whose working influenced society whether directly or indirectly. Nature and, thus, natural disasters have a profound effect on Javanese social, economic, political, and cultural life. To understand the historical experiences of the Javanese it is important to understand how they viewed, experienced, and responded to these disasters.

Several studies have touched on this particular subject. Foremost among these was Peter Carey's *The Power of Prophecy*, a biography of Prince Diponegoro which also briefly discusses some natural disasters that occurred in this period as well as their effects on Javanese society. Then there is Sastrawan's *Portents of Power* which give a broad historic overview on how disasters, especially earthquakes and eruptions, were perceived in Java and Bali between the 9th to the 19th century. Anthony Reid briefly touches on the historiography of earthquakes and eruptions in *Environment, Trade and Society in Southeast Asia*. There is also Judith Schlehe's *Cultural Politics of Natural Disaster* which specifically focuses on volcanic eruptions and how it is conceptualized by the Javanese. Most of the works above discuss natural disasters within contemporary context or give a general cultural overview across a broad historical period rather than a specific case.

This research will employ historical methods by selecting, examining and interpreting the various available data. The main aim of this study is to study how natural disasters influenced Javanese societies during periods of social turmoil. Four main points will be examined here. First is the structure and working of Javanese society in the early 19th century.

Second is how natural disasters were perceived by Javanese society. Third is the social turmoil that engulfed Javanese society between 1808 and 1825. Fourth is the various natural disasters that occurred and how they directly or indirectly influenced societal development during this period.

Javanese Society in Early 19th Century

The socio-political structure of Javanese society in the early 19th century was linked with land ownership and rights. Much of this system was likely inherited from the late Mataram state. The kingdom was divided into several concentric rings and appanage lands were distributed by the king for officials and courtiers (Moertono, 2009: 113-114, 127-129). This system, in turn, seemed to have been adopted from the previous *mandala* system Hindu-Buddhist kingdom of Majapahit (Moertono, 2009: 113-114).

Theoretically in the 19th century, the king owns all of the land of the kingdom. In practice, he had little direct control. most of the lands were given to family members, court officials, and regents who for the most part, did not govern their lands directly, but instead rely on officials known as *bekel* and *demang* (Carey, 2007: 15–7). Among the peasantry, a small class known as *sikep* would own the rights of public lands alongside their own 'private' lands who lived with their relation (*ngindhung*) and landless dependents (*numpang*) (Carey, 1986: 81).

This socio-political system is one of mostly indirect governance. The king's direct control over land was mostly theoretical and even courtiers who 'owned' these lands had to rely instead on groups of village officials to oversee their territories. Said courtiers' concerns rested mainly on getting their due taxes and corvee laborers for which they rely on the *bekels* and *mantris*.

Much of this system rested on the stability brought about by the peace of Giyanti. The lack of military conflicts, relative secureness of the political arrangements, and a period mostly devoid of major destructive natural disasters resulted in a time of relative prosperity. This peace allowed Javanese agriculture to recover, thrive and even expand into previously undeveloped land (Ricklefs, 2001: 130–143). Concurrently there was also the expansion of the irrigation system, especially in the areas of Yogyakarta. Both the royal courts and peasants cultivators sought to develop and expand the irrigation network, allowing an increase in the number of wet sawah and the cultivation of secondary crops in greater numbers (Carey, 2007: 35–39).

Expanding agricultural fields and irrigation systems increased food production leading to surpluses that can sustain larger numbers of people. Increasing food production also allowed the population to retain a relatively nutritional diet, resulting in an overall healthier population. Using available data, south-central Java's population can be estimated to be at 862,500 lives in 1755 (Ricklefs, 2018: 168–9). Another estimation in 1815 counted the rounded population to be around 1,658,000 (Raffles, 1817/2015, I: 70).

This means, roughly, that the population grew by around 1.5% per annum. However, this number is likely higher because the 1755 data was almost certainly conflated and the 1815 data was an underestimation (Ricklefs, 2018: 168–169 and Peper, 1970: 76).

