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"The Great Tochio Flood of 1926: Limits to Modernization in Flood Amelioration"

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Most of the papers in this panel deal with responses to calamities after they happen. I take up the degree to which late nineteenth and early twentieth century Japanese governments attempted to prevent or ameliorate floods. While these two themes are related as cause and effect, at first glance they appear to involve distinct sets of problems. I argue further that there are some striking similarities in the structure of decision-making and the allocation of resources to deal with the two sets of problems. In addition to this perspective, I also employ this case study to examine important ramifications of large-scale state planning in the Japanese context to explain why Japan's rapid nineteenth and early twentieth century technological and industrial progress did not lead to widespread adoption of these technologies and productive capacities to flood hazard amelioration. I begin with a discussion of the latter perspective.

Seeing like a State: The development of modern central governments and productive capacities typically appears to not only produce greater wealth, but a greater ability to concentrate that wealth for particular purposes through collection of taxes and state expenditure of the resultant revenues on preferred programs. This is a fundamental premise for James Scott, for example.¹ Scott further posits a link between what he calls high modernism and other factors to create a recipe for a failure of government planning. To be

¹ James C. Scott, *Seeing Like a State : How Certain Schemes to Improve the Human Condition Have Failed*, Yale Agrarian Studies. (New Haven [Conn.]: Yale University Press, 1998).

more specific, Scott identifies four requirements for clumsy, bound-to-fail large-scale state action:

1. Administrative ordering of society: an array of standardized images of applied across society, e.g., modern maps, censuses (with their fixed categories), and the like, a characteristic, he says, that marks modern states generally, but which takes on a different, rather sinister characteristic when combined with the following three traits.
2. High modernist ideology which, as a FAITH, stresses an optimistic assessment of the modern technical, scientific and economic capacity to address social objectives and limit the impacts of nature (again, common to modern states, and by itself, not problematic).
3. An authoritarian regime willing to marshal all its muscle to implement a massive project.
4. A weak society incapable of effective opposition to the designs of its authoritarian overlords.²

Especially in the broad context of Scott's work, there is a strong sense that states possessing these characteristics are wont to undertake large-scale projects. However, Scott's framework pays less attention to whether there are unforeseen implications of the choice to pursue a grand design, other choices outside the kind of project he examines. From a different perspective, the impact on other realms of a choice made to pursue a major project is precisely the focus of scholars who explore the success or failure of international relief efforts.

Priority Regimes. Peter Howe, attempting to understand contemporary occurrences of widespread famine when many assume it to be a preventable phenomenon, provides an

² Ibid., 4-5.

interesting model of “priority regimes” that can help us understand changing responses to floods in Japan (and elsewhere) over the twentieth century. According to Howe, these regimes operate at different social and international levels, and interact with each other and “undirected occurrences” (e.g., climatic movements, markets) to create famines. While some elements of his model are less applicable than others, much of his model can be applied to flood prevention and amelioration.

Priority regimes are “sets of concerns . . . privileged in the decision-making and actions of institutions and individuals” and can be formal or informal (known through actions). The regimes themselves, like undirected occurrences (e.g., floods, epidemics, etc.), have three basic components: spatial, temporal, effectual elements all of which may involve intended and unintended, positive and negative effects. Priority regimes may not be explicitly concerned with the (famine) outcomes under study, and he divides the nature of the regime into those in which a) famine creation or prevention is not prioritized, regimes where it is neglected, a by-product of some other policy or action, or a trade-off with some other priority; and b) famine creation or prevention is directly prioritized: it is a means [the threat of famine is means to another end, e.g., boycotts intended to accomplish another aim as part of a broader policy], “famicide,” in which famine creation is the explicit/deliberate end desired, and response, e.g., an effort to prevent or alleviate famine.. Priority regimes involve both internal decision-making elements and external factors (over which decision-maker lacks influence, e.g., others' priority regimes, undirected occurrences) which all vary in their impacts. Each regime exerts or has the potential to exert different influences on occurrence of famine and is subject to different forms of leverage.³

³ Peter Howe, “Priority Regimes and Famine,” in *The New Famines: Why Famines Persist in an Era of Globalization*, ed. Stephen Devereux (New York and Oxon: Routledge, 2007).. See especially table 15.1 and the discussion of it, and 357-358.

Some of Howe's conceptualizations may strike us as odd when applied to floods as opposed to famines. For example, while today's headlines make us aware of intentionally generated famines designed to weaken an enemy (Sudan), we don't immediately think of floods in such a context. Yet destroying dams and dikes in order to intentionally create floods has a long history, including Chinese efforts to impede Japanese in 1938 (Yellow River) and in post-Soviet Eastern European conflicts.

The analysis that follows shows how planned major government projects – valuable and understandable in the context of the times – diverted resources from flood amelioration projects that took a clear human toll. I will also selectively explore some of the elements that Howe outlines, but in an exclusively domestic context, ignoring the international dimension that is so central to his work.

