

# Miasma as Earthquake Impact Depicted in Ambon Manuscript: A Disaster Semiotic Perspective

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## Abstract

This study aims to explore the concept of miasma and the spiritual implications of earthquakes as depicted in the Naskah Cerita Gempa (The Story of Earthquake) manuscript found in Ambon, “The Story of Earthquake” is a manuscript from the collection of Husain Hatuwe. It is cataloged in both the Ambon Manuscript Catalog and the Religious Catalog of the Makassar Research and Development Center, under the Ministry of Religious Affairs of the Republic of Indonesia. The manuscript has been digitized through a collaborative effort between the Pernaskahan Nusantara Foundation and the Faculty of Cultural Sciences at the University of Indonesia, in partnership with the Endangered Archives Programme (EAP) of the British Library. The digitized version of “The Story of Earthquake” manuscript can be accessed online via the EAP British Library’s website using the code EAP276/7/10. This study employs a textual analysis adopting Han-Liang Chang’s disaster semiotics methodology which categorizes disasters into three phases: natural events, interpretations and

effects. The findings of this study reveal that natural events, in the form of weather changes associated with miasma, have a significant impact on all forms of life, including animals, plants and humans. These changes lead to damage and death, prompting individuals to seek protection. This research underscores the profound spiritual and physical effects of natural disasters as interpreted through the lens of the Naskah Cerita Gempa manuscript.

**Keywords:** *manuscript, earthquake, miasma, disaster, semiotic, Ambon*

### ***Abstract***

*Tujuan dari artikel ini adalah mengungkap miasma dan aspek spiritual efek terjadinya gempa dalam naskah Cerita Gempa dari Ambon, Indonesia. Naskah Cerita Gempa merupakan naskah koleksi Husain Hatuwe. Naskah ini tercantum dalam Katalog Naskah Ambon dan Katalog Keagamaan Balai Litbang Makassar Kementerian Agama Republik Indonesia. Naskah ini telah didigitalisasi oleh Yayasan Pernaskahan Nusantara dan Fakultas Ilmu Budaya Universitas Indonesia bekerja sama dengan EAP British Library. Naskah Cerita Gempa digital dapat diakses secara daring dalam web Endangered Archives Programme (EAP) British Library dengan kode EAP276/7/10. Penelitian ini menggunakan analisis teks melalui metodologi semiotika bencana Han-Liang Chang. Semiotika bencana Chang membagi bencana dalam tiga fase, yaitu kejadian alami, interpretasi dan efek yang terjadi. Hasil dari penelitian ini menemukan kejadian alami berupa perubahan cuaca yang berkaitan dengan miasma, sehingga berpengaruh pada makhluk hidup, hewan, tumbuh-tumbuhan dan manusia. Naskah ini mengungkap dampak fisik dan spiritual dari bencana alam terhadap penduduk lokal.*

**Kata Kunci:** *manuskrip, gempa, miasma, bencana, semiotika, Ambon*

## **Introduction**

Indonesia, an archipelagic nation comprising 17,504 islands, is situated at the convergence of the Indo-Australian, Eurasian, and Pacific plates—the world’s three active tectonic plates. The country is home to over 129 active volcanoes, often referred to as the “ring of fire,” dispersed across its numerous islands. This geographical positioning renders Indonesia highly susceptible to natural disasters, necessitating the strengthening of the country’s resilience to various catastrophes induced by diverse geographic, geological, and demographic factors (BNPB, 2021).

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Data from the National Disaster Management Agency (BNPB) in Indonesia reveals that between January 1 and June 13, 2021, there were 1,413 disaster incidents. These disasters include a wide range of events including earthquakes, volcanic eruptions, karhutla (forest and land fires), droughts, floods, landslides, tornadoes, tidal waves, abrasion, and the COVID-19 pandemic. These events resulted in the loss of 493 lives, 68 missing persons, 12,853 injuries, 5,305,969 displaced individuals, 135,152 damaged dwelling units, and 2,919 damaged public facilities. On April 14, 2020, the government declared the spread of Covid-19 a non-natural national disaster, in addition to natural disasters. As of June 1, 2021, there have been 1,821,703 cases with 50,578 fatalities (BNPB, 2021).

Among the various types of disasters that occur in Indonesia, earthquakes are particularly noteworthy. These sudden vibrations, caused by shifting tectonic plates, can trigger secondary disasters such as tsunamis, landslides and volcanic eruptions. Regions affected by seismic activity often experience catastrophic events resulting in significant losses, both human and property. However, current scientific capabilities do not allow for precise prediction of the timing and location of earthquakes (Akhimuddin, 2013: 2). Japan, another island nation, shares similar conditions with Indonesia. It is located on the border of four tectonic plates: the Pacific, Philippine Sea, North America (Okhotsk), and Eurasia. This positioning leads to strain accumulation at plate boundaries, resulting in interplate earthquakes when the accumulated strain is suddenly released. This simple accumulation model forms the basis for deterministic forecasting of large earthquakes (Satake, 2015: 1).

Major earthquakes have occurred repeatedly in Japan and its surroundings. Recent studies of past earthquakes, including geological traces of giant earthquakes, show variations in the size and recurrence intervals of earthquakes. Historical literature identifies repeated occurrences of large earthquakes with an interval of about 100 years, but tsunami deposits suggest that the size of repeated earthquakes varies. This forms the basis for applying earthquake characteristic models for long-term forecasts, probability of future earthquakes, or estimates of maximum earthquake size (Satake, 2015: 5). Seismic activity in Japan and surrounding areas is very high. The Japan Meteorological Agency (JMA) compiles instrumental seismological observation data since 1923 as the JMA catalog. The Earthquake Research Committee (ERC) of the headquarters for the promotion of earthquake research under the Ministry of Education, Culture, Sports, Science and Technology of Japan annually updates the long-term forecasts of major earthquakes in the Japanese region and its surroundings, and publishes national seismic hazard maps (Schwartz & Coppersmith, 2012: 1). Long-term forecasts are made with the likelihood of future earthquakes in the next 30 years. Forecasts of future earthquakes are based on seismological and historical data from past earthquakes in recent centuries. There are differences in the earthquake recording practices across the archipelago and in Japan. Renowned historian Anthony Reid drew attention to the uncommon practice of the Nusantara people keeping a record of earthquakes. Despite the scarcity of such records, Fathurahman argues that any information on earthquakes in the archipelago, no matter how little, should be gathered, examined, published and used as a scientific source to

learn about historical events, customs, and cultural practices of the local populace (Akhimuddin, 2013: 14).

