FINDING FAULT: EARTHQUAKES DURING THE REIGN OF TANG DEZONG (785-805)

by

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THESIS ABSTRACT

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Drawing from trends in environmental and disaster studies, this study examines the meaning of earthquakes within the official histories of China's Tang Dynasty (618-907), specifically those during the reign of Emperor Dezong (r. 785-805), as both historiographic metaphors and incidents of real natural-induced disaster. Earthquakes, like other forms of potentially harmful natural phenomena, demonstrated, the Chinese believed, Heaven's dissatisfaction with a sitting ruler. Over time, ministers and court scholars sought to draw connections between earthquakes and specific forms of behavior in attempts to perhaps prevent future incidents of seismic reproach. And though certain relationships are articulated more clearly in some parts of the histories than others, earthquakes nevertheless demonstrated an ability to engender a great sense of uncertainty and discord within historical memory. Consequently, the reading of the natural world codified in the official histories marked an attempt by the Chinese state to control human behavior for generations to come.

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CHAPTER I

INTRODUCTION

Xi'an is a thriving metropolis of nearly seven million and the former capital of China's golden age. It is a place where a number of grand historic epochs converge into one another, producing a spectacular panorama that is modern and ancient. Hidden amongst this landscape of steel and concrete are powerful reminders of the past, and a stroll through Xi'an teases travelers with the sights and smells of its most celebrated era, the Tang (618-907). The uniform grid of the city along a carefully measured north-south axis, for example, reflects the philosophies that guided imperial city planning for over two thousand years. Visitors can likewise explore—via a bit of sweet-talking and a simple bribe—an innocuous-looking earthen mound situated just south of the gates to Shaanxi Normal University once used by the Tang emperors for their annual sacrifices to heaven. What is more, a stroll though Xi'an's celebrated Muslim market testifies to the exchange of goods and ideas that took place here, brought from the West along the famous Silk Road. Engulfed in a cloud of excited chatter and the rich aroma of roast lamb, one is continually struck by the reverberations of its history.

Once one of the tallest buildings in the city, the Small Wild Goose Pagoda, 小雁塔 *xiao yan ta*, now sits hidden among a morass of overdeveloped urban sprawl. Most locals can easily direct travelers to its more famous sibling, the Large Wild Goose Pagoda, 大雁塔 *da yan ta*, several blocks east, but it requires a bit more perseverance to navigate the grid of dingy side streets and crowded boulevards to reach this particular site.

Nevertheless, the pagoda stands proudly within the modern-day landscape, anchored in place by a small patch of lush greenery. The scene appears dreamlike, looking as if someone grafted a thirteen-hundred-year-old religious compound onto a bustling city block. Exaggerated, perhaps, by stark architectural contrast between it and its neighbors, the Small Wild Goose Pagoda is a powerful reminder of both the city's celebrated past and its precarious geological location, for Xi'an is a city riddled with fault lines. The pagoda itself stands almost one hundred and forty feet tall, roughly the same height as some of modern Xi'an's shorter apartment complexes. Built atop a square base, the structure rises up in tiers—fifteen in all—that contract as they reach the sky. Each level is roughly eight feet tall and adorned with four small windows that look out over the city in each cardinal direction. The bricks used in its construction give it a color not unlike the rich loess soil used for the agriculture that sustained the empire: in the evening sun it glows a proud ochre color, whereas wet weather softens it to a cool and somber gray. Constructed during the early years of the eighth century during the brief reign of Emperor Zhongzong (r.705-710), the pagoda managed to weather centuries of political unrest and neglect, becoming one of only two original Tang Dynasty structures to survive into the present day.

The pagoda is not without signs of wear. What were once sharp right angles are now dulled by centuries of blowing sand and harsh, icy winters. The sharp eaves that in earlier times jutted forth from each tier have long disappeared and are no longer trimmed with the colorful auspicious banners and lanterns used for religious ceremony. The most striking destruction, though, is found at the very top of the pagoda. Once adorned with a delicate lotus bud, the pagoda is now crowned by a violent scar, a grim reminder of a

devastating earthquake that struck the region in 1556. Killing over three hundred and sixteen thousand people, this quake still holds the record as the deadliest in all of human history.[1] All across the province, towns fell to ruin while the population in some areas dropped 60 percent. But whereas the Big Wild Goose Pagoda, which also suffered damage, was promptly and easily repaired, the Small Wild Goose Pagoda has remained blemished by this gapping cavity ever since. In fact, the disfigurement has come to define the structure with its own five hundred year legacy. It is a two-faced historical relic of both China's exalted golden age and its violent seismic past.

In spite of its ferocity, the 1556 earthquake was but a single episode in a history of seismic activity spanning back over two thousand years. From the earliest periods of Chinese history, rulers bemoaned the destruction wrought upon their lands by the unexpected and chaotic trembling of the earth. In times before modern geological understandings of the planet's processes, rulers sought to determine the reasons behind this disruptive force, eventually linking it to patterns of unrighteous behavior. As the head of society, a ruler exhibited greater influence on the natural world than common subjects, and thus it was up to him to calm the ground in times of distress. By teasing out certain patterns, the moralized reading of earthquakes reflected the larger cause and blame theory that shaped the interpretation of history. In many ways, the story of China's earthquakes is a story of its imperial tradition, for much of our understanding comes directly from the dynastic histories compiled in the courts of its rulers.

[1] In comparison, the second deadliest, the 2010 Haiti quake, resulted in three hundred thousand deaths. "Earthquakes with 50,000 or More Deaths," *United States Geological Survey*, http://earthquake.usgs.gov/earthquakes/world/most_destructive.php

This study examines the meaning of earthquakes within the histories of the Tang Dynasty, specifically those during the reign of Emperor Dezong (r. 785-805), as both historiographic metaphors and incidents of real natural-induced disaster. Earthquakes, like other forms of potentially harmful natural phenomena, demonstrated, the Chinese believed, Heaven's dissatisfaction with a sitting ruler. Over time, ministers and court scholars sought to draw connections between earthquakes and specific forms of behavior in attempts to perhaps prevent future incidents of seismic reproach. And though certain relationships are articulated more clearly in some parts of the history than others, earthquakes nevertheless demonstrated an ability to engender a great sense of uncertainty and discord within historical memory. During the Tang we see many a minister refer back to incidents of earthquake activity in the Zhou and Han dynasties so as to highlight the catastrophic potential these disasters could possibly have for the emperor and the imperial legacy. Some we will see proved more capable than others in demonstrating to both Heaven and earth their worth as emperor. Those unable to bring an end to the shaking were consequently remembered as ineffective leaders and responsible for larger political and social failings of the court.

That should not imply, though, that subsequent historians simply fabricated earthquake accounts to agree with their didactic reading of the past. Rather, the histories examined in this study represent a record of—and reaction to—actual geological processes characterizing central China. The pattern of seismic behavior that emerges from these sources is one largely consistent with a modern scientific understanding of the subterranean world. But even if unable to tell us the magnitude of a particular quake or its exact epicenter, these sources nevertheless provide a glimpse into how earthquakes

reshaped the natural environment into unfamiliar terrain and submerged communities into a terrible sea of confusion, showing that the consequences of sudden disaster extended far beyond the guarded walls of the imperial palace. Metaphorically potent as they were, the earthquakes and disaster rhetoric employed within the pages of the dynasty histories were ultimately supported by shaky ground: these earthquakes were real, even though their placement alongside reports of giant footprints and mischievous birds may at first arouse suspicions. But by controlling the reading of the natural world, the Chinese state, through the writing of official histories, sought to control the behavior the people.

Much of this study depends on an investigation into the philosophies and biases surrounding the Chinese historiographical tradition. Nearly as old as the dynastic system itself, the official writing of history emerged as one of the primary cultural and political pursuits of the court. Later writers modeled their projects upon earlier classics and in doing so preserved a number of recognizable themes, tropes, and beliefs. In many ways, the writing of history was itself a type of literature, for court historians approached their work with the desire to tell a story of times gone by. The rise and fall of previous ruling houses were situated within the larger narrative of Chinese civilization, of which the current dynasty represented merely a single episode. Accordingly, historical actors were cast into roles that characterized them in either a positive or negative light. Fully aware of the benefits afforded by hindsight, scholars sought to identify instances of moral and political folly that eventually led to a ruling house's overthrow. The inclusion of natural disaster and other inauspicious signs were a means of signaling this decline to future observers and thus stand out as powerful metaphors of social discord.

While most historians of the Tang attest to the accuracy of the dynastic sources, I approach them with a great deal of caution. When I read these histories, I interpret them not as precise firsthand accounts, but as literary interpretations of past events and peoples. That is not to suggest I read these sources as complete fabrications. Instead, I see them as an attempt to present a historical record based on careful scrutiny and primary source research—indeed the court historians were celebrated for their commitment to their scholastic endeavors—through a familiar and recognizable format. This fact becomes especially clear when reading the conversations between an emperor and his ministers. These exchanges follow a simple formula in which the emperor, confused as to why something bad is afflicting his lands, calls upon his advisors for council. In many cases, these scenes mirror almost exactly similar events recorded in earlier histories, cementing to its readers the need to observe the lessons of the past. And even as isolated incidents within a single history, they contain powerful literary lineage. The same holds true for the earthquakes. To read them as simply cases of natural disaster risks overlooking the larger ideological and mechanical continuities shaping their presence within the records.

Consequently, this study is very much a story about stories, for which I owe much to the writings of William Cronon.[2] When compiling the history of the Tang Dynasty, the Song historians set about the task of goal of revealing the story of their predecessors. What were the successes facilitating its rise? What were the shortcomings leading to its eventual destructions? In fact, the entire understanding of the dynastic cycle—in which the rise, climax, and fall of a dynasty resembles the plotting of any story—served as a means of organizing a history of various successor states under the legitimacy of a

[2] William Cronon, "A Place for Stories: Nature, History, and Narrative," *Journal of American History* 78, No. 4 (March, 1992): 1347-1376.

Heavenly right to rule. Determining one's legitimacy then depended in part on the organization of an unorganized set of natural events into a story in which a moral could be derived from the relationship of nature to human events. Finally, there was the story of China's geological processes, of which there was ultimately none at all. Recorded as they were within the histories, earthquakes existed outside the purview of the human perspective; understanding them for the natural processes they were, we must recognize them as the outlier of sorts, a story apart. Such a distinction did not exist for those earlier historians, though, and their understanding of seismic activity rested on their cultural beliefs and the stories that shaped the world for them.

By weaving these various threads together into a larger tapestry, I hope to provide a single story of how early Chinese society, specifically the Tang, understood the natural environment where they made their home. This interplay of people, nature, and ideas is the fundamental basis of environmental history, and here my approach has been greatly influenced by Donald Worster. In his essay "Doing Environmental History," Worster identifies three necessary components for the field. First, historians must venture beyond the realm of human affairs and devote considerable attention to the natural landscape. Secondly, they need to look closely at how humans organize themselves into larger communities, with particular attention given to economic structures and the distribution of power. Finally, historians need to understand how these communities then engaged their natural environment mentally or culturally via literature, laws, and morals (to name but a few of its myriad manifestations). While historians may focus on the human element—indeed, we are by definition concerned with the human actors—such a schema

is meant to highlight the subtle ways in which these three components contribute to the story of people and their environment.[3]

For the most part, my study follows Worster's model fairly closely. Given my focus on earthquakes, I devote considerable attention to the geological processes taking place underground both now and during the Tang. By drawing from modern scientific studies examining central China's seismicity, I build a foundation that allows us to better understand the powerful events the historical observer's wrote about. Regarding the socioeconomic element described by Worster, I pay much less attention to specific economic structures than to the larger superstructure of the Chinese imperial state. Specifically, I interpret the mere occupation of space as a form of consumption. Land, like wood and coal, is a natural resource, and it is the state's commitment to a particular space that lead to disaster. This decision to live in a particular space can be linked to other environmental factors, specifically fertile lands, that provide a clearer example of how nature and humans were linked through an agricultural economy. The Chinese state, in turn, produced historical writings, which I examine here as an example of culture, the final component of Worster's methodological triumvirate. In doing so, we see how nature shaped the historical record and how the historical record in turn shaped attitudes towards the environment.

Disaster scholars have formulated a similar equation, in which natural disaster is defined as the convergence of natural forces with human society. Recognizing the idea of "natural disaster" as a cultural construct returns us to Worster's model, though we must

[3] Donald Worster, "Doing Environmental History," in *The Ends of the Earth: Perspectives on Modern Environmental History*, eds. Donald Worster and Alfred W. Crosby (Cambridge: Cambridge University Press, 1988), 289-308.

reconsider the nature of the relationship: whereas culture in the original schema stands as a synthesis of environment and human society, it is here produced from the sudden (though not entirely accidental or unexpected) collision. This fact is significant because it highlights the role of human agency and shows that natural disaster does not simply result from chance, but hangs on a number of contingencies. Throughout this study, I use the word "decision" to highlight points of possible change or divergence in which Chinese civilization could have taken an alternative path that may have placed them beyond the danger of seismic activity. While I do not dwell on the counterfactuals, nor do mean to imply that Chinese society as a whole was entirely conscious of these decisions, I do believe recognizing alternatives ultimately demonstrates that nothing is inevitable.

At its core, this study is about those choices and the relationship between the Chinese state and its natural environment. As an agriculture-based society, China's success depended on the stability of the land and its ability to produce consistent harvests of grain and other foodstuffs—indeed, the Chinese worldview owed much to their preoccupation with farming, especially in regards to gender, religion, and politics. By the time of the Tang, the Chinese state had already reshaped its surroundings to facilitate their agricultural pursuits through deforestation and large-scale irrigation projects.[4] Natural disaster, however, represented the reshaping of human society by natural forces—a disruption of normal, socially acceptable patterns of human behavior—and thus necessitated a reevaluation of this relationship. How could they make sense of the unpredictable? And how could these beliefs then be used to return to the status quo?

Looking at the relationship between the Chinese and their environment, we must finally consider whether or not the emerging patterns of behavior are distinctly Chinese,

[4] See Robert Marks, *China: Its Environment and History* (Maryland: Rowman & Littlefield, 2012).

of if they perhaps reflect a larger pattern of *human* behavior. On one hand, this is mainly a Chinese story, and the relationship that emerges is one set apart by a distinct set of cultural beliefs and ideological traditions; indeed, a look at different societies will reveal different readings of earthquakes (and even here I cannot claim to speak for all of China's inhabitants, but only for a specific—albeit majority—group, the Han). At the same time, the Chinese state's reaction to natural disaster shares many similarities with communities elsewhere throughout the world and throughout time. Therefore, just as I contextualize the Tang within the larger history of the Chinese imperial traditional, I also hope to contextualize the Chinese empire within a larger human tradition. While appreciating the details that set cultures apart, I ultimately find the similarities of much more interest.

The plan of my study is as follows: Chapter 1 situates the Tang earthquakes within the larger geological, political, and social history of central China. As powerful and persistent as it was, this period of seismicity was not atypical, nor was it inevitable; instead, these disasters resulted from a larger set of historical contingencies, some resulting from human decisions, some not. This chapter also explores the history of ideas surrounding earthquakes and the intellectual milieu from which later conceptualizations drew influence. Chapter 2 turns specifically to the reign of Emperor Dezong and 788, the year of twenty earthquakes. Through a close reading of the Tang dynastic histories, we can understand how historians employed this natural phenomenon as a rhetorical tool and how that then reflected political and social ideologies. Chapter 3 explores the larger consequences of such rhetoric, demonstrating how a link to the natural world ultimately affirmed the legitimacy of the emperor and his dynasty in both the eyes of his subjects and the pages of history. It also addresses the manner in which traditional cultural beliefs

influenced the formulation of an early scientific method as scholars sought to identify the relationship between human behavior and seismic phenomena.

