Introduction

Water control in Chinese history is a long-studied topic, and scholars have applied various theories to understand the relationship between water and society in China.¹ One cannot start without mentioning Karl Wittfogel’s theoretical model in Oriental Despotism, according to which one or a few powerful persons at the top of the society were in complete control of hydraulic constructions at the local level.² He argued that states that were built on the basis of large waterworks, such as China and India, developed permanent despotic systems.³ Scholars have widely criticized the logic and ideological inclination of Wittfogel’s model of “hydraulic states.”⁴ Anthropologists Clifford Geertz and Stephen Lansing proposed contrasting models of local self-governance in water management. Geertz analyzed two models of water management: the field cultivation of wet rice paddies in Bali, where the irrigation system was largely managed by farmer’s associations called “sub- aks,” and the dry-weather water management in Morocco, where the emphasis was on private ownership.⁵ Lansing’s study also asserted the self-governing water management of Balinese local society. He showed that water management, especially the irrigation system in Bali, was organized by “networks of ‘water temples’ that constituted an institutional system separate from the state.”⁶

In the China studies field, while Wittfogel’s despotic interpretation...
has been discredited, much work takes a state-centered approach to analyze water control. Most scholars have focused on the Yellow River, Huai River, Hai River, and the Grand Canal, all of which flow through the longtime political center of China proper, the North China Plain, where drought and flood could affect the ruling legitimacy of imperial dynasties. But other scholars have studied locally managed hydraulic systems with vastly different topographical features and climate patterns, such as the water distribution practice among local villages in an arid environment of the Shan-Shaan region in historical and contemporary periods, the overlapping hydraulic drainage systems and ritual alliances in the Putian plain of Fujian Province in late imperial and modern times, and the land reclamation and water control in Hunan in pre-nineteenth-century China. While these scholars’ works provide insight into regional hydraulic management, the case of the Jianghan Plain, the alluvial plain at the confluence of the Yangzi and the Han Rivers, is perhaps unique in three aspects: its hydraulic infrastructure and social mechanism from below in dealing with excessive water, the overwhelming reliance on maintenance schemes from below, and the dialectics between state authority and actions from below. Most previous scholarship on the Jianghan Plain focuses on the official main dikes, such as the Wancheng dike (a major section on the Yangzi River), and the Han River long dikes, where the state intervened constantly in dike inspection, dike repairs, and dike funds. Analysis of the locally managed hydraulic infrastructure—the yuan, “the self-contained geographical units of the enclosures”—is still lacking. However, it is acknowledged that these “must have had a strong shaping effect on the social communities they contained,” though very little information could be found about the social structure inside each. Given the scattered and often-inconsistent information on yuan in the sources, this paper is an attempt to reconstruct and make sense of the narratives on the yuan and local society from a variety of sources and to provide a glimpse of environmental history from below, in the case of the late imperial Jianghan Plain.

This article analyzes water management in the Jianghan Plain, particularly the management of the yuan (the main unit for dike work) and its social and cultural implications in late imperial China. The phrase “the revolt of the commons,” which will provide the framework for this article’s analysis, has three meanings. First, it assumes the discus-
sion of common-pool resources management and collective actions taking place at the local level.\textsuperscript{11} The Jianghan Plain is a case in which the local communities established effective institutions to manage water systems and water and land resources and to foster collaborations and solve conflicts among communities. As shown in this article, in an environment prone to disasters (mostly floods), the Jianghan communities had developed effective coping strategies by building yuan and fostering collaborative dike construction and maintenance, before the forces of population pressure, resource limits, ineffective governmental intervention, and individual self-interest started to override the socio-ecological systems.

Second, the phrase implies the power of local activism, which this article emphasizes in the water management of the Jianghan area. We will see that local people—be they peasants, commoners, monks, local literati, or local lower-level officials—all actively participated in the decision-making process of water management. Voices and actions from below in the Jianghan area were not only expressed in small individual water conflicts but also developed into large-scale petition movements. The development of local activism from individual spontaneous acts into large organized campaigns was one of the main driving forces to order and reorder the river-lake systems and change the hydraulic infrastructure in this region. This by no means suggests the lack of state presence in this region—the state certainly played its part in managing the dike system and mediating large-scale water fights. But the official intervention was ineffective and often ignored. Thus, this case not only departs from Wittfogel’s theory but sheds lights on the state’s role in the water management in regions far from the power center in late imperial times.

Third, it indicates one connection in the adaptive cycle of C. S. Holling’s theory—the revolt connection. It suggests that the development of a society reaches a point where “the resilience is low and the level is particularly vulnerable” and a point “where fast and small events overwhelm slow and large ones, and can cascade to higher, slower levels.”\textsuperscript{12} In the case of the Jianghan Plain, after the drastic population growth and massive land reclamation by the end of the eighteenth century, the nineteenth century became a critical time period when the local ecological systems were strained, disasters rampaged, and violent conflicts surged over land and water resources, accentuated by the colossal diplomatic and military crisis in the mid-nineteenth century. The increase in frequent conflicts and mass violence in the region signified
that the Jianghan Plain was transforming from a stage where small individual water and land fights broke out to a stage where a larger-scale ecological crisis took its shape. It was the time period in which traditional local water management incubated institutional changes to cope with population pressure, resource shortage, governmental inefficiencies, and their own conflicts of interest. Although substantiating institutional transformations is beyond the scope of this article, I would like to suggest here that the crisis in water management incubated some institutional adjustments, such as the transition from a decentralized, locally managed yuan system to a potential supra-watershed management in the early twentieth century. To acknowledge such a transition is not only meaningful to understand the changes in the Jianghan Plain but also suggestive of the fact that forces coming from below often induce profound social and environmental transformations.

This article has three parts: the first part describes the ecology of the Jianghan Plain and its disaster-prone conditions; the second part examines the extensive local institutions of water management that constituted the potential and the resilience capacity of the Jianghan Plain; and the third part analyzes conflicts over water and land resources and dike maintenance in this region. I argue that the Jianghan Plain was a highly resilient society in coping with water calamities. However, due to population pressure and excessive land reclamations, the relationship between the people and the land and water became strained, and local communities gradually lost their resilience. At the same time, the state’s lack of an effective crisis-management scheme added to the instability of the Jianghan society. It also points out that building a system of dikes, on the one hand, protected the agricultural fields from floods and, on the other hand, narrowed the water course and “progressively hindered the drainage of the basin and resulted in a state of overconcentration of human settlements and permanent agricultural land.” In other words, the environmental history of the late imperial Jianghan Plain shows that while ecological resilience comes from below, ecological fragility comes from spontaneous actions from below as well.

The Flood-Prone Environment of the Jianghan Plain

The Jianghan Plain was formed out of the continuous sinking of the continent since the Cretaceous period. The whole plain is three hundred kilometers from the east to the west and four hundred kilometers...
from the south to the north. Mountains surround the plain in the west, north, and east. South of the plain, hills and wetlands are the dominant terrain types. Therefore, the alluvial plain is relatively high in the west and slightly inclined in the south. The southern part of the plain is flat and low. When floodwater runs through the whole plain, it is difficult for the south lowlands to let out the waters in a timely fashion. This is why the south lowlands, where the drainage problem had been the greatest, were called “water bags.”

The whole region is strongly subject to the semitropical monsoon climate. The average annual rainfall ranges from 1,100 to 1,300 millimeters. The precipitation during April and September accounts for almost 70 percent of the annual rainfall. When the monsoon season comes, the Jianghan Plain is the inevitable path for the cold air moving down toward the south. As a result, the Jianghan Plain always has wet and cold weather in spring and autumn. If the monsoon season is long and the rainfall is excessive, the plain is easily subject to flooding between June and September. In some dry years, when there is hardly any rainfall during the fall season, severe droughts would most likely attack the region.