Ancient manuscripts serve as records that store various thoughts, knowledge, beliefs, customs or behavior of the community at a certain period of time, thereby containing accurate information of an event that has occurred in its time. These manuscripts can be an inspiration and reference in revealing past events. In many cases, local wisdom contained in ancient texts can be a social alternative to solve problems faced in the present such as earthquake natural disasters (Pramono et al., 2019: 16). Not all countries have written relics from the past. As a country whose population consists of various ethnic groups, Indonesia is one of the countries rich in ancient manuscript heritage, both in number and diversity of languages and characters (Chambert-Loir & Kramadibrata, 2014: 7). Revealing the content of ancient manuscripts that are diverse in language and script requires philology. According to Robson (1994: 9-10), philology is more than just text criticism. Philology is a way of working so that the text is read or understood by presenting (to present) and interpreting (to interpret) the text.

To extract the traditional intelligence that is contained inside significant cultural sources, studies have been conducted, especially to lessen the impact of disasters and investigate the diversity of Indonesian society and culture. Traditional intelligence emerges from society's interactions with its surroundings, which are created by recurring occurrences over an extended period of time (Setyawati et al., 2015: 101).. People with traditional intelligence are able to read and understand natural indications because they have developed a pattern of adaptation to natural conditions and

symptoms in pre-disaster, emergency, and post-disaster scenarios. Building a disaster management system requires the development of traditional intelligence, which is a significant asset. Traditional knowledge or intelligence, as an experience resulting from people's interaction with their environment, requires meaning and interpretation according to the context of their time. Traditional intelligence contained in ancient manuscripts in this case stores local values in the form of certain symbols or signs. Therefore, to understand these symbols or signs requires the science of signs, namely semiotics. The relationship between humans and signs is closely related to meaning, and signs will be useless without the process of meaning (Hoed, 2014: 6).

In contemporary studies, cultural relics containing traditional intelligence on the earthquakes are identified and understood for their meaning. Its symbols or signs is analyzed using geomorphological semiotics to reveal natural events, interpretations and determine the impact that occurs. This is an adaptive response to natural changes that can be used as a basis for building disaster response communities.

Some research on earthquakes sourced from ancient manuscripts has been carried out in Indonesia, but in terms of territoriality the texts that have been studied come from the Western Indonesia region. This research aims to address this gap in the studies of ancient manuscripts related to disaster literacy, specifically from the Eastern part of Indonesia. A key focus is the manuscript from Husein Hatuwe's collection, titled "The Story of Earthquake," which is cataloged in the Ambon Manuscript Catalog. This manuscript, believed to originate from the 19th century, narrates earthquake

occurrences during specific months and times. It also includes descriptions of the subsequent events that a country may experience as a result of these earthquakes.

The primary objective of this study is twofold. Firstly, it seeks to describe the traditional intelligence encapsulated in the manuscript through philological studies. Secondly, it aims to analyze the concept of earthquake disaster mitigation as presented in the manuscript. The insights derived from this analysis are expected to contribute significantly to the development of disaster management systems. The research question guiding this study is: How can the traditional intelligence summarized in the *Cerita Gempa* manuscript be described? How does *Cerita Gempa* manuscript be analysed for its disaster mitigation functions?

## **Literature Review**

Research on earthquakes in the Indonesian archipelago has been a subject of interest since the 19th century, initiated by European scholars intrigued by the natural potential of the archipelago and its diverse resources. Studies on earthquakes has been enriched by contributions from experts across various disciplines, leading to comprehensive investigations on earthquakes and other natural phenomena.

The first study entitled “Review of past and present geotectonic concepts of eastern Indonesia” (Katili, 1989: 103-129), drew parallels between the geological structure of the Indonesian archipelago and the European Alps, highlighting the dual character of the Indonesian archipelago due to its strategic location at a convergent zone. Sulu, Celebes and the Banda Sea represent trapped

areas of the Indian Ocean crust, the Banda Sea occupies a critical position in the complex convergent zone between Australia, Southeast Asia and the Philippine Sea Plate. The article concludes that the geological future of eastern Indonesia will be sandwiched between Australia and Asia, the region will resemble the complexity of the Alps and the Hercynian region. This early study by Katili (1989) set the stage for subsequent research on earthquakes in Ambon and its surroundings, with a total of 30 scientific articles published to date.

A significant portion of the research has focused on the analysis of ancient manuscripts and their implications for understanding earthquakes. For instance, Jaelani (2019) discussed the investigation of earthquakes and volcanic eruptions in the Dutch East Indies during the 19th century, conducted by naturalists, doctors and earth science experts. Despite its location in Indonesia, this study on disaster literacy did not focus on ancient manuscript related to history, religion, language, literature, and other traditional knowledge including disaster problems. Following Jaelani's study, Hermansyah (2012) and Akhimuddin (2013) examined earthquake texts based on ancient manuscript data from Aceh and Malay Minangkabau, respectively, contributing to the records of earthquakes and tsunamis in traditional intelligence contained in ancient manuscripts. Hermansyah (2012) studied the Ta'bir Earthquake Manuscript in the context of disaster mitigation and local wisdom in Aceh. An important contribution of this research is the records of earthquakes and tsunamis in traditional Acehnese intelligence contained in ancient manuscripts. This research shows several versions of ancient Acehnese texts and concludes that every earthquake has good and bad, self-introspection and disaster

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mitigation are important in responding to each event. Akhimuddin (2013), on the other hand, examined earthquake texts based on ancient manuscript data originating from Malay Minangkabau. This thesis research discusses earthquakes in several ancient manuscripts originating from Malay Minangkabau. Earthquake texts are inventoried and reviewed from religious, historical and anthropological perspectives. An important contribution of this research is the interpretation (*takwil*) and perception of the Minangkabau people regarding earthquakes which have been part of life for hundreds of years.