Perceptions on Natural Disasters in Java in Early 19th Century

As mentioned in the previous passages, Java was, and remains, home to various types of natural disasters that were caused by several geographical factors. Java is placed along the Pacific Ring of Fire, a tectonic line that runs around the Pacific ocean, passing through various countries across its coast, and is characterized by considerable amounts of volcanoes and seismic activities. A volcanic mountain chain stretches along the length of Java east to west which had the result of splitting its territory north and south. Moreover, Java is situated on the border between the Eurasian and Australian plates that often clashes with one another resulting in large numbers of seismic activities.

The volcanic characteristic of the island is well attested to in the historical sources. Thomas Stamford Raffles, the British Lieutenant-Governor of Java noted the island's volcanic characteristics (Raffles, 1817/2015: 13–8). The *Babad Tanah Jawi* also makes mentions of certain volcanoes around the island with the most notable being the prominent Mount Merapi (Remmelink, 2022: 60). As a result of these geographical conditions, Java became relatively prone to various seismic and volcanic-related natural disasters, such as earthquakes and volcanic eruptions. Indeed, historical records from both European and Javanese sources made considerable mentions of these disasters (Reid, 2015: 75).

Volcanic eruptions and earthquakes are not the only natural disasters that the inhabitants of Java had to contend with. Java's position near the equator line places it firmly in the tropical region of the planet. As a result, it experiences the typical tropic seasons of dry and rainy which brought their own natural disasters.

During the rainy season, the main natural disasters that engulfed the island were floods caused by the overflowing of the island's rivers. Java is home to a large number of rivers and among the larger ones in south-central Java were the Brantas, Begawan Solo, and Progo river. There were also countless numbers of smaller rivers, tributaries, and small streams that cut through the land. As a result, floods became a seasonal occurrence in this island.

During the dry season, the main natural disaster was drought. Drought can be particularly devastating to farmers who rely on agriculture as their main source of sustenances and income. Drought might cause a decrease in overall agricultural productivity which could result in food scarcity and soaring food prices. The effect of drought can reverberate heavily across Javanese societies because rice was not only an important foodstuff, but is also used to pay taxes and sustain the higher echelons of

society.

Besides the various natural disasters in Java, just as important is the discussion on how the Javanese themselves view natural disasters. In this regard it is vital to take considerthe Javanese cosmological conception and how the Javanese view the relationship between the natural, physical world of the seen and the supernatural, spiritual world of the unseen. In Javanese conception, the supernatural was not a realm strictly separated from the natural, rather both coexist simultaneously.

One aspect of this cosmological conception relevant to the discussion is how natural phenomenons, including disasters, are often linked with the political realities and events that occurred close to them . Within Javanese conceptions of power, spiritual or supernatural powers are often linked with political ones and were considered one and the same (Anderson, 1990: 7–8 & 19). As the supernatural world is intertwined with the natural world, events within the latter can be seen as linked to events in the former. Because of this, natural events can be used to interpret supernatural and political changes since politics and the supernatural are tightly linked (Anderson, 1990: 19).

Not all natural disasters are interpreted supernaturally and even if they were, they are most certainly not considered in an equal and uniform manner. Because of this, the responses to these disasters differed from time to time. In this regard, volcanic eruptions and earthquakes usually take special place within the Javanece conception of natural disasters.

In *babad* literature the occurrence of volcanic eruptions and earthquakes are usually given special attention. They are often linked with events of great political and social significance. In the *Babad Tanah Jawi*, for example, volcanic eruptions were linked to the victory of Senapati of the army of the Pajang Sultanate (Remmelink, 2022: 60–1). In another text, the *Babad Dipanegara*, mentions were made of earthquakes occurring during the burial of Sultan Agung (Dipanegara, 2022: 183). Earthquake augury also became a popular subject of Javanese literature during this period (Dwiadmojo, 2020: 28–29).