As shown on the maps, the Jianghan Plain is located in the downstream valley of the Han River, and the Yangzi River runs right through the whole plain. In addition to the two major river systems, there were numerous wetlands, lakes, and tributary rivers within the territory of various counties of this area. However, a water-abundant environment can bring both blessings and woes to people’s livelihood. Because of the unevenly distributed monsoon rainfall, water calamities struck this place quite frequently. If the basin were left unprotected, those farming fields in the basin would be flooded annually. At the same time, due to the flatness of the plain, the outflow of waters was very slow, and the drainage problem was severe. Building a system of dikes was the essential practice among the local communities to live in such a flood-prone environment. People usually “considered dikes as important as their lives.” The dike system in the Jianghan Plain was dualistic: on the one hand were the long dikes containing the Yangzi and the Han within their main beds, critical sections of which were usually sponsored by the government; on the other hand were circular dikes, called yuan, for which Will suggests the term “enclosures” and which could also be defined as “caissons.” Usually, there were two ways to build the yuan: one was reclaiming the land in an abandoned river tributary or silted
river harbor; the other was reclaiming the land from lakes. Thus, the agricultural fields in the yuan consist of alluvial soil rich in organic materials and mineral nutrients, such as nitrogen, phosphorus, and potassium. While yuan construction was an essential strategy of the local people to survive in a harsh environment and maximize their material production, the proliferation of yuan could easily strain the river-lake system, block the waterways, and affect the timely relief of excessive water. Although the term yuan could be exchangeable with polder, I prefer to use the corporatist word yuan to indicate its particularity in its social and cultural cohesion that had been critical in the resilience capacity of the Jianghan society.

The yuan were constructed as early as the Southern Song period, during the thirteenth century, as a state-sponsored military tuntian scheme in the Jianghan Plain. It was soon adopted by civilian peasants as a critical structure in agricultural irrigation and flood control. In the late fifteenth century, a huge influx of immigrants entered the wetlands, lake areas, and riverfront of the Hunan-Hubei region, and yuan were massively constructed to help wet-paddy rice cultivation and fend off floods. By the eighteenth century, a small yuan had an average size of 67–134 hectares (one or two thousand mu). A big yuan could include hundreds of small yuan, and a yuan zone (yuan qu) could have several big yuan inside.

Yuan offer a case of regional variation in local hydraulic infrastructure. In the process of local people adapting to their water environment, different hydraulic infrastructures were developed. For instance, in North and Northwest China, the basic unit of water management was the she, or “village,” which were natural units rather than administrative units and through which people shared water resources. In the lower Yangzi region, a wei was the basic hydraulic unit, and the activities of agricultural irrigation and rent resistance were organized on the basis of collaboration among the wei. In the Jianghan Plain, the yuan was an arena in which the state, the society, and the environment encountered and interacted. These units differed in their construction, scale, and mechanism. For example, small yuan could be quite similar to wei in terms of their hydraulic structure; however, while a yuan could include one or dozens of villages and the length of its dikes could range from a couple of hundred meters to tens of thousands of meters, a wei was confined only to the village level. In addition, while wei remained
a basic hydraulic and agricultural unit for irrigation, yuan had developed complex cultural and social systems to facilitate cooperation and to resolve conflicts. The following image is of a *wei tian* (literally, “surrounded field”), which features agricultural fields surrounded by circular dikes. Several agricultural households resided inside the circular dike. This image offers a reference for a single small *yuan*.

The yuan structure was also quite complicated. It was constructed in between land and water. In a flood-prone environment, a yuan was easily inundated and disappeared. But people formed a bond based on yuan community, and such a bond within a yuan was exclusive, elaborated by their beliefs on water deities. A single yuan had its own hydraulic interest and, at the same time, had to collaborate with other yuan in dike maintenance and flood control. Despite its precariousness, the yuan formed a unique culture in the Jianghan Plain—spontaneous, pragmatic, but tenable enough to negotiate with the state authorities.

**Social, Cultural, and Ecological Resilience of the Jianghan Plain**

We see that the Jianghan Plain was a place ridden with water calamities due to its topographical condition and the climate pattern. Normally, the perception of disasters would be that they rarely happen and are exceptionally traumatic; of course the degree of people’s suffering varies according to the fragility of the ecosystem, the vulnerability of the human society, and the flexibility of the crisis management system. As some scholars put it, there is no single disaster that is completely natural—one should understand disasters in the context of the subjugation, chaos, and vulnerability of a political and social system. The following analysis will show that communities in the Jianghan society had a strong resilience capacity in a disaster-prone environment. These communities developed mechanisms to manage the hydraulic infrastructure of the area, to deal with water calamities, and to connect and bond with each other. In part, this is an example of sustainable environmental management (mainly dike construction and maintenance) from below, at least to the end of the eighteenth century.

Zhang Jiayan discusses extensively from an agricultural standpoint the peasants’ strategies—for example, cultivating water-resistant crops and replanting various types of crops after high water had receded—to
live in a flood-prone environment. I would emphasize that the formation of social networks was utterly important for the survival of newly settled immigrants in a vast, marshy land. When immigrants came to the plain, most of them first resided on higher ground. Some early residents lived close by and celebrated festivities by drinking together, and households who were undergoing illnesses and deaths would receive collective donations and other forms of help from other households in the same neighborhood. The formation of social networks was of the utmost importance for the early residents of the plain to survive and prosper in a harsh environment.

The early human settlements in the plain required house construction and land reclamation, and most of those projects needed the collaboration of multiple families. At the beginning, such collaboration was loosely organized and was mainly based on blood relations, neighboring locality, and friendship. For example, a relatively big project such as building a house was very seasonal; if the construction could not be completed during the winter and the spring, the unfinished part would most likely be washed away by floodwaters during the summer and the autumn. Therefore, the rapidness of building mounded earth and the number of people who were willing to participate in such a project signified the tenacity of a family’s social networks and hence the power and prosperity of this family.

As a matter of fact, not only in building mounded earth, but also in agricultural cultivation, the local people relied mainly on their social networks. Planting seeds on time was the most important task for a single agrarian household. A late seed planting meant being caught in a heavy rain or floods and would lead to a poor harvest in the fall. Likewise, a slow and late harvest would mean the waste of a year of cultivation efforts. Moreover, when floods threatened the fields, an intensive labor force was needed to save the crops; and when floods destroyed crops, a second round of planting would similarly need intensive labor to ensure the maximum agricultural output. Therefore, people in this region, bound by either geography or bloodline, were all involved in an interlocking chain of mutual reciprocity.

Informal and spontaneous help from family members, neighbors, and friends was very important to keep the agrarian life running. Water furthermore perpetuated such community bonds—households who shared the same water resources and who were subject to flood-
ing threats from the same water body worked out a more efficient way to improve their quality of life. Collective actions, such as constructing and maintaining dikes and fending off floods, were thus called on to fight against the water disasters. Japanese historian Morita Akira has discussed the significance of water units such as polders in fostering collective actions among communities:

An entire polder is interdependent. It is even so exceedingly hard to bring people’s feelings into unison, since, if a polder contains a thousand mu of land, it will not have fewer than several tens of families. If, however, the “wall” (dike) of the polder for one family’s holding has collapsed, then the wall in the sound condition of the rest of the polder is useless. Under these circumstances, the poor and rich will give each other mutual support.28

It is quite clear in this description that people within the polder had a well-defined sense of community—households enclosed within the “wall” of the polder whose security required a collective defense against floodwaters. Morita’s discussion on ‘polder’ applies to ‘yuan’ in this article. Although political scientists questioned the ability of a traditional peasant society to overcome the internal problems of public goods, they agreed that irrigation and flood control projects have large potential benefits for the village (through increased crop yield), and these projects involve providing an indivisible public good (protection from flooding and waterlogging).29 In fact, the communities in the Jianghan Plain developed systematic local institutions to foster collaborations in resource management, which will be discussed further later in this article.

