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CONTENTS

1 The Concept of Inherited Evil in the Taiping Jing
   Barbara Hendrischke

31 Water Control in Zherdong During the Late Ming
   Morita Akira

   Brian Martin

87 The Limits of Hatred: Popular Attitudes Towards the West
   in Republican Canton
   Virgil Kit-yiu Ho

105 Manchukuo: Constructing the Past
   Gavan McCormack

125 Modernizing Morality? Paradoxes of Socialization
   in China during the 1980s
   Børge Bakken

143 The Three Kingdoms and Western Jin : a History of China in the
   Third Century AD - II
   Rafe de Crespigny
Cover calligraphy  Yan Zhenqing 顏真卿, Tang calligrapher and statesman

Cover illustration  “Seeing the apparel, but not the person.”
   Cartoon by Liu Bai 劉白, Pan-chiao man-hua
   [Five-cents comics], vol.6, no.1 (1932), p.5
WATER CONTROL IN ZHERDONG
DURING THE LATE MIRNG

Morita Akira 森田明

Introduction

Seen in terms of the forms assumed by water control in the basic economic areas of China, there was a transition from the irrigation by means of channels (qur) used in northern China before the Tarn dynasty, with its heartland in the Guanzhong region, to irrigation by barrages and reservoirs (bei-tarm) in the Jiang-Huair region. From Sohng times onwards 'creek' irrigation also developed in the Jiangnam (in other words, the Yarngzii) delta. The intensive wet-rice agriculture of Jiangnam further increased in economic importance during the Mirmg and Qing dynasties, and it is understandable that research on water control in this period has largely concentrated on this latter area.

Even for the Jiangnam region, however, it is undeniable that, compared with the polder-field (weintam) area of Zherxi, research is lacking on the water-control systems of Zherdong, which were to be found both in the areas at the foot of its mountains and among fields lying high among the hills.

It has been pointed out by Honda Osamu that the Zherdong region was already hydraulically developed between the Later Hahn dynasty and the Tarn, and thus it was an old agricultural area compared to the polderlands of Zherxi, which were still newly opened in late Tarn and early Sohng times.

Barrage-and-reservoir irrigation was the distinguishing feature of the older farmed areas of Zherdong and relied critically on the storage of water by the innumerable barrages, reservoirs, and lakes of various sizes created there between the Later Hahn and the Sohng. The plentiful small- and middle-sized streams of the hilly uplands of Zherdong constituted its sources of water, and numerous barrages and reservoirs were located at the points

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1 Chinese words are transcribed here into tonal pinyin: the second and fourth tones are shown, respectively, by unsounded post-vocalic 'r' and 'h', and the third tone by a doubled principal vowel, while the first tone remains unchanged. Note also that in quotations from pre-modern Chinese works, 'j' stands for 'juahn' (approximately 'chapter'). [Translators’ note.]


3 Typical recent works are Kawakatsu Mamoru, Chugoku boken kokka no shihai kozo: Min-Shin fueki seido shi kenkyu [The control structure of the feudal Chinese state: studies on the forced labour system of the Ming and Qing dynasties] (Tokyo: Todai Shuppankai, 1980), and Hamashima Atsutoshi, Mindai Kovan ronson shakai kozo no kenkyu [Studies on the social structure of villages in Ming dynasty Jiangnarn] (Tokyo: Todai Shuppankai, 1982).

4 ‘Zherxi’ was approximately the region that lies north of Hangzhou Bay and south of the Yarngzii River, and ‘Zherdong’ that /O
/part of modern Zhejiang province that is south of Hangzhou Bay. [Translators' note.]


6 Honda, "Wuzhou."

7 Shiba Yoshinobu, "Tô-Sô ni okeru suiri to chiiki soshiki" [Water control in Tang and Sohng times and the structuring of regions], in Hoshi Ayao Sensei Taikan Kinen, ed., Hoshi bakushitsukan kinen Chiigo kushibonshû [Essays on Chinese history in commemoration of the retirement of Professor Hoshi] (Tokyo: Kyûko Shoin, 1978), reprinted in Shiba, Sôdai Kônan keizaishi no kenkyû [Studies on the economic history of

where these came off the mountains and into the plains. It was from such streams that the surrounding drainage basins were fed. While barrage-and-storage irrigation was far from having the significance of creek irrigation in the overall scheme of Chinese water control, it deserves attention because of its regional importance.

I have discussed elsewhere the nature of the principal source used here, the jingyee guilieh quarnshu [Complete documents relating to the "Summary of Regulations for Managing the Countryside" reissued by Huär Xuerlieh 華烈 in 1865. Here I examine water control and social questions related to it in Zhujih county 茶陵縣, Shaoxing prefecture, in Zherjiang province during the late Ming, as a basis for further research into barrage-and-reservoir irrigation.

2. Water Control in Zherdong

Honda Osamu has used the statistics on the various categories of farmland contained in the General Gazetteer for Zherjiang Province of the Qianlong reign-period (1736–96) to compare the area of paddy-fields (tiarn 田) and reservoirs (tarn 塘) in the counties of Jinhua prefecture during the eighteenth century. He thinks it can probably be inferred, however, that the wide diffusion of water-storage basins that he has shown for this later time was already almost as high in the earlier Sohng period.9

Map 1
The Sources of the Waan River, from Jingyee guilieh quarnshu (see nn.8 and 27)
Scale: each panel is about 2 km wide
Orientation: left to right = north to south
Annotations: unnamed features in the map are identified beneath it within parentheses.

Key to main symbols:

- dyke
- undyked bank or lake-area boundary
- lock
- bridge (several variants)
- stele
- burial-ground

1. Qiantang River  • Turtle-Hatchlings' Gate  
   Caacobaor Gate  • Xixing Crossing
   [Hangzhou: prefectural capital]

2. Xixing Relay Station  • Luber Tower
Although Zhujih county is in Shaoxhing prefecture, it lies in the south-western corner of the latter and next to Jinhuiar prefecture, and may be said to share the regional characteristics of Jinhuiar, having a wider distribution of storage basins than the other counties of Shaoxhing. The Puuyarng river 浦陽江, whose sources lie upstream in Yihwu and Puuijiang counties, runs through Zhujih approximately from south to north, being known here as the 'Waanjiang' 温江, and then passes through Xiaoshan county before emptying into the Qiarntarng river. In the preface to the Complete Documents it is described as follows:

The upper reaches come surging down in one knows not how many hundreds and thousands of branches. In its middle course where they gather together they resemble nothing so much as a single belt on clothing. Lower down, as the river moves towards the place where it drains, it becomes like a throat, and should a sudden downpour last the whole of the morning, then a hundred 11i become a torrent. Not even two or three years out of ten are without some disaster. The people of Zhujih have, in general, no year without grief from floods.

The Waan river was thus fed by numerous tributaries coming off the mountains, and unable to retain all its water within its banks during the season of heavy rains and rising water-levels. This led to floods caused by the breaking of the dykes.11

The livelihood of the people of Zhujih is wholly supplied by their fields, but half of these are low-lying marshlands. Though the elevated fields have stony soil,
between the past and the present, yet without this book the people of Zhujih would not have known which way to turn, and those who have governed them in later times have had nothing to rely on." He had, he insisted, "adhered to the original in every respect, and not presumed to add or delete a single character." Morita, "Liur Guangfuh," pp.33-4. [Translators' summary.]

Production in Zhujih was divided between elevated or 'mountain-fields' (shantian 山田) and low-lying fields or 'lake-fields' (burtian 湖田).13

There are more than 700,000 mou in this county producing food-grains, half of them mountain-land and half lake-lands. The mountain-fields are stony and of low fertility, yielding poor returns, so that the people routinely rely for their supplies upon the lake-fields. If these latter fail to yield a harvest, the entire county reports a famine.14

The county gazetteer for the Qianlong reign-period (1736–95) noted how 'lake-fields', which was the name given locally to low-lying fields, were a form of polder built in the marshy, lowlying parts of the Waan river floodplain with a dyke around them to keep out the flood-water.

All the upland fields (yuantian 原田) of Zhujih are at some height, but those that lie alongside the rivers, and are marshy, are called 'lake-fields' (burtian). Dykes (yu+) built around each of them keep out the water. There are seventy-
two of these, large and small. The people who make their living from them create internal subdivisions. The county suffers from floods each year which time and again damage the crops, so that the people of the county are constantly half-famished.

According to the *Complete Documents*: “The dykes around the fields are in low-lying and swampy areas. If there is a certain amount of rain, they are immediately flooded over. After repeated years of such inundations, the people are in an extremely painful condition.” Seventy-two lakes (*bur*) were built to prevent the floods caused by the sudden overflowing of the area in which the low-lying fields were located:

There is only one river, the Waanjiang, to drain the waters from several hundred *li* of mountains and valleys in Zhujih. The inhabitants have therefore established seventy-two lakes all around the county to store this water, and so are spared the menace of inundations.