Several studies have also explored the role of religious manuscripts and local wisdom in disaster mitigation. Firdaus (2017) examined the contribution of Minangkabau Muslim scholars in responding to earthquakes and tsunamis based on the earthquake *takwil* text. This research attempts to explore the text of earthquake *takwil* which has not been accommodated by previous research. An important contribution of this research is the discovery of four earthquake *takwil* manuscripts in different places, including in Ulakan, Pariaman; Biaro, Agam; Mungka, Fifty Cities; and Padangpanjang. Similarly, Arfiansyah et al. (2019) and Ulumi et al. (2019) researched natural disaster mitigation in Aceh and Banten, respectively, focusing on the role of the Ministry of Religion and the exploration of local wisdom as a basis for building disaster-resilient communities. Arfiansyah's study seeks to explore local wisdom as a basis for building disaster resilient communities through the role of religious counselors, ulama and religious figures within the scope of the Ministry of Religion. Important contributions in this research are practical steps in dealing with natural disasters in various regions of Aceh and local wisdom sourced from one manuscript from the

Ali Hasjmy library collection and three manuscripts from the Aceh State Museum collection. Meanwhile, Ulumi (2019)'s study reveals natural disasters from manuscript, historical, folklore, anthropological and sociological perspectives. Religious instructors have an important role in the post-disaster rehabilitation process. An important contribution in this research is the explanation of disasters in several ancient manuscripts originating from Banten, namely: Parimbon/Parukunan manuscript, Gembong manuscript, Kekedutan manuscript.

Research has also been conducted on the perception of natural disasters in historical texts. Sudiby (2019) examined the volcanic eruption and the poet's perception in the testimony of the Bima, Javanese, and Malay texts of the 19th century, revealing the poet's perception of the destructive nature of mountains. This research reveals the poet's perception of the destructive nature of mountains in the Bima Kingdom Poetry, Babad Betawi, Babad Diponegoro and Lampung Karam Poetry. The important contribution of this research shows that from the four texts there is no perception of adequate awareness of disaster mitigation poet in Bima, Java and Malay in the 19th century. Suyami et al. (2015) also examined the Panjeblugipun Redi Kelut manuscript. The PRK manuscript in Javanese written by S. Dayawiyata and Mas Yudakusuma was published by Bale Pustaka in 1922. This text reveals the process of the eruption and lava flood disaster on May 20, 1919, along with its impacts and mitigation. The important contribution of this research is to present the text and translation of the PRK manuscript, a description of the eruption of Kelut Volcano on May 20, 1919, a description of the condition of the community around Kelut Volcano when the volcano erupted, a description of the impact of the eruption on the lives of

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the surrounding community and a description of disaster mitigation. Further, Pramono et al. (2019) examined the four earthquake manuscripts in the Darek area, including: the Chapter Stating the Earthquake in Balaigurah, the Earthquake Address manuscript in Taeh, Payakumbuh, the Earthquake Takwil manuscript in Kototuo and the Tabir Earthquake manuscript in Padangpanjang. The researchers examined disasters in West Sumatra from philological, theological, folklore, anthropological and socio-historical perspectives. The role of the Ministry of Religion in disaster mitigation is the scope of research using a local wisdom approach through ulama, religious instructors and religious figures.

Another perspective of studies on earthquakes was the traditional intelligence by recognizing natural signs. Setyawati et al. (2015) examined traditional intelligence in mitigating eruption disasters. The study focused on communities on the southwest slopes of Mount Merapi. The article identifies traditional intelligence in the form of cultural, faunal, vegetal, and physical semiotics. The recognition of these signs and their interpretation need to be developed in disaster management efforts. Pirol & Aswan (2018) also examined traditional intelligence in mitigating disasters. The study focused on the Luwu community. The research discovered local knowledge in the form of myths, animal behavior, certain types of plants, climate readings, and building architecture. The research recommends designing a disaster management communication system based on this local knowledge.

The research by Chang (2005) is a significant contribution to the field of disaster semiotics. Chang formulated disaster semiotics as a new perspective, arguing that every natural event can be a sign. This

perspective is based on Umberto Eco's statement. The research identified three phases in disaster semiotics: natural signs, interpretation, and effects. This formulation by Chang complements previous expert explanations regarding natural phenomena and social systems. Sunarto (2011) further explored the concept of disaster semiotics. The research focused on the philosophical meaning of local wisdom for community adaptation to marine and fluvial disasters. The study used a geomorphological hermeneutics and disaster semiotics approach. An important finding in this research is local wisdom in the form of cultural and faunal semiotics in anticipating the dangers of marine and fluvial climate change. This local wisdom can be used as a guide in facing danger.

Among these studies, a specific study on Ambon manuscript, especially on Cerita Gempa manuscript has not been conducted, despite its similar content on earthquake. This present study, is therefore, aiming to fill this gap.

## **Method**

This research focuses on a 19<sup>th</sup>-century manuscript known as the Cerita Gempa (The Story of Earthquake), henceforth referred to as the CG text. The aim is to uncover the traditional intelligence and spiritual aspects embedded within it. The methodologies employed in this study are philology and semiotics.

Philology is primarily used to present information in the form of text and physical manuscripts. Given the potential for changes or deviations during the process of copying or writing manuscripts, philological research is rooted in textual criticism. This often results in texts being perceived as unstable. However, in this study,

philology extends beyond mere text criticism. It involves making the text readable and comprehensible through presentation and interpretation. In this context, philology serves as a tool to restore any damage and address any issues present in the text (Robson, 1994: 9-10).