Another important aspect of such social networks was the god or goddess worship and temple construction, which were usually the manifestation of community bonds and a platform for people to make decisions collectively.30 As Prasenjit Duara, who examined the cultural networks in the North China Plain during the Republican era (1912–49), has pointed out, the “religious dimension of irrigation communities is perhaps one of their most nearly universal features in China.”31 The Jianghan Plain is not an exception. In the history of the Jianghan Plain, people built numerous temples, towers, monuments, and statues of sacred animals to fend off what they called the “water demons.” Many yuan communities had statues of sacred animals or temples for praying rituals. Towers, stone lions, and particularly iron bulls were
usually built at critical locations (called *ji*) of the river dikes. The iron bulls were made according to specific measurements (approximately 3 meters long, 2 meters wide, and 0.7 meters tall), the head and body being hollow and the rest of the bull being solid; and inscriptions were carved onto the backs of these iron bulls.

Water myths, temple construction, and god or goddess worship were prevalent in the pre-nineteenth-century Jianghan Plain. An example would be the worship of Guandi, a hero with great martial valor in the tales of the Three Kingdoms during the Age of Division (220–589). Local literatus Liu Changji once noted, “People were having a good life all because of the protection of Guandi. . . . It was Guandi’s divine power to save Qianjiang [a county in the Jianghan Plain] people from floods and turn the fish and turtle’s land into cropland. . . . Everyone should worship Guandi and appreciate his protective power.” Guandi was not the only divine power that had been worshipped by people in this region; in fact, the diversity of the water deities among local communities is stunning. In one single gazetteer of the Jianghan region, one can read of numerous deities, such as Bodhisattva Guan Yin or General Nanmu, usually associated with water myths and temple construction. What I have also found is that each yuan community had its own particular set of gods or goddesses to worship and that people in each yuan built temples to worship that particular set of gods or goddesses as protection from disasters.

Water myths, water-deity worship, and temple construction constituted an important part of the culture of disasters in the Jianghan Plain. This culture features pragmatism and spontaneity; features the panics facing the threat from disasters in general (mostly floods); and features small-scale, dispersed community beliefs. Each yuan had its own main set of gods or goddesses in which to seek protection, the temples were constructed and maintained by the people from a certain yuan, and the worshippers were predominantly the residents of a certain yuan. Such a pattern of local beliefs not only represents the strength and durability of dealing with the stress from disasters by the local communities but also, to a large extent, contributed to and aggravated rifts, conflicts, and riots in this region, which I will discuss later in this article.

The hydraulic and agricultural units, yuan, were classified into two types: official yuan and people’s yuan; but basically the official yuan and the people’s yuan were both managed by the community people.
Whereas the official yuan were recorded in the governmental registry, the people’s yuan were not registered with the government and were completely managed by the people (xiu fei zi you). Usually, the annual maintenance of the official yuan of this region had to be reported to the board of revenue (Hu Bu) of the central government. The projects on the official yuan followed a model of “official supervising and people managing” (guan du min xiu). It is not that the government owned the official yuan—it did not; instead, local lineages owned or co-owned a particular yuan. The dike maintenance funds were allocated among local lineages and households, usually according to the land each of them owned. Occasionally the government would allocate funds for dike repairs, but mostly for emergency reasons, such as disaster relief. People’s yuan were on their own—they were not reported to the board but were subject to the same rate of taxation as official yuan.

The government’s role in the management of official yuan mainly lay in three aspects: Firstly, local government would decide on the types of projects and when those projects should be carried out. Regular maintenance and repairs were usually in the winter. Secondly, during the projects and when the projects were finished, local government sent officials to examine the work progress and the quality of construction. Lastly, the officials supervised the whole hydraulic management system, which only effectively existed between the 1560s and 1640s. The best example was the implementation of “dike legislation” (dijia fa) issued by Jingzhou prefectural magistrate Zhao Xian in 1568 on both the Yangzi River and the Han River long dikes. It regulated the river dike management system as follows: one “dike elder” (dilao) for every 3,330 meters (1,000 zhang), one “dike head” (dizhang) for every 1,665 meters, and one “dike leader” (dijia) and ten “dike laborers” (difu) for every 333 meters. Although these people were elected from the locals, they were reporting to the county government. The system did not last very long and was dismantled by the chaotic politics of the late Ming era and the devastating warfare of the 1640s. In the early Qing, the management of local hydraulic communities was mostly in the hands of powerful local lineages.

In various historical records, there were also private yuan; but from the description of those records, there was no fundamental difference between people’s yuan and private yuan. In a strict sense, the people’s yuan or the private yuan were illegally reclaimed polders. They were not registered with the government and were usually hidden from the
tax catalog of the government. The spread of the private yuan was especially prevalent when population growth surpassed the capacity of agricultural production. The proliferation of private yuan, to a large extent, narrowed the river course and slowed the speed of water runoff, which often led to floods; at the same time, they competed for resources previously available for the official yuan. Therefore, they were often subjected to official repeated but ineffective prohibitions.

Both the official yuan and the people’s yuan were managed by people through a loosely organized community hierarchy in accordance with a certain system of rules and regulations. In most of the yuan, there was a yuan head to administer affairs, and there were two routine ways to establish the hierarchy: public election or lineage rotation. On some occasions, both ways were used. In the case of yuan communities in the Jianghan Plain, local residents elected the yuan heads publicly. Such a model was also observed in other rural communities of premodern China. For example, Mark Elvin mentions that in the Sangyuan polderland in Guangdong Province, there were “regular annual meetings of publicly selected representatives and systematic public selection of hydraulic managers.” In Shanghai County of East China, the county magistrate summoned an assembly of local nobles for advice and legitimation in making decisions on water dredges. Elvin concluded that it could amount to “a sort of proto-democracy.”

In most cases, big clans and lineages dominated the selection of yuan heads. For example, in the Bailü yuan, since the Ming dynasty (1368–1644), heads of the five headquarters were alternatively chosen by elders from five big lineages: Liu, Chen, Peng, Ma, and Zhang. In some places, according to a study by Peter Perdue, the post of yuan chieftain (yuan zong, or yuan head)—unlike the dike elder and dike tithe head along the river, who were rotated yearly—was held by one lineage for generations. Perdue considered this as an illustration of consolidated local power in Huguang in the late fifteenth and early sixteenth centuries. The yuan heads were responsible for investigating dikes, making plans for dike repairs, and supervising construction projects. They also worked as the intermediate connection between a higher hierarchy (usually the head of a bigger yuan) and the people within the yuan.

Within a big yuan, a hierarchy was set up to make sure the hydraulic responsibility was allocated properly (see fig. 2). For example, the
Bailü yuan was divided into twelve small yuan. Five headquarters were established to administer the whole yuan, with two dike elders (di lao) for each headquarter. Each headquarter administered two to four small yuan. A yuan head (yuan zhang) was also appointed to each small yuan. Each small yuan also included six to fourteen wei (smaller polder), whose leaders were called weijia. Each wei had several hundred households under its delegation. Therefore, a distinct hydraulic hierarchy was established within and among the yuan communities. Such a hierarchy was an integral part of local water management, enforcing collaboration and mediating conflicts.