CHAPTER II

THE BEST OF ALL POSSIBLE WORLDS

Jihai day, earthquake.[1] Taken alone, the first recorded incident of an earthquake during the reign of Emperor Dezong, just four characters long, appears fairly innocuous. Read at face value, the capital and its inhabitants emerged unscathed; what is more, the histories' turn to a subsequent military campaign implies that daily life within the empire continued unimpeded. Yes the earth had shaken, but it was of no great consequence. Such entries in the annals, though, do not exist within a vacuum and represent part of a much larger story: while insignificant at initial glance, this earthquake marked the first of over thirty that plagued Dezong during his tenure as emperor. But this too requires context, for the destruction wrought by these phenomena—on village life, agriculture, and Dezong himself—represented the convergence of human and natural history. While their striking in the middle of the night surely came as a surprise to many, Chinese society had been long aware of the hazard posed by the surrounding environment. This same environment, though, sustained its development for several thousand years, benefits of which ultimately outweighed the risks. The story of earthquakes is thus one of understanding the natural environment, and recognizing how people read their surroundings and its consequences. Like history, components of the natural environment cannot be read individually, but rather as parts of a much richer whole.

[1] Liu Xu 劉煦, *Jiu Tang Shu 舊唐書 [Old Tang History]* (Beijing: Zhonghua, 1975), 325. Hereafter *JTS.* Ouyang Xiu 歐陽修, *Xin Tang Shu 新唐書 [New Tang History]* (Beijing: Zhonghua, 1975), 185. Hereafter *XTS.*

Thirteen hundred years ago, when the Tang Empire was at its zenith and the Big and Small Wild Goose pagodas stood unmarred in their full majesty, Xi'an was known as Chang'an, the Everlasting Peace. Located on central China's sprawling Guanzhong Plain, the capital afforded generations of kings and emperors a safe and productive environment from which to rule over their subjects. To the north of the city flowed the Wei River, whose torrents provided early inhabitants with both fresh water and protection from the threat of outside armies. So too did the Qinling Mountains to the south, a near-impenetrable natural barrier against outsiders and a valuable source of timber for construction.[2] Long before the Zhou established their capital here in 1000 BCE, early humans recognized perhaps the most valuable of the land's attributes: the soil. Blessed by geological happenstance with a rich blanket of this fertile loess—particles of dust relocated from the desert in the west and north by regular winds—humans as early as 5000 BCE began domesticating and cultivating various strands of millet, thus producing an agricultural bounty that would serve as the lifeblood of this burgeoning civilization for millennia to come.

Deep beneath the soil, though, several miles underneath the weary feet of these early farmers rumbled an environment that would prove less salubrious to their livelihood; while the earth provided them with a safe home and dependable means of sustainability, every so often it trembled with a violent power capable of also overwhelming society with paroxysms of doubt and uncertainty. The same geological forces responsible for shaping the streams and mountains were likewise responsible for these earthquakes, and to truly understand the environment of Chang'an and the surrounding area, we must venture several miles below the loess-covered fields and into

[2] Marks, 63.

the planet's inner depths. To begin, the outermost layer of the Earth's surface is the crust, which itself is the outermost layer of the lithosphere. The lithosphere is then comprised of smaller tectonic plates, each divided roughly around the planet's continental landmasses. China is located on the Eurasian plate, which contains most of the Eurasia, sans the Arabian Peninsula and the Indian subcontinent. Though the borders of these plates are fixed, they are far from static and shift back and forth amongst themselves due to the relative instability of the underlying asthenosphere and mantle; whereas the over-laying lithosphere is completely solid, these lower levels are highly viscous.

Floating, as it were, along this sea of ductile morass, tectonic plates have nowhere to travel other than into each other, and it is these collisions—at so-called convergence zones—that ultimately produce earthquakes. For Chang'an, and indeed for all of China and western Eurasia, the most significant of these convergence zones is where India collided into the Eurasian plate roughly 40 million years ago, the severity of which remains evidenced by the towering peaks of the Himalayan mountains (and while they may not have the same seismic symbolism of the San Andreas Fault, the area's propensity for earthquakes has proven just as great—and deadly—as anywhere else on the planet, California included).[3] The movement and collision of plates does not immediately lead to earthquakes; rather it places stress on weak points, known as faults, deep within the rock. While the crust is capable of a certain degree of elasticity, too much stress can cause the fault to slip, redistributing its weight to the immediately surrounding area. Seismologically speaking, this slippage is called an earthquake; the subsequent

[3] Susan Elizabeth Hough, *Earthquaking Science: What We Know (and Don't Know) about Earthquakes* (Princeton: Princeton University Press, 2002), 20.

ground movement experienced by people above, powerful though it may be, is nothing more than an aftereffect of an unseen subterranean process.

Nestled between the banks of the Wei and the foothills of the Qinling Mountains, Chang'an occupied a space relatively far removed from the violent tensions of colliding tectonic plates. But as central China's rich seismic history attests, the capital was not entirely immune from its consequences; instead, the stress produced by the convergence of the Indian and Eurasian plates reverberated powerfully through the continent and deep into the Chinese heartland. When charted by scientists, this process produces a striking image: seismic energy, born from the meeting of tectonic plates, gushes forth from the Tibetan Plateau like a surge of fresh water from an inland spring. Flowing east, it washes over Asia towards the Pacific Ocean. Though fairly uniform in coverage, the trajectory of this energy is abruptly interrupted by the Ordos Plateau, a distinct region contoured to the north, east, and west by bends in the Yellow River and to the south by the Wei. Just as water flows more vigorously around a partially submerged boulder, so too does seismic energy around the plateau. While the center is largely protected from earthquakes, the surrounding area, which researchers termed the Circum-Ordos seismic zone, is one of marked earthquake activity, with Chang'an situated on the edge.[4]

These tremblers occurring within the boundaries of an individual plate are referred to as intraplate earthquakes and represent a relatively young area of study within the larger field of seismology. Though they may not necessarily represent the most powerful cases of seismic activity, intraplate earthquakes are noteworthy because of the

[4] Mian Lu, Hei Wang, Jiyang Ye, and Cheng Jia, "Active Tectonics and Intracontinental Earthquakes in China: The Kinematics and Geodynamics," from Stein, Seth, and Stéphanie Mazzotti, eds. *Continental Intraplate Earthquakes: Science, Hazard, and Policy Issues* (Boulder: Geological Society of America, 2007), 97-125.

way in which they tend to catch human society off guard, as it were. Whereas interplate earthquakes (those occurring along the boundaries of neighboring tectonic plates) tend to strike with a certain degree of frequency, their intraplate counterparts can lie dormant for several centuries. Thus, the seismic propensity of certain areas can go unappreciated until its far too late. A brief look at historic seismic activity within the United States offers a striking comparison: Over the course of the twentieth century, California gained a reputation as the land of earthquakes. Guided by such perceptions, infrastructure development within the state involved certain precautions to protect itself from the environmental hazard; while earthquakes could not be avoided, the costs—human and financial—could at least me minimized. Areas like Missouri, on the other hand, centrally located within the safety of the North American plate, made no such efforts: earthquakes, inhabitants believed, occur only in California, not in their home state. Both history and geology, however, show that Missouri too is at risk, even as popular memory continues to understate such risks. Intraplate earthquakes thus disrupt established norms and highlight the hazard that emerges from the tensions between natural phenomena and human understanding.[5]

By the founding of the Tang Dynasty in 618 CE, though, the area's earthquakes had become part of common knowledge among the local population and the imperial historiographers.[6] Sima Qian's *Records of the Grand Historian*, a massive tome—which developed the basic structure for all future imperial annals—written during the Han Dynasty (206 BCE – 221 CE), includes many references to earthquake activity, some

[5] See Conevery Bolton Valencius in *The Lost History of the New Madrid Earthquakes* (Chicago: Chicago University Press, 2013).

[6] All subsequent dates are Common Era unless otherwise noted.

dating all the way back to the Zhou. Already we see certain themes that future writers used to characterize the quakes, including their effects on the physical landscape and their symbolic connotations: "In the second year of the reign of King Yu (Zhou), the three rivers of the western province were all shaken and their beds raised up. Poyang Fu said: 'The dynasty of the Zhou is going to perish. It is necessary that the *qi* of heaven and earth should not lose their order; if they overstep their order it is because there is disorder among the people."[7] A more nuanced attempt to explain earthquake activity follows, but what is noteworthy here is the early date at which earthquakes are present within the historical record and, of no less importance, the perceived relationship between natural phenomena and the behavior of human society.

Interest in earthquakes persisted throughout the Han, and so regular did they occur that one official, noted polymath Zhang Heng (78-139), developed a means of tracking and measuring them via seismograph. The device, which Joseph Needham refers to as the "earthquake weathercock," consisted of a single column suspended by its top to the roof of a closed bronze pot.[8] Attached to this pendulum were a number of cranks connected to eight ornate dragon heads adorning the outside of the vessel, the mouths of which each contained a small metal ball. When shaken, the pendulum pulled the crank, triggering the dragon's jaw to open. Below each dragon head sat a patient bronze toad, with its mouth open, providing a receptacle for the falling ball, should it be set in motion by an earthquake. After the movement of the pendulum released the ball from the dragon's mouth it would land soundly in that of the toad, revealing the direction from

[7] Sima Qian 司馬遷, *Shiji 史記 [Records of the Grand Historian]* (Beijing: Zhonghua shu ju, 1959), 145-146. Translation taken from Joseph Needham, *Science and Civilisation in China, Volume 3: Mathematics and the Sciences of the Heavens and the Earth* (Cambridge: Cambridge University Press, 1959), 624-625.

[8] Ibid., 627.

which the tremors—sometimes imperceptible to human observers—originated. Officials then relayed this information to the emperor so he could dispatch aid to the afflicted areas without having to await the arrival of a messenger.

Most significantly, Zhang Heng's seismograph was not an attempt to predict earthquakes, but rather a means of as accurately as possible recording the region of occurrence and mitigating the damage, both of which were tied to the authority of the imperial throne. After observing the effectiveness of the device, Emperor Shundi (r. 125-144) placed it under the control of the Bureau of Astronomy and Calendar. Knowledge of the earth, like that of the skies, which indeed were perceived as being closely linked, belonged within the hands of the emperor, for he alone represented the connection between man and heaven; dissemination of the esoteric was his prerogative and his alone. With this knowledge, though, came certain responsibilities, and with the emperor's role as the guardian of social harmony, there existed a certain expectation to provide his subjects relief. But even here, disaster relief worked as another tool to secure the legitimacy of the sitting emperor: in his analysis of Zhang Heng's seismograph, Joseph Needham is quick to note, "We ought not to miss the point that the invention had a certain connection with the centralization of government; with its aid the high officials would have advance notice of an earthquake in a distant province, and would be able to take measures to deal with needs or disturbances which might ensue."[9] Though one may not have been able to prevent an earthquake with this device, simply knowing it happened, especially so quickly, carried considerable political clout.

While the seismograph did not see much use outside of Zhang Heng's lifetime, cultural and political views of disaster remained fairly consistent up through the founding

[9] Ibid., 632.

of the Tang Dynasty (and certainly beyond) in 618. Celebrated as a golden age of military prowess, politics and culture, the Tang and the previous Sui Dynasty (581-618) marked the reunification of China after the fall of the Han nearly four hundred years before. Li Yuan (later known as Emperor Gaozu [r. 618-626]), an erstwhile Sui general of mixed Chinese and Turkic origin, established the new dynasty after revolting against the second Sui emperor. Claiming the Mandate of Heaven as his own, he consolidated his forces within the Guanzhong plain and from there extended his control over the rest of his deposed predecessor's holdings. For the next century, the Tang grew to a remarkable size, maintaining a considerable military presence in parts of modern-day Xinjiang to the west and Vietnam to the south, as well as a cultural hegemony over much of East Asia. Urban life flourished at this time, with Chang'an acting as the eastern-most point of the so-called Silk Road. Muslim traders mingled with Chinese merchants within the noisy markets as exotic products and ideas arrived from distant cities.

Used by historians—ancient and modern alike—to categorize Chinese history into neat chronological blocks, dynasties project a sense of a homogenous consensus about the merits of dynastic rules onto the past just as tectonic plates perhaps inspire a clear reading of the earth's surface without revealing the potential turmoil below; but just as stress could emerge within larger plates, so to could political stress challenge the structural integrity of a dynasty, oftentimes with catastrophic results. The Tang was no exception, and after nearly one hundred years of imperial expansion and consolidation (not even impeded by the unexpected rule of Empress Wu Zetian [r. 690-705] which rather made a great number of contributions) political strain threatened to undermine the potency of the throne. And while the Tang managed to weather the initial intra-dynastic

quake that came to be known as the An Lushan rebellion from 755 to 763, the dynasty continued to decline until its eventual fall in 907.

Ruling during this period of weakened imperial authority was Emperor Dezong, who took the throne in 779 upon the death of his father, Daizong (r. 762-779). The empire in its current state was a far cry from that founded by his ancestors nearly two centuries before. During the reign of his great-grandfather, Emperor Xuanzong (r. 712-756), an opportunistic general named An Lushan (703-757) sought to bring down the Tang and establish a new dynasty of his own in its place. Prompting this rebellion was Xuanzong's retreat from political affairs into the decadent pleasures of the inner palace. While the emperor devoted his time to the voluptuous consort Yang Guifei and dined on succulent lychees imported at great cost from Persia, General An Lushan gathered military support and took control over the north. When confronted with the threat, Xuanzong and his court abandoned the capital Chang'an for the safety of the southern hinterlands. Though infighting among An Lushan's lieutenants and the general's assassination ultimately cut the rebellion short, it nevertheless shook the Tang to its very core: the legitimacy of the emperor had been challenged, and the relationship between the central state and the periphery irrevocably fissured.

Young, well-educated, and strong-willed, Emperor Dezong seemed just the man needed to reinvigorate the battered empire, and indeed a sense of optimism pervaded the court upon his ascension.[10] Unfortunately, aftershocks from the An Lushan rebellion continued to reverberate across China long after the general's death. For the first seven years of his reign, Emperor Dezong contended with a succession of powerful governor-

[10] Denis C. Twitchett, ed. *The Cambridge History of China, Vol. 3: Sui and T'ang China, 586-906 AD, Part 1* (Cambridge: Cambridge University Press, 1979), 498.

generals in Hebei, a province just to the east of Chang'an. Faced with such formidable opposition, Dezong followed the example of his great-grandfather and fled from the beleaguered capital. Thanks to the actions of the loyalist general Li Sheng (727-793) and competition between rebel forces, the disgraced emperor finally returned to his capital in 784. In a brilliant move proposed to the emperor by the pragmatic minister and personal confidant Lu Zhi (754-805), Dezong ultimately pacified a majority of the insurgents with an imperial pardon later the same year.[11] After three long decades and the rule of four emperors, the An Lushan rebellion came to an end.[12]

Prolonged warfare crippled the court financially, and subsequent attempts to address the situation dominated policy debate over the course of Dezong's reign. When Dezong took the throne in 779, the court employed a system that collected a uniform tax from each adult male within the empire. The efficacy of this system rested almost entirely on the so-called equal field system, a means by which the state evenly allocated farmland among its subjects so as to prevent excessive individual land holdings. A society sustained by farming, after all, required that the earth be utilized in the most possible effective manner. The overall tax contained three components: one paid in grain, one in cloth, and one in corvée labor. Without a strong central authority, though, such a system became difficult to monitor and effectively administer; the theory surrounding its creation no longer matched the reality of Tang society following the An Lushan rebellion. Consequenly, Dezong and his ministers implemented a new two-tax system in 780—"one

[11] Michael T. Dalby, "Court Politics in Late T'ang Times," in Denis C. Twitchett, ed. *The Cambridge History of China, Vol. 3: Sui and T'ang China, 586-906 AD, Part 1* (Cambridge: Cambridge University Press, 1979), 584. For more about Lu Zhi, see Josephine Chiu-Duke, *To Rebuild the Empire: Lu Chih's Pragmatist Approach to the Mid-T'ang Predicament* (Albany: State University of New York Press, 2000).