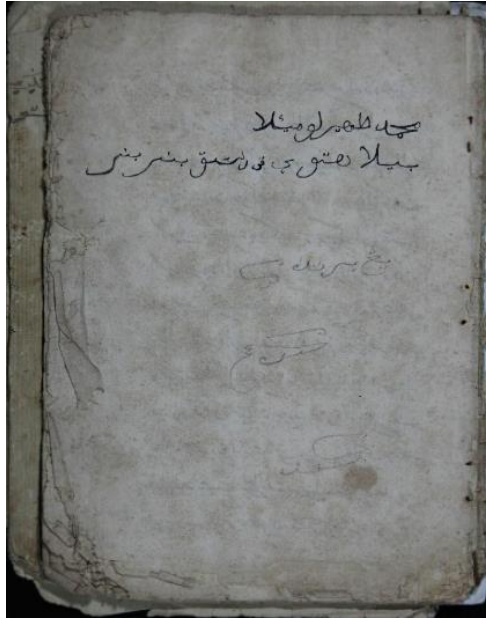
The semiotic theory of behaviorism is applied to recognize natural signs and changes in the surrounding environment, particularly in relation to earthquake disasters. To decipher the content of the CG text, this study employs the disaster semiotics theory proposed by Han-Liang Chang. Chang (2005: 9) categorizes his views into three phases: natural events, interpretations, and effects. In the context of earthquakes, this study bases its interpretation on geomorphological studies. The signs identified are interpreted based on the shape of the land or landscape affected by natural and social events (Sunarto, 2011). This approach allows for a comprehensive understanding of the CG text and its implications for disaster management.

## **Result and Discussion**

### **The Story of Earthquake Overview**

The manuscript entitled the Story of Earthquake (hereinafter referred to as CG) is contained in the Ambon Manuscript Catalog (Achadiati et al., 2011: 46). This manuscript is Husain Hatuwe's collection which has been digitized by the Faculty of Cultural Sciences, University of Indonesia in collaboration with the Nusantara Manuscript Foundation in the British Library's Endangered Archives Programme (EAP) program. The manuscript can be accessed online on the British Library EAP web ([eap.bl.uk](http://eap.bl.uk)) with the code EAP276/7/10 (EAP, 2011). In addition, this

manuscript is also contained in the Religious Catalog of the Makassar Research and Development Center of the Ministry of Religious Affairs of the Republic of Indonesia with the code 63-64 / Ktk / BLA-Malteng / 2010.



*Figure 1 The cover page of CG manuscript*

The manuscript dimension is 16.5 x 21.5 cm consisting of 48 pages. The size of the text block is 10 x 10 cm, and each page has 13 lines. The material is European paper with ALMASSA paper stamp, and the manuscript cover is made of green cardboard. The condition of the manuscript looks weathered but can still be read clearly. The text is written in black ink in Malay-Ambonese with Jawi script. This type of text is a narrative in the context of Ambonese culture. On the first page there is no information about the title, but the name of the person estimated is the name of the copyist/ author and the name of the owner of the manuscript. Here's an excerpt of the initial page of CG text.

// Muhammad Thohir Lumaela / Bila Hatuwe fi Kaitetu banar-banar

The title of the CG text was probably given by the author of the catalogue based on the word earthquake written repeatedly in the narrative text. The text of the first part contains the address that came in the month of Muharam and the prophecy of fate that will befall a country. Here is an early excerpt of CG text.

*// Bab suatu jika pada bulan Muharam gempa ita / datang pada siang hari alamat sedikit per / cintaan dalam negeri ita jika pada malam alamat / percintaan juga tetapi padi mahal dan / sekalian rakyat di Kaitetu jika pada waktu / subuh alamat negeri ita berperang dan / beras padi murah jika pada waktu zuhur / alamat berperang (kasadahani) jika pada / waktu asar alamat berpindah negeri ita / diri pada suatu tempat jika pada waktu maghrib / alamat orang banyak mati sebab berperang jika / pada waktu isya alamat beroleh isi negeri / ita dimurah pada Allah taala O Bab suatu*

*// Chapter one if in the month of Muharam an earthquake / comes during the day address a little per / love in the country ita if at night address / romance too but rice is expensive and / all the people in Kaitetu if at / dawn address the country is at war and / rice is cheap if it is at noon / the address is for war (kasadahani) if it is at / asar time the address moves to the country it / oneself in a place if it is at maghrib / the address many people die because of war if / at isha time the address gets the contents of the country / it is cheap to Allah taala O Chapter one*

*Digital Manuscript Link: <https://eap.bl.uk/archive-file/EAP276-7-10>*

At the end of this text there is a colophon containing information about the author and owner of the manuscript and the date of copying of the manuscript, namely Muhammad Thahir Lumiala, Bila Hatuwe, who finished copying on the 25<sup>th</sup> of Safar. The final text contains addresses that come on certain days as well as

predictions of fate that will befall a country. Here is the colophon contained in the script.

*// Hijrah nabi SAW / Tamat kalam yang tertulis ini pada duapuluh lima hari / Dari bulan safar pada lepas waktu asar pada malam isnain / Yang menyurat ini Muhammad Thohir Lumila*

*// The Hijrah of the Prophet SAW / The end of this written pen on twenty-five days / From the month of Safar at the end of Asr on the night of Isnain / The one who wrote this is Muhammad Thohir Lumila*

*Digital Manuscript Link: <https://eap.bl.uk/archive-file/EAP276-7-10>*

### **Semiotics of Behaviorism Earthquake Story Text**

CG text is a narrative that has special characteristics. The text has a pattern composed of several phrases and clauses that give it a certain meaning. In each explanation, the CG text has a special characteristic, starting the explanation with *a chapter* phrase that is described in narrative form. This phrase predominantly appears in starting a new discussion with certain variables and characterizes this text. Structurally, the content of the CG text contains earthquake forecast texts based on the Hijri calendar, unfortunate days, illustrations and prayers.

To analyze the signs of earthquake contained in the CG text, the text was analyzed using Morris's behaviorism semiotics which consisted of three areas of study, namely syntax, semantics and pragmatics. Based on these three regions, this section will discuss the signs contained in the CG text. The following excerpts show the phrases.