Furthermore:

Zhujih is situated where the mountains meet, and looks down upon the banks of the rivers and their confluences. For this reason, when there are sudden rains and a swift rise in the water-level, the currents of a multitude of torrents vie with each other for mastery. If downstream the waves and the tides have suddenly surged up, then the lower reaches of the river are immobilized. These hydrological threats to Zhujih county arise from the lack of a means to drain the water, but there are also threats from a lack of a supply of water. Since drainage...
Mirm has two senses, namely 'commoners' in contrast to guan 'officials' (and shern 'gentry'), and 'civilians' in contrast to kung 'soldiers'. Where there is an indication, or implication, that orders are being given to the mirm, 'commoner-civilians' is a more precise translation than the usual 'people'. [Translators' note]

Adopting the interpretation of the Fengtuujih [Record of airs and places] given in the Kangxi zihdiaan [Kangxi reign-period dictionary] (reprint of Diankeh Tonggbaan edition, Hong Kong: Fahshih Tianyiger, n.d.) that puu means "a large stream having small mouths such that through-flow is subdivided." [Translators' note]

Footnote 19 of the original provides a list of all but two of the names of these lakes drawn from the Wahnlih reign-period gazetteer for Shaohxing prefecture, j.15 (shuuilih-zhib).

Guh Yamwuu, ed., Advantageous and disadvantageous aspects, ceb 22 (Zherjiang xiah).

These lakes stored water in order to prevent flooding, and served as safety devices by regulating the quantity of water. It may be seen from the statement in the Qianlong reign-period gazetteer that "many of the streams that enter Zhujih county are of a bottle-shaped configuration (puu 潟), constituting large lakes that are full of water in spring and summer but shallow or dried up in autumn and winter," and that the majority of the Seventy-Two Lakes were not dug artificially ab initio, but were natural riverine lakes, scattered in great number throughout the Waan river basin, seasonally filling up and drying out, that had been converted into reservoirs by the building of dykes to contain the flood-waters.

At the same time, the water in these lakes also came to be used for irrigation, as the following quotation from the Advantageous and Disadvantageous Aspects of the Empire, compiled by Guh Yarnwuu, reveals:

Now lakes are in general the means by which fields are watered, but the Zherdong region is particularly well endowed with benefits from them.
Topographical changes, however, and sediment deposited by flooding (zhabngsba 聚沙), and mud caught in the roots of vegetation, increase gradually day by day. The people follow this trend and convert the lakes into farmland. If we were now simply to desire to get rid of these fields and restore the lakes, this would be to disregard the fact that once sediment has created an obstruction it is no longer possible to store water, and that even if we did remove the fields no advantage would come from so doing. What is more, it has never been possible to transform lakes entirely into fields. There are constraints on those in comparatively low-lying places from becoming fields, and the people who derive the benefit from them dredge the sediment away and build them into waterways so that there is a through-flow. If there is any significant degree of reduction in depth due to the deposition of silt they immediately scoop it out. In this way the fields do not constitute an obstruction and the lakes do not dry up. Both forms of profitability can coexist.

It would thus appear that in the early period there was no across-the-board ban on converting the shallow parts of the lake into arable land, but only that it was limited to some extent. Provided that the beneficiary was charged with the obligation of maintaining the through-flow of the waterway and dredging any accumulated sediment, lake-fields could coexist with the lakes without impairing the basic purpose for which the latter had been created, and the lake water could also serve for irrigation. It may also perhaps be conjectured from the ‘internal subdivisions’ of the lake-areas referred to on page 35 above that some limited, small-scale, semi-legal conversion of lakes to farmland was being carried out by the peasants. The fourteen-panel map of the lake-

15. Prohibitions Stele
16. Prohibitions Stele
17. Public Village

- Yuartarn Oxbow Meander Land
- Prohibitions Stele
- Public Burial Ground
- Water connection to Zhirub
- Zhaqia Wharf
- Public Burial Ground
of the Waan river are two. One is called the Upper East River and flows in from the south-east from Dongyamg county, joining together the waters of all the streams and mountain torrents. The other one is called the Upper West River and flows in from the south-west from Puujiang county, also joining together the waters of all the streams and mountain torrents. It then flows north-east, joining with the Upper East River, both of them emptying into the Waan river. Further north, this again divides into two streams. One of these is called Lower East River, and winds about to the east of the county capital before bending to the north, covering over seventy li in all on its swift course to San'gaangkoou. The other is called the Lower West River, and winds around to the north side of the county capital before slanting off swiftly eastward, likewise for more than seventy li, joining the Lower East River at San'gaangkoou. The waters of all the streams and mountain torrents flow into it. Once the two rivers have joined together, they are also called the Great River. This then flows several tens of li northwards to Jih Family Confluence in Shanyin county, becomes the Qiamtamg River and enters the sea at Sanjiangkooul. 

The construction of Lake Bih can thus be traced back to Sohng times. It may likewise be surmised that most of the Seventy-Two Lakes were built in either the Sohng and Yuam, as regards the earlier of them, or the early Ming, as regards the later. This is also consonant with Honda’s point about Sohng-dynasty Wuhzhou (present-day Jinhuar) mentioned at the beginning of this section.
3. The Creation of Lake-Fields in Late Mirng Zherdong

We have now examined the natural environment of Zherdong, with our focus on Zhujih county, and the characteristics of the water-control system appropriate to it. The type of installation indispensable for hydraulic works in this region, namely that featuring the combination of water-storage and irrigation, as exemplified by the so-called ‘Seventy-Two Lakes’, was widespread but displayed certain variations depending on the topography. According to the county gazetteer for the Xuantoong reign-period (1909-11):

Zhujih derives three kinds of benefit from water. In the eastern, southern, and western districts the topography is elevated and there are no barrages, or reservoirs, and no extended wetlands, with which to store water. The streams off the slopes discharge directly and may be expected to run dry immediately. Benefit is to be had from irrigation and so they build diversionary cross-dykes (yahn 防 here. The northern lands are located in a low-lying swamp into which a multitude of streams discharge. Without dykes for defence it would at once become a world of marshes. Benefit is to be had from protection and so they build enclosure-dykes (geng 防) here. Thus water neither enters from the outside nor escapes from the inside. When there is damage from the encroaching expanses of flood, benefit is to be had from drainage, and so they construct locks (zhar 防) here. These benefits are determined by the terrain.32

We have also seen that the development of the Zherdong region had already occurred to some degree in the Sohng dynasty, and that it was clearly further consolidated during the Yuarn and the Mirng.

---

21. Zhangshen Temple
22. Shabngwuaang Temple
23. Huihyih Bridge
24. Taipingsi Bridge
25. Zhujih County Capital
26. Charitable Home (for orphans, etc.)
How far, though, was the functioning of the lakes maintained in an untroubled manner thereafter? According to the Wahnlih reign-period gazetteer for Shaohxing prefecture:

In six of the eight counties that today constitute this prefecture, the exceptions being Shehng and Xinchahng, lakes are used to store water, and the farmers look on them as a matter of life and death. Their struggles over water at the height of the summer season sometimes lead to fights in which they kill each other. As epoch has succeeded epoch, however, the fields have become more numerous day by day, and the lakes day by day diminished in size. Hardly a day passes even now without someone encroaching on a lake. The situation is reinforced by the constricted character of the land and the density of the population. It has regularly been suggested that all the mature fields inside the [former bounds of the] lakes should be registered for taxation, but the Rural District Leaders (xiangzhaang 鄉長) and elders aver that there ought not to be fields in the middle of [what was] a lake, and that having fields there is injurious to water-control. . . . Although we cannot prohibit those who have encroached up to the present time, we must put into effect some method of obstructing [the continuation of the process].

The consequence was not only an insufficiency of water for irrigation but also a decrease in storage capacity, leading to a lessened ability to prevent damage from floods, and hence to a situation that gave grounds for anxiety.

Let us look at this in concrete terms, beginning with the background reasons for the usurpation of the lakes as set forth by Liur Guangfuľ 劉光復 during his time as magistrate of the county in the later sixteenth century:
I have invited people of humble means to pay me a visit, and have enquired of them about their sufferings. They all maintain that Zhujih consists half of mountains and half of lakes, and that because of the repeated disastrous floods over the years they have been unable to find the means of survival. When I have sought the reasons for this, it appears that the lower course of the Waanjiang/Puuyamjiang is often blocked, that the disposition of the people is to be lazy and uncooperative, and that powerful and refractory persons have monopolized the profits and made difficulties for others to the point where the resentment and exhaustion of the latter are unbearable.\textsuperscript{35}

The gazetteer for the Kangxi reign-period (1662–1722) reveals what had happened to Lake Bih, the most prominent storage lake in the county:

Lake Bihpuu 滇浦湖 [Lake Bih] lies fifty lì north-east of the county capital, and is about eighty lì in circumference. It is in the territory of the fifty-ninth circumscription (du 都), and was used in times past as a lake, not as farmland. For this reason it was not registered for taxation and had no inhabitants, and therefore no cantons (tur/lì 圖/里).\textsuperscript{36} Later on, the people who lived along the margins of the lake gradually took possession of it as farmland. As the days passed, they gained substantial profits from so doing. The authorities detested this violation of the law, but every time they brought the cunning fellows to court to settle the matter, the latter would divert the responsibility for their taxes to others so as to divide the burden (feisa飞散) and eliminate themselves as targets (yiingshe 影射).\textsuperscript{38} . . . The people looked on [the area] as fields, and the officials on it as a lake. Broadly speaking, there was no need for it to be entirely one thing or the other, but since both superiors and inferiors persisted

\textsuperscript{35} Complete documents (zhebng), “Shenqing libei shihjihin yoongquarn shuulih shenwern.”