In contrast to the special place afforded to earthquakes and volcanoes within their literatures, Javanese attitudes towards seasonal disasters related to the dry and rainy season seemed more blase. Few mentions were made in regards to disasters such as flooding and droughts. Supernatural attribution to them also seemed somewhat rarer. This is not of course to say that they were not supernaturally important. One case is the occurrences of out-of-season rains in the 1670s which was linked with Amangkurat I's tyranny reaching its zenith (Remmelink, 2022: 107). Another interesting case occurred during the construction of Mangkunegara's future burial site; a heavy storm occurred that was taken as a sign of help and blessing from the resident spirit, Sunan Lawu (Ricklefs, 2018: 277–9).

Disaster mitigation methods during this period remained somewhat rudimentary. Javanese seemed to have acclimated well to periodical disasters such as flooding and draught, devising some methods to reduce potential damages. Raffles reported Javanese peasant houses whose

interiors and veranda were raised two feet off the ground, likely in case of flooding (Raffles, 1817/2015: 88 & Reid, 1988: 63). Likewise, irrigation networks channels were built up, especially in the latter half of the 18th century, not just to water the field, but also reduce farmers' dependency on rainwater and chances of harvest failure in the dry season.

Unlike floods or droughts that came periodically and can thus be predicted, there was no accurate ways to predict earthquakes or volcanic eruptions. There were symptoms and signs that may precipitate such disasters, like smoke rising from volcanoes or ground tremors, but when they did happen, they left little time for the common peasant to make mitigation efforts. In most cases, the only option was to flee. There was no specialized institution to organize evacuation efforts, so flights from volcanic eruptions or earthquakes were likely left in the hands of the village communities and there was probably little to no effort for a standardized evacuation procedure.

Social Turmoil in Java 1808–1825

In the early 19th century, Yogyakarta and Surakarta were ruled by kings who, in many ways, embodied cultural characteristics and stereotypes of their respective states. Sultan Hamengkubuwono II of Yogyakarta was a hard man who was often considered a despot; an iron-handed and prideful man whose oppressive tax and corvee policies made him disliked by his courtiers, among whom Hamengkubuwono II's own son, the future Hamengkubuwono III. Meanwhile, Sunan Pakubuwono IV of Surakarta was of a more subtle and conniving character whose amiable attitude belies a fierce ambition which he channeled through several devious plots and schemes to extend his own power and subdue his rivals in Yogyakarta.

Even before Daendels' arrival, Javanese government already started putting increasing fiscal burden on the peasantry. This is most clear in the case of Hamengkubuwono II. The Sultan sought to increase his tax revenues and this he did in a haphazard manner that simply increased the burden of taxes on pre-existing land and led to administrative confusion and chaos. He also launched several building projects which he constructed by forcing the yearly corvee laborers to work for a longer time period than what was traditionally considered proper.

However, even without Hamengkubuwono II, the Javanese peasants would likely still face increasing financial burden due to growing population pressure. The rapid population growth of the past half a century didn't necessarily aligned with the expansion of rice fields and agriculture. This meant that in certain areas, particularly in the core regions, the same number of rice fields had to sustain a growing number of the peasant population (Carey, 2007: 30). Population growth among courtiers also meant that the courts had to give even more rice fields to sustain new officials and because of bureaucratic inefficiency, the court couldn't tap into newly opened sawah and often had to divide up old ones (Carey, 1986: 74). Thus, the old sawah faced a dual population pressure from both

above and below. It was during this time of increasing population pressure on the available agricultural land that Daendels arrived.

In 1808 under Franco-Dutch government, Marshall Herman Willem Daendels took power in Java. He was a battle-hardened revolutionary whose enlightenment ideals and desire to extend colonial sovereignty over the Javanese courts clashed against the traditional political order in Java. Daendels sought to subdue the two Javanese courts and to this effect began to make changes to the ceremonial and court etiquettes between Europeans and Javanese which symbolically placed the latter in an equal or even subordinate role to the former. The Sunan readily accepted these changes, but the Sultan resisted them fiercely, leading to diplomatic incidents and tension.