*// **Bab suatu** jika pada bulan Muharam gempa[h] ita / datang pada si[y]ang hari alamat sedikit per / cintaan dalam negeri ita  
// Chapter one if in the month of Muharram an earthquake [h] ita / comes on that day address a little per / love in the country ita*

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**Bab suatu** jika pada bulan Safar gempa[h] ita datang pada si[y]ang / hari alamat rakyat dalam negeri ita berpindah-pindah / daripada tempat kepada suatu tempat yang lain terlalu / kes[y]akita[ng] pada tahun ita

Chapter one if in the month of Safar an earthquake[h] occurs on the day / day of the address of the people in the country moving / from one place to another too / case[y]akita[ng] in the year

**Bab suatu** jika pada / bulan Rabiul Awal gempa[h] ita datang pada si[y]ang / hari alamat dalam negeri ita (alif-ba-nya-ya) sangat /

Chapter one if in / the month of Rabiul Awal the earthquake[h] came on the day / day of the address in the country (alif-ba-nya-ya) very /

.....

Digital Manuscript Link: <https://eap.bl.uk/archive-file/EAP276-7-10>

The phrases above contain a temporal sign of the change of months, days and times, accompanied by certain signs that indicate differences in conditions and situations at a time. This shows the relationship between natural phenomena and social situations that form the signs. This understood sign of the reaction of living beings to a stimulus as the object of research of Morris's semiotic behaviorism. The attitude of a sign points to a certain sign (Trabaut, 1996: 34). In the CG text, the phrase *chapter is* based on the months of the Hijri calendar, prayer times and Arabic days. This shows that the CG text in its writing was influenced by Islam. The Islamic world uses the Hijri calendar as a guideline calculated since the hijra of the Prophet Muhammad SAW (Al-Khatib, 1995: 19).

Meanwhile, in recognizing signs of natural and social phenomena, CG texts use the displacement of the sun identified in prayer times. Day and night as general signs of the presence of sunlight, while prayer time as special signs that use the size of shadows to distinguish between one time and another. Fajr, Duha, Zuhr Asar,

Maghrib, and Isha are important times in Islam because they are related to the worship that must be done (except Duha) by its adherents. People are easier to recognize natural phenomena or social events that occur based on these times because they are closely related to their beliefs.

Displacement in the context of the Hijra and the shifting of the sun was repeatedly mentioned in the CG text. The phrase displacement appears five times in the text.

*jika pada / waktu as[y]ar alamat **berpindah negeri** ita / dari pada suatu tempat (halaman 2 baris 8-10)*  
if at / time as[y]ar the address moved to that state / from a place  
(page 2 lines 8-10)

*jika pada waktu maghrib / alamat akan **berpindah-pindah negeri** ita daripada suatu // tempat (halaman 3 baris 12-13)*  
if at dusk / the address will move from one state to another // place (page 3 lines 12-13)

*pada si[y]ang / hari alamat **rakyat** dalam negeri ita **berpindah-pindah** / daripada tempat kepada suatu tempat yang lain terlalu / kes[y]akitan[g] pada tahun ita (halaman 3 baris 1-4)*  
on the day / day of the address of the people in the state moving / from one place to another too / case[y]akitan[g] in the year  
(page 3 lines 1-4)

.....

Digital Manuscript Link: <https://eap.bl.uk/archive-file/EAP276-7-10>

The excerpts above discuss two types of displacement: geographical and human. Geographical displacement refers to the movement of landmasses, closely linked to natural phenomena that cause shifts in the earth's structure. This displacement is understood as geological processes or landscape changes resulting from endogenous and exogenous activities. These activities impact the structure of the land or landscape on the earth's surface, subsequently affecting the life

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of organisms inhabiting it. Therefore, observing earth activities and movements of other natural objects is crucial to prevent casualties and minimize losses.

Geological activity can be divided into two categories: endogenous and exogenous. Endogenous activities originate from within the earth and include phenomena such as earthquakes, magmatism, volcanism, orogenesis and epeirogenesis. Exogenous activities, on the other hand, originate outside the earth and affect soil conditions. These include weathering, erosion, and sedimentation (Noor, 2014: 235). Each geological process has unique characteristics and impacts, necessitating different handling and evacuation methods.

Human displacement, as expressed in the text, varies according to perspective and its relationship with other phrases. The movement can be individual or collective and is context-dependent. If related to geological processes, the movement is in the context of evacuation or self-preservation from natural disasters. In the context of war, displacement occurs as individuals or groups seek safety from conflict. When related to meeting life's necessities, the movement represents human activity, such as the shifting field system used by nomadic community groups.

The fulfillment of life basic needs is related to natural phenomena such as rain, wind, very cold and hot weather is also mentioned in the CG. These events greatly affect human life in a short and long period of time. Climate and weather affect the occurrence of rain which has an impact on the growth and development of plants found on earth. The rain is mentioned eight times in the text.

*/ jika pada malam tsa alamat angin dan **hujan[g]** / banyak sangat (halaman 4 baris 9-10)*

/ if at night tsa addresses wind and rain [g] / very much (page 4 lines 9-10)

*/ Bab suatu jika pada bulan Ramadan gempa[h] ita / datang pada si[y]ang hari alamat segala orang / dalam negeri membawa[h] senjata banyak bersalahan / masing-masing keras[y]-kerasan kemudian[g] tsa jadi ber / seteru segala binatang [am]punya[h] kaki kerbau dan / kambing karena[h] hujan (halaman 13 baris 5-10)*

/ Chapter one if in the month of Ramadan an earthquake[h] ita / comes on the day[y] the address of all the people / in the country carrying[h] many weapons / each one hard[y]-hard then[g] tsa so be / the enemy of all the animals [generally] have [h] feet of buffalo and / goat because of [h] rain (page 13 lines 5-10)

.....

*Digital Manuscript Link: <https://eap.bl.uk/archive-file/EAP276-7-10>*

The CG text describes rain in various conditions, including heavy, moderate and light intensity, accompanied by cold and very cold temperatures. The occurrence of rain can be attributed to some factors, including climate and weather patterns, geographical location (such as tropical regions) and human activities.