\textsuperscript{36} In Ming times, the tur (literally 'map') was usually synonymous with the lì or 'canton' of the tax and corvée system. See Hoshi Ayao, Chūgoku shakai keizai shi goi [Glossary of terms used in Chinese social and economic history] (Tokyo: Tōyō Bunko, Kindai Chūgoku Kenkyū Sentā, 1966), p.316.


\textsuperscript{38} Zen Sun, Administrative terms, #634, and Hoshi, Glossary, p.15.
in their ways, the courts were filled with countless denunciations for more than thirty years.39

A proposal to preserve Lake Bih presented in 1602 argued that:

Lake Bih is a place for storing water, with the purpose of bringing the impetus of the latter to a standstill. . . . The top-quality land (gaofoub 高阜) all belongs to official households, and the people of modest and of few means serve as tenants of the powerful households. Each one of them struggles for profits from his harvest and disregards the disasters that arise from blocking the streams. The watercourses are as constricted as throats. When the water flows in them it is as if they were choking. Only a morning's sudden downpour is needed for there to be a sheet of water spreading as far as the eye can see.40

A report that the ban on the insertion of fishing-stakes in Lake Bih had been violated declared that:

Lake Bih is an official lake for the storage of water pertaining to this county. The more than forty thousand moou of which it originally consisted have all been surrounded with enclosure-dykes by powerful families using their tenants as a false front [?] (maob diabn 假田). Since this time, the water has had nowhere to go and the entire county has suffered.41

From this it may be inferred that those promoting the transformation of the lake into farmland were the powerful local gentry described by such terms as 'official households', 'eminent households', or 'influential families'. By and large, the land obtained by encroachment on the lake was farmed by tenants. According to the Shaohxing prefectural gazetteer for the Wahnlih reign-period, "there has been a surge of proposals in recent years that tenants should be invited [to cultivate the lake areas] and powerful people have taken advantage of this, and the greater part [of the lake] has been done away with."42 Faced with this situation, the Community Recorders (liidib 里表)43 and farmers who used the water presented numerous legal appeals to have it stopped,44 but seemingly without hope of effect.

Lake Baiartai45 was likewise encroached upon by 'great households' and 'eminent households':

Lake Baiartai was located still further downstream than the Seventy-Two Lakes, and linked inland with the Lihshan46 and Maa47 reservoirs. It served more than 40,000 moou of tax-paying fields, stretched across two rural districts (xiang 鄉), and had a circumference of a hundred lli [that is, about 16 lli or over 10 kilometres in radius, if approximately circular. Trans.] The banks formed by enclosure-dykes along the rivers that bordered it ran for more than 1300 lli [zhabn 靜, i.e. over 4,650 metres. Trans.] The Waan river rushed into it. . . . Eminent households and great households, secure in their possession of rich lands, were casting their [greedy] eyes from afar on the lake-fields [there].49

Further disputes occurred over Lake Xiaoolih:

There were thirty-seven official [reed-] swamps in Lake Xiaoolih, with names such as the 'Zhuhuyuarn' and so on, from which the entire lake [area] was
supplied with its irrigation water. In 1543 the forebears of those now living there purchased them, but the people who lived by the lake considered that an official lake could not be sold in this unauthorized fashion. The plaints they lodged, and the enmities that thus accumulated, caused lawsuits that lasted for more than fifty years at a cost of not less than several hundreds of ounces of silver. In this way the lake was not a source of benefit but, on the contrary, a bane.

It was recognized that an 'official lake' safeguarded the livelihood of the poor. In a plea to preserve Lake Bih it was, for example, stated that, "if by these means the survival of the lake can be assured, and it is confirmed as an official lake, and the poor people are allowed to fish there and gather herbaceous plants, they will contrive the means of existence from such activities." In another case, from 1605:

The one hundred and twenty-four plaintiffs, headed by the enclosure-dyke leader (juzhaang 堤長) Fang Zhaoh, have ascertained by investigation that all the people have been filled with a hungry desire for the official [reed-] swamps of Lake Gao, and have been encroaching to plant their seeds there without once stopping. They have not realized that this is in fact a place for the storing of water, to furnish the needs of the lake people both in times of drought and of flood. The plaintiffs all desire this situation to be cleared up, so that long-term plans may be made.

Two years earlier a similar case had been reported for Lake Houhtarnq:

Twelve persons, headed by Warng Deng, have repeatedly come before the authorities for thorough examination. They have been plotting to encroach on an official lake, an act against which the law has set a clear prohibition. Out of the more than three thousand moo of tax-paying fields in Lake Houhtarnq, more than fifty moo of official [reed-] swamps have survived, and the entire lake relies on them for its irrigation water. In 1596, thirteen persons, headed by Warng Nemg, effected a plan to act as 'official families calling for tenants' (huahnjiaqiingdiahn 官家請佃). In 1598 there was a drought, and as a result not a grain of rice was harvested in the entire lake-area. The people of humble means came one after the other to the county magistrate's office to present their plaints with tears.

In all these cases, the damage done to the supply of lake water needed for irrigation by these unauthorized encroachments made economic reproduction impossible for the poor people living by the lakes.

The inhabitants of the areas near the lakes also took advantage of the deterioration of the enclosure-dykes to engage in other sorts of activity that interfered with water control:

I have observed [wrote one official in 1600], in the course of my inspections walking along the enclosure-dykes of the Seventy-Two Lakes in this county, that many of them are delapidated and that in the gaps the people living near the rivers have driven in wooden stakes and bamboo screen-nets to catch fish, which blocks the water.

59 Map, Sources, panel 13 (pp. 36) (just south of Lake Bih). [Translators' note]

60 Not located, but the map, Sources, panel 13 (p. 36), shows New Grass Lake approximately west of Ruaan-Family Wharf across the stream leading to Fengqiaor county. [Translators' note]

61 Complete documents (zhehng), "Jihn chahob shenwem."

62 Kawakatsu, Control structure, sect. 2, pt 3; and Morita Akira, Shindai suirishakaishi no kenkyū [Studies on the social history of water control in the Qing Dynasty] (Tokyo: Kokusho Kankokai, 1990), pt 1, chap. 2.

And again:

I would observe that when it was reported to me that the enclosure-dykes of Lake Bairtaa had been breached, I went to make an inspection forthwith and gave a lecture to the people assembled according to the provisions of the Rural Compact (xiangyue 鄉約). When I proceeded in person to examine the bank formed by the enclosure-dyke, I took a route from Ruaan-Family Wharf out to Grass Lake Inlet Mouth. [I found that] nineteen of the neighbourhood people, headed by Ruaan Can, and a hundred and six of them, headed by Qiam Kan, had all driven in bamboo poles and timbers in this particular place, and constructed screen-nets for the catching of fish, cutting off the use of the water by this transverse blockage. The matter pertains to the welfare of the area, and the wooden stakes and bamboo screen-nets are to be split up and removed.

This shows that the hydraulic installations were disintegrating as a result of the slackening of the management of the enclosure-dykes around the lakes, and at the same time that this offered an inducement not only to encroachments by the powerful but also to illegal acts by the poorer people living beside the lakes.

It is clear from the foregoing that the outcome of the forcible creation of lake fields on repeated occasions during the Wahnlih reign-period of the late Mihe local level the unauthorized profits of the powerful and crafty should be done away with, that the pre-existing collective hydraulic order centred on the farmers who used the water, and now on the verge of crisis, should be restored, the hydraulic installations and their functions reconstituted, and their management strengthened, as matters of urgency. It is true that, within certain limits, the transformation of lakes into fields had already been recognized as semi-legal for the lakes of this region, and the benefits of the lakes and of farmland thus coexisted. What is implied here is that by the Wahnlih reign-period the equilibrium between them had been decisively disrupted.

4. Reorganizing and Strengthening the Regulations Governing Management

It so happened in 1598, when the Zhujih area was facing the problems mentioned above, that Liur Guangfu had taken up the post of county magistrate and become involved with their solution. A stele later set up to commemorate him in a 'shrine for a living person' stated that
The magistrate of Zhujih county was formerly His Honour Liur from Qingyang county [in Anhui province]. He was a perspicacious, forbearing, loyal, and trustworthy man who laid deep plans and was good at making decisions. He drove away calamities, attracted good fortune, corrected popular customs, and rectified the evilly disposed, there being nothing that he did not undertake. . . . The people of Zhujih were conscious of his sincerity, and their mode of behaviour was greatly altered. He understood what was of substance in government and persevered in his planning with matters of long-range import. Once he had resolved his doubts, he adhered firmly [to his decisions] and executed them in forceful fashion. It was his contention that of all the afflictions from which Zhujih suffered none was worse than water. . . .

During his time in office Liur’s sincere and positive efforts to improve local government thus won him the confidence of the people. While he did his best to reform the social evils of “leaving corpses in coffins to await interment, the drowning of infant girls, the fettering of female servants, and the purchase of boys and girls having the same name as the purchaser to serve as slaves (奴 奴), he put his greatest efforts into water control, which he saw as causing the most distress to the local inhabitants:

When Liur Guangfuh came to Zhujih in 1598 it was immediately following the great flood when Femgyih 汝, god of streams, had acted in hurtful fashion. The lakes had been submerged everywhere, and the people were almost without any means to make their living.