Far less welcomed than Daendels' changes to court etiquettes was his onerous demand for food, material, cash and labor in order to strengthen Java's defenses. These demands burdened both the courts and the common Javanese peasantry and eventually lead to the open revolt of Raden Rangga, the son in law of the Sultan who tacitly supported it (Carey, 2007: 219). Daendels' response was swift and brutal; the revolt was crushed, the rebels killed or captured, and Rangga himself was killed and his body sent to Yogyakarta.

After defeating Rangga, Daendels himself marched to Yogyakarta and deposed Hamengkubuwono II in favor of his son, Hamengkubuwono III. A treaty was then drawn up. Among his terms were an indemnity demand to be paid in cash, the annexation of several princely lands, and the abolishment of the *strangeld* payment, a land rent that the VOC government had to pay to the two courts for their holdings in north coast Java. All of these amounted to a huge economical loss for both Surakarta and Yogyakarta. The land annexation meant the loss of possible *apanage* land and the *strangeld* payment meant a loss of a principal part of both state's revenue. In order to cover the cost of these losses, many Javanese aristocrat turned to opressive tax-farming and land-rent schemes which severely burdened the peasantry. Not long after his victory over Yogyakarta, Daendels was soon relieved of his post and replaced by Jan Willem Janssens whose tenure was cut short by the British' arrival.

Immediately, the British defeated the Franco-Dutch force who was reluctantly aided by the two courts, and set up an interim government under Lieutenant Governor Thomas Stamford Raffles. During the conflict, Hamengkubuwono II re-established himself in court. While Pakubuwono IV mostly gave an amiable front to Raffles, Hamengkubuwono II was more rigid. This led to diplomatic tension between Yogyakarta and the British which was further flamed by the machinations of Pakubuwono IV who on the one hand put on an openly submissive stance to the latter and on the other promised support to the former which emboldened the Sultan.

In 1812, British troops stormed and sacked the palace of Yogyakarta. Hamengkubuwono II was again deposed and replaced by Hamengkubuwono III. Besides military humiliation, Yogyakarta also suffered economically

as well. During the attack, large swathes of Yogyakarta's treasuries were looted by the British troops, a loss from which they could never recover. British troops also found correspondences between Pakubuwono IV and Hamengkubuwono II, uncovering the Surakartan plot, almost resulting in Raffles doing the same thing to Surakarta as he did to Yogyakarta. Further consequences for the two courts would follow.

During the interim British government between 1812 and 1816, Raffles would implement several important economic policies. Likely as punishment for their insubordination, Raffles seized apanage lands in the outer and core region owned by both courts. This inevitably meant another loss of apanage lands for both Surakarta and Yogyakarta, cut off many courtiers and officials from their revenue and likely led to the two courts scrambling to redistribute remaining lands to followers who suffered from said loss (Carey, 2007: 381-2). Raffles also seized the markets and tollgates in the two kingdoms, many of them he subcontracted to Chinese bandars which led to oppressive and exploitative practices (Ricklefs, 2001: 149). Lastly, within the newly annexed territories, he implemented a system of land tax that was to be paid mostly in cash. In theory, this was meant to replace traditional systems of taxations and corvee labors and lighten the peasant's burden. In practice, however, it would only put further fiscal burden on them which would be discussed below.

During both Daendels and Raffles' tenure, Surakarta and Yogyakarta faced increasing fiscal burden, much of which was borne out by the peasantry. As more and more apanage lands were annexed by European governments, the remaining apanage territories were parceled between the courtiers who likely received increasingly smaller portions of land and thus, revenue. In order to make the most out of these territories, Javanese officials turned to Chinese *demang* who became increasingly known for their extortionary practices and effectiveness in squeezing out taxes from the peasantry (Carey, 2007: 17–9). Another way in which Javanese officials made more money is by leasing out their lands to European and Chinese entrepreneurs who planted said land with cash crops, such as coffee or indigo.

When Java was handed to the Dutch in 1816, one of their main economic concerns was to make Java profitable. To this end, they enacted several policies. Perhaps the most consequential of these was the expansion of the land-rent system developed by Daendels and Raffles. Within the land-rent schematics, lands held by the court officials would be rented out to European and/or Chinese enterpreneurs which they then used to plant cash crops such as coffee or indigo and, in return, those enterpreneurs had to make cash payment to the court.