All in all, the Jianghan Plain displayed a strong resilience capacity in a disaster-prone environment. The community people formed extensive social networks, established systematic institutions, and shared cultural activities by worshipping and constructing temples for gods and goddesses. The yuan communities were culturally cohesive and socially consolidated.
Collaboration and Conflicts among the Water Communities

The yuan communities were self-contained units that were paradoxical by nature. They needed collaboration in water management among communities that were connected by dikes, but they were also self-protective and rejected cooperation on various occasions. The paradoxical nature of the yuan communities, to a large extent, decided the rule of cooperation among those communities, especially when there were no clear rules enforced by the state. Up until the mid-eighteenth century, the state did not issue clear legislation to govern the hydraulic communities of this region—the local hydraulic order was maintained by tacit rules mutually agreed on by inhabitants of certain communities. For example, no houses were to be built on the dike; no work factories were to be set up on the dike; no tombs were to be dug on the dike; no soil was to be moved away from the dike; water-resistant plants (such as reeds or willow) were to be planted.\textsuperscript{51} The actual implementation of those rules was in the hands of the locals. Basically, cooperation in public dike constructions followed the rule that one who benefited from the dike system should contribute to the dike maintenance.

Allocating the dike works proportionally according to landholdings or taxed grain production of each yuan was widely practiced. For example, the maintenance of Chedun yuan was conducted by Qianjiang County and Tianmen County according to a customary allocation of $6/4$ in funds and labor.\textsuperscript{52} In the case of the Wanfu dam project of the Qianlong reign (1735–96), Tianmen County and Mianyang County negotiated several ways to raise the funds, such as $6/4$, $7/3$, $8/2$, and $7.5/2.5$. After measuring the land in both counties, they agreed on a division of $7.675/2.325$.\textsuperscript{53} In Qianjiang County, when the yuan cooperated in the dike construction and repairs, the project funds were collected according to the size of lands—twenty wen for each mu (0.067 hectare).\textsuperscript{54}

However, not all collaborative schemes worked out well; many communities who were supposed to collaborate tried to shirk their responsibilities. Such situations were exacerbated during the eighteenth century, when the population nationwide quadrupled. In the case of the Jianghan Plain, the total population increased from 1 million in the fourteenth century to 10 million at the end of the eighteenth century. The survival needs of people prompted them to reclaim land from wetlands,
floodplains, and lake areas; as a result, the number of yuan drastically increased. For example, the number of yuan in Hanchuan County increased from 44 in the late seventeenth century to 308 in the eighteenth century; in Mianyang Prefecture, the number of yuan increased from around 167 in the sixteenth century to 1,368 by the end of the eighteenth century. Excessive land reclamation, increasing collective violence, and huge population pressure overloaded the local ecology, leading to “ecological devastation almost ignored by communities and state.”

In addition, from the end of the eighteenth century to the mid-nineteenth century, the middle Yangzi again became the major battlefield where the Qing state army and various rebels—including the White Lotus rebels, the Taipings, and the Nians—fought relentlessly. State military schemes in the middle Yangzi inevitably exerted a huge pressure on the resource management of this region. Furthermore, as Mark Elvin points out, short-term rewards from the overexploitation of resources “tended to reduce any inclination of the state to limit exploitation within sustainable limits at a time of crisis (at a given technological level).” As a result, the conflicts over land and water greatly increased within the plain, between upstream and downstream communities, between left-bank and right-bank communities, between fishermen and commercial people, between two households sharing an irrigation canal, and between officials and local people. People in local communities therefore resorted more and more to litigation and violence. In fact, as Zhang Jiayan points out in his book, “filing lawsuits related to water control became one of the most notorious customs of Hubei Province.” Zhang emphasizes four main features of the surging litigation from the mid-eighteenth century to the twentieth century: the unclear legal ownership of much of the land in the plain; the use of waterways for different purposes; residents of some yuan fighting for their own interest; and many yuan being involved in large, decades-long lawsuits.

Even small-scale collaboration among the yuan was sometimes problematic in the face of people’s self-interest in an individual yuan, and conflicts became more frequent after the eighteenth century. For example, a lawsuit between the Bianhe yuan and the Wenjia yuan of the Tianmen County on dike work allocation lasted for about sixty years during the eighteenth century. The two yuan were geographically connected and were supposed to collaborate on yuan dike maintenance. However, the Wenjia yuan did not want to cooperate (for reasons un-
known from the sources) and built a separation dam in between the two yuan in 1701. After the separation, the Wenjia yuan did not maintain the dike that mostly surrounded the Bianhe yuan, and the Bianhe yuan simply could not afford to maintain the dike itself. As a result, the Bianhe yuan sued the Wenjia yuan at various levels of the government. It was finally settled in 1759 by the county magistrate, Hu Yi. However, from the sources, we do not know how it was settled. Presumably the dike work should be assigned between the two yuan according to the land each of them owned.

The rifts between lineages also set barriers to collaboration within and among the yuan communities. For example, the dike work was originally allocated between two lineages, Zhu and Huang on the Mutou yuan of Qianjiang County; however, the two lineages held grudges against each other and could not cooperate in the dike maintenance. They brought the lawsuit all the way to the capital during the Tongzhi reign (1862–74). The solution was to segregate the two lineages, blend several other lineages into the yuan, divide the dike work (its dike was 4,458.3 meters, or 2,702 gong) into three sections (assigned to Zhu, Huang, and other lineages respectively), and allocate the dike work based on the land each lineage owned. Zhu lineage owned 105 hectares of land and therefore had to construct a dike 914 meters long; Huang lineage owned 171 hectares of land and accordingly took responsibility for 1,490 meters. Other lineages had 235.6 hectares of land in total, so they were allocated 2,052.6 meters of dike work.

Upstream and downstream communities of a yuan often had conflicts that involved an escalated level of violence. Tragedies happened in the Lanjia yuan in the late nineteenth century. The yuan was divided into two parts by an earth dam. The upstream communities of the yuan wanted to destroy the earth dam so that the floodwaters could go through, while the downstream communities of the yuan desired to keep the earth dam so that the area could be free from floods. The two parts of the yuan had been fighting to construct or destroy the earth dam for generations, leading to numerous deaths. The communities had also brought lawsuits all the way to the capital, where the central government officials came up with no better solution than sending troops to put down the mass violence.

There were also cases in which peasants and commoners attacked dike heads (di zhang, or di tou, were responsible for organizing labor
and money to maintain the dikes), landlords, rich households, or officials, in retaliation. The dike maintenance system was sometimes problematic itself. Cases of corruption, avoiding responsibilities, cheating on projects, or refusing collaboration were prevalent in dike construction and maintenance. Rich households, which usually lived far away from the dikes, tried to avoid contributing money and labor to the dike works, and poor peasants were drafted to work on the construction and repairs. Some rich households also cheated in the dike work, such as putting a thin layer of soil on the surface of the dike and claiming that they had done the due maintenance. When floods destroyed dikes, there was sometimes not enough money to repair the dikes. Some of the dike funds were embezzled by the dike heads or local officials, leaving insufficient funds for the dike work. Dike laborers, usually peasants and commoners of the communities, called on people and robbed dike heads’ houses, especially when big floods came and broke the dikes. In the late nineteenth century, a peasant named Tan Jincheng was assigned dike work on the Wujia yuan, whose dike head had cut Tan’s wages. Tan therefore stole pigs and cows from the yuan in lieu of pay. The dike head sued Tan in the county court. When Tan was about to be arrested, he organized hundreds of people, roaming around the yuan communities, claiming they were robbing the rich and helping the poor, and engaging in fighting. Such incidents were usually eventually suppressed by government troops.

