Prologue

1048: The Opening of an Environmental Drama

The Sixth Day of the Sixth Month, "People Were Flushed Away Like Fish and Turtles"

On the sixth day of the sixth lunar month in the eighth year of the reign of Emperor Renzong 仁宗 (1010–1063), the "Festive Era" (July 19, 1048 of the Common Era), China's second largest river, the Yellow River 黄河, breached its northern bank at a site called Shanghu 商胡. From this location in modern northern Henan 河南 Province, the river tore apart over 700 meters of its banks. Its torrents burst through the rupture and surged northward into the Hebei 河北 Plain. Over the next few days, the river gouged the earth to open up a channel for a new "northern flow" and made its torturous way nearly 700 kilometers toward the vicinity of the present Tianjin 天津, where it eventually exited into the Bohai 渤海 Gulf. With this incident, the river's lower reaches turned counterclockwise by 30 degrees, bringing its river mouth northward by one latitude degree to 39° north. This drastic shift of the river terminated an eastern course that the river had taken between southern Hebei and northern Shandong 山東 for the previous millennium. For the first time since the second century BCE, the river crashed into the heart of the Hebei Plain, turning it into a delta where the river's lower reaches sought a path out to the ocean.

Caught completely unawares, people in Hebei were drowned or carried away by the water, "dispersing like fish" or "turning into food for fish and turtles," as some contemporary officials and poets described it.[1]

[1] Liu Chang, "Yonggu [Verses on antiquity]" (No. 8) and "Kuyu [Suffering the rain]," *GSJ*, 4: 6b, pp. 1095–1430 and 4: 12b, pp. 1095–1433.

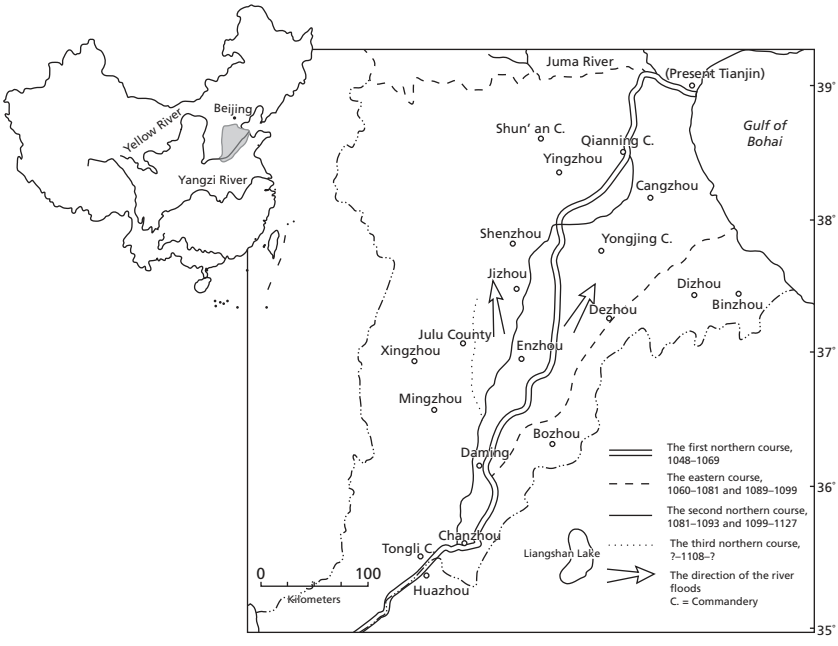

ILLUSTRATION 1. The Yellow River's Courses in Hebei: 1048–1128

Indeed, how could anyone have anticipated this violent arrival of the river? In the middle of the Northern Song Dynasty 北宋 (960–1127), Hebei, like other regions in the empire, had enjoyed a decades-long peace and a steady growth in terms of both population and economy. To Hebei people, their homeland had had no deep connection with the Yellow River for nearly a thousand years; their daily lives had nothing to do with the remote river. The river existed only in the classics and literature for those who read books or in legends and folklore that people passed on orally.

The sudden encounter between the river and the northern land brought an end to the peace and prosperity. The flood destroyed enormous numbers of buildings and villages and submerged field after field of crops. Its immediate attack, its aftermath, and the ensuing famine killed and displaced at least one million people, more than 20 percent of Hebei's entire population. Refugees were forced to leave their homes in search of a dry, safe place to live, and the most basic supplies. In a literary, somewhat exaggerated fashion, contemporaries of the eleventh century lamented that "In a distance over a thousand *li* 里 (lit. about 500 kilometers), the

roads are full of corpses of dead men."[2] "Eight or nine households out of ten have migrated out of Hebei."[3] This was the first time since 1005, when war ended and peace returned to Hebei, that this land suffered such a dramatic loss of population.