[12] Dalby, 585.

of the major events," Denis Twitchett argues, "in Chinese economic history"—in an attempt to both reassert imperial authority and to replenish the royal coffers.[13]

The implementation of this new system represented a significant restructuring of the relationship between the government and the individual, as well as between central and provincial governments. Most significantly, the two-tax system shifted the financial burden away from the individual and onto the household to which he belonged. These larger familial units were then responsible for two taxes, a progressive one based on household wealth to be paid in cash and another based on the amount of cultivated land they possessed to be paid in grain. Not only did the household levies prove more effective in their ability to tax a greater number of people in total, bringing in persons outside the traditional agricultural purview, but it also tapped into the wealth generated by the Tang's many large landowning families, a resource underutilized by previous emperors. The new system also restructured the means by which taxes were collected. In this regard, the court relinquished a great deal of control over the financial matters of the individual provinces, opting for the collection of predetermined tax quotas instead of direct administrative involvement.

The two-tax system successfully provided the emperor with a steady stream of revenue, but did so by revealing the limits of Dezong's authority over the provinces. The relinquishing of tax collecting to local governments did not necessarily represent a willing compromise, but rather an adjustment to present circumstances. In fact, provincial officials, emboldened by a lack of imperial oversight, exploited the new system to line their own pockets and bolster their political influence. Discontent within Hebei only exacerbated the situation, producing a troublesome cycle of ever-intensifying taxation

[13] Twitchett,

and spending; in order to combat the northern rebels, Dezong required more money from his subjects, which, in turn, empowered provincial leaders. The more troublesome local officials took it upon themselves to levy higher taxes than those called for by the court. In every case, the burden fell most heavily on peasant farmers, one of whom expressed his unhappiness to the emperor upon a chance meeting during the winter of 787: "We are impoverished and can no longer bear any more [taxes; exploitation]. Distressed and hard-pressed like this, how can I be happy? Whenever there are edicts proclaiming special relief for us, they are mere scraps of paper. I'm afraid my sagely lord deeply secluded in the nine levels of Heaven (the palace) is totally unaware of these things."[14]

Political and personal rivalries, though, fueled by emperor and minister alike, characterized life within the imperial court and threatened management of the empire. During the early years of his reign, Dezong exhibited skill in surrounding himself with competent officials who promoted several pieces of important legislation, the two-tax system among them. Unfortunately, this period proved short-lived as Dezong's growing stubbornness and reliance on eunuchs slowly curtailed the influence of the Confucian scholar-officials. Traditionally, the imperial Chinese court was divided into two spheres: the outer, 外廷 *waiting*, and the inner, 内廷 *neiting*, courts. The outer court consisted of the official civil and military bureaucracies and represented the proper place in which court business was to be conducted. Conversely, the inner court referred to the emperor's personal quarters and was populated by his most intimate of relations. Eunuchs belonged

[14] Sima Guang 司馬光, *Zizhi Tongjian 資治通鑑 [Comprehensive Mirror for the Advancement of Governance]* (Jiulong : Zhonghua shu zhu Xianggang fen zhu, 1956), 7508. Hereafter *ZZTJ*. Translation taken from Josephine Duke-Chou, *To Rebuild the Empire: Lu Chih's Pragmatist Approach to the Mid-T'ang Predicament* (Albany: State University of New York Press, 2000), 123. Brackets added.

to the inner court, and were therefore able to exercise a great deal of influence over a variety of decisions at the expense of outside officials. For many, this retreat into the inner sphere signaled a retreat from responsibility and was closely associated with periods of weak imperial rule. Later historians, for example, placed the blame for the An Lushan rebellion directly on Xuanzong's improper devotion to his consort Yang Gufei. Similarly, many blamed Dezong's reliance on eunuchs as the beginning of a larger period of bureaucratic erosion that would eventually bring the Tang to its end.

The rivalries between outer and inner court officials outlived both Dezong and the Tang and proved influential on the writing of their histories. As Michael T. Dalby notes in his examination of Tang historical records, "the intense hatred felt among the courtiers of Dezong's time for the eunuchs … was transformed to some extent to the emperor himself; this theme was taken up by the literati historians of later times and magnified enormously."[15] Those writing the histories belonged to the outer court and believed it to be their duty to demonstrate the folly of facilitating the intrusion of others into the exclusive sphere of court politics. To these officials, the influence of eunuchs—whose power came from sycophancy rather than a lifetime of careful study—on the affairs of government exemplified societal disorder. Everyone had a proper place, and theirs was in the imperial apartments where they were to be nothing more than attendants to the emperor. "For allowing the inner court a place in court politics," Dalby concludes, "Dezong has never been forgiven."[16]

Like the recording of earthquakes and the observation of the stars, the writing of dynastic history belonged to offices within the imperial court. For the Chinese, history

[15] Dalby, 588.

[16] Ibid.

stood as a sweeping narrative of human civilization shaped by a moralizing process of praise and blame: the decisions of just emperors and officials were celebrated while those of lesser men carefully scrutinized. Looking back upon the actions of previous generations, a perceptive emperor could discern a proper program of social behavior and then use that to guide his decisions. It was thus essential to provide him with an accurate and thorough account of the past, a task entrusted to only the most capable of officials within the imperial administration. During the Tang, a large bureaucracy of court historians worked diligently to compile an ongoing record of court business. Responsibilities varied: some historians were tasked with keeping a daily Court Diary, minutes of the emperor's official business. Others then took these notes and pieced them together into a larger Administrative Record of court affairs.[17] To record one's own history served to legitimize one's rule, even if the fall of the dynasty left the job incomplete, a common—if not unexpected—occurrence. Emperor Gaozu, for example, commissioned the dynastic history of the Sui in 629. As such, the ability to write someone else's history, and thus affirm their place within that larger human narrative, similarly stood as a testament to the legitimacy of a new ruler.

The accounts of Dezong's reign come from historic accounts compiled after the fall of the Tang Dynasty in 907. This paper draws primarily from two of those official histories: the *Old Tang History* 旧唐书 *Jiu tang shu* and the *New Tang History* 新唐书 *Xin tang shu*.[18] Known at first as simply the *Tang History*, work on the *Old Tang History* began in 941 under the auspices of the Later Jin dynasty (936-947), one of the many small, would-be successor states that emerged following the Tang's collapse. While An

[17] Translation of titles taken from Twitchett, 41-42.

[18] Sometimes translated as *The Old Book of Tang* and *The New Book of Tang*, respectively.

Lushan's raids on the capital destroyed much of the earliest source material, fortunately for historians, much of the material produced during the period itself survived later attacks on Chang'an, allowing them to base their work on the contemporary source material just discussed. For Dezong's reign, at least, the Later Jin scholars drew heavily from the Veritable Records typically compiled shortly upon the death of an emperor—indeed, Twitchett argues that the period from 760 to 847 is the best documented within the *Old Tang History*.[19] Drawing as they were from earlier sources, these historians were not required to compose a great deal of new written material; instead, their job mainly involved compiling and editing extant sources into a single coherent narrative.

Consequently, the later Tang histories drew heavily from this initial work, among them the *New Tang History*. Hoping to provide a more detailed account of the Tang, Emperor Renzong (r.1022-1063) of the Song commissioned the scholar Ouyang Xiu (1007-1072) to head the project in 1044. While the emperor initially envisioned the new history as an attempt to provide a more thorough account of the previous dynasty, a lack of surviving material ultimately required Ouyang Xiu to draw heavily from the earlier work. Still, supplementary research, then and now, supported by the discovery of surviving Tang documents in Dunhuang, revealed that both histories are quite accurate, especially regarding the administrative actions of the court. Historical bias, a constant concern, typically resulted in the omission of information and individuals from the record

[19] Denis C. Twichett, *The Writing of Official History During the T'ang* (Cambridge: Cambridge University Press, 1992), 201-202.

rather than from invention—though scholars can never fully recapture what may have been left out, most agree the information included is largely accurate.[20]

As was custom, the compilers of the *Old Tang History* and the *New Tang History* divided their respective works into separate sections, two of which serve as the primary source of information regarding earthquakes. First and foremost are the Basic Annals, 本記 *benji*, day-by-day accounts of the most important events of each emperor's reign. Included within these entries are accounts of official proclamations, political assignments, and military campaigns, as are reports of noteworthy natural activity such as unusual weather patterns, sightings of strange animals, and, of course, natural disasters. Supplementing these basic accounts are the various treatises, 誌 *zhi*, which examine a number of subjects outside the realm of statecraft in greater detail. Among these treatises is "The Treaty on the Five Phases," a record of anomalous natural phenomena—typically weather-related—during the Tang. Earthquakes feature prominently in this section and further corroborate those discussed in the Basic Annals. Comparing the two sections and the two histories, earthquake occurrences and their dates are largely consistent; of all those recorded in the *Old Tang History*, only one is absent from the *New Tang History*.[21]

To understand how earthquakes were presented to future readers, it is important to first understand the manner in which they were described within the texts, for all quakes were not treated the same. Measured by the degree to which detail is given, the earthquakes recorded during Emperor Dezong's reign can be organized into four rough

[20] See Denis C. Twitchett, "Introduction," in Denis C. Twitchett, ed. *The Cambridge History of China, Vol. 3: Sui and T'ang China, 586-906 AD, Part 1* (Cambridge: Cambridge University Press, 1979), 1-48. See also Denis C.Twitchett *The Writing of Official History During the T'ang* for the reliability of these sources and the compilation of the *Old Tang History*.

[21] The earthquake recorded for June 1, 783. *JTS*, 193.

categories. The first and most graphic earthquake within the histories is that which occurred on first day of 788. Not only is the destructive power of the quakes presented in great detail, but it is the only example in which Emperor Dezong himself addresses the disaster directly by name. The descriptions comprising the second group are much less personal, but still address the severity of the earthquake in question and its impact on the land. Third are those entries that simply provide the date and location (most occurring in the capital, Chang'an). The final group of entries is the simplest and typically follows the more descriptive occurrences from categories one or two. In fact, the full term for earthquake, 地震 *dizhen*, is never used in these instances. Instead, the earth as the subject is merely implied and we are only told that it "again shook." Some of these so-called "aftershocks," 又震 *youzhen*, though, are treated as a category three quake, *dizhen*, within the largely derivative *New Tang History*.

While the use of "again" for these smaller occurrences implies a relationship with previous activity, translating them as "aftershocks" risks overlooking the destructive potential of these seemingly lesser quakes. This fact also holds true regarding modern understanding of seismic activity and use of the equally ambiguous term "aftershock." According to seismologists, aftershocks are a relatively predictable set of quakes that follow in the wake of the mainshock. The magnitudes of these subsequent shocks are typically smaller than the initial event, but only by one degree, though quakes of equal strength or two degrees are fairly common.[22] (The relationship between fore- and mainshocks is the opposite where the subsequent quakes is larger that than the initial occurrence.) Over time, though, unless triggered by a second earthquake—defined as

[22] Hough, 58-59. The principle defining aftershocks is known as Bath's Law, which in turn has been modified in recent decades to be more inclusive of a larger range of subsequent quakes.

being of higher magnitude than the first trigger—aftershocks as a rule decrease in power, or decay, at a fairly steady rate. A decline in magnitude, however, does not necessarily mean a decline in the danger posed. As noted seismologist Susan Hough laments "there is a phrase in the popular vernacular that makes seismologists cringe a little: '*just* an aftershock.'" "[A]ftershocks are earthquakes," she concludes, and are, "damaging in their own right."[23] Reading certain quakes as aftershocks, or *youzhen* is thus useful for understanding the larger sequence of events, but by no means should the danger be assumed to have passed; instead they should be appreciated within the context of a larger process of seismic activity.

At the core of this study is the tension between earthquakes as naturally occurring geological phenomena and as culturally loaded metaphors shaping the historiography of the Tang annals. To what extent, if any, can meaning be applied to an event that exists outside the influence of human action? Indeed, one of my larger arguments here is that while a sharp increase in seismic activity certainly characterized Dezong's reign, reading it as a *post hoc* invention of later historians ignores the geological realities of the environment. Conversely, the symbolic implications of earthquakes—and other forms of natural disaster—reveal the manner in which the Chinese read their surroundings and sought to interpret disruptive natural phenomena. Interpretive tension, though, does not signify contradiction, and a multifaceted examination of these earthquakes ultimately nurtures a wonderfully nuanced understanding of the relationship between early Chinese society and its Guanzhong home, as well as human society's ability to cope with disaster.

Taken as a whole, the descriptions of earthquakes within the dynastic histories are not terribly satisfying, leaving a great deal of uncertainty regarding their magnitude and

[23] Ibid., 60. Italics added.

epicenter. Helpful in this regard is *The Catalogue of Chinese Earthquakes (1831BC – 1969 AD)*, an attempt by Chinese seismologists to scientifically measure and catalogue all of the country's major earthquakes at a magnitude of four and higher from antiquity to the point of its publication in 1969. The goal of the study was to examine earthquakes in a manner that essentially stripped them of their former symbolic power. The compilers were not so much interested in the historic and political contexts during which these quakes occurred—no mention is made of the different dynasties—but rather with the ability to accurately analyze the phenomenon over the course of the *longue durée*. Here, earthquakes were portrayed as natural occurrences that resulted from measurable patterns; they were not a form of Heavenly rebuke against improper human behavior.

That being said, the study still draws heavily from the traditional dynastic annals for those earthquakes that occurred before the implementation of modern scientific reading techniques in 1900. Instead of instrumental measurements, the details of each earthquake are based on mathematic formulas designed to approximate their intensity and epicenter. While the accuracy of such methods is questionable, the catalogue helps to indeed highlight certain themes related to the historical understanding of earthquakes. Most importantly, the careful mapping of the historic earthquakes reveals certain zones of higher seismic vulnerability, the Circum-Ordos zone among them. Compared to the capital of the following Song dynasty (the period in which the *New Tang History* was compiled) further south, the area was much less prone to such activity. Not only was there a temporal separation between the Song scholars and the people of the Tang Dynasty whose history they were officiating, but an important spatial separation as well.

For imperial historians and scholars, though, the real power of an earthquake was within its symbolic meaning, the consequences of which extended far beyond any single event. This fact is especially clear when we revisit the nature of Chinese historical writing, in which the official histories of a dynasty were written after its fall. Those compiling these records were working with the advantage of hindsight; moreover, they were in a position that allowed them the ability to pick and choose the events they considered integral to the larger story of the dynastic cycle. Their understanding of history focused primarily on the emperor and his court, and, as such, the common people were largely absent from the narrative. This of course held true in regards to their earthquake records, with a few exceptions. Little mention, for example, is made concerning the damage left in their wake. As such, one wonders why earthquakes were even mentioned at all if, based on a literal reading of the historic annals, it seems most were not terribly destructive. Read as symbols, however, earthquakes took on a greater significance as potent indicators of disorder and chaos. When the earth shook, the tremors were difficult to ignore.

The very labeling of certain natural phenomena as an "earthquake" constitutes an act of interpretation, especially before the advent of modern seismological study. Even today, an average person's definition of an earthquake is not necessarily the same as a seismologist's and reflects a different relationship. "[T]o most people," Susan Hough writes, "an earthquake is less about a process on a fault than it is about the effects that fault rupture causes. The earth shakes."[24] Whereas a seismologist reads the initial slippage as an earthquake, a layperson's understanding of the event is contingent entirely on the felt effects of that larger unobservable process. Fault lines, slippage, and the

[24] Ibid., 32.

shifting of the lithosphere are of no concern in this instant. In other words, the average person understands earthquakes insofar as it disrupts the normal state of affairs: the earth does not normally shake, but when it does, something must be wrong.

This labeling of atypical natural behavior is not limited to earthquakes. Compare it to famine, another symbolically powerful disaster recorded within historical annals. Famine itself is not a natural occurrence, per se, but rather results from certain ecological factors—among them blight, extreme weather conditions, and hungry locusts—on a program of environmental manipulation meant to sustain a desired way of life. Even here, the so-called natural factors can be deconstructed even further to reveal the manner in which human expectations shape views of their environment: drought, in Chinese or English, for example, is a term used to describe less than favorable weather conditions, measured first and foremost by its conduciveness to agriculture. Similar are views of vermin such as locusts, which proved troublesome to many an emperor over the course of China's history. These ravenous insects' primary sin was their taste for the same plants needed by humans for survival. Within this shared ecological community, humans and locusts were competitors vying for limited resources, not unlike warring factions vying for a political dominance; locusts were the enemy, a disaster on par with flooding and warfare. Certain cultural understandings thus emerged from ecological reality and economic desire.