The above were just a few of the conflicts over water from local gazetteers and precedential legal cases; we also find many water and land dispute cases in the criminal records housed by the board of punishments (Xing Bu). To list a few: In 1900 Liao Fa’er opened the sluice gate of a public dike for crop cultivation. When his landlord, Qing Shiguang, found out, he beat Liao to death. Qing was arrested and was sentenced to death in 1902. From 1901 to 1902 commoner Xiong Zhijie had a big fight with his neighbor Tao Changdian because of a dike construction across their land. The fight led to the death of six family members, four from the Xiong family and two from the Tao family. In 1904 the Tianmen man Wu Chuanxuan falsely accused his fellow county resident Xian Chubao, saying that Xian was destroying the river dikes. The board of punishments investigated the case and found out that the accusation was a perjury and that Wu actually wanted to take revenge in a family conflict. The situation was even worse in the Republican era. In 1918
the Junmin yuan was suffering from flooding problems and sued the upstream yuan for digging out a dam that had led to flooding further downstream. In 1934 the Hanyang Xihu yuan Guo Dehai sued Xiao Yantang for Xiao’s destruction of dikes. And in 1947 Hanchuan resident Qu Yupin appealed to the high court of Hubei, asking to clarify the dike work allocation. Corruption among officials made the situation even worse. For example, the Jiangxi yuan of Hanchuan County was flooded in 1931, and it turned out that the dike head, Zhou Tianqu, had embezzled the public dike funds and compromised the dike quality. The same thing happened in the Wuhe yuan and the Hefeng yuan of Jiayu County, the Wenhe yuan of Mianyang County, and many others.

The extensive violence, perjury, embezzlement, and lawsuits in the water and land disputes indicated not only the anxiety of impoverished people competing for survival in a society short of resources but also the lack of a feasible plan and effective institutions to solve water problems. In the following part, I will use the controversies over the Zekou outlet and the Wujia outlet to illustrate the irreconcilable conflicts among different communities of the same watershed as well as the constant challenges to government authority by the efforts from below. The lack of effective watershed management led many local communities to fight for their own interests. From this perspective, we see strong local activism in managing the hydraulic systems in the Jianghan Plain, transforming small individual water fights into larger-scale organized campaigns to combat governmental decisions.

The Conflicts over Big and Small Zekou Outlets from the 1840s to the 1910s

The Zekou outlet was the path of the Han River to its distributary river, the Jing River. In the late nineteenth century, several major outlets were either silted up or converted to agricultural fields, and the Zekou outlet became the only big outlet to relieve the water pressure from the Han River. In 1870, high waters in the Han River could not go through the Zekou outlet quickly and opened up a small water outlet near a silted sandbar (liang tan) inside the Zekou outlet. Soon after, when a tremendous flood came through the Zekou outlet, the outlet was swept wider and wider by the flood torrents and eventually changed the river course of the Jing River. Since the new outlet was through the land of the Wu
family, this change in the river course was called Wujia gaikou ("outlet change at the Wu family’s land"). After that, the Han River waters ran through the new outlet instead of the Zekou outlet, and the Zekou outlet gradually silted and dried up. Because the other river outlets were either silted or blocked by people for various purposes, the new river course had to run through yuan communities in the south bank of the Han River, which not only inundated the fields and wiped out people’s houses but also caused serious drainage problems in those yuan.

Map 3. The small Zekou, the big Zekou, and the Han River in Qianjiang County during the Daoguang reign (1820–50). The circled crosses have been added to indicate the two outlets in Qianjiang County. The left circled cross is Zekou, the big Zekou outlet; the right circled cross is Lufu Kou, the small Zekou outlet. Note: This map is not to scale. Modified based on the map in Yu Changlie, Chubei shuili difang jiyao [Records of water control in Northern Hubei] (Hubei: Hubei fanshu, 1865), 1:40–41.
From the 1840s to the 1910s, there were thirteen conflicts over blocking or opening the Zekou outlet and the Wujia outlet, revolving around the opposing hydraulic interests between four counties on the south bank of the Han River (Mianyang Prefecture, Qianjiang County, Jianli County, and Jiangling County) and ten counties on the north bank of the Han River (such as the Tianmen, Zhongxiang, and Jingshan Counties). In those conflicts, efforts from below—including local county governments, local literati, and common people—were intense and frequent to block the two outlets in contravention of the policies from above. The scale and level of violence in those campaigns were unprecedented in the plain. Furthermore, those conflicts also demonstrated the strong demands from below for self-governing institutions in order to make their own decisions to suit their hydraulic interest instead of complying with governmental decisions.

Peasants, commoners, and lower-level gentry were the main initiators and participants in the campaigns. In 1844, Mianyang monk Cai Fulong complained that the Wujia outlet led to many conflicts among the yuan of the south bank of the Han River, and he built an earth embankment near the Wujia outlet. Tianmen gentry from the north bank of the river petitioned, and the Mianyang prefectural government ordered the destruction of the earth embankment. Cai managed to escape. Three years later, Cai came back, circulating pamphlets, collecting fees and grains from local villagers, and trying to organize Mianyang people to block the outlet again, which was also dismissed by the prefectural government.79

In 1860, Wang Maoyi organized thousands of fellow Mianyang people, taking up weapons and slogans, to block the Lufu outlet (the small Zekou outlet). They set out to block first the Lufu outlet and then the big Zekou outlet (before it silted up). Tianmen gentry again petitioned the prefectural government, which sent people to destroy the earth embankment.80 The issue of blocking the outlets did not come up again until 1872, possibly due to the extensive warfare between local militia (which to some extent was organized based on yuan communities) and the Taipings and Nians. These two large-scale peasant rebellions from the 1850s to the end of the 1860s left the hydraulic systems in this region unattended.

The conflicts on the outlets escalated in the 1870s, during the reign of the Tongzhi emperor (1861–75). In 1873 a Qianjiang man named Liu Yuwen and a military candidate named Wang Zifang distributed pamphlets and organized people to block the Wujia outlet. Regarding
this incident, the Mianyang, the Hanyang, the Anlu governments all stressed that the outlet should remain open, and the blocking attempt was dismissed. In 1874 Yan Shilian, another Qianjiang commoner, organized some two thousand people, marched to Mianyang prefectural government, forced the officials to distribute pamphlets, and took weapons and tools to block the Zekou outlet. They even established a dike bureau (di ju), collecting dike fees from the community people. This blocking campaign was eventually put down by the government troops. The leader Yan Shilian was sentenced to death. Yan's compatriots Tian Bincheng and Liu Zicai were exiled. The three governmental bodies destroyed the earth embankment and erected a stele at the outlet warning that the Zekou outlet should never be blocked and that anyone who attempted to do so would be sentenced to death.81

Apparently, the south-bank residents did not take the government warning too seriously. They tried other ways to block the outlets. Two years later, in 1876, Qianjiang resident Guan Juncai persuaded the Mianyang magistrate to repair the river dikes, though his true intention was to block the outlet. The Mianyang magistrate allocated approximately forty-nine thousand chuan of funds for the river dike repairs, and the community people also donated sixty thousand chuan of funds for the proposed project. After taking the funds, Guan did not start to repair the river dikes; instead, he instructed his team to build an earth embankment to block the Wujia outlet. Furthermore, Guan embezzled so much of the repair funds that his colleague Zhang sued him in the provincial court. Guan somehow escaped from the lawsuits. In 1880, Hubei provincial administrative advisors suggested banning the blockage on the outlet forever.82 However, just as before, the banning order did not have any substantial effect, because soon, in 1886, Mianyang resident Wei Fengchi and Chen Huanzao set up a private bureau (si ju) to collect dike fees and other miscellaneous fees in the name of building a dike near Zibeiyuan (a location in Jianli County). But in fact, they intended to block the Wujia outlet. By the time they started the blocking, they had already collected over three thousand chuan, of which one-third was used for other purposes.83

In 1888 Yan Xianshan, the son of the former blocking-campaign organizer Yan Shilian (who was sentenced to death around 1874), plotted another blocking campaign in the name of the capital officials who were inspecting the Wujia outlet area after a flood struck the area. Yan
proposed to the capital officials to repair the dikes along the Han River. While the officials were still investigating the case and making a decision, Yan erected a yellow flag with the slogan “supervising work according to the edict” (feng zhi du gong) and started to collect funds. Officials soon found out Yan’s actions and accused Yan of being greedy and of being heavily influenced by his father. The Anlu and Hanyang prefectural governments ruled again that the Wujia outlet had become a critical path of the Han River and should not be blocked.84