From the autumn of 1048 through 1049, the standing waters of the Yellow River ruined three seasons of crops. Continuous harvest failures drove starving people to horrifying extremes. As statesman Sima Guang 司馬光 (1019–1086) later recalled, "fathers and sons ate each other."[4] The Song's imperial court ordered its regional and local governments to open up granaries to relieve Hebei's starvation. Yet, government officials were not trained for this kind of emergency. Unsure how to cope with the large numbers of refugees, they gathered the refugees into small urban slums, where they set up stoves to cook and feed the refugees collectively. As large crowds congregated, hardship, malnourishment, and poor hygiene led to the outbreak of infectious diseases. Death tolls mounted even higher. As the prefect of Qingzhou 青州 Fu Bi 富弼 (1004–1083) saw it, the government measures to supply relief were "in the name of saving people, but in fact killed them."[5]

Soon, civilian granaries were exhausted by the refugees. The government began to draft male refugees into armies and provide them with military rations, as a way to reduce the refugee population.[6] But even military granaries were overburdened and soon became short on supplies. Some men became outlaws, raiding towns and cities to obtain food. Those who were more vulnerable or physically weak, like children, the elderly, and women, turned to begging on street, sometimes selling themselves in exchange for food. Running out of resources as well as relief strategies, the Song government had to permit such trades of human labor and encouraged wealthy, powerful families to "adopt" refugees as servants.[7]

Hebei's disasters and sufferings crossed regional boundaries. The effects rippled south, dragging the entire eastern part of north China into hardship. From 1048 to the early 1050s, the central government

[2] Fu Bi, "Dingzhou Yuegutang xu [Prose on the Hall of Yuegu in Dingzhou]," *Dingzhou zhi*, 21: 26a–b, pp. 1823–1824.
[3] Ouyang Xiu, "Lun xiuhe diyizhuang [The first memorial on repairing the Yellow River]," *OYXQJ*, 108: 5b–7b.
[4] *XCB*, 3: 125.
[5] *XCB*, 166: 3985.
[6] *XCB*, 164: 3957 and 166: 3985.
[7] *XCB*, 165: 3974–3975.

continued to ship bulk grain from southern regions, such as the Huai River 淮河 valley and the lower Yangtze River 長江 valley.[8] However useful this interregional transport of goods was in terms of alleviating the suffering in the north, its efficacy was significantly weakened when the lower Yangtze and Huai valleys experienced drought and harvest failures in the early 1050s. Farmers there suffered food shortages, becoming less capable of meeting the central government's demands and contributing to the welfare of Hebei.[9] As various environmental and socio-economic problems mushroomed across the empire, the imperial state of the Song sank into a fiscal and governing crisis.

"The Yellow River's floods have always done damage since ancient times, but never to an extent like this!" cried Jia Changchao 賈昌朝 (997–1065), the former Grand Councilor to the emperor and now the prefect of Daming 大名, the most significant and prosperous district in southern Hebei whose territory was now penetrated by the river.[10] Jia was right. Indeed, the river had rarely caused flooding disasters of this intensity and magnitude in its previous history – none since the first century CE. What Jia did not know, however, is that the worst was yet to come. What happened in the summer of 1048 was not a single incident, but rather a harbinger of the difficult time ahead.

An Environmental Drama

The Yellow River's shift into the Hebei Plain was a clash between two marginally connected environmental entities and their consequential convergence into a giant Yellow River–Hebei environmental complex. This violent encounter inaugurated an environmental drama that lasted over the next eighty years, during which the river occupied the land and flooded nearly every other year. With multiple episodes of flooding, the river's 700-kilometer-long meandering flow created three other courses that stretched in different directions inside Hebei. More and more areas were attacked by the torrents or submerged in the river's stagnant water. Crops were washed away or rotted in the fields. As agriculture continued to decline, various kinds of hardship continued to escalate. Some hungry refugees turned violent; raids and riots exploded in both rural and urban

[8] *XCB*, 165: 3968. Also Han Qi, "The epitaph of Han Gongyan," *QSW*, 856: 73.
[9] *XCB*, 171: 4119. Ouyang Xiu, "Zailun shuizai zhuang [The second discussion on the flood]," *QSW*, 687: 244.
[10] *XCB*, 165: 3976–3978.

areas. To survive, the remaining population resorted to a variety of local solutions. Some destroyed government dykes or built private dykes to defend themselves from the waters; some gave up farming and adapted to other kinds of livelihood, including fishing and salt production. At the turn of the twelfth century, Hebei was a desolate land stricken with suffering people, turbulent waters, wild weeds, and numerous patches of yellow sand.