Land-rent was already known during the time of Daendels and Raffles, but it was when the Dutch finally returned in 1816 that they truly took off. Under the Dutch, large swathes of colonial and court land were leased out to European and Chinese entrepreneurs whose main aim was simply to make a profit and had little concern for the common Javanese peasants who lived in their lands (Ricklefs, 2001: 150). These

enterpreneurs forced the common peasantry to plant cash crops such as coffee or indigo in their fields, instead of rice leading to the prices of rice rising dramatically. Additionally, many peasants were forcibly separated from their villages and brought to coffee estates in order to meet labor demands in which the work conditions they had were especially pitiable (Carey, 1986: 128–30).

It was also during the Dutch period that the exorbitant practices of Chinese tollgates keepers reached a new peak and the system became rife with corruption, abuses, and exploitation. The Chinese tollgate keepers became known among both Javanese and European for their cruel practices in squeezing out as much money from the Javanese peasants (Carey, 2007: 467–471). The proliferation of Chinese held tollgates stifled local trade among the Javanese as peasants were further discouraged from trading their goods outside of their immediate local proximity (Carey, 2007: 471–478).

Increasing economic pressure because of land-rent practices and rising taxation led many Javanese peasants into the arms of Chinese moneylenders (Carey, 1986: 99 & 134). Peasants families began to rack up bigger and bigger amounts of debts in order to pay for these taxes and climbing food prices. These debts themselves were given with high interest rates leading to the peasants being buried deeper and deeper into financial abyss.

Things came to a head in the 1820s. During the previous period, the land-rent, forced labor, and rising rice prices already led to rice scarcity which forced farmers to resort to secondary crops such as maize. In 1821, the situation became more dire when a severe drought engulfed large swathes of south-central Java leading to harvest failures, resulting in soaring rice prices. Further drought in 1822 worsened the situation and fed into the rising foodstuff prices.

The peasants suffered greatly during this period. There were reports of farmers resorting to a diet consisting mostly of secondary crops, like maize and cassava and, in more extreme cases, some even went on to eating roots, weeds, tubers, and tree leaves. (Carey, 1986: 107, 122–123). This famine was followed by the cholera epidemic of 1821. While the worst of the plague were confined to coastal areas such as Surabaya and Semarang, it still left a terrible mark on the south-central Javanese population, especially in and around Surakarta.

Amidst all these problems, the social fabric that held the peasantry together began to crack at its seams. In order to escape these sufferings, Javanese peasantry began to migrate en masse. Indeed, there were records of entire villages' populations migrating from areas under the colonial government to those under the control of either Surakarta and Yogyakarta especially because of forced labor practices (Carey, 2007: 494). In the area of Pacitan which was controlled by the Dutch, for example, the opressive European estate drove the peasantry to move out and the population fell by about 10% between 1819 and 1821 (Carey, 1986:124). The Surakartan Babad Dipanagara also reported such migratory movements among

the common populace (Carey, 2019: 5 & 7). The exact effects of such movement are unclear, but they likely resulted in severe social dislocation as entire communities uprooted themselves and moved to other geographical locations.

Javanese peasantry also resorted to more violent means. Bandit groups were already present in Java even before the 19th century, but by 1825 the Surakartan Babad noted the increasing number of criminals, such as thieves, highwaymen, robers, and bandits (Carey, 2019: 5). However, deteriorating social conditions proved a fertile ground for criminal recruitment. Deteriorating social conditions proved a fertile ground for criminal recruitment. Workers hoping to escape abysmal work conditions, ex-farmers driven into poverty, or landless laborers began to flock to such bandit groups and criminal activities like raids, robberies, burglary, and arson increased (Carey, 2007: 464, 471, & 494). The motive was as much personal as they were economic. Bandit groups often targeted Chinese tollgate keepers and European land-renters who were much hated by the common peasantry (Carey, 2007: 471).