Having once witnessed this, “how could he have borne to have stood by idly as a spectator. He determined to make every effort over the winter months, and formulate a plan far-reaching enough to be effective for a century.” In more concrete terms:

During the Wahnli reign-period [1573–1619] His Honour Liur of Qingyang was himself obliged to make plans to bring the situation under control. He had channels cut to guide the flows. He had weeds scythed away and holes blocked up. He had the locks (zbar) repaired and the dykes (geng) banked. He took matters in hand step by step until once again the river was flowing freely.

Furthermore:

Zhujih county is bordered by innumerable mountains, and its Seventy-Two Lakes are located at the junctures of streams. It is easy for the mountain-fields to suffer from drought yet for the lake fields to be flooded. The people suffer from this without respite. Liur Guangfuh surveyed the terrain and installed a diversionary dyke (bab 堍) at the Mar Brook (Mar qi 麻溪), so as to direct the water into the Qi Embankment (Qi yabn 七堰, probably a variant of Qi yabn 磚堰), in anticipation of both droughts and floods. He also marked out longitudinal divisions in all the lake areas, building long enclosure-dykes (yu) in order to ward off the water. He raised huge levees (fur 防) along the banks of the rivers, fitted with sluice-gates (shuaiwen 閘門) that were opened and closed at the appropriate times. He installed several tens of persons as enclosure-dyke chiefs (yuzhaang 坂長), with orders to lead [the local people] in banking up the enclosure dykes again if any of them should collapse.
It may be presumed that this greatly reduced the damage from floods.

The Xuantoong reign-period gazetteer for the county says that at the same time that Liur was making these efforts to restore hydraulic installations on the verge of collapse, and re-establishing and improving their technical functions, he also clearly prescribed various ordinances that laid the foundations in a well-considered fashion for operations after the restoration. The means he employed to make plans for the benefit of the people of Zhujih were, by and large, written into the **Summary of Regulations for the Management of the Countryside**, with the intention that they be handed on down for many years to come. The general explanation for this was that he greatly hoped that those who came after him would maintain the established procedures, and, indeed, not only maintain them but, as the occasion warranted, consider what else was needed in the minutest detail. The depth of his concern can be felt coming through his words.73

Finally, the preface to the **Complete Documents**, which was first printed in 1727, states that

When His Honour Liur took up the post of magistrate of this county, during the Wahnlih reign-period of the former Ming dynasty, he built levees and dykes to prevent [further] disasters. . . . His detailed enquiries into water control are printed here in book form under the title **Summary of Regulations for the Management of the Countryside.** It is in truth a manual for the government of Zhujih county. The people who live by the lakes in particular regard it with respect as containing the established rules, and as not to be subject to abridgement.74

The **Summary** is divided into three chapters, an 'upper', a 'principal', and a 'lower'. The first of these is, for the most part, about water-control rules that have an overall application; the second is a collection of particular reports and submissions; while the third records the dimensions of each of the lake-areas and dykes, and also the acreage of the fields, subdivided into sections.

In his preamble to the eleven subdivisions of the "Matters Concerning the Lake-Fields" (šubuišzbib湖田事宜) that constitute the main body of the regulations, Liur addressed his superiors as follows:

When plans are being drawn up to last for hundreds of years, even if there are great advantages to be derived from them, some minor damage will also be inflicted, and what is of benefit to the great majority may, I suspect, work to the detriment of certain individuals. As is invariably the case, if we were to follow the schemes of corrupt government favoured by the evilly inclined holders of local power, or were heedlessly to adopt the accustomed practices of commoners who are deficient in perception and whose one desire is a quiet life, then success and freedom from mishaps would be impossible to achieve. I have respectfully expounded the matters relevant to the lake-fields, item by item; and if, after due examination, it should appear that what I say is not without sense, and ought to be put into effect, then I would beg that the authorities issue a decree to the people of Zhujih county. The commoners have heart-minds that are compliant, and matters may be brought to a successful conclusion without difficulty.75
At this period the landlords of southern Shaohxing prefecture were evading the payment of their taxes and, in the process of accumulating land, encroaching without restraint on such domains of collective usufruct as hydraulic installations like reservoirs (tarng 蓄) and lakes, and on the mountains.\(^\text{76}\) In Zhujih county, in similar fashion, the established collective order using water, with the peasants as its core, was faced with this sort of encroachment by evilly disposed local power-holders. The "Matters Concerning the Lake-Fields," summarized below, was an attempt to thwart this usurpation of property and to restore the peasants' traditional, autonomous management and operation.

The first section concerns the cutting and clearing of the trees along both banks of the Waan river [i.e., the upper Puuyamg], and directing its flow. Over the more than five hundred \(lit\) of the Waan River's downward course, there are several hundred bends [it says], but formerly it did not flood when a small amount of rain fell. Lake Bih functioned reliably as a reservoir, and there was plenty of land outside the dykes, so the river could contain a large discharge of water. At the present time, however, Lake Bih has been lost. The land outside the dykes has been encroached upon and turned into private property. Farmsteads and houses have been built on the banks of the brooks, and mulberry trees and willows planted in the middle of the rivers. With the passing of the years, the river lands have been filled up higher and higher. If the dense cover of vegetation formed by thickets of bamboos and groves of trees is not cleared, the obstacles to the impetus of the water not removed, and an effort not made to deal with the drainage of the river, then the result is certain to be flooding.

The second section is concerned with the levelling of unauthorized dykes (sigeng 私埂) and maintaining the old course of the river. When the lakes were first constructed, the surplus land outside the dykes was left untilled. Evil and greedy rogues have, however, reported the situation falsely and opened up the land, beginning with vegetables and fruit, and moving on step by step to growing glutinous rice and millet. Another lake has been created in addition to the [original] lake, and another bank added beside the [original] bank, growing gradually in such a fashion that though not many years have gone by it has become as lofty as a city wall. This is why, as the old men who live beside the lake recount, the impetus of the water in times past was slow but in recent years it has suddenly become inclined to flood. Controlling the waters of the lake is essential for safeguarding a large number of lives, and it is therefore not permissible to add any more dykes to those already in the lake water. Plans must be made for the total removal of unauthorized [hydraulic] installations and of blocks placed on exits for the water.

The third section deals with stopping the development of the spare land (zhahngxahdib 艄隊地) alongside the paths on the banks, and the obstacles and appropriations resulting from this encroachment. It is not easy to maintain a strict surveillance over those who want to make unauthorized dykes, but we have to brace ourselves to oppose the reckless pursuit of profit by the powerful and cunning. Whenever the officials put in an appearance, they take

\(^{76}\) See Kawakatsu Mamoru, Control structures, chap.2, sect.3; and also Morita, Shindai suiri shakai shi no kenky\(\text{i}\), chap.2.
their fences down, but once the officials have departed they set them up again, creating a domain of private property out of what in name pertains to the public. The landowners must be made to mow and hoe the river-banks, and to create paths, and the shoreline land must be surveyed place by place, and its cadastral designations (tuuming 土名) and registration numbers (biaohsheng 碑号) recorded in a register authenticated with a seal. On no account is this land that has emerged from the water to be permitted to be reported as new tax-paying farmland (baohsheng 報陞). Anyone who has enrolled a household on the basis of the enclosure or blocking off [of land] (rubbub quanseh 入戶圈塞) shall be sent for examination by the Circuit Intendant or Prefect on the same terms as in a case of encroaching on a water-control [system]. Stone steles are to be set up in important places in order to record the survey points (gongkoou 口口), and are on no account to be moved or demolished.

The fourth section treats of the equitable enrolling of the enclosure-dyke leaders (yuzhaang) and heads of the groups of labourers (fujiaa 夫甲), and the allocation of their areas of responsibility (xibndih 信地) for repairs,
construction, and measures for defence and relief. The lake-fields in this county cover a wide area and are not infrequently flooded. As a result, in contrast to those cases where there are lakes but no enclosure-dyke leaders, there are also cases of people with no lands in the lake area improperly becoming enclosure-dyke leaders. The enclosure-dyke leaders are the heads of important households who have numerous fields but, once they are appointed to this post, they are quite often so frightened of being vexed by exactions, and of hurt being done to their persons, that they deliberately evade the duty. It is in these cases that substitutes (fannohng 番弄) not on the register have been appointed.

Since the selling of labour-power, and the fraudulent reporting of work done, and even negligence in the execution of the work, have only been punishable by several tens of lashes, the dykes have readily become fragile and collapsed.

There have been specific regulations for Lake Bairtaa, Lake Zhugong 朱公湖, and Lake Gao, but no unified rules for the other lakes. Hence the allocation of responsibility has not been clear, and it has been easy for blame to be transferred to others, and errors committed. The quantity of farmland and the extent of the dykes are to be counted for each lake, and responsibility assigned to each moou of land for so many feet of dyke; and for every few tens of moou one labourer (fu 夫) is to be enrolled, to each of whom will be assigned so many tens of feet of the corresponding dyke. For every group of labourers a group-head (jiaazhaang 甲長) will be established, and for every few groups an enclosure-dyke leader. In the case of the large lakes a General Enclosure-dyke Leader (zoong yuzhaang 總圩長) will be added, but there will be a limit of one or two enclosure-dyke leaders in the case of the small lakes. For the sake of convenience, trustworthy people who live in the lake-fields will be chosen to be enclosure-dyke leaders and labour-group heads, and gradually enrolled after examination. It is to be feared that those whose fields and homes are farther away will be careless in their management, and their positions should be filled by capable tenants instead.