The environmental drama came to an end in 1128, as the Yellow River shifted out Hebei, turning clockwise by 90 degrees to head toward south China. After that time, the river never again entered Hebei. Despite its departure, however, the dramatic episodes between 1048 and 1128 caused tremendous environmental trauma that continued to haunt the land and water of Hebei throughout the second millennium. Consequences of the river's eighty-year occupation of Hebei – a disordered water system, the deterioration of soil due to salinization and sandification, and the exhaustion of forests and other vegetative materials – have continued to shape the region's environmental conditions and socio-economic challenges up to today.

This environmental entwinement of the Yellow River and the Hebei Plain and the resulting socio-economic problems were not merely regional issues. They trapped the imperial state of the Northern Song in often unsuccessful policies of environmental management and exhausted the state politically, financially, and mentally. With an eye to improving its geopolitical and environmental circumstances, the state employed political rationales and technological means to push the river to shift northward in 1048. However, facing the overwhelming Yellow River–Hebei environmental complex after 1048, the state became increasingly anxious about the prospect that the devastation of Hebei, the empire's key frontier region, would elicit an invasion by its nomadic enemy in the north. Equally disconcerting was that the Yellow River continued to undermine the state's domestic environmental, political, and social stability. Troubled by both external and internal concerns, the state formed contradicting hydraulic policies and practices, which competed for resources and political capital, and were thereby mutually defeating. These concerns also divided the ruling members of the state. Emperors, their imperial courts and senior statesmen, and various levels of institutions in Hebei split into multiple politico-hydraulic factions. The lack of consensus in state policies and of persistence in executing the policies led the government to switch frequently between polarized approaches in handling the environmental challenges.

Paradoxically, the more the state engaged in regulating the Yellow River–Hebei environmental complex, the less return it gained, and the deeper it sank into a costly dilemma. The worsening environmental conditions brought down the social and economic conditions in north China. Hence, along with managing the hydraulic works, the state had to sustain its military forces in Hebei to safeguard this region's strategic significance; it also had to rescue Hebei's civilian society and economy from a complete collapse. It had no choice but to endlessly funnel a significant portion of state finances into Hebei, mobilize the transportation of enormous resources from south China to Hebei, subject itself to speculative activities and exploitation by private merchants, draft large numbers of laborers from all over north China to fulfill the military and hydraulic services in Hebei, and even fell trees and bushes throughout north China in order to supply construction materials for Hebei's hydraulic works.

The imperial state and its empire were trapped in a "hydraulic mode of consumption" – a key concept to be developed throughout the second half of the book – that extracted political capital, labor, and other resources and channeled them toward the bottomless black hole of the Yellow River–Hebei environmental complex. During this interregional exchange and distribution of resources, the disaster-ridden land of Hebei failed to serve the empire as a self-sufficient, stable, and obedient periphery that the state endeavored to make it. Instead, it became a *de facto* center of the empire, the "root of All-Under-Heaven (*tianxia zhi genben* 天下之根本)," where resources flowed in to be consumed, rather than the reverse. The state's decades-long efforts to achieve imperial centralization by militarizing Hebei and marginalizing it socio-economically as well as environmentally only led to an inverse core-periphery structure in terms of wealth distribution and resource consumption. Seen from an environmental perspective, the Yellow River–Hebei complex established its own environmental regime: it wielded power to intervene in human politics, affect human lives, and organize wealth that the human society produced. Along the way, it incorporated the Song state into a vast environmental world, demanded its services, and shaped many ways in which the state ran its political, financial, and environmental life.