Campaigns like the above cases continued in the last decade of the nineteenth century and the first decade of the twentieth century. In 1893 and 1896 several commoners either petitioned the government or simply called on people to block the outlet. The Qianjiang County government even sent troops to suppress the blocking action in 1896. In 1903, more than one thousand people from Jiangling, Jianli, and Mianyang gathered together to build an earth embankment to block the Zekou outlet. The governments of these three regions had to send troops to dismiss the action. After another blocking episode in 1908, the county and prefectural governments of both the south bank and the north bank of the Han River decided on seven rules regarding the outlets. The first was that the Zekou outlet should never be blocked. The next four limited the height of the dikes. The sixth required digging trenches to relieve the river’s water pressure. And the seventh forbid any private construction.85

Those rules only bought four years of peace around the outlets. In 1912 the controversy over the Zekou outlet was brought up again. In December of the same year, representatives of Mianyang Prefecture, along with Jianli residents Tang Huanzhang and Tan Fangpeng, proposed to the newly established Hubei provincial government (after the Revolution of 1911 overthrowing the Qing dynasty) repairing dikes along the Wujia outlet, and this proposal was allowed to proceed. However, Tianmen people soon sent a petition to the provincial government that the Mianyang and Jianli people’s real purpose was to block the Wujia outlet instead of repairing it. They insisted that if the action of the south-bank counties were not stopped by the government, they, the ten counties of the north bank, could also send armed force to stop it.86 The conflict escalated one month later. Mianyang and Qianjiang people gathered at the Wujia outlet and built an earth embankment to block it. The Hubei provincial government had to send troops, eventually suppressed the
action, arrested the leader of this action, and destroyed the river embankment.\textsuperscript{87} This was not the end of the conflict. Three months later, in April, Qianjiang and Mianyang people again organized militia, attacked government troops at the outlet, injured government soldiers, and burned down the official inspection camp at Shayang (a critical section of the Han River). Likewise, Tianmen, Zhongxiang, and Jingshan people from the north bank also organized tens of thousands of local militia to fight against the south-bank people. It was noted that “many bandits blended into the militia to rob houses and communities were in big chaos.”\textsuperscript{88} The Hubei provincial government dispatched troops. But the army was not able to put down the mass violence, and the provincial government had to ask Tianmen County officials as well as local elites to help suppress the action.\textsuperscript{89} After this incident, the Hubei provincial government decided to thoroughly investigate the outlets, sending off hydraulic experts to examine the hydromorphological condition of the outlets, in search of a solution that would benefit the people of the communities on both the north and the south banks.\textsuperscript{90}

From the above cases, we can see that various social groups from below—especially farmers, commoners, local literati, and monk from the south bank, not powerful lineages, rich families, or gentry who usually had served in the government or had official connections in the government—demonstrated a strong activism to counter the policy making from above in various levels of governments. For the residents of the south bank communities of the Han River, the changed river course greatly affected their living, and they fought to manage the hydraulic infrastructure of the area for their interest, manipulated the government officials, and twisted officials’ decisions. They went as far as establishing dike bureaus to collect fees and organize large blocking campaigns. On the other hand, local elites, degree holders, and officials of the north bank communities of the Han River did not hesitate to petition against the blocking attempts from the south bank. Different levels of government, though possessing the decision-making authority as well as military power, did not demonstrate strong authoritarian characteristics in those cases. The image of a seemingly powerless government may well be a reflection of the late nineteenth- and early twentieth-century regime, which was undergoing a series of political, diplomatic, and military failures.
Conclusion

The local water management of the late imperial Jianghan Plain is a case study of environmental history from below in late imperial China. The state did not intervene much in the management of yuan from the very beginning (the state intervened more on the official main river dike management, as previously discussed), although the thirteenth-century, state-sponsored military tuntian scheme did kick-start massive building of yuan in this region. Forces from below were the main drives for the social, economic, and environmental changes of the Jianghan society. The sustained waves of population influx from neighboring provinces onto this fertile alluvial plain starting the late Ming (around 1500) was a process from below, reclaiming the land and turning wetlands into agricultural communities (yuan communities). Coordination among communities on dike management developed from below. The continuous land reclamation and building of more yuan were spontaneous responses from below to the survival needs of a high-rocketing population by the end of the eighteenth century. When the environmental resources were strained in the nineteenth century, conflicts broke out from below. From the cases we discussed in this article, we can see that effective local coordination existed at least till the end of the eighteenth century and that conflicts were usually solved through normative legal procedures enforced by the state. Conflicts demonstrated a more violent nature toward the second half of the nineteenth century, and locals tended to fight for their own interests and voice their rights by working out of the normative scope of the imperial state, such as organizing massive petition movements, forcibly blocking outlets, manipulating officials, establishing dike bureaus without official sanction, attacking government troops, and burning down official dike-inspection camps. As Will notes in his article, “we do not find before the middle of the 19th century such episodes as those of the ‘monk’ Cai Fulong (in 1844) or of the ex-officer Yan Shilian (in 1863–64), who took the lead of the poor peasants of the interior delta in contesting the prevailing ‘hydraulic order’ . . . To my knowledge such large-scale movements, apparently not controlled and not manipulated by the gentry, did not have any precedent in the region.”91 The Jianghan people’s ambivalence or even animosity toward the state and their strong local activism are yet another rejection of Wittfogel’s theory of hydraulic despotism.
It is also a regional case study of environmental resource management from below and of strong local forces transforming the social, economic, and political structures. It shows the resilience capacity of the Jianghan communities by establishing cooperative local institutions to effectively facilitate collaborations in dike building and maintenance. In this regard, it is a positive example in which public goods such as dike systems could be managed from below, with minimal intervention from the state. However, when self-interest (be it of an individual or a community) overrode the larger public good, effective state intervention or a supra-watershed institution was needed to reach optimal results. The late nineteenth-century large-scale campaigns on water issues signified the necessity of a transition from yuan-level schemes that were small, individual, and noncooperative to macromanagement within the whole watershed, such as forming a larger zone or even a Yangzi River Commission (Changjiang shuili weiyuanhui, in its present form), to collectively manage waters. Such a practice had been attempted in the late seventeenth century to enforce collaboration. The yuan were grouped into zones, with one zone including several yuan; the yuan within the same zone were to cooperate on dike construction and maintenance, allocating labor according to the acreage of land each yuan owned. However, evidently the yuan-zone system concentrated only on a few areas of the plain—Qianjiang and Tianmen Counties, for example. The individual yuan was still the main unit responsible for the dike work. Government intervention in enforcing collaboration was very limited. As Pierre-Etienne Will points out, the definitive governmental function in managing the local dikes was never decided over the long history of late imperial China, and the Qing rulers were hesitant to use the same method of managing the Yellow River, the Huai River, and the Grand Canal to manage the Yangzi River system. Moreover, there is no evidence to indicate that the establishment of a Yangzi River Commission was ever thought of by the Qing rulers and statecraft officials. The unification of a watershed management was not considered seriously until the early twentieth century.