Rain significantly impacts life on earth, influencing the conditions of plants, the behavior of animals, and social situations. Specifically, the text repeatedly mentions the effect of rain on the condition of fruits and rice paddies. This suggests that rainfall, its intensity, and temperature play a crucial role in agricultural productivity and, by extension, the livelihoods of communities. Rains have been mentioned repeatedly in CG texts as follows.

*/ jika pada malam tsa alamat panas keras pada / tahun ita dan segala buah-buahan habis[y] / lurah sebab panas keras (halaman 7 baris 2-4)*

/ if on the night of tsa the address is very hot in / the year ita and all the fruits run out [y] / villager because of the intense heat (page 7 lines 2-4)

*/ pada kutika zuhur alamat orang akan datang / ke benua[h] ita bermula[h] jika[h] pada kutika[h] asar / alamat segala **buah-buahan** akan menjadi dan / anak raja-raja di benua[h] ita beroleh kekayaan yang / maha bes[y]ar (halaman 9 baris 8-9)*  
*/ at noon kutika the address of people will come / to the continent[h] ita begins[h] if[h] at kutika[h] asar / the address of all the fruits will be and / the children of the kings in the continent[h] ita bear wealth that / maha bes[y]ar (page 9 lines 8-9)*

*// segala **buah-buahan** banyak kurang dan segala / pohon kayu pun bersakat dan anak orang / tiga[h] tahun atau tujuh tahun isinya / banyak mati (halaman 12 baris 1-4)*  
*// all the fruits are lacking and all the / trees are withered and people's children / three[h] years old or seven years old / many die (page 12 lines 1-4)*

.....

*Digital Manuscript Link: <https://eap.bl.uk/archive-file/EAP276-7-10>*

The condition of fruits and rice, as depicted in the text, is influenced not only by weather patterns but also by prevailing social situations. One of the significant social events repeatedly mentioned in the text is warfare. The text suggests that warfare was a common occurrence in societies involving kings and their people, with eleven instances highlighting the frequency of such events.

*jika pada waktu / subuh alamat negeri ita **berperang** dan / beras padi murah (halaman 2 Baris 5-7)*  
*if at / dawn the address of the warring state and / cheap rice (page 2 Lines 5-7)*

*jika pada waktu zuhur / alamat **berperang** kasudahannya (halaman 2 baris 7-8)*  
*if it is at noon / the address of the war is over (page 2 lines 7-8)*

*jika pada waktu maghrib / alamat orang banyak mati sebab **berperang** (Halaman 2 Baris 10-11)*  
*if at dusk / address many people die because of war (Page 2 Lines 10-11)*

.....

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The wars depicted in the CG texts can be classified into two categories: conflicts against foreign entities and internal disputes among the people. These wars have profound impacts on both the natural environment and societal conditions. Consequences include loss of life, economic inflation exemplified by the rise in rice prices and the decline of prosperous nations.

The narrative of these events in the CG text is structured through clauses connected by two conjunctions, 'if on' and 'address'. This pattern recurs in the text, with the appearance of a condition clause followed by a corresponding answer clause. The following are examples of these clauses and the conjunctions that link them (conjunctions are underlined).

*// Bab suatu jika pada bulan Muharam gempa[h] ita / datang pada si[y]ang hari alamat sedikit per / cintaan dalam negeri ita jika pada malam alamat / percintaan juga tetapi padi mahal dan / sekalian rakyat di (kaf-jim-ta) jika pada waktu / subuh alamat negeri ita berperang dan / beras padi murah jika pada waktu zuhur / alamat berperang kasudahannya jika pada / waktu asar alamat berpindah negeri ita / dari pada suatu tempat jika pada waktu maghrib / alamat orang banyak mati sebab berperang jika / pada waktu isya alamat beroleh isi negeri / ita dimurah pada Allah taala (Halaman 2)*

*// Chapter one if in the month of Muharram an earthquake [h] ita / comes on that day the address is little per / love in the country ita if it is at night the address / romance too but rice is expensive and / all the people in (kaf-jim- ta) if at / dawn the address of the country is at war and / rice is cheap if at noon / the address of the war is the end if at / asr the address moves the country / from somewhere if at dusk / the address many people die because of the war if / at the time of Isha, the address is given to the country / it is offered to Allah Almighty (Page 2)*

*Digital Manuscript Link: <https://eap.bl.uk/archive-file/EAP276-7-10>*

The quotation above demonstrates the use of condition and answer clauses, linked by the conjunctions ‘jika pada’ and ‘alamat’. These conjunctions play a dominant role in the text, connecting two inseparable clauses. In the provided example, several clauses are generally tied to the initial clause, specifically: ‘bulan Muharam gempa[h] ita / datang’. Furthermore, each clause is specifically bound to the ‘shara’ clause at each occurrence. This pattern of clause arrangement and connection provides a structured narrative flow within the text.

*Bab suatu // jika pada hari Ahad gempa[h] ita datang / alamat hujan sangat buah-buahan / menjadi (Halaman 19 Baris 1)  
Chapter one // if on Sunday the earthquake [h] ita comes / the address of the rain is very fruitful / becomes (Page 19 Line 1)*

*Digital Manuscript Link: <https://eap.bl.uk/archive-file/EAP276-7-10>*

The excerpt above demonstrates the presence of a condition clause and an answer clause, linked by the conjunctions ‘jika pada’ and ‘alamat’. Contrary to the previous citation, this quotation comprises only two clauses, hence they are not binding, and subsequent clauses stand independently. The use of the conjunctions ‘jika pada’ and ‘alamat’ is a nomenclature that suggests the CG script belongs to a category of divination scripts. This characteristic differentiates it from other types of scripts and provides unique insights into its structure and usage.