A carved stone is to be erected beside each lake to record the length of the dykes and the quotas of the labour-group heads, and to make it clear within whose sphere any repairs and building may fall. Since the numbers of labourers vary according to the fields and dykes involved, if these allocations by fixed rules are correctly handled they not only give a basis for inspection by officials but also prevent the evasion of duty by commoners. When there is no great urgency, all are to combine their efforts to ensure that the dykes are everywhere solidly built, while when there is a high degree of urgency they should devote themselves unreservedly to remedial measures. If the officials go directly to the lands beside the lakes, and see who is diligent and who lazy, drawing a clear division between merit and culpability and so encouraging them and disciplining them, the heart-minds of the people will be filled with enthusiasm and there will be no slacking.
The fifth section covers prescriptions governing the sharing of the burdens of labour and expenses between the landlords and their tenants, and how compliance is to be ensured. Rich households who live up in the hills regard their lake-fields as supplementary property. People who live in the lake area look on their lakeside lands as a matter of life and death. Since rich households have no compassion for the bitter toil endured by their tenants, those who do the job are exclusively poor people. In many cases the excessive burden placed on them, and their difficulty in obtaining rations, forces them to run away from their responsibilities and so causes the work to be done in slapdash fashion.

It is for this reason that the following rules have been made. If they are obeyed, there is reason to think that we shall not have to stand idly by and watch disasters happening, and that there will be neither disputes nor errors. That is to say, each moou will be assigned [a quota of] one labourer (gong 工); and in autumn and winter the enclosure-dyke leader will lead the heads of the groups of labourers out to do the work and bank up [the dykes]. The repair of each section of dyke will be the duty of the tenants, but the landlords for their part will each provide either 0.1 ounce of silver per moou or five pints of rice to assure them of a supply of food. At the end of each year [the officials] must go directly to the places where the work has been done, and see that it has been completed in accordance with the register of labourers (fu bub 仏簿), so as to prevent any indulgence being shown them or their neglecting duty for pleasure.

The sixth section is concerned with the proposal that a payment for acreage (tiarnjiab 田價) should be made for the excavation [of peasants' fields needed for hydraulic work], so showing pity for a uniquely heavy imposition. No payment has heretofore been made for the removal of sediment (shana tr 沙泥) for the sake of the dykes. When, however, it is necessary, in order to move or restore dykes that have been swept away by the onrush of the waters, to take soil from certain people's fields, the property of the persons affected can disappear, so giving rise to the situation in which “the fields have gone but the tax remains.” Since the enclosure-dyke leaders and the labour-group heads are afraid of the powerful but defraud the weak, and have no regard for the damage they inflict in their greed for tempting prey, they repeatedly tamper with the title-deeds (nuoryib 擝移) which causes unrest among the common people, accompanied by quarrels, and militates against stability.

If, henceforth, when the base-line of a dyke is being shifted, or the gaps in a dyke are being made good, the enclosure-dyke leader and the labour-group head make a survey together and pay however much it may be for so many fields, it will be easy to win the people's compliance. The aim of this is to share the burden fairly between the rich and the poor, the evasion of their duties by the crafty and the powerful, and their transferral of them to the poor, are not to be allowed.
The seventh section concerns a proposal to stockpile materials in advance, to be conscientious in making tours of inspection, and to take precautions against ant-holes (mafuer 螞穴) leading to the sudden bursting of an embankment. Although the people of Zhujih suffer from the destruction of the dykes every time the peak discharge occurs in spring, the enclosure-dyke leaders ignore this. Only when they have been [officially] urged to do so do they proceed to take a look, empty-handed, which is intolerable. Since the enclosure-dyke leaders and the labour-group heads have their own areas of responsibility [now], it is easy for them to manage. Outbreaks of flooding only occur a few times each year, and last no more than a few days on each occasion, so why should they be afraid to engage in hard work?

With the coming of the summer, the enclosure-dyke leaders and the labour-group heads must be made to calculate the quantities [that will be required] for each dyke, and make ready in advance a certain number of bamboo mats, and a certain number of lengths of pine and bamboo. The enclosure-dyke leaders will carry a gong, and the labour-group heads
The Xuantoong reign-period gazetteer notes (j.13, shuuliib-zhih) that "Throughout the county the popular name for the sluices (dough nmm) that convey the water through the lake-fields is waum [depression, 'puddle'], and they are also called gangwadobng nmmnmm [literally, 'jar-depression-holes']."


Figure 1
Translation of the form for a warrant to be issued to an enclosure-dyke leader (from the Complete Documents). The original text is reproduced on the page opposite (upper panel) and a transcription into modern printed characters (lower panel)

Zhujih County: [Assignment] Warrant for [Hydraulic] Defence and Water Control

Warrant of appointment to non-official position in matters concerning the prevention and relief of disasters from flooding in Zhujih County in Shaoxing Prefecture: the enclosure-dyke leader, labour-group leaders, and farmers assigned to this lake are to have stake-timbers, bamboo and straw mats, and lanterns prepared. When there is a flood they are to go on patrol night and day, and gather people together, giving each other mutual protection and assistance. If there is anyone who is lazy or negligent in arousing the masses, that they fail to cooperate, and a breach in the dykes occurs as a result, the enclosure-dyke leader concerned shall report his name for pursuit and investigation. If an enclosure-dyke leader or labour-group head who has been assigned is negligent and does not provide leadership, he too shall be punished without mercy. A warrant requiring to be despatched

Listing:

Endlosure-dyke leader X  | Labour-group head X
Landowner X              | Landowner X
Landowner X              | Landowner X

The above possessing . . . fields, with . . . dykes.

The above warrant commissions the enclosure-dyke leader concerned.

By Order

Received by the clerk for execution on the . . . day, of the . . . month, of the 31st year of the Wahnlih reign-period.

wooden clappers, and they will patrol at night, lanterns in hand. If they come across anything needing urgent attention, they will transmit this information by sounding the gongs and the clappers. If everyone joins forces to assist in relief measures, then human strength can overcome Heaven-Nature (tian 天).

In the case that a labourer has not been despatched to do the work required, the area of land farmed [by the defaulting owner] shall be calculated and a fine of one labour-day per moou imposed. If a dyke has been breached, [this penalty] shall be doubled. In the case that an enclosure-dyke leader or a labour-group head fails to turn up, the fine shall be two labour-days per moou, and double if a dyke has been breached. A punish-ment will be imposed according to past precedent if the materials required for the work have not been made ready. Errors committed by the enclosure-dyke leaders and the labour-group heads shall be punished according to the gravity of the offence either by flogging or by wearing the neck-collar with an announcement of the crime on it. When the burden of providing materials causes difficulties, a charitable foundation (yibbubh 義會) is to be set up to plan the means of obtaining assistance.

The eighth section deals with the ban on linking unauthorized conduits (stiyin 私鑭) to the official channels (guanlibh 官頾), and with assisting the lowlying fields by putting a stop to the catching of fish. If the rules are followed when unauthorized conduits are opened along the rivers, no disasters to the lakes shall occur, but most people consider only their own convenience. Since the conduits (gangyin 閘閘) are for this reason of fragile construction, as soon as they encounter a sudden spate of water, wave after wave flows into them so that, even if the dyke is not broken, the fields are submerged by the flood.

If, when conduits are constructed, both the inside and the outside are solid, and stone slabs are used to secure the opening and the closing, it is possible to prevent disasters. All private conduits where this has not been done are to be blocked up. The channels and streams (liherb 淹河) in the lake area are made use of for drainage in time of floods, and for irrigation in times of drought, being the vital arteries that run through the lakes. A tour of inspection around the various lakes has shown how the farming households near the lakes have filled up those channels having high beds with earth, and so made them into fields, and how they have built barrages (bab) across those having low beds and turned them into reservoirs (tarng), so blocking the through-flow of the water. They disregard the fact that the channels are official property, and instal locks (zbar) without the authorization to do so, either to create fields or wilfully to engage in catching fish.

The enclosure-dyke leaders and the labour-group heads throughout the lakes area are to be obliged every spring and summer to make an inspection to ascertain if land has been encroached upon or channels blocked. If such malpractices as suspending screen-pocket nets (bordaih 様袋) across the official channels have occurred, everyone is allowed to bring this to public attention, and the offenders will be dealt with severely. Should the reports
from the enclosure-dyke leaders be ambiguously phrased, or should they wink at abuses, they shall be examined and punished along with the miscreants.

The ninth section covers the subdivision of the management of water control and the allocation of responsibilities. There are seventy-two lakes in this county, and two rivers, one in the east and one in the west. Since these cover an area of more than a hundred 里 [about 58 kilometres] across, and it needs about twenty days to make an inspection of each lake in succession, it is difficult for a single person to manage them satisfactorily.

It is for this reason that the lakes of the entire county have been divided into three sectors. Responsibility for managing the upper sector of the county belongs to the jail-warden (diaanshii 典史), that for the eastern river in the lower sector of the county to the county vice-magistrate (xiabncherng 縣丞), and that for the western river to the keeper of the county records (zhuubuh 主簿). They are to lead the rebuilding in the slack season for farming, and during periods of peak discharge direct the implementation of relief measures. In the spring and autumn they are to carry out inspections and report in detail to the higher authorities on what has been done. If merit and demerit is assigned to these officials on the basis of whether they have been diligent or dilatory in their management of the agricultural land, then, as a result of this imposition of authority, they will of course be induced to exert themselves at their duties.