The concept of disaster is another way to understand a dissonance between human society and its natural environment. Anthropologists Susanna M. Hoffman and Anthony Oliver-Smith present a useful—and admittedly ambitious—definition of disaster as "a process/event combining a potentially destructive agent/force from the natural, modified,

or built environment and a population in a socially and economically produced condition of vulnerability, resulting in a perceived disruption of the customary relative satisfactions of individual and social needs for physical survival, social order, and meaning."[25] Viewed through this lens, disaster is not inevitability, but rather the product of environmental and historical contingencies. The seismic activity that characterizes the Circum-Ordos zone itself does not constitute a disaster; the earth may shake, but if no one is around, it is of little consequence. Only with human presence—such as in the grand metropolis of Chang'an of the Tang—does this shaking become a problem and its memory preserved within the historical record

[25] Susanna M. Hoffman and Anthony Oliver-Smith, "Introduction: Why Anthropologists Should Study Disaster," in *Catastrophe & Culture: The Anthropology of Disaster*, eds. Susanna M. Hoffman and Anthony Oliver-Smith (Sante Fe, School of American Research Press, 2002), 4.

CHAPTER III

THE SAME CAUSE, THE SAME EFFECTS

On new year's day 788, Emperor Dezong descended form his palace to receive the customary well wishes of his ministers.[1] But as he approached the balcony railing facing the many onlookers, the earth suddenly started to shake. Over thirty people were crushed to death in the following chaotic moments as debris rained down indiscriminately upon the unsuspecting bystanders. Overwhelmed by the horrific scene around him, Dezong turned to his chief minister and lamented the disaster: "I, lacking virtue, am plagued by such misfortune! The earth shakes unceasingly, and though I have attempted to repair the government, it is to no avail! Alas, the earth still shakes!"[2] Unfortunately for Dezong, this small quake was but a harbinger for greater catastrophes to come. Over the course of the month, the earth continued to shake violently, culminating in a magnitude 6 earthquake that struck the heart of the empire later that year on March 8.[3] In what seemed like a burst of violent fury, rivers overflowed and mountains crumbled. Villages were destroyed causing people to scatter in confusion as their simple wooden homes fell

[1] 2.12.788. Conversions from the Chinese lunar calendar based on Takeo Hiraoka 平冈武夫, 唐代的历 [Tang Dynasty Calendar] (Shanghai: Shanghai Classic Book Press, 1990). Magnitude estimate taken from Gu Gongxu, et al., 9-10.

[2] *JTS*, 1328.

[3] All measurement taken from Gu Gongxu, et al. *The Catalogue of Chinese Earthquakes (1831BC – 1969 AD)* (Science Press: Beijing, 1989), 9-10.

in ruin. Without mercy the quakes continued. In all, according to the *New Tang History*, "the capital was struck by earthquakes twenty times."[4]

Given their destructive power and symbolic potency, it is no wonder earthquakes caused Dezong such distress. A successful Chinese emperor, philosophers contended, was one who united Heaven, Earth, and Man through proper behavior and careful guidance into a harmonious one. In return, Heaven bequeathed upon him a mandate to rule the people of the world, one that could just as easily be taken away. Natural phenomena, both good and bad, were understood as reflections of this relationship and could be read as gauging the effectiveness of a sitting emperor. Were this emperor to lose Heaven's mandate, the consequences would be disastrous for his people: plague, flood, and drought were but a few of the consequences unleashed upon the realm of a wicked or lazy ruler. Sometimes even the earth itself shook in disapproval, leaving little recourse for subject and emperor alike. It was then up to future generations—those living in a *new* dynasty—to learn from his unfortunate example and lead lives on earth in accordance with the desires of Heaven. Originally formulated by the kings of the Zhou to justify their overthrow of the previous Shang Dynasty (c.1600 BCE – c.1046 BCE), the Mandate of Heaven, 天命 *tianming*, was a central pillar of Chinese religious and political thought by the founding of the Tang.

Dezong's pleas to forces above made it clear he understood his role in the relationship between ruler and nature, but care should be taken not to underestimate the simple fear that arose in response to the destructive power of earthquakes. As the above entry illustrates, these quakes led to death and destruction, and attempts to assuage

[4] *XTS*, 196.

Heaven's disapproval also came out of a desire to return the empire to a period of seismological stability. Moreover, the power of earthquakes had the ability to level the sharp stratification that characterized imperial Chinese society. Both the emperor's and his subjects' homes were destroyed, though to varying degrees of severity. Perceived as a sudden and violent intrusion into the lives of everyone, earthquakes were able to uproot and even destroy the very markers and organizational apparatuses of Chinese society and civilization: the homes that distinguished one family from another splintered into pieces, the walls that separated cities from the wilderness crumbled down, while the home and authority of the Son of Heaven started to crack.

Dezong was not the first Tang emperor to experience an earthquake during his reign, nor would he be the last. In fact, both histories characterize the entire dynasty as a period of fairly regular seismic activity. The first recorded earthquake dates from 620, during the second year of Emperor Gaozu and is fairly typical of later entries: Yiwei day, earthquake in the capital.[5] Some emperors, however, suffered more than others: whereas Gaozu experienced only one other quake during his remaining tenure as emperor, his grandson, Gaozong (r. 649-683), witnessed ten. His sons, in turn, both saw one apiece. Overall, nearly every emperor over the course of the Tang, with few exceptions (easily explained by particularly short terms on throne), witnessed a quake.

Though it may give us some idea as to the regularity of seismic activity during the Tang, an attempt to quantify it is frought with difficulties. First off, not every emperor ruled for the same period of time, and Gaozong's ten quakes appear less extraordinary when we consider his reign was nearly four times longer than that of Gaozu. When taken into consideration, the rate of earthquake activity is largely consistent between the two

[5] Ibid., 9.

with one quake for every three and a half to four years on the throne. More problematic are the inconsistencies between the *Old Tang History* and the *New Tang History* regarding the number of earthquakes for each emperor. Whereas the numbers for Gaozu's and Gaozong's reigns are exactly the same, some, such as Emperor Xizong (r. 873-888) vary wildly. Though the *Old Tang History* records only one earthquake over the course of his reign, the *New Tang History* records eight. In some cases, the condensing of prolonged periods of seismic activity into a single entry accounts for such blatant discrepancies, but this is not always the case, especially considering that the higher counts come from the later *New Tang History.* (And while it is tempting to read its numbers as evidence Ouyang Xiu and his staff had access to additional source material, we can not necessarily make such assumptions).

Instead, it is essential to look more at *how* the earthquakes are described rather than taking a simple count, at which point it is helpful to turn to the histories' respective treatises on five phases. Though the information presented in these sections is drawn from the basic annals, their conciseness reveals those occurrences that were of particular interest to the compilers; removed from all other information, the earthquakes themselves become the focus. More importantly, the events presented in the treatises typically involve a greater engagement between the ruler and earthquake in an attempt to more fully understand the underlying reason behind the destruction. In the *Old Tang History*, four emperors are mentioned specifically by name and quoted directly: Gaozong, Xuanzong, Dezong, and Xianzong (r. 805-820). The same incidents, among others, were recorded in the *New Tang History*, though references to the above emperors and their conversations are absent. Nevertheless, we are still presented with a catalogue of the most

severe—in terms of symbolism and perhaps severity—cases of seismic activity during the Tang.

In both treatises, the dubious honor of longest entry belongs to Emperor Dezong, as does the greatest number of separate earthquakes recorded within the Basic Annals.[6] While 788 certainly stands out as the most intense period of seismic activity, the histories contain reports of earthquakes leading up to and following this seemingly extraordinary occurrence. From 780 to February 788, both histories describe five separate earthquakes, while the *Old Tang History* includes one additional quake for June 1, 783. Two of these quakes occurred fairly close in time to the cluster of twenty, on January 10, and 12, 788, respectively. The first of the twenty struck on the first day of the lunar year, February 12, with the subsequent earthquakes occurring fairly regularly, though with decreasing frequency, through June 8. A seemingly intense quake struck on September 23 of the same year. From this point, we see a period of respite until a particularly violent earthquake shook the region on May 27, 783, with another following a year later on May 29, 794, and another on July 13. The final earthquake of Dezong's reign occurred on August 8, 797, after which the earth remained still until April 2, 814, under his son Shunzong. Even when the length of reign is accounted for, the frequency of Dezong's quakes remains noteworthy: with thirty over a twenty-five year reign, Dezong averaged a little over one earthquake for every year he spent on the throne.

[6] The only possible challenge to Dezong's nearly thirty earthquakes comes from his successor, Xianzong. On the night of April 2, 814 both histories record eighty quakes. Though this single event would place Emperor Xianzong far above Dezong's count, I am somewhat dubious of its occurrence. Most problematic is the fact that all eighty earthquakes struck in a single night. While this may be a reading of a prolonged seismic spasm, its presentation within the texts lacks the same emphasis placed on the twenty that occurred over the first half of 788. In the latter's case, each quake is presented as a separate incident, occurring of different days over an extensive period of time.

Perhaps most problematic for Dezong was the fact that of the thirty earthquakes experienced during his reign, most are described as occurring within Chang'an itself, with all but one affecting the capital.[7] While the centrality here is not particularly unexpected given its precarious location along the perimeter of the Circum-Ordic seismic zone, such activity nevertheless posed a problem for those living within its borders. The same holds true for future observers. It was one thing for an earthquake to strike a province like Songzhou located out in the Sichuanese hinterlands, but an entirely different matter for twenty—let along one!—to strike the center of the imperial state. Of Gaozong's ten quakes, for example, only three occurred in Chang'an with the others mainly in provincial cities. Similarly, a strong quake during the reign of Emperor Xianzong struck a city far south of the capital. Dezong's twenty, on the other hand, were more centrally located. While in some cases the location is implicit within the entries, the *New Tang History* leaves no room for mistake, stating specifically that the twenty earthquakes struck the capital itself.

An entry from the *Old Tang History* detailing the events of the fourth summer month of 794 represents the typical manner in which natural phenomena—in this case earthquakes—were depicted alongside supernatural omina and mundane political affairs to create a larger historical narrative that demonstrated the relationship between human activity and the natural world. Moreover, the entry relies heavily on the symbolic power of certain phenomena, offering little to no detail outside the basic facts. This is especially true of the two earthquakes noted in the entry's opening lines: though they are listed as

[7] There is a slight discrepancy between the two texts regarding the May 27, 793 earthquake: The *Old Tang History* suggests Chang'an may have been affected, though textual ambiguity prevents a definitive reading. On the other hand, the *New Tang History* specifics only Guanfu and Hezhong were affected. As such, I have chosen to err on the side of caution and interpret the quake as occurring outside Chang'an's borders.

happening one after another in short succession, no other information is offered. The extent of the damage, the number of lives lost (if any), and the location of the quake are all left unknown. Instead, the entry jumps immediately to a number of unrelated topics: In Hengzhou the footprint of a giant was discovered. Gao Xilong was promoted to General of the Left Imperial Guard. Throughout the month the planet Venus was visible during the daytime. And finally, a flock of giant birds descended upon the imperial palace where they then dined on an assortment of bones.[8]

Though the larger narrative presented in the dynastic annals cannot be ascertained from an isolated entry, we can nevertheless get a feel for the state of the Tang during this period. In short, the empire was in a state of discord. That being said, some of the events noted are not necessarily inauspicious and simply reflect the workings of the court. Both the discovery of the footprint (which is described as being *reported* to the emperor) and the promotion of Gao Xilong are typical of the kind of court affairs described elsewhere in the annals. Venus's visibility is likewise innocuous, highlighting a period of clear weather. This brings us then to the entry's bookends: Unlike the footprint and Venus, which are described in passive voice—being discovered or observed by human actors—the earthquakes and birds represent a relatively more active form of natural phenomena. It is the earth that shakes and the birds that descend upon the palace and eat. Moreover, both represent an assault on a form of stability or structure. The earthquakes destabilize the very ground we stand on while the birds invade the very center of the state: the palace. The behavior of the natural world thus reflected and mocked the degeneration of the Tang body politic.

[8] *JTS*, 379.

Earthquakes as aberrations of the normal state of affairs proves a common theme throughout the histories and were often presented in close proximity to other instances of remarkable human and natural phenomena. Much like the one that occurred in 795, the two earthquakes recorded during the summer of 783 demonstrate these themes. On May 23, an earthquake struck the capital. So severe was the damage that farmers were unable to tend their fields for a prolonged period of time, long enough at least for the untamed brush to resemble "yellow and white hair." Like the above entry, the report of the earthquake was immediately followed by other seemingly unrelated events: A few days later, the military leader Ge Shuyao lead a military campaign into Yingjiao where he and his troops were greeted by "a piercing quake of thunder."[9] Suffering a number of casualties, their company quickly retreated to the safety of a nearby county. Interesting to note here is the relationship between earthquakes and thunder. What I have translated as "quake" is the same character, 震 *zhen*, used to describe the sound of thunder that stopped Ge Shuyao's advance. The relationship between natural phenomena and human affairs is further cemented for the readers.

But what exactly fell within the realm of the "natural"? When Dezong cried to "Heaven," who or what did he expect to answer? The translation of 天 *tian* here and elsewhere in this study as "Heaven," though, should not be confused with the Judeo-Christian concept familiar to most Western readers, nor should it be read as a form of monotheism. Rather, the Chinese worshipped a large pantheon of deities culled together from Confucianism, Daoism, local folk beliefs, and Buddhism. Heaven itself was an amalgamation of ideas, at once the home of the gods, the gods themselves, an active force

[9] Ibid., 336.

shaping the world, a deity unto itself, nature, and the heavens above.[10] Attempts to adequately define Heaven, and thus comprehend its patterns, inspired scholarly debate among generations of religious, political, and historical thinkers, further compounding our own attempts to understand it. Nevertheless, a few rudimentary characteristics can outlined here: First, Heaven occupied a place above and outside—though not separate from—human society, and from this position, it governed the workings of the human world. Secondly, Heaven was both a spiritual and physical place. In many conceptualizations of the world, Heaven sat in contrast to the earth, 地 *di*. Like Heaven, the tern for earth contained a variety of meanings, among them the physical land, as seem in the term for earthquake *dizhen*, and the plane of *human* existence, a distinction that ties it back to point one. Finally, Heaven operated along certain principles that could be understood by human observers, not unlike the laws that govern the natural world. But whereas natural change occurs without a fixed goal, culminating instead from certain processes outside moral reasoning, that wrought by Heaven was purposeful.

Consequently, the Chinese understanding of the natural world was deeply shaped by this concept of a willful Heaven, and use of the term nature here on out reflects this fact. While not without its own set of problems, nature generally demarcates a realm of existence outside the purview of human civilization. Indeed, Chinese civilization—much like those the world over—defined itself based on its having transcended the habits of wild animals and peoples. Instead of walking around naked and feasting on raw meat, they obtained means of clothing themselves and cooking their food. The development of agriculture, which produced the mulberry leaves needed for sericulture and the grain for

[10] Lillian Lan-ying Tseng, *Picturing Heaven in Early China* (Cambridge: Harvard University Asia Center for the Harvard-Yenching Institute, 2011), 3-4.

eating, represented the greatest divide between the Chinese and the natural world, for it required the active manipulation—the *civilizing* of—a previously untamed, natural landscape. But nature itself could encompass a larger set of phenomena operating independently of clear human influence: just as a wild elephant could wander onto a field and trample an unwitting farmer, so too could an earthquake strike in the dead of night and destroy one's home. While reading these events as the will of Heaven provides a larger explanation, their occurring independently of any immediate human cause defines them here as natural.

The close link between the natural and human world is well illustrated by an incident from Emperor Xianzong's reign as described in the *Old Tang History*'s "Treaty on Five Phases." Distressed by a recent earthquake, Xianzong summoned his minister Li Jiang and asked, "Yesterday the earth shook causing the grass and trees to all tremble. Why is that so?" Li Jiang responded immediately, recalling the story of King Yu from Sima Qian's *Records of the Grand Historian*: "In the time of the Zhou an earthquake struck the kingdom, causing the three rivers to dry out. Minister Poyang Fu addressed the Zhou king, stating 'It is necessary that the *qi* of heaven and earth should not lose their order; if they overstep their order it is because there is disorder among the people.'"[11] He continued, referencing the *Spring and Autumn Annals*, an earlier history believed at this time to have been written by Confucius: "If the government is distressed, Heaven and Earth will see disaster. The histories provide guidance and admonitions, and should be used to warn future rulers."[12] Though the exact nature of the crisis is never specified—

[11] *JTS*, 1348. Translation here based on Joseph Needham's so as to highlight the historical and literary allusion. Needham, 624-625.