Another way in which the Javanese peasants sought refuge from the harsh social reality they lived in was through drug-usage, especially opium. Opium trade rose sharply during the time of the British and later the Dutch colonial government. Opium addiction seemed to be a prevalent problem in south-central Java which led not only to physical problems, but economic as well as the drugs encouraged peasants to sell their meager belongings or go into debt in order to obtain more of it (Carey, 2007: 479–80).

Perhaps the most consequential way in which the peasantry responded to the increasing suffering they underwent is in the supernatural. This came in the form of millenarian and messianic expectation; the belief that the current age was an age of turmoil marked by the upheaval of both the natural and social order which would later be followed by a cleansing of the land and a golden age when Java will be ruled by a messianic figure, usually known as the Ratu Adil. Such beliefs proliferated throughout south-central Java during this time, finding fertile ground among the desperate peasantry. This can be most readily seen in various millenarian movements, such as the Umar Mahdi Affair (1817), the Imam Sampurna movement (1819), Sunan Waliyullah movement (1822), and of course Diponegoro's Java War (1825–1830). All of whom received widespread support among the peasantry.

Natural Disasters in Java, 1811–1824

Natural Disasters

Almost concurrently as Javanese societies erupted into social turmoil, Java itself was also engulfed by a series of natural disasters during this period. Materially, they do not have a uniform effect with some disasters being far

more destructive than others. Spiritually as well, they are not all regarded in a uniform manner outside of a general belief of a supernatural force at work behind their occurrences. This meant that not all natural disasters had the same effect on the social turmoils in Java, each are intertwined with the condition and circumstances of the time. There are some notable natural disasters, however, that seemed to play a more important role in that regard.

The first of these disasters was the eruption of Mount Kelud which occurred on the 27th of June 1811. It resulted in ash rains that darkened the south-central Javanese sky for days and several heavy earthquakes which might have damaged some structures. It might also have caused a plague among the Javanese cattle, possibly because of the ashes in the air and grass.

This disaster occurred shortly before the British Invasion of Java and seemed to have been of some importance to the Javanese because it appeared within the Surakartan Sengkala List of that year (Carey, 2007: 280). As volcanic eruptions were often connected with political changes, some might have taken it as portent for the fall of the Franco-Dutch government. Indeed, this eruption might have emboldened Hamengkubuwono II to refuse the Franco-Dutch government's request for a loan in July later that year. The successful British invasion would have cemented the notion that the eruption of Kelut was a sign of the fall of the Franco-Dutch government and the rise of the British.

The second disaster were the droughts that engulfed south-central Java in 1821 and 1822 which heavily impacted the rural peasantry because of harvest failures (Carey, 2007: 493). The lack of rain might have prevented farmers from planting their crop, worsening the situation. These droughts occurred while the Javanese peasantry were suffering from various heavy taxations, forced labor, and high toll. Its destructive effect on the economy can be most readily seen in the soaring rice prices that occurred after it. Rice scarcity because of drought and soaring prices of foodstuff eventually lead to famine. All of these likely increased the socio-economic pressure on the peasantry, resulting heightened social tension and turmoil.

A revolt broke out in January 1822 when rice prices and food scarcity likely reached its peak. This revolt was orchestrated by Sinduratmadja, an adventurer and Pangeran Dipasana, son of Hamengkubuwono I who gathered to their side various robber bands whose ranks might have been filled with recently disenfranchised peasantry (Carey, 2007: 496-8). Sinduratmadja led the rebels to rampage across Kedu and Magelang, attacking European and Chinese before eventually being defeated by the Dutch. Diponegoro in his *babad* seemed to allude that the revolt was preceeded by a new tax policy decreed by Hamengkubuwono V (Dipanegara, 2022: 285-292). If such a policy was enacted during this period of drought and scarcity, it would put further economic pressure on the already burdened population.