### **Disaster Semiotics in Earthquake Story Manuscript**

The “The Story of Earthquake” manuscript explores the semiotics of disasters, with a particular focus on earthquakes. Earthquakes are depicted as catalysts for subsequent disasters, such as aftershocks,

tsunamis, landslides, volcanic eruptions and even the emergence of diseases. This latter connection was noted by Dutch East Indies doctors, including Pieter Bleeker (1819-1878), the first principal of Doctor Djawa. He observed an increase in patients with diarrhea, rheumatism, and catarrh at Batavia hospital following the 1842 earthquake. This correlation between earthquakes and disease emergence is based on the neo-Hippocratic paradigm, which posits that an unhealthy environment can lead to disease (Jaelani, 2019: 37).

The manuscript narrates the diverse natural and social events triggered by earthquakes. These events are analyzed using Chang's disaster semiotics, which comprises three phases: natural events, interpretations and effects. The theory suggests that natural phenomena are intertwined with the prevailing social system, leading to specific impacts on both society and the landscape.

While science has yet to predict precisely when and where earthquakes will occur, humans can identify signs of impending earthquakes based on past experiences. It is crucial to note that earthquakes can trigger new disasters, necessitating vigilance not only towards the occurrence of earthquakes but also their aftermath. Aftershocks, tsunamis, landslides, volcanic eruptions and disease outbreaks are all potential consequences.

The study of health topography, grounded in the neo-Hippocratic paradigm, was a concern for 19th-century physicians in the Dutch East Indies. Frans Epp detailed the emergence of diseases due to earthquakes, explaining that earthquakes could release gases from the soil. Cracks caused by earthquakes would allow steam to escape from the ground, releasing potentially harmful air laden with various



impurities that had undergone decay. This could lead to an unhealthy climate and environment, altering weather conditions and increasing disease susceptibility (Corbin in Jaelani, 2019: 38).

Epp's writings highlighted the relationship between disease emergence and earthquake phenomena. He noted that the 1835 earthquake in Ambon resulted in air pollution by *miasma*, leading to fever outbreaks and rendering Ambon an unhealthy place (Jaelani, 2019: 37). The miasma theory posits that diseases like cholera, chlamydia or the black plague are caused by "bad air" emanating from decaying organic matter (Last, 2007). Epp's research in Ambon in 1835 aligns with the situations described in the 19<sup>th</sup>-century CG texts from Ambon. The texts detail various conditions arising from earthquakes during specific periods, affecting humans, animals, and plants, and causing weather changes.

The text describes diverse weather conditions following an earthquake, including heavy rain, wind and extreme cold and hot temperatures. Heavy rain can have both positive effects, such as ripening fruits (CG, 19:1-3) and cheapening rice (CG, 16:2-3), and negative impacts, such as the decline of prosperous countries (CG, 17:7-9). Other weather changes include wind rain, extreme cold and extreme heat. Extremely cold weather cheapened rice (CG, 19:7-9) and armed the king's *patih* (CG, 20:8-10), while extremely hot weather led to failed fruit harvests (CG, 20:1).

The manuscript also illustrates that weather changes, particularly those following earthquakes, significantly impact both animals and humans. For instance, animals such as buffaloes and goats are depicted as quarreling over rain (CG, 13:5-10), violent winds lead to rats consuming plant crops (CG, 7:12), and numerous buffaloes

and oxen perish (CG, 15:11, 18:5). In humans, these weather changes result in sickness and death, particularly among children aged 3 or 7 years (CG, 12:3), youth (CG, 9:1), and the affluent (CG, 16:9-10). This situation is interpreted as the aftermath of harmful gases released following an earthquake, leading to weather changes and the emergence of diseases. The resulting scenario is one of sorrow, as many individuals fall ill and succumb to diseases such as cholera, chlamydia, or the black plague.

In addition to these natural impacts, earthquakes also trigger social events that lead to widespread death and starvation. The CG text depicts social events such as wars, kings blaming each other, and people from distant lands. The text provides several instances of wars (CG, 2: 5-7, 2: 7-8, 3: 8-9, 6: 5-6, 6: 10-13, 10: 1, 10: 5-7, 14: 5-8, 15: 3-4, 18: 1-2), illustrating disputes between kings that force their respective populations to engage in conflict with foreign nations. These conflicts, often driven by trade monopolies, lead to a rise in rice prices. The inflated cost of rice renders it unaffordable for the people of Ambon, forcing them to resort to sago as an alternative food source. This situation is interpreted as a period of hardship, characterized by difficulties in securing basic food supplies. The following line describes this warfare challenge.

*padi mahal dan / sekalian rakyat dikejut(kan)* (Halaman 2 Baris 4)  
rice is expensive and / all the people are surprised (right) (Page 2 Line 4)

The CG text depicts the struggle of people to meet their basic needs, describing a situation where individuals move from one place to another to practice 'huma' (CG, 15: 8-10). 'Huma' refers to an ancient farming method involving shifting cultivation systems to

clear forests. The text portrays a scenario of starvation, suggesting a shortage of food supplies due to adverse weather conditions.

In addition to impacting crops, earthquakes also have significant effects on dwellings. They can cause dwellings to move or disappear due to the melting of soil surfaces, leading to soil shifts and the displacement of everything above it (CG, 13: 10-13). This study identified several clauses in the CG text that pertain to geological events or changes in landforms. These clauses are as follows:

*jika pada / waktu as[y]ar alamat **berpindah negeri** ita / dari pada suatu tempat (Halaman 2 Baris 8-10)*

if at / time as[y]ar the address moved to that state / from a place (Page 2 Lines 8-10)

*jika pada waktu maghrib / alamat akan **berpindah-pindah negeri** ita daripada suatu // tempat (Halaman 3 Baris 12-13)*

if at dusk / the address will move from one state to another // place (Page 3 Lines 12-13)