[12] *JTS,* 1348.

ambiguous discord among the people and poor governance being suggested—it is clear that something is amiss, as evidenced by Heaven's punishment.

While this exchange occurred after Dezong's reign, its presence within the text allows us to read it backwards onto earlier events within the dynasty. Future readers were expected to be as well-versed in history, especially those composed by Confucius and Sima Qian, as Master Li Jiang himself, and indeed the compilers of both Tang histories were working with a strong appreciation for historical and literary allusion. When compiling these texts, they did not necessarily read this type of phenomena as natural, but rather as consistent with earlier traditions of politics and historical study. Dezong's claim to have repaired the imperial government clearly demonstrates his knowledge of this tradition, even if it lacks the explicit references to past events featured in Xianzong's case. Even in the latter case it is not the emperor making these connections, but a wise minister who uses history to remonstrate—if only implicitly—the shortcomings of a wayward ruler. Ultimately, as evidenced by the text here, philosophical understandings of earthquakes proved more pervasive than scientific methods of reading them.

Less than a month after Ge Shuyao's retreat, on the night of June 10, the capital again experienced an earthquake, only this time it seemed to mark an end to the militarism preceding it. Just a few days later, the rebel king of Yingjiao died, and nothing more is heard of Ge Shuyao until the next following month. Instead, the entry turns to other occurrences of atypical, albeit considerably less destructive, natural phenomena: The first notes the clarity of the Yellow River's normally muddy waters in Puzhou and Huazhou provinces. The second mentions a horse in Puzhou that sprouted a horn. Much like the giant's footprint and the visibility of Venus discussed earlier, these two entries

represent a more passive form of symbolism as rulers and officials could take a seemingly innocuous occurrence and use it as a tool to help bolster the court's legitimacy. The sudden appearance of a unicorn, for example, could be read as an auspicious sign of virtue. Of course a horse suddenly growing a horn would be somewhat disconcerting for its owner, but it is ultimately innocuous. There are no real consequence born from its existence; as such, meaning can be ascribed to it in a way that cannot be done with earthquakes and other destructive forms of natural activity. The effects of earthquakes, floods, locust plagues, and drought are much more difficult—though not entirely impossible—to spin into a positive message. This fact is especially true when a quake strikes the capital, the very center of the empire, affecting both emperor and subject.[13]

The adverse effects of earthquakes on both the natural and human order is shown repeatedly throughout the histories. On the night of January 10, 788, three tremors suddenly violated the winter's silence. Whereas many entries do not necessary allude to the magnitude of the shocks, this one specifically noted that the force was so powerful that birds' nests were violently shaken apart in the treetops and thrown to the ground. From this description one can almost hear the rustling of the pine and spruce trees as they swayed to and fro in the dark while tremors reverberated up their base into the canopy above. A flurry of leaves, twigs, and feathers descended upon the forest floor as flocks of startled birds abandoned their disintegrating nests for places unknown, their cries slowly fading off in the distance. But birds belonged in trees, and their sudden abandonment of their proper homes symbolized an aberration from the natural order.[14]

[13] Ibid.

[14] *JTS*, 358.

Compare this example then with a later entry from the *New Tang History* describing a series of three earthquakes that struck Chang'an in 794. After the second quake subsided, the history notes, several trees suddenly sprung forth from the loose and muddy soil. Squirming amongst the branches—where one would expect to find birds busily at work on their nests—were earthworms in a gross parody of the normal order. Banishing nests from the safety of the canopy down to the forest floor while replacing them with worms plucked from the ground, earthquakes easily overturned the natural order, transforming the world into a cacophony of uncertainty. Normally, everything—animal, elemental, and human—occupied a proper place: birds belonged high in the trees, earthworms down in the soil, water in the rivers, people in towns, farmers in the fields, and the emperor at the top of society. Though not entirely hierarchical, a divergence by one group nevertheless posed a threat to the larger system, especially when caused by outside forces. In addition to earthquakes, rebellion, flooding, and famine, to name but a few, all had the ability to threaten this order. But *natural* disasters, as they would be understood today, were not necessarily interpreted as such during this earlier period but rather as ramifications of human behavior; as such, the natural order was deeply entwined with societal order, and divergences in the former reflected divergences in the latter.[15]

This shock to the natural world immediately calls to mind the disruptive effects of earthquakes on the stability of human society, especially those that occurred in 794. Most significantly, the destruction of the birds' homes directly parallels the destruction of the people's homes and city walls. The symbolic relationship between birds and humans is considerably more explicit in the account of the January earthquakes found in the *Old Tang History*'s "Treaty on the Five Phases." Whereas humans are entirely absent in the

[15] *XTS*, 908.

afore-discussed account recorded in the "Basic Annals" section, they figure prominently here: "The capital was struck by three earthquakes during the night. The nesting birds were all startled [and] many people abandoned their houses."[16] Beyond the simple parallel between frightened birds and human beings, it is important to note here the emphasis placed on each groups' respective domiciles. Though care should be taken to avoid over-indulging the metaphor, there is nevertheless a powerful comparison to be made between birds' nests and human homes, both of which are *constructed* so as to provide security from external dangers—birds belonged in nests just as civilized humans belonged in houses. Earthquakes, though, demonstrated the power to disrupt the way the world ought to be, even on the most basic of levels.

This discord extended even to the earth itself, for earthquakes exhibited the ability to transform and disfigure the natural landscape. So powerful was a quake in 788 that it caused rivers to flood and mountains to crack.[17] The *Old Tang History* records similar activity for 793 when "the ground split open [and] water flowed [through the land]."[18] In both instances, these descriptions immediately follow accounts of the destruction done to human establishments and serve to further emphasize the pervasive discord brought about by these catastrophes. The normative rhythms of life, for both humans and animals, so violently disrupted by a sudden quake are thus comparable to the waters expelled from their proper channels. And for a society frequently plagued by flash flooding, the power of untamed water stood as a powerful signal to future readers. Similarly, the ruination of boundaries and the challenge to societal order—both represent the loss of stability—are

[16] *JTS*, 1348.

[17] *JTS*, 364 and *XTS*, 195-196.

[18] *JTS*, 376.

mirrored in the fissuring of the ground and mountains. In both cases, there is once again a pronounced sense of uncertainty: while houses, walls, and nests could all be rebuilt, a broken environment, as it were, stood as a more formidable challenge.

Entries pulled from the annals of other Tang emperors reveal similar occurrences of changes to the land following intense bouts of earthquake activity. During Gaozu's reign, for example, an earthquake struck the southern province of Xizhou in what is today Sichuan. Though no deaths are recorded, the quake was apparently powerful enough to topple mountains, or at the very least induce a series of powerful landslides. Nevertheless, the rocky debris was so great that, after finally coming to a rest, it effectively obstructed the flow of a nearby river.[19] The quake that struck during the night of April 2, 814, proved even more extraordinary: after a string of eighty tremors, the earth produced a hole measuring approximately thirty *li* wide.[20] In many ways, reading the damage wrought by these quakes served as a means of measuring their severity, especially in a age without any tools comparable to a modern seismograph. (Though Zhang Heng's device was no longer in use, recall it was designed simply to determine the direction in which the earthquakes occurred; even in the earlier Han period severity was primarily assessed via physical damage). In many regards—and the emphasis placed on the landscape within the histories certainly seems to support this point—observing the landscape served as the most effective means of assessing the power of an earthquakes, both then and now.

Other environmental changes are found elsewhere and likewise hint at some of the larger ramifications of earthquakes on human society and their relationship with their

[19] *XTS*, 17.

[20] Ibid., 908.

environment. Return then to the quake that occurred in May 783 and the so-called "hair" that sprouted from the earth as a result.[21] What at first seems like a tangential, albeit freakish, detail turns out to be in actuality evidence of a larger social disturbance: because of the severe earthquake, people were unable to tend their fields and produce food. Agriculture was the lifeblood of the imperial Chinese state, and the success of the Tang depended heavily on its ability to facilitate the production of sustainable yields. Disorder in the fields could lead to disorder in the government. The entry does not specifically state the exact reason why these people abandoned their fields. Did they scatter in fear? Simply abandon their land? Attempt to first rebuild their homes? Die?—the initial blame is placed squarely on the earthquake. Aftershocks, we see, came in many forms, some more obvious than others. Nevertheless, this significance of this entry highlighted the manner in which these symbolic markers echoed very real concerns of Chinese society.

Unfortunately, the near-clinical nature in which earthquakes are presented in the dynastic annals—listed one after the other with limited detail—ultimately understates the severity of these events on those who experienced them. As such, a certain tension arises between earthquakes as symbols of Heavenly disfavor and earthquakes as real natural occurrences. As discussed earlier, Chinese historians did not simply make things up, and it is safe to say that the earthquakes described within the histories actually happened. But seeing as these officials wrote for a very limited audience—primarily the emperor and his administration—the focus of their work was likewise limited to those actions concerning the court. When confronted with disaster, the emperor looked to the past for precedents to help him frame an effective response (even if this just meant rectifying his behavior to an extent). For the most part, the only quakes recorded are those felt in the capital at

[21] *JTS*, 336.

Chang'an. These histories are therefore silent regarding the people outside of the court and their earthquake experiences. Nevertheless, we should attempt to identify those details that provide a glimpse into their lives and facilitate the telling of a different side of the "official" story recorded in the histories. This approach will help us understand these earthquakes as the real catastrophes they were for those affected as opposed to mere metaphors of historiography.

Like modern science today, the Tang rulers could not predict earthquakes, and many of the entries express a sense of shock. Several earthquakes are introduced with a "sound like thunder," 声如雷 *sheng ru lei*.[22] Though there is debate among seismographers whether earthquakes themselves produce noise—many posit that the most sound comes from falling rocks or trees—the manner in which they were here presented in the annals nevertheless invites comparisons to a sudden flash of lightening and loud, frightening bellows of thunder.[23] Perhaps more disconcerting were those earthquakes that struck at night, such as those recorded for June 10, 783, and January 10, 788.[24] Not to say there is a good time to have an earthquake, but the specification made regarding these entries hints that the nighttime occurrences were noteworthy. People fleeing their homes in fear is described elsewhere, and it is therefore easy to imagine something similar occurring during these nighttime quakes when residents of Chang'an woke in panic as their homes shuddered around them in the darkness. Rushing out into the city's boulevards for safety from the falling debris, they are greeted by equally

[22] Ibid.

[23] The issue of earthquake noise is discussed at length by Valencius in *The Lost History of the New Madrid Earthquakes*.

[24] *JTS*, 336 and 358.

distressed neighbors and sounds of thunder off in the distance. And as we already saw, the emperor himself could be just as anxious when caught off guard by an earthquake.

But no matter when they occurred, earthquakes were devastating forces that vastly reshaped the lives of those they affected. A particularly vivid example of their destructive force comes from the *Old Tang History* in which an estimated magnitude 8 earthquake struck China's central plains on May 27, 793.[25] Heralded "with a sound like thunder," the earthquake suddenly threw the inhabitants of Hezhong and Guanfu into a state of destruction and confusion. As the earth trembled violently underfoot, villagers were forced to look out onto the landscape while their community landmarks—the protective garrisons and familiar homes—crumbled. A horrible chorus of splintering wood joined the thunderous din of the earthquake as ochre clouds of dust emanated from the wretched remains of fallen earthen walls. Stillness brought no respite for these already beleaguered souls, for the resulting landslides and flashfloods proved equally—if not more—devastating than the initial quakes. The severity of the resulting floods is unclear from the account here from the *Old Tang History*, but it is safe to assume a collective sense of uncertainty coursed through the community of survivors.[26]

A similar account describes the earthquake that struck the region on March 8, 788, though a few key differences hint at greater residual damage. First off, the March 8 entry begins—whereas the 793 entry ends—with the effects of the earthquake on the surrounding natural environment, prioritizing these details over the destruction wrought upon human society. This significance is likewise emphasized by the compilers of the *New Tang History*, whose entry omits all subsequent detail regarding the catastrophe. (In

[25] Gu Gongxu, et al., 10.

[26] *JTS*, 376.

contrast, the same history fails to provide any supplementary information regarding the 793 quake outside of its basic occurrence.) Most significant then is the fact that the power of this earthquake was so strong that it was able to divert the flow of the river waters and cause mountains to split. The symbolic imagery here is certainly important, but it is worth reading these events as actual occurrences of flooding as well and what was likely a mud-slide or avalanche: those changes in the land came with certain, oftentimes devastating consequences. As modern earthquakes continue to demonstrate, great danger comes after the earth is once again still. The ordering of events within the chronicle certainly seems to hint at a chronology with the destruction of the peoples' homes coming immediately after the flooding and the splitting. Moreover, these devastating aftereffects likely contributed in no small part to the peoples' vain attempts at recovery.[27]

Ironically, the most dangerous place to be during an earthquake was within the very structures meant to protect the people from the natural world: their homes. Time and again the histories record the number of people killed by collapsing buildings. The entry for February 11, 638, describing a powerful quake that struck Songzhou and Congzhou in modern-day Sichuan province highlights this danger, as many people are described as being "crushed to death" following the destruction of their homes.[28] Other entries give more precise casualty numbers, providing readers another way to assess the magnitude of any given quake. The September 12, 649, earthquake in Hedong resulted in approximately five thousands deaths—the greatest number of dead from any one earthquake during the Tang—all of them from being crushed following the destruction of

[27] Ibid., 364.

[28] Ibid., 49.

their homes.[29] Over thirty people died following the quake on February 12, 788, during Dezong's new year ceremonies as did an additional hundred on April 2, 814, during Xianzong's reign.[30] In each case, death is strongly linked to the falling of debris, which in turn followed descriptions of the destruction of human-built structures. When the earth shook underneath, death typically came from above.

Aftershocks, of course, contributed to this lingering sense of dread. Even though the use of the term "aftershock" it not without its problems, the dynastic histories still note several earthquake "clusters" and periods of prolonged seismological activity. The highest concentration of which occurred during the first half of 788—the year of twenty earthquakes—and followed Emperor Dezong's new year's ceremony. Even within this period, the *Old Tang History* distinguishes between the full earthquakes, 地震, and the aftershocks, 又震: the February 12 quake was followed by shocks on the 13 and 14; a March 15 quake by shocks on March 17, 18, and 29; and finally, a June 7 quake by one the day after. Still, it is difficult to draw solid conclusions from this organization scheme because between these clusters a spattering of other quakes occurred, some just within days of each other.[31] Moreover, little detail is given to describe the severity of these individual earthquakes beyond the manner in which they are labeled; even in this regard, the *New Tang History* makes no distinction between the two.[32]

Regardless of what they were called, the period of quakes had a profound effect on Tang society. Dezong, of course, expressed his frustration to Heaven as his legitimacy

[29] Ibid., 66.

[30] Ibid., 449.

[31] Ibid., 363-365.

[32] *XTS*, 196.

was challenged by the seemingly unending disaster. The earthquakes affected other levels of society in different ways. In its entry for May 23, 788, the *Old Tang History* claims that white and yellow hair sprouted from the ground in and around the capital.[33] Again, this is a direct reference to an absence of human activity, as no one is in a position to keep the wild brush and grasses at bay. The extent of the quakes' damage is alluded to in an earlier passage for March 8. Nearly two months earlier, a severe earthquake struck the provinces surrounding Chang'an, devastating the area. Familiar themes reappear as "several homes were destroyed [forcing] their former residents to dwell down upon the open ground."[34] Whatever attempts there were to rebuild—the history is silent on the matter—were surely complicated by the chain of earthquakes that continued through the spring planting season. The emphasis on the length of the "hair" in this case, purportedly over several *jin* in length, certainly alludes to a prolonged period of time since the last planting. Come May, the fields remained fallow.