The topic of the tenth section is making equitable the tax quotas that fall on the reservoirs and reed-swamps (tarngh/dabng 湖/澇), and relieving poverty. Lake Bih was originally a place where the water from the other lakes was stored, but the result of building dyked enclosures (yu) has been that today the water control in the upper reaches of the rivers is also effective and the soil fertile, so that good harvests there are frequent and disasters caused by flooding likewise rare. Tax is levied on the best category of land there at the light rate of 0.0073 ounces of silver per mou, on the middle category at 0.0059, and on the lowest category at 0.0035, and there are no labour-services required. Around Lake Bairata, however, and others like it, there is dearth every two years out of three, and nine out of ten of the seeds that are planted fail, yet the not insignificant costs of providing a labourer for service in the canton and tithing system (liijiaa 屬甲) amount to four-tenths of a picul of rice. This hardship year after year in the latter area is a major change. It being impossible to overlook such difficulties, I have made the tax on reservoirs and reed-swamps here 0.0015 ounces of silver per mou, and twice this where there are profits from rearing fish and irrigation. Thus the poor can escape their continuous burdens through the application of the principle of 'light taxes on low incomes'.

The eleventh section deals with the surveying of the farm acreage, and the unequivocal specification of the numbers of corvée labourers (jiu). The principle of 'calculating the acreage and enrolling the corvée labourers accordingly' has been followed since long past, but for quite some time now
these procedures have become confused. There are cases both of corvée labour being owed in the absence of farmland, and of farmland not owing any corvée labour. In a situation in which the rich and powerful live at their ease and ‘gather flowers’, the poor suffer hunger and have to do building work on behalf of others. They are not only bankrupted by taxes and burdened by forced labour to the end of their own lives, but bequeath an unending calamity to their sons and grandsons.

In my view it is necessary to scrutinize the old registers for each of the lakes. If there is no great inequity it will be acceptable for corvée labourer obligations to be enrolled according to the registration numbers (baob 號) [of the fields], but in those cases where the quota is inadequate, or there are serious errors, it will be necessary to make another survey based on pacing across the actual ground (liümoou charzhabng 鼎柵查丈). Landlords will then have to be enrolled in accordance with this.

In the foregoing we have presented a summary of the eleven sections of the “Matters Concerning the Lake-Fields.” Three major points may be extracted analytically from its contents:

1. **Rules for Technical Management.** Because severe damage was caused in Zhujih county by the flooding of the Waan river arising from the direct discharge of the hillside streams into it, it was necessary to concentrate on removing obstacles in order to maintain its free flow. What was wanted was to prevent flooding, and the submersion of the lower reaches, by taking measures such as chopping down the trees and bamboos that covered the foreshores with dense vegetation, eliminating the caused by unauthorized dykes across spare land, and banning the screen-pocket nets installed in private channels for the catching of fish.

2. **Organizational Rules.** The local hydraulic system, namely the lakes plus the dykes, was managed through having enclosure-dyke leaders, labour-group heads, and labourers for each lake, and assigning the labour-force constituted by the latter on the basis of enrollment according to acreage—the system of ‘labour-service corresponding to farmland’ (junyih faa 均田均役法). The principle established under the particular historical circumstances of the later Ming dynasty that ‘landowners should provide food and tenants labour’ (yebsbir diabnilib 禮食佃力) was applied for the imposition of corvée. The enclosure-dyke leaders and the labour-group heads had to collect in advance the various kinds of materials required for the work, and to assemble and direct the labourers during periods of peak discharge. Those who failed [or whose tenants failed] to turn up for work were punished with a “fine of one labour-day for each moo.”

3. **Rules for Administration.** The management of the lake-fields of the whole county was subdivided into three administrative sectors, over which the county vice-magistrate, the jail-warden, and the keeper of the county records were put in charge. They had to make on-the-spot inspections in spring and autumn, and to direct repairs and construction during the
agricultural slack season. Furthermore, in order to remove the inequity occasioned by the lack of balance in the taxes falling on reservoirs and reed-swamps, rationalized quotas of taxation were prescribed.

If we now survey these various provisions as a comprehensive whole, they appear as a plan to counter the contradictions that had appeared by late Ming times as a consequence of the weakening of the customary hydraulic order. In other words, their object was to counter the encroachments made by powerful local people into the established system of management, and the resulting crisis, and by reinvigorating the system to remedy the deterioration of its functioning, and restore it to its former state. The issue with which we now have to deal is thus that, in contrast to its earlier operation on a collective and autonomous basis, management had now been reorganized and the contradictions resolved by means of legal regulation, in other words the intervention of official power. Moreover, the organization of work that had been entrusted to separate managements with the individual lakes as units was now reconceptualized as a regionally unified county-wide system.

Magistrate Liur wrote about his creation as follows:

Broadly speaking, it is easy to propose a system but difficult to put it into operation, simple to proclaim a system to the commoners but hard to ensure they do not make a mockery of it. With respect to the provisions that I have detailed in the foregoing, and submitted for approval to the authorities, [I may say that] in all of them I have been constantly attentive to our people, so that there may be some among them who are obedient to their superiors, show all the sincerity of heart that might be wished, and do not act contrary to what the public well-being requires. If my modest and limited ideas are of some slight benefit to the lakes area, I will exert myself to the utmost in executing them, and would wish to present them to the people of Zhujih to be maintained in perpetuity.

What this meant was that simply presenting "Matters Concerning the Lake-Fields" as a set of legal regulations by no means solved every problem. The question was in fact whether or not the regulations would be followed in every respect. This was why, in order to deepen [the authorities'] understanding of the lake-people, Liur Guangfuh presented a more detailed explanation of the benefits to be derived from the lakes in the form of his "Matters for Attention Following Reorganization" (shahnbouh shihyib 善後事宜). A difference may be noticed between this and his previous documents, such as the requests he had submitted to the higher authorities, in which he had operated on the basis of obtaining the support of his official superiors for his proposals. This latter consists of supplementary items stated as he personally saw them. They run as follows:

1. Since the primary meaning of 'lake management' is cutting and hoeing away the bamboos, trees, and reed-choked ditches (bageng 芭埂)\(^{82}\) that block the flow of the two rivers, it is essential to verify each year that this has been done, and to prevent such obstructions by law.

\(^{82}\) "In Jiangnan reed thickets are called ba thickets," Kangxi zhidiaan [Kangxi dictionary], webjir shahng, 1, quoting the Shihjih. Geng has elsewhere been translated as 'dyke', for reasons of contextual consistency, but is here given its more usual meaning of 'ditch'. (Translators' note.)
2. Since four-armed scoop-nets (zeng 竜) used to catch fish cause major blockages to the water, and create waves, they are to be absolutely forbidden in summer and autumn. Those breaking this rule are to be investigated and punished, and a stern announcement made to the public on this subject.

3. Since bundles of timber, when gathered together, obstruct the mouths of the rivers, and constitute a serious impediment in the narrow parts, wood merchants and brokers must be strictly forbidden to assemble them here during the summer and autumn.

4. The posts of enclosure-dyke leaders must be filled by capable men possessed of means, and able in addition to inspire confidence in the public. They should show diligence in rooting out malpractices, stop the strong from preying on the weak, and work in a way that stirs the masses to enthusiasm.

5. The enclosure-dyke leaders and the labour-group heads of the various lakes have the troublesome task of assembling people, and the burden of having to travel about. They are to be excused the obligation of furnishing labour-service to a specific extent with respect to the acreage of their farmland, but on no account is this to be an excessive quantity. Those who conceal the existence of land in excess of their exemption, or have themselves taxed by allocation (kebpaib 科派) under a false name, shall be dealt with severely.

6. The time for enclosure-dyke leaders to retire from their conscript administration is after the large tides in the eighth month. Since they are required to be sagacious and reliable in their dealings with the public, any schemes on their part for contracting to handle other people’s tax-payments in monopolistic fashion (baolaan 包揽) must be taboo.

7. When the time comes for the transfer of office from one enclosure-dyke leader to another, it is not proper for signed voluntary acknowledgements of responsibility (ganjier 甘結) for the matters concerning the lakes area to be exacted [by the authorities], so forcing the shifting of responsibility on from one [incumbent] to another. In cases where the incumbent has died from disease, however, and his sons and younger brothers are poverty-stricken, and a transfer has been effected as a matter of urgency [to someone else] after making the situation known to the public, it is proper to treat this procedure as without error.

8. If any of the lakes people or the enclosure-dyke leaders submit requests about matters of advantage or disadvantage to the lakes area, their implementation must be authorized.