Last but not the least, this case shows that the resilient mechanisms, especially the local cooperative schemes to manage the common good of the Jianghan communities, gradually lost their effectiveness toward the end of the nineteenth century, when large petition movements and civilian campaigns formed to combat the state authority in ordering
and reordering the hydraulic systems. It seems plausible to suggest that the Jianghan Plain was transforming from a stage where small individual conflicts broke out to a stage where a larger-scale ecological crisis took its shape. Unceasing conflicts over cooperative dike construction, excessive land reclamation, shortages of money and labor in dike maintenance, and weak state enforcement of dike management, in addition to the large amount of sand washed off from upstream by the Han River, blocked outlets between agricultural fields and rivers and lakes and greatly shaped and reshaped the landscape of the Jianghan Plain. As people built more and more yuan on the lakefronts, wetlands, and floodplains, which were the natural relieving areas for excessive water, the dike systems and reclaimed lands constricted the river course, slowing water flows. The whole plain became more vulnerable to floods and drainage problems. Statistics show that big floods happened, on average, every 12.1 years between 1368 and 1464; at the end of nineteenth century, big floods were recorded every 1.5 years. So the very spontaneity of actions from below resulting from short-sighted needs and relatively unsophisticated methods produced an ecological trap with too many people to live securely from water calamities. Therefore, it shows the paradox in the water management of the late imperial Jianghan Plain, where both ecological resilience and also ecological fragility came from below.

ABOUT THE AUTHOR

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NOTES

1. By “late imperial China,” I mean the prolonged late imperial period of Chinese history, from the 1600s to the 1940s. The majority of cases in this article concentrate on the period from the seventeenth century to the first decade of the twentieth century. I am very grateful to two anonymous reviewers who provided extensive comments on an earlier version of this article and helped greatly to shape the current version. I also appreciate that Dr. Donald
Sutton, professor emeritus at Carnegie Mellon University, offered insights on this article. The remaining errors are mine.


7. Besides Karl Wittfogel’s own work, Randall A. Dodgen, Controlling the Dragon: Confucian Engineers and the Yellow River in Late Imperial China (Honolulu: University of Hawai'i Press, 2001), and Jane Kate Leonard, Controlling from Afar: The Daoguang Emperor's Management of the Grand Canal Crisis, 1824–1826 (Ann Arbor, mi: Center for Chinese Studies, 1996), both deal with the North China Plain.

8. Japanese scholars have made considerable contributions in this respect; see Mark Elvin and Hiroaki Nishioka, eds., Japanese Studies on the History of Water Control in China: A Selected Bibliography (Chūgoku suirishi kenkyū: Nihongo bunko mokuroku) (Canberra: Australian National University, Institute of Advanced Studies / Tokyo: Yunesuko Higashi Ajia Bunka Kenkyu Senta, 1994), see especially the introduction. For more on water distribution in the Shan-Shaan region, see Pierre-Etienne Will et al., eds., Shanshan diqu shui ziyuan yu minjian shehui diaocha ziliao ji [A collection of sources on water resources and surveys on local societies in the Shan- Shaan region] (Beijing: Zhonghua Shuju, 2003). For more on hydraulic drainage systems and ritual alliances in the Putian plain, see Kenneth Dean and Zheng Zhenman, Ritual Alliances of the Putian Plain, vol. 1, Historical Introduction to the Return of the Gods (Leiden, the Netherlands: Brill, 2010), in which the authors argue that the construction of village temples, and the formation of ritual alliances to a large extent, coordinated with the irrigation system of the Putian plain, which implies that the community-based management of water resources contributed to the formation of the ritual alliance.
For more on land reclamation and water control in Hunan, see Peter C. Perdue, *Exhausting the Earth: State and Peasant in Hunan 1500–1850* (Cambridge, MA: Harvard University Asia Center, 1987).

9. Some important works dealing with hydraulic issues of the Jianghan Plain include those of Morita Akira, Ts’ui-Jung Liu, Pierre-Etienne Will, Zhang Jiayan, Shi Quan, Zhang Guoxiong, Zhang Jianmin, and Lu Xiqi. Morita Akira examines the dike systems in both Hunan and Hubei, especially in the management of the Wancheng dike in the Jingzhou section of the Yangzi River and the Han River section within the Hubei territory. He argues that the late-nineteenth-century Qing government had turned control over hydraulic construction to local gentry. Ts’ui-Jung Liu conducts a thorough examination of the dike construction in Jingzhou in the late Qing and supports Morita Akira’s view on the water control in the Jianghan Plain. Pierre-Etienne Will proposed a cyclic model to analyze the ebb and flow of power between the Qing state and local society in the Hubei region. Zhang Jiayan differentiates the dike management of the Yangzi River and that of the Han River, as well as the management of the river dikes and the *yuan* dikes, and argues that although the Qing government officials had the intention of maintaining an orderly dike management, the innate structural institutional problems of relying on lower-level informal officials (such as yamen runners) and wide-spread corruption among officials made the decline of the whole dike system inevitable. See Morita Akira, “Shindai Kokō ni okeru chisui kakai no tenkai” [“The development of water control and irrigation in Huguang under the Qing”], *Tōhōgaku* 20 (1960): 63–76; Morita Akira, *Shindai suirishi kenkyu* [Researches on the history of water control under the Qing dynasty] (Aki shobo: Tokyo, 1974); Ts’ui-jung Liu, “Dike Construction in Ch’ing-chou, a Study Based on the ‘Ti-fang chih’ Section of the Ching-chou Fu-chih,” *Papers on China* 23 (Cambridge, MA: East Asian Research Center, 1970), 1–28; Pierre-Etienne Will, “State Intervention in the Administration of a Hydraulic Infrastructure: The Example of Hubei Province in Late Imperial Times,” in *The Scope of State Power in China*, ed. Stuart R. Schram (Hong Kong: Chinese University Press, 1985), 295–347; Zhang Jiayan, “Water Calamities and Dike Management in the Jianghan Plain in the Qing and the Republic,” *Late Imperial China* 27, no. 1 (2006): 66–108. See also Shi Quan and Zhang Guoxiong, “Jianghan pingyuan de yuantian xingqiyu heshi” [“When did yuan fields start in the Jianghan Plain?”], *Zhongguo lishi dili luncong*, no. 1 (1988): 131–40; Mei Li, Zhang Guoxiong, and Yan Changgui, *Lianghu pingyuan kaifa tanyuan* (Nanchang, China: Jiangxi jiaoyu chubanshe, 1995); Peng Yuxin and Zhang Jianmin, *Mingqing changjiang liuyu nongyeshuili yanjiu* (Wuhan, China: Wuhan daxue chubanshe, 1993).


For the study of the commons in an East Asian context, the books by Micah Muscolino on fishery and by Philip Brown on land are both good references. See Micah Muscolino, *Fishing Wars and Environmental Change in Late Imperial and Modern China* (Cambridge, MA: Harvard University Press, 2009); Philip Brown, *Cultivating Commons: Joint Ownership of Arable Land in Early Modern Japan* (Honolulu: University of Hawai‘i Press, 2011).


19. Shi and Zhang, “Jianghan pingyuan de yuantian xingqiyu heshi,” 1988; *Tuntian* refers to a military scheme to combine military practices with agricultural cultivation.

20. 1 mu = 0.067 hectares.


30. A good case is the rain praying within the North China Plain, discussed by Prasenjit Duara. He explored the ritual hierarchies among irrigation communities and illustrated “how the authority of the Dragon God worked to maintain the overall stability of the system even as it permitted the pursuit of various sectional interests.” As for the hierarchies, Duara used the case of irrigation communities in Xingtai Prefecture of Hebei to illustrate “the organizational levels all the way from the family to small groups to gate associations to alliances of gate associations and finally to the drainage basin of the river—the maximal unit.” He discovered that not only each village had a Longwang (Dragon God) temple but each gate association also had a Longwang temple or its own Longwang deity in a Longwang temple, where the locals conducted rituals on several occasions—for example, on the fifteenth day of the second lunar month. See Prasenjit Duara, *Culture, Power, and the State: Rural North China, 1900–1942* (Stanford: Stanford University Press, 1988), 26–38. Other regions had similar cases. For example, a collaborative project between French and Chinese scholars focuses
on Shaanxi, where local communities were suffering from severe water shortage, and reveals how people managed a water distribution system in which “water societies” administered water resources sharing among several communities. Local people of this region worshipped the “Sacred Empress of the Yao Mountain” (Yaoshan Shengmu), who was supposed to provide sufficient water resources for local communities. People constructed a temple, making sacrifice to the empress, conducting rituals, and making collective decisions at the temple. See Dong Xiaoping and Christian Lamouroux, eds., Buguan er zhi: Shanxi sishe wucun shuili wenxian yu minsu (Beijing: Zhonghua Shuju, 2003). Canadian anthropologist Kenneth Dean also examined the religious alliance in the irrigated alluvial plain of Putian, Fujian, including the early popular cults, Ming lineages, Qing multivillage alliances, and late Qing spirit-medium associations, among others. In his analysis, it is quite clear that the religious alliance sprang from the irrigation system of Putian; therefore, there were substantial overlaps between the boundary of religious alliance and that of the irrigation system. See Dean and Zheng, eds., Ritual Alliance of the Putian Plain, 2 vols., 2010.