Not until late September did the year of twenty earthquakes finally end. Based on Dezong's plaintive cries, earthquakes demonstrated a power that instilled fear into the heart of the emperor himself. Helpless before the will of Heaven, he wondered loud about the cause behind his continued misfortune. Why did Heaven see it fit to target him specifically? What had he done to deserve such punishment? Already he had been forced to abandon his capital in disgrace. What more possibly awaited him? Earthquakes shook Tang society to the very core, and if nests could be thrown down from the safety of the treetops, so could an ineffective emperor be thrown down from his position at the top of society. Even on a more basic level, earthquakes threatened the stability of the Tang as

[33] *JTS*, 1348.

[34] Ibid., 364.

they disrupted the normal patterns of life that maintained the empire. Without farmers in the fields, the danger of famine loomed ever closer; without people productively at work within their villages, there was no one to tax. Moreover, the destruction of homes and walls exposed them to threats posed by adversaries, both human and natural. Though there was little Dezong could do to prevent such disasters, fault would ultimately fall unto him.

CHAPTER IV

CULTIVATING OUR GARDENS

Yiwei day, earthquake. The final earthquake of Dezong's reign appears as innocuous as the first, couched between the dredging of a canal and a military assignment—the earth shook, but life went on as normal.[1] Though the twenty earthquakes caused the emperor great distress, they were not enough to bring his rule or his dynasty to an end. In fact, he remained on the throne for seventeen more years while the Tang lasted for another hundred. Such is the nature of decline. Though historians can look back and identify certain periods and events as turning points, their significance is often invisible to those living at the time as the tensions and maneuverings taking place just beneath the surface go unnoticed until they rise up and disturb society. Dezong's earthquakes, however physically disastrous, ultimately proved more productive than destructive as historiographical metaphors. While they certainly highlighted the moral and political shortcomings of Emperor Dezong, the links drawn between natural phenomena and his person essentially reaffirmed his legitimacy within the historical records. Were he not the true Son of Heaven, the responsibility for the earthquakes would not have been his to bear. Instead, he shouldered the burden and affirmed his link to Heaven and role within society. Even as signs of discord and fragmentation, earthquakes, like other natural disasters, afforded the emperor an opportunity to stabilize society by affirming his status as head of the Chinese state and his dynasty's place in history.

[1] *JTS*, 386. *XTS*, 201.

In many ways, the dynastic reading of Chinese history was and is an anachronistic device employed by historians to organize the past into orderly periods. Such a reading, though, was neither inevitable nor natural, for the selection of certain dynasties as legitimate—and therefore others as illegitimate—depended on the careful interpretation of earlier events by court historians. Dynasties such as the Han and Tang, which enjoyed widespread and long-lasting political experience, posed little problem for these scholars. Periods of disunity, however, when a number of smaller states vied for hegemony after the fall of a dynasty, proved much more difficult. Which of these states, if any, deserved recognition within the historical narrative? Which deserved the honor of continuing on this cultural and political tradition? Most importantly, how were historians supposed to determine whether or not a certain state operated under Heaven's mandate?

In the *Comprehensive Mirror for the Advancement of Government*, a history of China from the Zhou to the Tang, the Song historian Sima Guang (1019-1086) grappled with such questions, illustrating the complexities behind China's historiographical tradition. Decidely pragmatic, Sima Guang chose to base his approach on each dynasty's political and ideological continuity. Writing to the emperor in his work's introduction, Sima Gaung justified his editorial decisions:

> Your servant does not presume to know anything about the distinctions of legitimate and intercalary, but treats each state only in accordance with its actual accomplishments. Zhou, Qin, Han, Jin, Sui, and Tang each in turn unified the nine provinces and transmitted the throne to its descendants. And though their descendants in time grew weak and were forced to move their capitals, they still carried on the undertaking of their ancestors, continued the line of succession, and hoped to bring about a restoration of power.[2]

[2] *ZZTJ*, 880-881. Translation from *Sources of Chinese Tradition: Second Edition, Volume 1*, eds. Wm. Theodore de Bary and Irene Bloom (New York: Columbia University Press, 1999), 506.

By simply describing these events as accurately as possible, historians believed the legitimacy of any one dynasty would make itself known. This is not to suggest, though, that Sima Guang approached his work without a particular story in mind, nor was he any less didactic than his fellow historians. As the title of his history implies, the past served as a collection of lessons to which a sitting emperor gazed to assess his rule.

Given his emphasis on practical policy, it is perhaps of little surprise then that Sima Guang did not mention even a single one of Dezong's quakes. In fact, earthquakes as a whole are conspicuously absent from his historical narrative, which instead provides readers with more descriptive accounts—compared to those found within the *Old Tang History* and the *New Tang History*—of certain anecdotes from each reign. It is from Sima Guang's history that we find the account of Dezong's chance encounter with the peasant lamenting abuses of the two-tax system in the final month of 787. Entirely absent from the *Old Tang History*, the *New Tang History* also mentions the emperor's hunting trip to Xindian but offers no other details concerning his visit, though it is worth noting that this particular entry is couched between two earthquake accounts.[3] Whereas the earlier histories alluded to discontent in the empire by highlighting disaster, it seems as if Sima Guang instead opted for a more direct manner of condemnation.

Still, the concept of virtue figured heavily into the historian's process of political legitimization, evidenced again by his introduction to the *Comprehensive Mirror*. While rulers may exercise control over large tracts of land, their authority ultimately rested upon an ability to govern the people justly and effectively. Territory and virtue emerged over time as the twin pillars of statecraft employed by a true Son of Heaven. But this conceptualization was not unique to Sima Guang. Indeed, Dezong's lamentations

[3] *XTS,* 195.

following the new year's quake in 788 illustrate the place of virtue within earlier historiographic rhetoric, especially that found within the *Old Tang History*. By calling upon Heaven and recognizing his own lack of virtue—even as a means of humbling himself before a greater force—this conceptualization of Dezong claimed authority over one of the primary tools of political control. He realized that his lack of virtue is ultimately to blame for the catastrophe, and recognized that it was he, and he alone, who should be claiming responsibility for the sudden onslaught of earthquake activity.

By doing so, Dezong situated himself within a larger tradition in which rulers recognized their moral influence on the natural world. Baffled by a seemingly unending bout of seismic activity within the province of Jinzhou, Emperor Gaozong sought the counsel of his trusted advisors. "I am unclear as to how I should instruct my court," he lamented, "and as a result the earth in Jinzhou repeatedly quakes and stirs!" Chancellor Zhang Xingcheng responded carefully and dutifully, "Heaven is *yang*, while earth is *yin*. *Yang* symbolizes the ruler, and *yin* his ministers. When the ruler acts appropriately, his ministers remain peaceful. Jinzhou suffers from an earthquake, which has continued unceasingly for over ten days now." Detailing then a list of abuses within the court, Zhang closed with a stern warning for the emperor: "The continued shaking of the earth is surely a response [to this misbehavior]. You should think deeply about the future and seek to prune these troublesome buds."[4] Only by cultivating his virtue, and by extension the virtue of those around him, the emperor could bring order and peace to his garden.

There are of course strong parallels between this exchange and those attributed to emperors Dezong and Xianzong, as well as allusions to the earlier historical earthquake accounts from the *Records of the Grand Historian*. Like Dezong, Emperor Gaozong

[4] *JTS,* 1347.

employed the royal "I," 朕 *zhen*, in his speech, a literary device employed solely for imperial dialogue recorded within the histories. Though used widely throughout these particular texts, this term nevertheless linked these two individuals together, as it indeed did with all the emperors, making it clear to the reader that they occupied a prestigious place within the political and linguistic hierarchy. What is of most interest here, though, is how the speaker of the royal "I" then goes on to affirm his relationship with the natural world via his actions within the court. Both Dezong and Gaozong express concern over their inability to structure their respective governments in a manner satisfying the desires of Heaven. In both cases is governance linked to moral behavior: With Gaozong, Zhang Xingcheng informs the emperor that if he were to act justly, then his ministers would behave appropriately. Similarly, Dezong refers to himself as one who lacks virtue, which he then relates to his failed attempts to effectively improve his court. But unlike Gaozong and Xianzong, Dezong's concerns went unanswered, for no one explained to the confused emperor why the earth continued to shake.

Dezong's lack of understanding, so the historiographers judged, is reflected in the subsequent earthquakes that continued to beleaguer the capital over the course of year. Gaozong's quakes, however, come to end shortly after he received advice from his chancellor, hinting at the ability of an emperor to actively change the process of nature by rectifying his actions. Indeed, the text notes that the emperor complied with Zhang Xingcheng's recommendations.[5] Dezong, however, is provided with no such council, and even upon recognizing his shortcomings as a ruler, he is further punished by Heaven.[6] Xianzong, too, continued to suffer, though to a markedly less severe degree than his

[5] Ibid.

[6] Ibid., 1348.

father. Like Gaozong, he consulted with his ministers to understand why the earth shook. And in spite of the council offered by the learned Li Jiang, no mention is made of Xianzong making any efforts to address the situation. Consequently, another earthquake—this one considerably more powerful than the first—is recorded following the earlier incident, a sign of the emperor's failure to change.[7]

Such a reading is complicated by the fact that the Five Treatises include only a select number of those earthquakes described within the Basic Annals. Though the clean ending makes for a good story, in reality Gaozong's quakes continued even after he consulted his ministers. More problematic is the manner in which the Treatises exclude an event demonstrating the pragmatic means by which the state dealt with disaster. Early during Dezong's reign, an earthquake struck the same Jinzhou region killing over five thousand people. Instead of waxing philosophic on the issue and seeking ways to prevent similar occurrences in the future, he immediately dispatched an envoy to the afflicted region. Not only did the emperor exempt these people from corvée duties for two years, but he also bestowed upon the local officials three bolts of valuable silk to assist in the cost of recovery.[8] Indeed, this incident is the only one within either Tang history in which the emperor is depicted as making actual efforts to provide aid to his subjects following an earthquake. The magnitude of the event—the deadliest of all the Tang quakes—certainly required such extraordinary actions. In contrast, no mention is made of Dezong's efforts, if any, to offer assistance to those affected by quakes during his reign.

[7] Ibid., 1348-1349.

[8] *JTS*, This earthquake is one of the few that appears in Sima Guang's *Comprehensive Mirror for the Advancement of Governance*, attesting perhaps to its severity. *ZZTJ,* 6269.

That is not to suggest Dezong ignored the crisis entirely, for his communication with Heaven, and the implication that he may have intended to change his behavior, represented the dominant form of disaster prevention understood by the Tang court. In many ways, Gaozong's earlier pragmatic responses to the quakes in Jinzhou were arguably the more atypical of the two scenarios. An episode from the reign of Emperor Xuanzong in which his chief minister, Yao Chong (651-721), fought diligently against a number of opposing parties to provide relief to those suffering from locusts highlights the ideological debate between moral rectification and pragmatic relief effort. Many traditional-minded critics argued that only through the cultivation of virtue could the emperor bring about an end to the scourge. While never abandoning similar beliefs, Yao Chong saw a need to at least take some sort of proactive stance against the ravenous insects such as trapping them and burying them beneath the ground. He also proposed an ambitious multi-year extermination campaign. Xuanzong himself initially critiqued his minister's proposals, but eventually consented after Yao Chong presented his proposals as a means for the emperor to reassert his claim over Heaven's mandate. This challenge could be met in more than one way, though the goal—legitimacy—remained the same.[9]

Regardless of the approach, disaster afforded the emperor an opportunity to demonstrate his power and magnanimity, affirming once again his supreme status within society. As a prerogative of the emperor, decisions regarding exemptions from corvée labor was a nuanced means by which he could simultaneously offer some means of very real relief and once again exhibit his influence over his subjects' lives. Such actions are similar to the frequent empire-wide pardons that rulers delivered during certain periods of

[9] N. Harry Rothschild, "Sovereignty, Virtue, and Disaster Management: Chief Minister Yao Chong's Proactive Handling of the Locust Plague of 715-716" *Environmental History* 17, No. 4 (2012): 783-812.

celebration: on one hand, these pardons presented the ruler as a caring individual capable of great acts of kindness; on the other, it affirmed his status as supreme upholder of the order within human society, for only he wielded such great power and the elaborate pomp and circumstance surrounding such announcements served as clear reminder of that fact. The gift of silk likewise served two purposes, demonstrating both the emperor's generosity and his magnificent wealth. With the inhabitants of Jinzhou looking to him, Gaozong needed to repair a battered province and his position.

Linking earthquakes and other natural phenomena to the emperor ultimately confirmed to future readers the legitimacy of his personal rule and the place of his family's dynasty within the centuries-old imperial tradition. The emperor's ability to cause an earthquake—however unwittingly—proved his claim to the throne: clearly he was of such great importance that Heaven felt compelled to warn him every now and again. While they could certainly portend the impending fall of a dynasty, sporadic natural phenomena such as earthquakes could also be read as challenges for an emperor to overcome. As Andrea Janku astutely points out in her study of late-imperial famine, many of China's enduring culture heroes were celebrated because of their ability to overcome natural disaster. Arguably the most famous of these figures was the mythical emperor Yu the Great, whose taming of the flood waters not only fostered the growth of sedentary agriculture, but earned him the mandate to establish China's first dynasty in Chinese historiography, the Xia. Gaozong's handling of the Jinzhou earthquakes stands as a similar test to his authority he ultimately triumphed over.[10]

[10] Andrea Janku, "From Natural to National Disaster: The Chinese Famine of 1928-1930" in *Historical Disasters in Context: Science, Religion, and Politics*, eds. Andrea Janku, Gerrit J. Schenk, and Franz Mauelshagen (New York: Routledge, 2012), 234.

Mark Elvin explores a similar relationship between emperors of the Qing (1644-1911) and uncongenial weather patterns in a study of so-called "moral meteorology."[11] While focusing on a period several centuries removed from the one examined here, Elvin nevertheless roots his study within a larger philosophical tradition dating back to the earliest periods—some mythical, some factual—of Chinese civilization, a tradition firmly entrenched in political discourse by the Tang as already evidenced by Ji Liang's citing of the *Records of the Grand Historian* and the *Spring and Autumn Annals*. Concerned with the legitimacy of their rule, these Qing emperors sought to understand—and subsequently impose their understanding upon their subjects—both favorable and unfavorable weather patterns as a reflecting of human activity within the empire. Because of the similarities to the Tang reading of earthquakes, we can borrow Elvin's concept here and understand the relationship as a "moral seismology."[12]

Moralizing the weather and earthquakes ultimately hinged on the regularity of these natural processes. As Elvin is quick to point out, a thorough understanding of such readings requires an appreciation of the natural patterns that characterize certain regions: "Perhaps only in an area such as northern China could such a belief maintain a hold on people's convictions. The reason is that the weather here in late modern imperial times, if

[11] Mark Elvin, "Who Was Responsible for the Weather?: Moral Meterorology in Late Imperial China," *Osiris* 13 (1998): 213-237. See also Mark Elvin, *Retreat of the Elephants: An Environmental History of China* (New Haven: Yale University Press, 2004) for a modified version of the same study.

[12] Though I use the phrase here to emphasize the similarities to those patterns discussed by Elvin, the phrase "moral seismology," and Elvin's own "moral meteorology" for that matter, is not without its shortcomings. Most problematic is the way both phrases impose upon the past a modern understanding of separate scientific fields of study. While seismology examines geological processes and meteorology examines weather patterns, such distinctions were not necessarily recognized during these earlier periods. Looking closer to home in the development of seismology in Europe and the United States, scholars have shown how the study of earthquakes was linked to meteorology during its nascent stages (see both Deborah Coen's *The Earthquake Observers* and Conevery Bolton Valencius' *The Lost History of the New Madrid Earthquakes* for a more detailed history of their relationship). Certainly this fact holds true when looking at earthquakes within early Chinese history, for they were typically linked to a myriad of natural occurrences—eclipses, drought, typhoon, etc.—that are today considered unrelated.

the modern record may be taken as an approximate guide, was very variable over the short term. Probably only high short-term variability [could] provide enough short-term coincidences—such as apparent responses to prayers—to sustain belief in the moral meteorological mechanism."[13] This cultural response to the natural phenomena, he argues, represented more than just baseless superstition, but rather a measured attempt to read the environment in a way that provided some semblance of stability to their society. Indeed, he likens the concept to scientific study, as court officials sought to elucidate certain patterns that would give them more control over certain natural processes. By determining exactly what behaviors caused Heaven to grant or withhold rain, they could ostensibly prevent future disaster.