9. The enclosure-dyke leader shall come to the government office to submit a written report when an incident has occurred, whereupon the local official shall put into effect appropriate instructions on the basis of his own investigations, and see to it that this report is transmitted smoothly to higher levels without obstruction.
10. By and large the post of enclosure-dyke leader shall be transferred once every three years. In the course of the annual operations the thickness of the dykes (jugeng 坞埂) is to be increased in such a way that after

**Figure 2**
Remote sensing image of the upper-middle course of the Puuyarng river at the county capital of Zhujih 諸暨縣, which is visible as the dark area in the centre of the scene, mostly on the left (west) bank. The narrow, confined character of the valley is clearly apparent, and the traces of the partitioning of the valley-floor into 'lake-fields' can also be detected, though with some difficulty. From an Eosat TM image on band 5 (near middle infra-red), reproduced by ACRES (Canberra) from digital data processed by M. Elvin and R. Grau. Taken 3 March 1986. Compare map-panels on pp.38-9, and Map 2 on p.48.
We should like to record our appreciation for the indispensable help given with the remote-sensing images by Robin Grau (Cartographic Unit, Research School of Pacific Studies, ANU), Merv Commons (Division of Society and the Environment, Research School of Pacific Studies, ANU), Paul Hutton (Division of Water Resources, CSIRO), and the staff at the Australian Centre for Remote Sensing. Translators.

three years they are a foot higher. This is because the drizzling down of beasts, inevitably reduces them in height. It is not allowed for enclosure-dyke leaders to end their term of conscript administration with their work still in an unfinished state. Nor may they quit after creating confusion as to the true state of affairs, so shirking their responsibilities.

11. If there is any matter [requiring attention] in the lakes area, its causes and consequences shall be thoroughly looked into. If [the managers] merely go through a formal show of compliance, [the official in charge] shall go directly to the actual place concerned and make an inspection. After examining the circumstances closely, and weighing the state of public opinion, he will resolve on appropriate measures.

12. When palanquins with two bearers pass close along by the lakes, they are to reduce the number of servants in attendance, carry their own supplies of food, and determine in advance where they are going to eat. It is in no way permissible for them to impose the burdens of such expenses and provisions on the places where they happen to be.

13. When you [i.e., local officials] are down by the lakes, listen carefully to what the local people have to say about them, attend carefully to each person's point of view, and do not block off their access [to having their opinions heard].

14. Because most of the lakes people are lazy and negligent, it is necessary to make it clear to them what constitutes a merit and what an offence, managing them by means of rewards and punishments. Such management assuredly cannot be done by mobilizing personal feelings among individuals.

15. Because those persons who were originally deputed to the various lakes have been dilatory in their jobs, it is necessary to reward them if they are effective at urging others to perform the work of construction, are of good character, and devote themselves to leading and giving assistance without showing any fear, and to punish by law those who have been disobedient and careless, so as to render them diligent.

16. When the dykes are being increased in size, it is acceptable if they are too broad but not if they are excessively high. The base must be banked up; merely piling up earth on top is not permissible.

17. When inspecting the work, it is necessary to check what quantity of farmland by the lakes is involved, how many labourers there are, and how much earth is to be moved by each labourer. One can determine if they have done well by looking at the quantity of the mud in the fields and at the traces left by the mud deposited on the top of the dykes, and, if so, they should be rewarded. If there are shortcomings they should be punished, and one should proceed in such a way that there is no cheating or covering over.

18. At the end of the autumn, announcements should be issued everywhere that the dykes are to be increased in size, while at the beginning of the
Figure 3
Remote sensing image of the Puuyarng river near its debouchment into the Qiantarng river (just off the scene to the west on the left). The fifteenth-century cut through Seven Worthies' Hill 七賢山（=塚塚山）is clearly visible on the lower left. The dark area immediately north of the westwards bend in the river is the town of Lirnpuu 临浦鎮. The earlier, northwards, course of the Puuyarng, marked by several oxbow bends, may be seen running north from Lirnpuu and off the north-east corner at the top right. There is another detached oxbow bend just south of the westward bend of the river. The Mar creek may be seen coming in at the lower right. From an Eostat image on band 5 (near middle infra-red), reproduced by ACRES (Canberra) from digital data processed by M. Elvin and R. Grau. Taken 3 March 1986.
summer announcements should be sent out that damage done to the dykes is to be made good. In both cases a workforce should have been previously assembled for this purpose. If there is prolonged rain, those originally deputed to be in charge [of these other tasks] should be made to take control and urge the process of repair forward. [The officials] should station themselves in person at the key places in this county, and execute the appropriate directives. Perfunctory performance as a mere onlooker is not acceptable.

19. As regards the protection of the various lakes, the basic principle is joint assistance, but once a flood occurs it is difficult to extend this to all. The most important lakes are Dahlüü 大倍湖 and its associated six lakes, followed by Bairtaa, Zhu-gong, and Lake Gao, and the various large lakes along the side-rivers to the east and the west. The farmland beside these lakes ranges from over a hundred thousand moou down to not less than several thousands of moou. It is [also] essential to be aware of the different speeds of flow in the upper reaches where the landforms are elevated.

20. Since the dykes are frequently breached during the night, each of the labour-group heads and the farmers must have lanterns, straw mats, and wooden stakes in readiness, though only in the required quantities, and they must not neglect to patrol at night when the rivers are in spate.

21. No matter which lake is concerned, only in those cases where the dykes have suffered disaster in numerous places should large numbers of labourers be mobilized in concentrated fashion to protect them. On all other occasions, so long as small groups of men are made to take turns at patrolling, even if there are leaks from ant-holes, it will be possible to prevent mishaps.

22. After the heavy rains in the spring and the summer it should at once be ascertained whether or not [the dykes of] the various lakes have collapsed or sprung leaks. Any damage should be swiftly repaired by those with the responsibility to do so. Ditches and reed-swamps suffering from prolonged rain should likewise by strengthened by straw coverings (caaoaipil 草皮) on their banks ?], and breaches prevented.

23. It is good practice to plant willow-trees [Salix babylonica] camphor-laurels [Cinnamomum camphora] and catalpas [Catalpa ovata] on top of the lake dykes, but it is not permitted to grow vegetables, beans, mulberries, hemp, or tallow-trees [Stillingia sebifera] there. Because scooping out earth damages the dykes, everyone must cooperate to protect them.

24. If those who farm the lands beside the dykes hoe away an inch of earth a year from their foundations, this will amount to a foot after ten years. For this reason it is strictly forbidden for the farmers at the foot of the dykes to shovel or scoop them out. If any hoe-marks are found, both the landlord and the tenant will be investigated and punished.
25. Particular responsibility for looking after the lake dykes is entrusted to the enclosure-dyke leaders. Those inhabitants who have accepted tenants are permitted to exercise supervision over the dykes, but they are not to pursue plans of encroaching on them.

26. Because most of the upper lakes between this side of the Zhuh’an Bridge and the Taipimg Bridge lie in an elevated landscape, there is no need to do any additional work on them. When there is occasion to carry out repairs, the circumstances should be examined, and an allocation of responsibility made for a given length of dyke for every mou of wet-field land (nirtuu). It is impermissible for enclosure-dyke leaders to mobilize the public for labour-service for their own personal advantage.

27. The people of the lakes mostly treat land that has emerged along the foreshores as concealed land. When, after some years, the officials want to enter it in the tax registers (shengkeb), it is not clear who is in charge of it. When new land has to be entered for tax, this person should be clearly recorded. Anyone who has been in breach of the law shall be traced and brought back, and the enclosure-dyke leader also implicated in his offence. If covert links with the Canton Elders have been involved in this subterfuge, these latter shall likewise be investigated and punished.

28. At each lake there have been established lock-fields (zhartiarn) and a reserve of rice held by a charitable association. Their accounts are reckoned up each year and a settlement made. Evilly inclined and powerful people are not be to be allowed to encroach upon them.

29. Setting aside as exceptions Huarmsha Oxbow Meander Land (buib) on the old bed of the river, and the request made to the Provincial Literary Chancellor and the Circuit Intendant that Jiangcun Oxbow Meander Land, and the surrounding lake-area used to support studies (xuerhur) be turned into lakel-areals for the relief of famine, in all other narrow places it is not permitted for powerful local inhabitants to cause intrusions and obstructions by accepting tenants.

30. Only for Bairtaa Lake have the survey-measures (zhahng) been paced out and labour-service quotas (fu) registered on this basis. In all other cases, the acreage of farmland at the various lakes has been determined by relying on the figures in the old reports. In cases where disputes arise out of uncertainty, the matter is to be cleared up by having the landowners follow the Willow-Wand Survey Registers (liurtiaor ce) and insert marker-slips in accordance with the registration numbers (baoh), visually aligning them with the four plot boundaries and the survey points in the fields. Evasion is not be be tolerated. If the disputes are not particularly serious, following the old figures is good enough.
96 Presumably by taking impressions off the carved wooden blocks held at the magistrate’s office. (Translators’ note.)

31. All the dykes in the various lakes have been directly surveyed by the county authorities and, provided that they neither collapse nor are moved, their recorded lengths are by and large accurate.

32. Since the impetuous nature of water stops it from ever being stable, it has quite often happened that rivers and streams have turned into mulberry groves and farmland. Hence it is only possible to obtain a correct assessment of the situation after a disaster has occurred by going to the actual place to see for oneself.

33. There are many small lakes in addition to the lakes and confluences (buibbur 鄱湖) officially listed. Even though they have not been surveyed, repairs and construction would be possible there, but it would be wrong to cause problems for the large ones for the sake of the smaller ones.

34. It is the local custom in Zhujih to esteem heroism, and one of the characteristic of the people is not to yield in quarrels. For this reason it is essential to have a clear idea of what is and what is not possible with regard to the affairs of the lakes area, and to keep the people at peace with each other by winning them over, and finding something of advantage in a settlement for all parties.