This book documents this eighty-year environmental drama. Using the 1048 flooding catastrophe as an anchor, the book investigates how three major environmental entities – the Yellow River, the Hebei Plain (the land and its people), and the Northern Song state – had developed a deeply entangled history over a span of centuries and eventually created a unique, delta-like physical landscape in north China in 1048. There, these

historical actors continued to interact with each other and produce a variety of environmental, political, and socio-economic tensions between 1048 and 1128. Some of the historical implications of this environmental drama even lasted through the second millennium. This book investigates but does not dwell on various dialectical relationships, such as how the state wrestled with a region and the physical environment or how a regional population negotiated with environmental disasters. Instead, it explores complex relationships in which, for instance, the state's wrestling with a region was complicated or destabilized by its attempts to tame the river and by the river's unpredictable reactions, or how the negotiation between a regional society and environmental disasters were not only mediated, appropriated, and destabilized by the imperial state's changing policies but also affected the execution and results of such policies. In this sense, the book explores the constantly evolving, open-ending "trialectic" complexity among the river, the plain, the state, and other small-scale, subordinate entities.[11] It demonstrates how a multiplicity of actors like water, silt, trees, earth, different state institutions, communities, and individuals interacted, through supplying possibilities or asserting constraints to each other, to make a certain history happen.[12] The history told in this book is simultaneously an environmental history of politics and a human

[11] The concept "trialectics" originates from studies on space and spatiality. Marxist philosopher and sociologist Henri Lefebvre critiqued binarism-rooted dialectic thinking by conceptualizing space and spatiality as the complexity of three types of space (perceived, conceived, and lived). Postmodernist geographer Edward W. Soja (1996: 60–82) developed the concept of trialectics to highlight the instability and blurred boundaries of these spaces and conceptualize a "Thirdspace" that not only encompasses all spaces but also is "radically open to additional otherness, to a continuing expansion of spatial knowledge." Although Lefebvre and Soja elaborated the concept specifically to understand space and spatiality, trialectic thinking carries broad theoretical implications. It challenges conventional binary epistemologies (e.g., reality and representation, natural and cultural, subject and object); it destabilizes dialectical modes of understanding of any relationship or historical process as a predictable, orderly progression toward a teleological synthesis. "Thirding" pays attention to otherness to capture the uncertainty, destruction, and complexity in a relationship or process. Not focusing on its "logico-epistemological" aspect of the concept as Lefebvre did but attending to the ontological trialectic as Soja theorized (Soja, 1996: 62 and 70), I use the concept to denote simultaneous material existence, continuous reciprocations, and various interactions among a multitude of environmental entities in an open-ending process that makes and remakes a flourishing, unruly, and unpredictable environmental world.

[12] As Soja (1996: 61) insightfully maintained, in the trialectic, "The 'third' term – and Thirdspace as a concept – is not satisfied in and of itself. The critique is not meant to stop at three, to construct a holy trinity, but to build further, to move on, to continuously expand the production of knowledge beyond what is known."

society, and a political, social, and economic history of various environmental entities in a chaotic environmental world.

The book asks two questions. First, how had these environmental entities evolved over a long time to encounter each other and how had their interactions increased over several centuries to eventually lead to the outbreak of the environmental drama? This question points to the long-term pre-history of the 1048 event. Second, how were these actors affected by the 1048 event and how did they respond to the continuous environmental changes, as they vied with each other to occupy physical space and acquire resources? This question points to both the short-term and the long-term implications of the 1048 event.

Part I of the book, Chapters 1–4, answers the first question. Chapter 1 begins with an introduction to the Yellow River's hydrological characteristics and its historical movements within the context of millennia-long environmental changes across north China. Adjacent to the Yellow River, the geographical entity of the Hebei Plain had enjoyed economic success and military strength over many centuries. Its people had constantly pursued political autonomy and challenged the central rule of imperial states on the other side of the Yellow River. Chapter 2 presents the imperial state of the Northern Song, the newcomer to history in 960. The state's desire to consolidate into a centralized empire led to a multi-dimensional project that, in political, military, environmental, and economic terms, appropriated Hebei into a stable, obedient periphery of the empire. These state building efforts, however, faced a series of crises in the 1040s. As Chapter 3 shows, military, financial, and environmental problems continued to mount both across the empire and inside Hebei right before the Yellow River shifted its course to the north in 1048. Chapter 4 suggests that, along with peripheralizing Hebei, the state pursued Yellow River hydraulics simultaneously. Its perceptions of critical geopolitical and environmental conditions in north China led to the formation of a particular kind of politico-hydraulic discourse and policies, which designated Hebei as the land to bear the river's violent torrents. Guided by such discourse, state-sponsored hydraulic practices had over several decades manipulated the river's hydrological conditions and forced the river to turn northward. The shift of the river's course and the creation of a river's delta inside Hebei in 1048 was a product of the state's politico-hydraulic enterprise.