The moral reading of earthquakes represented a means of understanding events that otherwise existed beyond the scope of human knowledge at the time. By drawing connections to human behavior, officials and historians attempted to make sense of an otherwise senseless disaster. And what Elvin suggests of the Qing certainly holds true for the Tang: if the histories are to be trusted, the Tang was indeed a time of regular seismic activity, a fact that is supported strongly by modern seismological studies of China and the surrounding region. While these early observers may not have necessarily understood that it was the tectonic movement of the Indian Plate into the Eurasian Plate that caused their homes to shake, they felt the effects nonetheless. The frequency with which quakes occurred then allowed them to see and affirm certain cultural readings shaped over the course of China's already long imperial tradition. If the dynasty were to fall shortly after an earthquake or other disasters, the interpretation of the quakes as a sign that the emperor and his line had lost the Mandate of Heaven seemed plausible proof of worldly

[13] Elvin, 216.

misbehavior punished by celestial outrage. If the dynasty were to persist, however, the disaster could be read as a test. Semantics, maybe, but such nuances provided this dogma with the flexibility that allowed it to persist over several millennia.

Such flexibility was essential given the fact that earthquakes, along with drought, locusts, and floods occurred outside of the moral framework created by the quest for cause and effect. The tension between reading earthquakes naturally and metaphorically plagues all scholars studying disaster during imperial China, as the moral reading of natural phenomena seems at times counterproductive to the authority of the emperor and his ability to maintain order within society. Read as a historical narrative long after the fact, there was little problem. But for a sitting emperor like Dezong who at once found himself caught in a storm of falling debris and confused panic, his inability to bring an end to the quakes threatened his legitimacy in the eyes of the people. Whereas others managed to bring stability through a rectification of their behavior, his pleas to Heaven only fell on deaf ears. A similar danger existed for those praying for rain or an end to a scourge of locusts: while the necessary rituals could be carried out without error, weather cycles and migratory habits may not have brought relief for the people at the desired time. Dezong's year of twenty earthquakes ultimately represented a case of unfortunate timing of increased tension between tectonic plates rather than any particular moral failing of the emperor.

What is more, Tang thinkers, like their Qing equivalents, sought to both pinpoint examples of miscreant behavior that led to the earth quaking and formulate natural-cosmological models detailing the physical process taking place underground. As such, we see a type of scientific theory emerge that coupled human behavior with geology. We

already explored an early example—and eventual precedent—for this conceptualization in the historical writings of Sima Qian, in which Poyang Fu claimed earthquakes resulted from an imbalance of the earth's *qi* with the inability of *yin* essence to escape from the ground. While this imbalance was seen as ultimately tied back to human behavior, but it is worth noting that the earth did not simply shake, but did so because of theoretically observable processes. The account of Gaozong in the *Old Tang History* draws upon this model and refines it to more fully account for human behavior by linking specific persons, the ruler and his ministers, to *yang* and *yin* respectively. Much like a scientist in a lab, the emperor could potentially change certain variables so as to produce a more positive outcome by redressing cases of abuse within his court. This was political science in its truest form.

Articulated in this case most clearly within *Old Tang History*'s "Treatises on Five Phases," the subtle relationship between human action and their environment was one of the strongest influences on their views of the natural world. The Chinese state and peoples set themselves apart from the untamed and uncivilized wilderness, but it was understood that all events were ultimately connected via an intricate and invisible system of cosmic causality. Translated by Peter Bol as the "cosmic resonance theory," or 感应 *ganying*, this force linked together the entire world through the vital essence of 气 *qi*. In many cases, this theory provided a rationalization for certain natural processes such as magnetism and sound, which could be observed but not necessarily explained. With others, cosmic resonance theory allowed observers to similarly explain human behavior. Actions, these philosophers contended, had both natural and social consequences, even if the link between cause and affect was imperceptible to human observers, much like the

energy produced by the convergence of tectonic plates. Accepted as a natural rule of the universe, this conceptualization provided an essential base on which observers built their moral readings of seismic activity.[14]

As a product of the natural environment and political theory, the Tang's "moral seismology" thus stands as an excellent example of culture as envisioned by Donald Worster in his three-prong formula for environmental history: ecology, economy, and culture. First off, to read earthquakes a certain way and instill them with metaphorical meaning, you needed earthquakes, which the Tang had in plenty. Second, for the quakes to be read, you had to have a people to read them, a people organized around a specific goal—agriculture—and organized in way where certain parties—a divinely inspired ruler—would benefit from such readings. This convergence of factors then produced certain perceptions of the natural world, i.e. a culture, that in turn shaped how human society saw itself within its environment. With China's long literary and historical traditions, such cultural ideas were relatively easy to maintain, as we have seen with the allusions to Sima Qian's writings in the Tang histories. And as an understanding of the world that ultimately served to bolster the power of a certain imperial tradition, the emperors commissioning these histories and the scholars compiling them possessed great interest in preserving these readings of earthquakes and other natural disasters.

In this regard, history served as a means of teaching future generations how to read earthquakes, basing their theoretical constructs on the authority of classical writings. Understanding the movement of the earth as an earthquake, as a *dizhen*, was not an

[14] Peter K. Bol and Robert Weller, "From Heaven and Earth to Nature: Chinese Concepts of the Environment and Their Influence on Policy Implementation," in *Energizing China: Reconciling Protection and Economic Growth*, eds. Michael B. McElroy, Chris P. Nelson, and Peter Lydon (Cambridge: Harvard University Committee on the Environment, 1998), 473-502.

inevitability, but rather a particular reading of a natural process formulated at an early date and perpetuated over time. Here we must recall Susan Hough's distinction between lay and expert readings of earthquakes: what an ordinary observer describes as a quake is to a trained seismologist only the aftereffect of a larger geological process. Even here, though, our understanding is shaped by our expectations of how the natural world *should* behave; that is, the ground should not be shaking. When it does, something is perceived to be wrong. That, of course, ignores the fact that the earth has been shaking ever since its inception, and such a process, regardless of how inconvenient it may be for us at times, will continue to occur long after we as a species are no longer around. As noted by both Tang histories, earthquakes tended to disrupt the agricultural system that sustained human society. Earthquakes *needed* to be understood as problems.

Consequently, periods of stillness were considered normal as result, and amidst the destruction recorded in the histories we see examples of what that normalcy entailed. Rivers, for example, were to flow regularly and without any obstruction while mountains were too remain strong and solid. Such references in the texts may at first seem trivial, but considering the massive irrigation projects that characterized Chinese agriculture, we can appreciate the need for environmental stability. As did the need of the state to keep its lands properly cultivated and free from the white and yellow hair. In times of peace, farmers would be hard at work in their fields producing the wheat needed to sustain the empire. Cities and villages, too, would be populated as bastions of civilization clearly set apart from the surrounding wilderness through sturdy and well-guarded walls. Families themselves would be properly organized along traditional lineages, living as units within carefully constructed homes. The patterns celebrated by the Tang were just as evident

within Chang'an's walls, where the long straight streets met at clean right angles. A design marked by consistency and readability was essential to social harmony.

By depicting earthquakes as sudden intrusions into the normal course of human behavior, Chinese writers effectively characterized them as a form of wildness. While certainly distinct from the physical tracts of wilderness that checked the expansion of the imperial state, such as the malarial hinterlands of the south, earthquakes nevertheless occupied a special place within the thoughts of Chinese society. As a psychic wilderness, earthquakes were used as events apart, a means of demarcating the boundaries of human control over their environment. As such, our reading of earthquakes, and natural disaster more broadly, reflects many of the tensions surrounding our modern conceptualizations of untouched wilderness, insofar as it is ultimately a flawed projection of certain human desires. Certainly this conceptualization, explored in depth by the American historian William Cronon, is complicated to an extent by the notion of cosmic-resonance—no place was ever truly free from human influence—but the basic point holds true for Chinese society, specifically the fact that societies project upon the natural world cultural ideas that then affirm a set of human beliefs. [15] As signs of disorder, untamed earthquakes represented the need for social stability: they were the Other through which the Chinese could gauge their actions. And just as the physical wilderness be tamed through proper agricultural practices, so too could earthquakes be tamed through virtue.

Understanding earthquakes simultaneously as wilderness and as acts of Heaven, the Chinese state ultimately ignored its own culpability in the ensuing disaster, as it did not have to read its environment as an earthquake zone. While it may seem unfair to

[15] William Cronon, "The Trouble with Wilderness; or, Getting Back to the Wrong Nature" in *Uncommon Ground: Rethinking the Human Place in Nature*, ed. William Cronon (New York: W.W. Norton & Co., 1995), 69-90.

place blame on a civilization with limited understanding of geological processes and seismological activity, the linking of earthquakes to a person rather than a place served to distance these Chinese thinkers from their natural environment. More importantly, this way of thinking deemphasized the risk involved with living in such a seismically volatile region. Even with such a well-documented history of earthquake activity across the span of several centuries, inhabitants living along the Circum-Ordic Zone could live their lives without any particular anxiety. Whereas the dissonance between California and Missouris's expectation of earthquakes is based largely on geography, that between the Zhou, for example, and the Tang was more situational. Those living under King Yu suffered from earthquakes only because he and his kin behaved improperly; though we live in the same place, we need not worry because our rulers will act with virtue.

While a great degree of culpability befell the human actors in this understanding, it was ultimately for the wrong reason. Ironically, the greatest harm came not because they were acting inappropriately, but because they were fulfilling certain expectations of what it meant to be civilized within the Chinese tradition: settling fertile areas for farming, building walls to protect themselves from the untamed wilderness, and housing themselves within private domiciles. When disaster struck, though, a commitment to this way of life could be fatal as evidenced by the thousands of hapless victims crushed to death in a sudden, horrible moment. In a perversion of Worster's dialectic of ecology and economy, we have here the convergence of environment and human history from whence disaster is born. But in order for this tradition to continue—the gains of such a system ultimately outweighed the occasional loss of human life—fault needed to fall elsewhere, and thus the contingencies were reshaped to perpetuate the dominant socio-political

ideology. In short, the tragedy itself remained unchanged, but the reasons why it occurred were adjusted to fit and further affirm the dominant worldview of the Chinese state.

The acts of Heaven filling the dynastic histories share a great deal with the so-called acts of God western societies use to explain their own encounters with sudden occurrences of natural disaster. Though this conceptualization evolved over time to refer less to divine retribution, Christian communities in Europe and the Americas viewed—and some modern-day holdouts maintain—earthquakes, hurricanes, and the like as signs that their society had somehow strayed from a proper moral path.[16] Following the powerful earthquake and typhoon that struck Lima, Peru in 1746, for example, officials sought to address the social ills they believe prompted their God to deliver such a severe judgment upon their city. What followed was a protracted, though not entirely successful, campaign to bring under control a number of supposedly dissident groups that failed to conform to proscribed norms, particularly the black and indigenous populations, esoteric religious sects, and seemingly wayward women. The earthquake offered religious and political officials to reestablish their control and bring stability back to an unruly state. Granted we do not see such extreme response during the Tang, but the similarities—the

[16] Unsurprisingly, early Christian missionaries in China expressed similar views. The Portuguese missionary Gaspar de Cruz toured Xi'an shortly after the 1556 earthquake and described it as a judgment from God for Chinese society's sinful behavior: "This people hath besides the ignorances above said, a filthy abomination, which is that they are so given to the accursed sin of unnatural vice, which is in no wise reproved among them. Notwithstanding, I preaching sometimes, as well in public as privately against this vice, they were glad to hear me, saying that I had great reason in what I said, but not that they had never had any who told them that is was a sin, nor an evil thing done. It seemeth that because this sin is common among them, God was willing to send them a grievous punishment in some regions, the which was public in all of China." Boxer, Charles Ralph, ed. *South China in the Sixteenth Century, Being the Narratives of Galeote Pereira, Fr. Gaspar de Cruz, O.P. [and] Fr. Martín de Rada, O.E.S.A. (1550-1575)* (Hakluyt Society: Nendeln/ Liechtenstein, 1967), 223-227.

redressing of seemingly wayward behavior, fears of disorder, and state response—hint at larger patterns of shared human behavior in response to widespread catastrophe.[17]

Ted Steinberg's study of the natural disaster in the United States over the course of the twentieth century likewise reveals certain patterns of human behavior we see in China during the Tang. First is his deconstruction of the naturalness of natural disaster, arguing instead that while they may be set in motion by natural causes, the ensuing destruction and loss is ultimately owes much responsibility to decisions made by human society. Disaster typically results from some some*one* rather than some*thing*. Blame need not necessarily imply malicious intent, however, for Steinberg is simply calling for a closer examination of how humans interact with their environment and the consequences this then has on their future.[18] In the case of the Chinese, we saw how early inhabitants were drawn to the rich loess of the Guanzhong Plain, and for good reason. With the subsequent development of a grand agricultural-based society, a choice was made, if subconsciously, to commit to this particular place, regardless of the inherent risk involved. And they were by no means unique in this regard, for people today continue to inhabitant areas known for their susceptibility to dangerous natural phenomena.

The second important point is Steinberg's argument that efforts to rebuild following disaster were first and foremost a means of restoring society to a *status quo* characterized by certain power relations.[19] This fact held true for China even during the early periods of empire as evidenced by Zhang Heng's seismograph, which the emperor

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[17] Charles Walker, *Shaky Colonialism: The 1746 Earthquake-Tsunami in Lima, Peru, and Its Long Aftermath* (Durham: Duke University Press, 2008).

[18] Ted Steinberg, *Acts of God: The Unnatural History of Natural Disaster in America* (Oxford: Oxford University Press, 2006), xx-xxi.

[19] Ibid.

used to expedite the delivery of aid and to make known his presence, if only symbolically, within the afflicted areas. Gaozong's efforts in Jinzhou likewise reflect this point. More generally, the explicit connection between earthquakes and the emperor's character affirmed his relationship with Heaven and thus his place on the throne. Though certainly problematic at times, the earth responded as it did only because this particular individual was indeed the Son of Heaven. Moreover, his response to such calamity, either through practical means or the rectification of his behavior, further solidified his place at the top of society. Looking more broadly, earthquakes and other Heaven portents legitimized certain dynasties within the long historical narrative, cementing a proper link between seemingly disparate ruling houses into a coherent line of succession. A proper understanding of earthquakes could thus prove stabilizing in both the short and long term.

Accepting the fact that earthquakes operate outside the influence of human action, our reading of them as metaphors nevertheless reveals their impact on Chinese culture and vice versa. Like all societies the world over, the Chinese were linked to the natural world politically, economically, and culturally. While this held true even in periods of stillness, unexpected disaster propelled this relationship into the forefront of the historical record. In a distressing inversion of the normal state of affairs, in which humans acted to reshape the natural world, earthquakes, if only briefly, reshaped human society. Its walls were no match for this relentless force of wilderness. Understanding disaster properly requires an understanding of the society in which it occurs, for "disaster" itself is a reading of the natural world produced by culture. By definition, disaster is imbued with certain connotations lamenting the loss of human life and the loss of human structures. Geologically speaking there are of course no emotions. A fault slips. Weight is displaced.

The ground shakes. Whether or not humans occupy the crust above is inconsequential, their behavior even less so. There is no place for moralizing in the field of seismology.

Such is the approach of *The Catalogue of Chinese Earthquakes (1831BC – 1969 AD)*, whose careful charting of seismic activity over the course of nearly four thousand years is essentially sanitized of any human presence: Gone is the rich narrative that incorporates the natural world into a grand historical narrative examining the rise and fall of Chinese dynasties. Gone is the cultural continuity that linked curious philosophers and ministers to their predecessors who grappled with the same issues centuries earlier. Gone are the faint glimpses into the lives of those jolted awake in the dead of night by deep, thunderous bellow. And gone are the fearful lamentations of an emperor witnessing a sign of Heaven's disfavor. Such tremors cannot be measured on an instrument—however sensitive—and highlight the necessity of the human perspective within the study of the natural world. Indeed, the catalogue's use of the dynastic records recognizes their value as tools of scientific study, but as this study has shown, earthquakes cannot be plucked from the historical context and still be fully appreciated as the disasters they were.