Liur described his efforts to have his system observed in a petition to his superiors:

Last year, as the hidden springs of causation (ji 機) were making the water break forth, I issued proclamations to announce my intention of rousing the people to action. I had the dykes surveyed for every lake, the acreage calculated, and the banking up done sector by sector. Through the three winter months I made tours of inspection. . . . The affairs of the lakes area, together with the numerical data for the length of the dykes, the acreage of the fields, and the divisions into sectors, have been compiled in sections and printed in book form. Three copies have been stamped by me with my seal and lodged in my office of works (gongfang 工房), and one each given to the county vice-magistrate, the keeper of the county records, and the jailwarden. Copies have also been issued to the enclosure-dyke leaders throughout the county on the basis of one for each lake. I have also furnished an appendix [the “Matters for Attention Following Reorganization”] prepared as a guide to inspections. Any of the common people who would like to have a copy are permitted to provide the paper and print it themselves.96

Nonetheless, as he wrote later:

I would humbly observe that the people of the lakes area often live as sojourners, scattered about like stars. They are very hard to control. In the limited number of families where the printed volume is stored, it is by no means certain that they earnestly wish to observe the regulations. The disasters will not be wholly eliminated unless we make matters clear by proclamations. . . . I would entreat the authorities to distribute these in profusion, and to have stones engraved for setting up in the thoroughfares, so that it is transparently obvious what is of advantage and what hurtful. Everyone must set eyes on them, and the evil and refractory must be warned, so that they do not dare to be neglectful or slack, and generation after
generation will maintain them in their integrity. This is indeed the overwhelming wish of the people of Zhujih. ... I have now set forth the reasoning in a first section and certain specific prohibitions in a subsequent section, besides making ready a separate register of the documents involved, and had them printed together to constitute the "Lake Register" (burceb 湖冊). I am obliged to request you to send down a proclamation in accordance with what has been specified above, so that it may be put into effect ...

The prohibitions of which Liur spoke had originated as customs autonomously created by a collectivity. Here, it should be noted, they had been proclaimed as a legal ordinance by the authorities, or, in the last analysis, by the state. The county gazetteer for the Kangxi reign-period said of their contents that Liur "planned with the most scrupulous care, built barrages and dykes (tingeng 隘埂) to ward off the force of the water, and had promulgated more than twenty items containing [the essential points] for the attention of those in charge." Furthermore, it says that "Official sanction was given to the 'Water Control Prohibitions' (shuuilih jihnyue 水利禁約) upon which the common people depend to no small degree; and it was commanded that they be cut in stone and placed on thoroughfares, to be obeyed in perpetuity. If powerful rogues showed obstinate resistance they were to be punished severely and without mercy."

The twenty-one prohibitions had essentially the same aim as the earlier "Matters Concerning the Lake-Fields" and the "Matters for Attention Following Reorganization." They ran as follows:

1. Chopping away and clearing the bamboos and trees that block the riverways must not be neglected.

2. Sluices (douwu/zhabn 資窪/漵) must not be built without authorization. At times when it is [nonetheless] necessary to do so, they must be consolidated inside and out with stone slabs, and mishaps avoided by having a supervisor put in charge of the opening.[?]

3. The flow of the river must not be obstructed as a result of building dykes or walled enclosures on the foreshores.

4. It is forbidden to encroach on the paths running along the tops of the dykes, or on the official roadways beside the east and west banks of the rivers, by erecting rough fences or planting thorns.

5. The collapse of dykes must not be caused by building tile-firing kilns or latrines inside them.

6. It is forbidden to scrape away the foot of the dykes, which makes them thinner, and leads to mishaps.

7. It is not allowed to plant vegetables, beans, mulberries, tallow-trees, or fruit-trees on top of the dykes, so converting them into private property.

8. Unauthorized dykes are not to be erected on the river foreshores or on surplus land (xibdib 隘地) outside the dykes that has been reported for taxation.
Tenants are not to be put on land already purchased (by the authorities) to serve as a passageway for water, nor on public burial grounds (yibzhooing 義墳) that have been recovered to effect the discharge of a debt, nor on land owned by the government (guanidih 官地).

It is forbidden to build houses by encroaching on constricted places such as dyke-paths and riverside roads.

Water may not be discharged from oxbow meanders and lakes (huibhur) or conduits (tongyirn 通堰) into the large lakes.

Catching fish by means of intercepting the current of streams and of lake drainage-channels (burilb 湖瀆) with screen-nets (bor箔) is banned.

It is not allowed to construct ‘fish harbours’ (jurbuh 魚埠) with stone slabs, as these create waves (turbulence?) and cause the dykes to collapse under the impact.

It is forbidden to encroach either on the beds of the drainage-channels (libji 瀬基) in the lakes or on the run-off ditches for water (guohshuuiguoxue 過水溝穴) outside the dykes.

Catching fish by spreading pocket-nets (daib 竿) or installing screen-nets (bor箔) across the sluices and locks in the various lakes, and so causing the sprouts in the fields to be submerged, is forbidden.

Timber merchants are not to float rafts of wood to San’gaangkoou [Three Inlets’ Mouth] 98 or other places on the river during the summer and autumn as this obstructs the water and causes flooding.

Encroaching on the water stored in the various lakes or on the official lakes is not allowed.

It is not permitted to take on tenants for old riverbeds that have filled up with sediment, thereby encroaching on them.

Unauthorized reservoirs may not be excavated at the foot of the dykes.

It is not permitted to catch fish by putting poison into the eastern or western rivers, or into the mountain streams or lake drainage-channels (burilb) anywhere in the county.

Shellfish (xtaan 螃蟹) are not to be gathered from the foot of the dykes by using a lance to scrape them into a ‘foot-net’ (jiaowuxiang 腳網).

These prohibitions, which are recorded in the Zhujih county gazetteer for the Kangxi reign-period, have already been studied by Yoshinami Takashi. In his view, breaches in the dykes were dealt with directly by laws issued by the state, that is, by imperial edicts, whereas other means were used to handle improper actions that were closely linked to these breaches as their causes. He has pointed out that all the actions contained in the prohibitions were those likely to cause breaches, such as encroaching on places filled up with sediment, collecting the produce of streams and marshes, and damaging the dykes. For this reason they were governed by the ‘agreement on banned acts’ (jibnyue 規約) of the collectivity. In the late Ming period, however, breaches of these rules had reached such an extreme level that the latter were
elevated to the status of supplementary laws, as 'ordinances' (tuorih 條例), with the aim of adding to their force.

5. Conclusions

Let us end by examining the background that led to the creation of the three types of regulations for water-control by Liur Guangfuh that have been presented above, the intentions behind them, and their significance.

Irrigation based on dammed reservoirs (bei-tarng) was characteristic of water control in Zherdong, and most particularly of the relatively elevated areas. In the Zhujih region the central concern was the Waan river (in other words, the upper course of the Puuyarng), along whose banks numerous lakes and reservoirs had been established. These served the joint functions of irrigation and of the buffer storage of floodwater when the dykes broke. The key to local water control was thus managing these lake-areal-dykes, and it may be supposed that a management system based on the local collectivity was created for this purpose.

Towards the end of the Mirng dynasty, however, both destruction, and usurpation in the shape of the formation of lake-fields, occurred along the riverbanks, and at many of the lake-dykes, as the result of the slackening of the system of management and the inroads made by crafty and powerful locals. The appearance of these lake-fields prompted the government to adopt a policy of surveying the land, but it also had deeper and more direct consequences. At the same time as water needed for irrigation dried up, they caused the much more serious flooding of the lowlying land, since the lakes and dykes were no longer fulfilling their storage function. The problem was thus to re-establish this function, and to reorganize and revitalize the system of management. It was a matter both of doing away with the intrusions of a certain number of powerful villains who had obstructed the autonomous and collective system originally founded on the Cantons and Tithings (lijiila), and so sacrificed the well-being of the peasants in no small way, and also of preserving the already constituted traditional order of water control, and with it the peasants' welfare. The promulgation of regulations for managing the system by Liur Guangfuh in his capacity as county magistrate was aimed at realizing these goals. The active participation of the officials in the running of the dykes around the lakes was superimposed on the pre-existing traditional, local, collective customs of water control, and amounted to the public recognition, or ascent in status, of the latter.

Hamajima Atsutoshi has studied how, in the creek-based irrigation of Jiangnam, the water-control system based on the Cantons and Tithings collapsed during the later sixteenth century, and was reconstituted through

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101 Ueda Makoto, in his “Chiiki to sôzoku: Sekkôshô sankanbu,” [Region and lineage: the mountainous areas of Zherjiang], Tôyô bunka kenkyûjo kiyô 94 (1984), notes “the impossibility of local society consolidating its water-control institutions on an autonomous basis because of the development of the system of absentee land-ownership,” as the background to Liur’s reforms.
the intervention of state power. In an earlier study by the present author it was shown how, in Horngdohng county 洪洞县 in Shanxi province, as large landownership advanced during this period, the class of middle and small landowners who had been the core of the water-control organization was ruined. This then led to an intensification of contradictions in the hydraulic order as then constituted, and the threat of its dissolution. The response to this was an effort to reorganize it by strengthening the legal character of the autonomously established rules for the channels.

In this sense, the situation in Zhujih was simply a part of a phenomenon that was widespread in the later Mimg.

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