Table I Rice Prices in Yogyakarta

Year (Month)	Rice Prices (*gulden*)
1820 (January)	5.50
1820 (December)	5.50
1821 (January)	6.00
1821 (May)	6.50
1821 (November)	7.50
1822 (January	7.20
1822 (March)	7.20

(Carey, 2007: 811)

The third notable disaster that occurred during this period was the eruption of Mount Merapi on the 28th of December 1822. The eruption continued on for two days, resulting in the destruction of some of nearby settlements. According to one Dutch report, the eruption destroyed three villages (Carey, 2007: 513). According to another, it sets fire to four villages and destroyed two (Journal de la province de Limbourg, 16 Mei 1823: 3). Mud and rocks; debris from the eruption blocked roads and clogged rivers which resulted in flooding. The eruption also caused a temporary spike in rice prices (Carey, 2007: 515).

There was also a spiritual element tied to the eruption. Diponegoro, who watched the eruption from Tegalrejo, believed that the eruption was a sign from God. In his babad, Diponegoro called the eruption as a portent of God's punishment (Dipanegara, 2022: 300–2). It's very likely that he was not alone in this regard and there is a high chance that this eruption further exacerbates millenarian beliefs of the populace. Mount Merapi was and remains a place of great significance within Javanese culture. It features prominently within the Babad Tanah Jawi where its rumblings, lightings and eruptions were caused by supernatural forces or else taken as spiritual portents (Remmelink, 2022: 60–1, 97, 104, 199). It's not hard to imagine then, that its eruption would have been looked on ominously and further fueled millenarian beliefs among the populace.

Analysis on the Effects of Natural Disasters

Generally, the effects that natural disasters have in the social turmoils that preceded the Java War can be roughly divided into two categories, one in the material and one in the immaterial. Firstly is the material effect of such disasters. This encapsulates not just the immediate destruction caused by them but also its indirect effects as well. The large-scale droughts of 1821-1822 did not just cause harvest failure but also food scarcity that eventually led to soaring rice prices. This is also the case during the Merapi Eruption in 1822-1823 where the eruption to a temporary increase in rice prices (Carey, 2006: 515). Both resulted in increasing socio-economic hardship

on the already burdened Javanese peasantry.

There is also a supernatural dimension to such disasters. They were often linked with spiritual or supernatural powers at work. Such beliefs were not just an attempt at explaining natural occurrences but also connected them to human affairs, especially related to great socio-political upheaval. When such portents were present it might exacerbate pre-existing supernatural beliefs which led to heightened societal demands for changes to the unbearable status quo. When Diponegoro beheld the 1822 Merapi Eruption, it further strengthened his resolve to resist the colonial government. This response, however, was not uniform.

The eruption of Mount Kelud in 1811 did not result in greater proliferation of messianic beliefs like with that of Mount Merapi in 1822. Partly, it might have been the greater significance of the latter, but more importantly is the social context in which they occurred. Wherehas in 1811, much of the societies and economic structure in south–central Java was still somewhat stable, in 1822 Javanese societies were engulfed in a myriad of socio-economic crises that brought it to the brink of collapse. Consequently, it's likely that the eruption of Mount Merapi was looked on more ominously by the Javanese peasantry than the eruption of Mount Kelud.

It's important to note that these two effects, the material and the spiritual, are not mutually exclusive. Instead they are interlinked with one another, affecting and building upon one another. The harvest failures in 1821 led to increasing famine which then resulted in the peasantry turning to messianic beliefs for comfort. Likewise, natural disasters also exacerbated millenarian beliefs which then manifested into social movements that may take the form of physical violence.

Conclusion

The effects of natural disasters on the social turmoils that engulfed Java during this period are complex, wide-ranging, and varied. It is important to understand that the context they occurred in mattered when trying to interpret how the Javanese would have viewed them. For example, the eruption of Mount Merapi in 1822 was received very differently than the eruption of Mount Kelud. While the former was shrouded in messianic expectation that heightens social tension, the latter were viewed more calmly and did not result in the same fervor as the former. Also important to the discussion was the material losses caused by these disasters. They can have far-ranging impact beyond the disaster itself as can be seen in how the droughts of 1821 resulted in increasing economic pressure and social turmoil of the period.

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