So, how then to read earthquakes? Based on the historical records, we can first read these earthquake accounts as a fairly accurate record of an ongoing geological process that has characterized central China ever since the Indian subcontinent collided into Eurasia roughly ten million years ago. These earthquakes also provide us with a brief three hundred year snapshot of the ongoing relationship between Chinese civilization and its natural environment that began with early human settlement and the development of agriculture within the Guanzhong Plain. While the eventual success of the Chinese state fuels a backwards reading of this place as the best of all possible worlds, a closer look

reveals its geological shortcomings. Plagued by regular seismic activity, the Everlasting Peace fell far short of the idealism embedded within its name. As such, we read these earthquakes as literary and historical constructions reflecting an attempt to cope with an unpredictable environment. Drawing on past accounts, Chinese thinkers sought to make sense of these events via a pattern of cause and effect based on proper virtuous behavior. Transmitting these ideals through the historical record, state historians provided a guide through which future rulers could bring peace to the Central Kingdom by diligently cultivating their own gardens.

CHAPTER V

CONCLUSION

The founding of the Song Dynasty in 960 signaled an important shift in Chinese history as the fledging imperial state, upon the pacification of its neighbors, established its capital further east in the city of Kaifeng. China was no longer ruled from the Guanzhong Plain. By the time of the An Lushan rebellion, though, China was already experiencing a significant population shift as elite families abandoned the chaotic north for the relative safety of the area south of the Yangzi River. The subsequent introduction of high-yield rice strands from Vietnam and other agricultural techniques during the early years of the Song further facilitated this growth. A political shift southward came roughly a century and a half later with the court's unceremonious retreat to Hangzhou following the invasion of the Jurchens in 1127. From that point on until the move to Beijing under the Ming (1368-1644), central China essentially belonged to the steppe peoples. Civilized society—that is to say, *Han* society—contented itself in the south. Before long, the newly-renamed Xi'an, the once glorious center of the empire in the cradle of Chinese civilization, was nothing more than a decaying city in a backwater western province, a mere relic of a time come and gone.

Ultimately, humans rather than earthquakes prompted people to move. In doing so, the Chinese encountered and adapted to a variety of new landscapes, each with its own set of ecological benefits and hazards: Communities built along the southeastern coast benefited from bounty of the sea, but were forced to contend with the danger of

typhoons. People living further inland were able to manipulate the land's many rivers to irrigate their crops, but did so with the threat of sudden devastating floods looming over their heads. And for those who remained in the former capital, whether by necessity or choice to continue tilling the loess soil, they did so knowing the earth could again start shaking at any moment, just as it had done years before. No one place was entirely free from hazard, but understanding the reasons why people decided to remain in areas they knew to be dangerous reveals the manner in which human society weighs the advantages of any one environment to the risks. Accepting the limits of social mobility at this time, most of these decisions came down to a matter of economics: Did the possibility of an earthquake outweigh the ability to sustain oneself by farming? The same question could be retooled, of course, to apply to cases of human-induced disaster: Did the dangers of the An Lushan rebellion outweigh one's history and interests in their beleaguered home, or was it best to take their chances down south?

The point here is to show that humans are not simply hapless victims whose fates are determined by a capricious earth, but rather individuals who are capable of shaping their lives. The Chinese commitment to agriculture is perhaps the greatest of these decisions, for it required a society to commit itself to certain place, a place in their case located in an earthquake zone. The cities that arose from this accumulation of wealth and the social structure designed to sustain its growth ultimately proved disastrous when the terrestrial foundations of this landed empire started shaking. But not all humans living within this area suffered the same. Consider the steppe nomads. While documentation is scarce, a simple comparison between lifestyles reveals how these neighboring horsemen were less susceptible to the dangers of major quakes: Living in modest tents on the flat,

grassy steppe, there was little to no danger of being crushed to death by structural debris. If rocks were to block a river causing an area to flood, they could simply relocate themselves to dryer pastures. And by sustaining themselves primarily on the milk and meat of their livestock, there was no agricultural season to be interrupted. Mobility in this case mitigated hazard, demonstrating once more that an earthquake did not necessarily promise disaster.

Appreciating the manner in which peoples' relationship with their environment put them at risk serves to better situate the human actors as the focus of natural disaster studies. While earthquakes are certainly interesting in their own right, as a historian I am primarily interested in how they affected human society. Indeed, this study represents an attempt to more fully understand a set of human conceptualizations of earthquakes rather than the quakes themselves. Just as the historical figures depicted in the dynastic records are mere representations of actual individuals distorted through the lenses of time and ideology, so too were the earthquakes distortions of actual events that needed to fit within a human-centered narrative. Reading these natural disasters as metaphors then provides us with the framework necessary for grappling with their complicated place within the historiographical tradition. In this sense, we see how Chinese thinkers used earthquakes as a rhetorical tool to further an ideological agenda linking intermittent periods of Chinese civilization into a unified whole. China's seismic continuity helped stabilize history, shaky as it was.

In her study on the development of modern European and American seismology over the nineteen and twentieth centuries, Deborah Coen emphasizes the importance of translation in the decimation of earthquake knowledge across linguistic and scientific

divides, an issue we see very much at play within the Tang histories.[1] Whereas translation typically refers to the conversion of words from one language to another—and certainly that applies here as I have attempted to translate these accounts from Classical Chinese into modern English—it can be also used to describe the process through which humans rendered the felt effects of natural processes into human speech. Recording these events within the historical record then has the result of codifying—and further distorting—this linguistic understanding for future generations: earthquakes, *dizhen*, means unsettling conditions, once and for all. Thus we can easily trace earthquake theories and language back over six hundred years. Monopolizing the writing of history, the court essentially controlled how its subjects and predecessors viewed the workings of the natural world for centuries; and because their authority depended so heavily on the behavior of nature, it is no surprise the emperor sought to maintain his power over this language. To this extent, earthquakes did not simply happen—they were made.

Examining the manner in which the human perspective shaped earthquakes also allows us to examine the way in which culture shapes scientific thought. One of the central arguments of this study is that the earthquakes recorded in the histories—even as potent metaphors and didactic rhetoric—most likely occurred, a conclusion that rests heavily on modern scientific understandings of China's geology. While the contrast between these two readings may imply a contest between science and culture, such a reading would be disingenuous: science, even as a discipline seeking objective truth, is itself a construct of cultural belief. This fact helps us appreciate more fully those earlier efforts to explain earthquake causation put forth by Poyang Fu and, later, Li Jiang. Their

[1] Deborah R. Coen, *The Earthquake Observers: Disaster Science From Lisbon to Richter* (Chicago: University of Chicago Press, 2012).

understanding of the world as being governed by the ubiquitous flow of *qi*, along with the movement of *yin* and *yang*, directly influenced their theories, just as our knowledge of tectonic plates shapes ours. Does this mean earlier theories are just as credible as our own? No, but it does show how attempts to see patterns and forge explanations reflect the cultures from which they emerge, as do these cultural beliefs ultimately drive the ways in which societies subsequently rebuild.[2]

In fact, efforts to more fully consider the place of culture and human observation is a major trend characterizing recent developments in seismology. With the debut of the Richter scale in 1935, scientists essentially abandoned an earlier intellectual tradition in which earthquake study depended heavily on accounts described by the afflicted region's inhabitants. Previously, scientists culled together these so-called felt reports in order to determine a quake's intensity and geographical scope. In most cases, the people writing were not experts themselves, but rather curious laypersons excited to be involved with a larger communal program of scientific exploration. But with the professionalization of the seismology field, scientists questioned the veracity of such reports, criticizing them as unreliable scraps tainted by folk knowledge and local superstition. Humans, unlike finely calibrated instruments, they contended, were subject to error and thus unusable for their studies. In more recent years, seismologists have revisited this earlier methodology, recognizing the need to pay more attention to place and human history when examining the true significance of earthquake activity and its disastrous potential.

While the focus of treatises on natural disaster in the dynastic histories is disproportionately focused on the imperial capital, they nevertheless provide us with a

[2] Mark Carey, *In the Shadows of Melting Glaciers: Climate Change and Andean Society* (Oxford: Oxford University Press, 2010). Much of this paragraph is the result of a well-timed rereading of Carey's study.

look into local conditions following an earthquake. The place of these sources within modern seismology is not unappreciated, as evidenced by their use by Chinese scientists when compiling *The Catalogue of Chinese Earthquakes, (1831BC-1969AD)* in 1969. But again, this volume of places and dates largely ignores the human perspective that more recent researchers, historians included, hope to reclaim. Comparing the dynastic histories to felt reports, however, proves a more fruitful exercise, revealing a number of striking commonalities that overcome an immense spatial and temporal divide. Parallels between the two source groups are not perfect—the dynastic histories, as we know, were compiled long after the fact, while felt reports were sometimes penned before the earthquake came to end—but focusing briefly on their similarities reveals certain details that are of little concern to trained seismologists interested only in the geologic world.[3]

The issue of noise is one that is of particular interest given the dynastic records' claims that earthquakes rolled in with a sudden crashing sound—indeed, much of the metaphorical power of the quakes derived from their linguistic associations with thunder and lightning. Accounts written following a period of earthquake activity that struck New Madrid, Missouri, between 1811 and 1812—another case of intraplate seismicity—noted similar noises, with witnesses claiming to have heard thunderous bellows emanating from deep within the earth. While early seismologists were at first suspicious of such claims, arguing that these individuals simply misheard or misremembered the events, recent studies have revisited these reports with more receptive minds. Certainly, the similarities of these accounts to the Tang histories further complicates our reading of the sources, showing that such details were most likely not exaggerations but rather instances of acute reporting. The same fact holds true for other details: the crumbling of mountains and

[3] Coen, 4-5.

drying of rivers may at first read like metaphorical indulgences, and yet comparisons with other earthquake events demonstrate the phenomena's ability to induce debris avalanches and change the course of major rivers. The Missouri quakes, for example, were powerful enough to temporarily reverse the flow of portions of the Mississippi River, draining former wetlands of their water.[4]

Looking at how societies read, observed, and interpreted earthquakes returns us to an understanding of natural disaster as a human construct. Labeling the disruptive intrusion of the natural world into the normal course of human affairs as a "disaster" fundamentally denotes it as something *wrong* and irrevocably disruptive. Consequently, there must be a *correct* way in which the relationship should carry on—be amended, in other words, in a way in which nature can be appeased. As previously discussed, the normal, and correct, relationship between humans and their environment was one in which the former operated as the active agents of change: humans were to till the land, damn the rivers, and tame the wilderness. Right and wrong, that is morality, are not natural concepts, but additional reflections of human culture. Therefore, reading the earthquakes through an understanding of "moral seismology" is not simply a modern projection but rather the recognition of the underlying basis for disaster. Indeed, the Chinese construction of nature as a potentially vindictive force of Heaven depended heavily on a moralizing foundation. By normalizing certain patterns of behavior, this rhetoric served as a subtle (and at times not so subtle) means by which the Chinese state controlled the behavior of its subjects. By implications of the cosmic-resonance theory, not acting in accordance with expectation could have very real, very disastrous consequences.

[4] Valencius, 195-6.

The moral reading of earthquakes and other natural disaster offers a glimpse into the way Chinese society viewed itself as both deeply connected to the natural world and as something distanced from nature. On one hand, interpreting earthquakes as a response by Heaven recognized the fact that human actions affected the natural world; moreover, perceiving the entirely of existence as being linked through an ubiquitous web of *qi* essence further tethered humans to their environment. That is not to imply, though, that the Chinese, as some romantic thinkers are inclined to believe, considered themselves part of nature, for their depictions of earthquakes reveal a sharp distinction made between civilization, which included created landscapes and shaped natural settings, and wilderness. The natural world beyond the walls was intimidating. It was also something unknown, a foil that Chinese thinkers used to contrast and thus affirm their beliefs. In addition to walls of bricks, proper behavior and the cultivation of virtue were seen as another set of protections to keep untamed nature at bay.

One of the primary debates among environmental historians is whether or not our academic/scientific studies should moralize: Looking at how human beings have reshaped the world around them, oftentimes for the worse, leaves us wondering how we may prevent a continuation of such harmful practices. The desire to instill a lesson brings us close to the Chinese historians of the imperial court who engaged their craft knowing it would serve as a mirror into which their contemporaries and future generations alike would gaze. In a study interested with the problems involved with the moralizing of natural disaster, such concerns are all the more pressing and perhaps bring about the risk of making the same flawed judgments as the historical subjects.

While working on this project, the events of Hurricane Katrina weighed heavily in my mind. Having lived most my life along the Florida coast, I am no stranger to the power of hurricanes and to some extent simply grew accustomed to the occasional bout of heavy rains and flash flooding. The payoff for living in the Sunshine State is clear weather and year-round access to the beach in exchange for an occasional storm. Katrina, though, coupled with a major urban center located precariously below sea level, reminded us of how truly devastating hurricanes could be. While the storm itself simply resulted from vapor produced by warm surface water in the Atlantic Ocean, many people sought a more profound explanation. Like the early Chinese, they linked the disaster to human causes: God, they argued, was mad because he had been marginalized from the lives of the people. Many a televangelist claimed the Almighty, in true Old Testament form, punished the United States for its tolerance of abortion, homosexuality, and promiscuity (among other indiscretions)—called for its citizens to repent, lest He strike our nation from the face of earth. Amazingly, very few of these speakers concerned themselves with the ways in which humans were *actually* culpable, caring little about the lack of preparedness, environmental racism, and economic culture that left so many people dead and abandoned.[5]

More fundamentally, natural disaster requires us to fully recognize the nature of our homes. Environments are not static entities, nor are they necessarily passive, waiting patiently for the human society to arrive and bring it under control. We may reshape them so as to make them more hospitable and profitable to human needs, but we should never overlook the natural processes that continue to shape the earth over time. We should also be more attentive to how human-induced changes in the land can potentially exacerbate

[5] Steinberg, 197-211.

the extent of the damage. The building of cities in an active earthquake zone, for example, had the unintended effect of placing people in danger, as did the building of a city below sea level in a swamp that once helped control flooding. The development of new methods of hydraulic resource extraction further highlights the manner in which the behavior of human society can indeed cause disaster. While studies are still ongoing, seismologists believe that the injection of pressurized water into underground wells can be linked to a recent increase in earthquake activity in states such as Oklahoma, Ohio, and North Dakota. But even after a year of nearly *two hundred* quakes, nary a fracking executive has come forward to decry his lack of virtue—or scruples, as the case may be—before Heaven.[6]

The relationship between people, place, and nature in the creation of disaster returns us to the busy streets of Xi'an. As the ever-expanding sea of skyscrapers continue to engulf the Small Wild Goose Pagoda, one wonders whether the lesson of that jagged scar will be heeded as the city continues on its current course of economic growth and urban development. Already exceeding seven million, the city's population will only climb as more and more people leave their rural homes in hopes of catching some of the amenities that hold the promises of ease and comfort. The shops and restaurants lining its central thoroughfare, Chang'an Road, are continually reshuffled with the construction of multi-storied luxury hotels and shopping malls whose questionable splendor dwarfs the modest pagoda. To accommodate this growth, city officials only two years ago debuted the first line of the Xi'an metro system. While its inhabitants celebrate these hallmarks of wealth and prestige, the concentration of lives in steel and concrete raises concerns of

[6] Seismological Society of America, "Wastewater disposal may trigger quakes at a greater distance than previously thought," Published May 1, 2014, http://www.eurekalert.org/pub_releases/2014-05/ssoa-wdm041814.php

how the city would fare if a quake like that which struck in 1556 were to occur again. How many residents are aware of Xi'an's seismic past when they visit the Small Wild Goose Pagoda and admire the glories of China's golden era? What lessons might we all take away when gazing into this chipped mirror of history?

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