Part II of the book, Chapters 5–8, offers answers to the second question formulated above: how various environmental entities responded to the 1048 environmental change and continued to evolve and interact

with each other. The river's crashing into Hebei drew these two environmental entities together to form a giant environmental complex. However, the creation of the Yellow River–Hebei environmental complex did not pacify the turbulent river; rather, it triggered even more environmental disasters. Chapter 5 suggests that continuous river disasters forced the state to invest enormous political, financial, material, and human resources in Hebei in order to sustain Hebei's strategic stability and the state's constantly failing hydraulic works. The struggles between humans and nature, intensified by political contestations within the government, continued to erode state power. Meanwhile, Hebei's human society suffered tremendously from both the disasters and the state's environmental management. As Chapter 6 examines, the decline of Hebei's population, in terms both of quantity and its socio-economic capacities, led both to tremendous human suffering and to the emergence of various local strategies and solutions, by which the impoverished Hebei people attempted to maintain a subsistence livelihood. The society's emphasis on subsistence went hand in hand with the overall decline of the agricultural economy. Chapter 7 shows that Hebei failed to join south China in a revolutionary growth of economy. Instead, it became a center of consumption that endlessly drew in supplies – mainly cheap goods like grain – from the state and south China. Hebei's utter dependence on the state and its consumption of external wealth dragged the imperial state down in a spiral that headed toward irremediable financial exhaustion. The final chapter turns to the earth and waters in Hebei. The eighty years of co-inhabitance and interactions between the Yellow River and Hebei's indigenous environmental entities had profound and long-term effects on this region. They continued to shape the region's environment and society in negative ways (such as soil deterioration and deforestation) throughout the second millennium.

Three Histories in Middle-Period China

This book contributes to our understanding of middle-period China by presenting three untold, deeply entwined histories.

The first is a regional history of Hebei. The book analyzes how this region was transformed from an environmentally, economically, and politically highly independent entity to a military-oriented, peripheral component of a centralized empire. This transformation culminated in the face of escalating environmental pressure, when Hebei was deliberately chosen by the imperial state to serve as a flooding ground of the

Yellow River and to become an environmental victim that would free its neighboring regions from disasters. In this era, which historians have lavishly praised for its demographic boom, cultural advancement, economic prosperity, and technological innovations – to the extent that many have even accepted the assumption that Song China entered an early modern age and headed toward a proto-capitalist economy[13] – it is Hebei who bore the tragic cost for such growth. Hebei not only lost its traditional political superiority, economic strength, and environmental solidity but was also thrown off the empire's fast-running economic train and was reduced to serving as the crossties and rails underneath it in order to promote the interests of the state and other regions. The environmental and socio-economic sacrifices made by Hebei contributed to the success stories of the empire and of other parts of China.

This regional history of Hebei addresses two issues only inadequately addressed in previous scholarship. The first is the issue of what north China was like after China's economic, social, and cultural centers moved southward into the Yangzi valley, a developmental trajectory that scholars advocating the Tang–Song transition theory have largely agreed on.[14] The second is the question of why Chinese scholarship of the past few decades has followed such trajectory to shift its attention to China's geographical south and to tell stories of growth associated with the rise of south China and the expansion of the empire.[15] Although contemporary

[13] Inspired by Naitō Torajirō and Miyazaki Ichisada's thesis on a multi-dimensional Tang–Song transition that facilitated China's entry into an early modern era, many scholarly works have emerged to study Song's exceptional economic development. Among English authors Mark Elvin (1973) has famously argued for the occurrence of a medieval economic revolution; Hill Gates (1996) believes the development of "petty capitalism" from the Song period. Joseph McDermott and Shiba Yoshinobu critique such optimistic views and offer a more moderate assessment of Song economy in Chaffee and Twitchett (2015: 321–436). Robert Hymes critiques the use of overgeneralized notions of "early modern" and "modern" to categorize the complex history in the Song period, in Chaffee and Twitchett (2015: 661–664).

[14] Ch'ao-ting Chi (1936) argued for the shift of key economic centers to south China. His thesis has inspired a great number of scholarly works that focus on the rise of south China. For a comprehensive survey of the Naitō thesis and the Tang–Song transition scholarship in Chinese, Japanese, and English, see Li (2010).

[15] In "a regional overview" of the Song's countryside, Golas (1980, 292) provides an impression of Hebei: "The Hebei Circuits located on the north China plain, had a high proportion of their land under cultivation (some of it in rice) and a dense population." The present book shows such impression is not based on studies of historical nuances and is incorrect.