*Digital Manuscript Link: <https://eap.bl.uk/archive-file/EAP276-7-10>*

The text contains repeated references to the terms ‘move’ and ‘country’. These terms are used in the context of a phenomenon known as liquefaction, which is interpreted as the shifting or displacement of a country’s geographical position. Liquefaction is a process that reduces the strength and stiffness of the ground, typically triggered by sudden and intense stressors such as earthquakes or explosions (Johansson, 2000: 1). This loss of rigidity causes the soil to behave like a liquid, leading to the displacement of structures built upon it. Consequently, this displacement disrupts social life and can result in significant damage or destruction. Liquefaction primarily occurs in saturated soils, where the spaces between soil particles are completely filled with water. The water exerts pressure on the soil particles, influencing their density. Prior

to an earthquake, the water pressure is relatively low. However, the shaking induced by an earthquake increases this pressure, facilitating the movement of soil particles against each other (Johansson, 2000: 1)

To mitigate the risks associated with liquefaction Johansson (2000: 6) suggests three strategies: 1) Avoiding soils prone to liquefaction, 2) Constructing buildings that can withstand liquefaction, and 3) Enhancing soil conditions in a sustainable manner. Avoiding liquefaction-prone soils can be achieved through comprehensive soil characterization mapping, which involves identifying soil structures across the country. This information can guide decision-making processes related to development plans. If construction on liquefaction-prone land is unavoidable due to space constraints, it is essential to design structures that are resistant to liquefaction.

In addition to soil mapping and structural design, another preventative measure against liquefaction is the improvement of soil strength, density, and drainage characteristics. This can be accomplished through various soil enhancement techniques.

*pada si[y]ang / hari alamat **rakyat** dalam negeri ita **berpindah-pindah** / daripada tempat kepada suatu tempat yang lain terlalu / kes[y]akitan[g] pada tahun ita (Halaman 3 Baris 1-4)*  
on the day / day of the address of the people in the state moving / from one place to another too / case[y]akitan[g] in the year (Page 3 Lines 1-4)

*jika[h] pada kutika / malam gempa[h] ita datang alamat **orang** akan / **berpindah-pindah** kepada tempat yang lain mendirikan / rumah tsa (Halaman 13 Baris 10-13)*  
if[h] on kutika / the night of the earthquake[h] it comes the address of people will / move to another place to build / house tsa (Page 13 Lines 10-13)

Digital Manuscript Link: <https://eap.bl.uk/archive-file/EAP276-7-10>

Heritage of Nusantara:

The text contains repeated references to the terms ‘move’ and ‘people’. These terms are used to describe the phenomenon of human displacement, which involves individuals or groups moving from one location to another. In the context of earthquakes, this displacement is typically interpreted as an evacuation effort towards safer locations. However, it’s important to note that the term ‘displacement’ in the third clause may have a different connotation, depending on the specific context in which it is used.

*jika pada malam tsa alamat **berpindah** daripada / tempat yang **sedikit** dan orang **berhuma** / kelaparan[g] (Halaman 15 Baris 8-10)*

if at night tsa the address moves from / a small place and people are hungry / hungry [g] (Page 15 Lines 8-10)

*Digital Manuscript Link: <https://eap.bl.uk/archive-file/EAP276-7-10>*

The text refers to the terms ‘move’, ‘little’, and ‘huma’. ‘Huma’ is defined as forest land that has been cleared for the purpose of food production (Mulyoutami et al., 2010: 9). The term ‘berhuma’ refers to an ancient agricultural system that involved slashing and burning to clear land for cultivation. Communities would work together to create fire barriers to control the spread of fire. This burning process is beneficial as it reduces pest and weed infestations during the planting period, thereby influencing the yield of the food crops (Daeli, 2019: 1).

The practice of ‘huma’ involves three stages: the planting phase, the production phase and the fallow phase, during which vegetation is allowed to regrow naturally (Mulyoutami et al., 2010: 9). The slash-and-burn activities prior to planting and the fallow phase post-harvest significantly impact soil and environmental conditions.

Fertile forests undergo transformation following the slash-and-burn activities, and the fallow phase is implemented to allow for the accumulation of nutrients in the biomass of woody plants (Daeli, 2019: 1).

In a cultural context, the shifting cultivation system, which involves cutting and burning forest areas, is a cultural heritage of ancient communities governed by customary law. The environment undergoes significant changes post cut-and-burn, with the forest land being replaced by agricultural land. Following the harvest period, the fallow phase is a crucial stage in the shifting cultivation system, aimed at restoring soil fertility. However, the text does not provide specific details regarding the size of the field or the area of forest land that can be utilized for cultivation. Customary law pertaining to 'berhuma' prohibits the use of primary forests for cultivation.

## **Conclusion**

The Cerita Gempa, a 19<sup>th</sup>-century manuscript, presents an intricate relationship between natural phenomena and social life, particularly in the context of earthquakes. It suggests that earthquakes serve as indicators of other impending natural and social events that warrant vigilance. These signs manifest as drastic changes in climate and weather, impacting humans, animals and plants alike. Such extreme changes can lead to widespread death, with crops and fruits drying up, escalating their prices. Animals exhibit behavioral changes, engaging in disputes, while many humans fall ill and die, causing profound sorrow within their families.

The text also explores the theory of miasma, proposed by doctors from the Dutch East Indies, which links earthquakes to the onset of

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diseases. According to this theory, earthquakes result in the release of harmful gases from the ground, influencing the weather and leading to various diseases. These conditions predominantly affect children, youth and the affluent. To cope with these adversities, the people of Ambon, especially those residing in Hitu country, place their faith in Allah SWT, expressing resignation and supplication for acceptance of their good deeds and protection from danger.

Furthermore, the text discusses the impact of earthquakes on the land's morphology, specifically the phenomenon of liquefaction. This process involves the melting of solid soil due to vibrations, causing it to shift from one place to another and leading to the loss or destruction of life on it. To prevent casualties and minimize losses, the text recommends three strategies: 1) Avoiding land prone to liquefaction through soil structure mapping, 2) Constructing buildings that are resistant to liquefaction, and 3) Sustainably improving soil conditions.

This manuscript offers valuable insights into contemporary disaster mitigation systems. It underscores the importance of government policies being formulated in line with the research recommendations before a disaster strikes. It also emphasizes the need for societies to enhance their ability to interpret natural signs, with the hope of minimizing loss of life and property in the event of a disaster.

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