32. Stone lions and iron bulls were both considered sacred cultural symbols of subduing water. Their symbolic power is associated not only with the choice of animals but also with the five-elements theory, in which earth (stone) subdues water and iron (metal) subdues earth. The creation and practice of those water-subduing symbols still needs further study. Ni Wenwei, Jingzhou wancheng dizhi [A history of the Jingzhou Wancheng dike] (1876; repr. Hubei: Hubei jiaoyu chubanshe, 2002), 89–90.

33. Ni, Jingzhou wancheng dizhi, 90. The Chinese measurements are 1 zhang long, 6 chi wide, and 2 chi tall, where 1 zhang = 3.33 meters and 1 chi = 0.33 meters.

34. The Taiping Rebellion and Nian Rebellion of the mid-nineteenth century destroyed many temples in this region, which is probably one of the reasons why the temple records are concentrated on the pre-nineteenth century.


36. For more details on water-deity temples, see Yan Gao, “Transforming the Water Regime: State, Society, and Ecology of the Jianghan Plain in Late Imperial and Modern China” (PhD diss., Carnegie Mellon University, 2012), especially chap. 2.


40. Huguang zongzhi (1591), 33:6, in Siku quanshu cunmu congshu (Qulu shushe, 1997), History 195-137.

41. Zhang Jiayan distinguished the people's yuan from private yuan; but according to his analysis, they were both created by people themselves and were not registered with the government. There seems no fundamental difference between the two. Zhang, “Water Calamities and Dike Management,” 73, 89.

42. Ni, Jingzhou wancheng dizhi, 322–23. It states that the official yuan, also called bu yuan, were supervised by officials but maintained by people. People did not want to call the yuan reclaimed by themselves as “private yuan” (si yuan); instead, they called them “people’s yuan” (min yuan).

Gao: “The Revolt of the Commons”
44. Mark Elvin, “Market Towns and Waterways: The County of Shang-hai from 1480 to 1910,” in The City in Late Imperial China, ed. G. W. Skinner (Stanford: Stanford University Press, 1977), 466–467. See also Elvin, Retreat of the Elephants, 117; Elvin noted here that the “public election” indicates a form of informal election without quantified balloting.
45. Elvin, Retreat of the Elephants, 117.
46. Elvin, Retreat of the Elephants, 117.
47. Jiangling Bailüyuan yuanshou zongyince [A catalog of the chiefs of the Bailü yuan in Jiangling County], cited in Peng and Zhang, Mingqing changjiang liuyu nongyeshuili yanjiu, 207.
49. Perdue, Exhausting the Earth, 184.
50. Peng and Zhang, Mingqing changjiang liuyu nongyeshuili yanjiu, 207.
53. Hu and Chen, Xiangdi cheng’ an, 4:1259–64.
54. Qianjiang xianzhi xu (1879), 10:18, 19.
55. Mianyang zhouzhi (1530), 8:4; Mianyang zhouzhi (1894), vol. 3, in Zhongguo difangzhi jicheng, 47:34–35; Hanchuan xianzhi (1873), 9:7, 34.
58. Thomas Buoye examines the evolution of property rights in Guangdong during the eighteenth century and argues that agricultural commercialization, market incentives, and population growth were the big momentum for the changes in Qing institutions. With the incentive of economic growth, many changes happened in the land-use system, which was reflected in the revision of Qing legislation—for example, the abandonment of land redemption and the further practice of topsoil-subsoil division of land rights. See Thomas M. Buoye, Manslaughter, Markets, and Moral Economy: Violent Disputes over Property Rights in Eighteenth-Century China (Cambridge: Cambridge University Press, 2000). Cases of conflicts in Hubei Province are discussed later in this article.
59. Zhang, Coping with Calamities, 201.
60. Zhang, Coping with Calamities, 197–98.
62. Qianjiang xianzhi xu (1879), 10:17. 1 gong ≈1.65 meters.
63. Qianjiang xianzhi xu (1879), 10:17.
64. Qianjiang xianzhi xu (1879), 10:5.
66. Peng and Zhang, Mingqing changjiang liuyu nongyeshuili yanjiu, 208.
William T. Rowe examined the Fankou Dam controversy from 1876 to 1883, which was set in the social milieu of reconstruction in the middle Yangzi region, and found that the controversy of the Fankou Dam construction involved a wide range of stakeholders, including the local government, the provincial government, the farmers, the gentry, the intellectual elites, the pettifoggers, and the fishermen. Rowe described Wuchang County as a “desperately poor” area. The Taipings had wiped out the county’s once-prosperous commercial business, and the whole place was suffering from economic depression. By striving for reconstruction, various social groups found a way to express their interests through the controversy of the Fankou Dam construction. See William T. Rowe, “Water Control and the Qing Political Process: The Fankou Dam Controversy, 1876–1883,” *Modern China* 14, no. 4 (1988), 353–87.


Hu, *Dazekou cheng’ an*, 26–27.

Hu, *Dazekou cheng’ an*, 27.

Hu, *Dazekou cheng’ an*, 27.


Hu, *Dazekou cheng’ an*, 17–18.

Hu, *Dazekou cheng’ an*, 23.

Hu, *Dazekou cheng’ an*, 23.


The Changjiang shuili weiyuanhui (literally, “Chang River Commission”) was a product of the People’s Republic of China that was established in 1950; but its previous form, the *Yangzijiang shuili weiyuanhui* (literally, “Yangzi River Commission”), was established in 1935 under the Nationalist government.

*Qianjiang xianzhi xu* (1879), 10:10, 14.

In his article “State Intervention in the Administration of a Hydraulic Infrastructure,” Will discusses an edict of 1715 that puts the contrast between the Yellow River and the Yangzi
in an interesting way. The edict asserts that “dykes of the Yangzi and the dykes of the Yellow River are not the same thing. The course of the Yellow River is not fixed and changes constantly, and this is why ‘river officials’ (heguan) have been appointed to keep watch on it. The waters of the Yangzi never change course, and for this reason it is enough to entrust their control to the field administration.” Will then discusses the fallible assumptions in this edict by pointing out that “the Hubei basin, when considered as a whole, offered an extremely unstable hydrography. . . . and would most certainly have justified the institution of an autonomous administrative hierarchy for river conservancy.” Will, “State Intervention in the Administration of a Hydraulic Infrastructure,” 317–18n51.

95. We should not see the rise of the riverbed as a direct and necessary consequence of the continuous diking, as pointed out by Will: “Matters are more complex. A carefully contained river does not rise if the ‘major bed’ contained by the dikes is correctly calculated taking into account both discharge and gradient. In the case of the Han in the 16th century and after, there probably was an interaction of various factors: closing and reopening of outlets, resulting in changes of discharge inside the principal bed, narrowing and widening of the ‘major bed’ causing acceleration and slowing down of the flow, hence eroding of the dikes or alluviation, etc.” Will, “State Intervention in the Administration of a Hydraulic Infrastructure,” 311n28.