Floods and Modern Japan. It would be hard to argue that Japan did not possess the attributes Scott identifies after the Meiji Restoration of 1868 when it first set out to model its new central government apparatus on Western forms modify them to suit what leaders felt were essentially Japanese patterns of governance. The government itself became a leading force within Japanese society for “Civilization and Enlightenment (*bunmei kaika*)” in multiple realms: military, economy, industry, government, law as well as education and civics. Historians tell a story of many resultant successes over the next half century, even when critical of the process: iron production increased, steel was introduced along with cement, ship building took off, the foundations of broad popular education were established along with facilities for higher education, Japan developed a military capable of deterring Western imperialist tendencies and so forth. In the end, Japan joined the Great Powers and became something of a model to many post-war foreign policy-makers and leaders in newly independent former colonies looked to the Japanese model as they sought to promote

economic development during the Cold War.

Yet there were clear limits to this transformation, limits that restricted the ability of Japan's government to enact programs such as those Scott envisions as common for states powerful relative to the society they governed, states such as that which characterized pre-War Japan. Despite the government's success in transferring wealth from the countryside to more urban uses, Japan's economic resources were, in fact, quite limited.⁴ Japan became a Great Power in the twentieth century to be sure, but more like Italy than Great Britain. The realm of flood amelioration constitutes one area of action where the limitations of the pre-War Japanese state stand out, and like amelioration of famine, the underlying explanations for this condition reflect political decisions that encompass the interaction of multiple sets of priorities.⁵

Japan certainly witnessed important riparian civil engineering projects. In 1924, in northern Tokyo, a new, modern gated barrier was completed to control overflow at the Sumida and Arakawa rivers, the Iwabuchi *suimon*. Two years earlier, the Okōtsu Diversion Channel (*bunsui*), at the time, the largest civil engineering project in East Asia, opened for operation, diverting high waters from Japan's longest river, the Shinano, into the Sea of Japan. Prior to that time, the Meiji government combined with private businesses built modern bridges for rail lines and other civil engineering projects, construction that took advantage of modern power equipment, dynamite, steel and cement.

However much pride Japan took in impressive, modern engineering accomplishments, and

⁴ Thomas C. Smith, *The Agrarian Origins of Modern Japan*, Stanford Studies in the Civilizations of Eastern Asia (Stanford, Calif.: Stanford University Press, 1959). makes the argument for this transfer of wealth.

⁵ Howe, "Priority Regimes and Famine." discusses the presence of multiple hierarchies of priorities, the meshing of which is a critical factor in modern famine relief. Absent the international dimension in Howe's theoretical analysis, one can certainly find multiple priority regimes in any era of modern Japanese history, most clearly seen in different local, prefectural and national objectives.

however much new structures conveyed impressions of a government able to marshal funds for large-scale projects to protect lives and property, these were the exceptions, limited in number.⁶ Especially for large flood control projects, Japan simply lacked the funds to tackle large numbers of them. The Okōtsu Diversion Channel, for example, had been almost completed, but final construction of the overflow weir was cancelled in 1878, not to be taken up again (with a different design) until the early twentieth century. What occasioned the turnaround? A combination of major flooding in 1896 and a spurt of government revenue which generated by Chinese reparations payments after the Sino-Japanese War.

Far more typical were provincial and local efforts to manage flood risk largely on their own, and that is the focus of this discussion. The Shoup “Report on Japanese Taxation” noted in 1949 that Japanese provisions for natural disasters were woefully underfunded, concluding:

“Subsidies for natural disaster rehabilitation are currently paid at the rate of two-thirds of the cost of the work resulting from major disasters. The works eligible for subsidies includes principally reconstruction of dikes, roads, harbors, irrigation facilities, and the like. It does not ordinarily include the repair of buildings. Our recommendation regarding disaster subsidies is that the amount should be increased to 100 percent of the costs involved, and all kinds of rehabilitation work should be included. The National Government should budget annually an amount equal to the estimated average cost of natural disasters during the preceding five years, and utilize this fund to defray all public costs incident to floods, typhoons, earthquakes, and similar

⁶ David G. Wittner, *Technology and the Culture of Progress in Meiji Japan*, Routledge/Asian Studies Association of Australia (Asaa) East Asia Series (London ; New York: Routledge, 2008). indicates that pride in the modern was substantial and an important motivation in the adoption of technology.

calamities. [emphasis added]”⁷

This assessment brought a clearly American perspective to bear on natural disaster relief; but it also came after a series of disastrous floods that wracked Japan in the immediate post World War II era. In the same year as the Shoup Report, shocked by the scale of flood damage, administrative agencies in Tokyo compiled major civil engineering plans that sketched out a program of dam and dike construction that is still under way today.⁸ Thus, Japan’s initiative reflected much more than American pressure. Nonetheless, U.S. pressure in the form of complete surrender and the abandonment of war freed budgetary resources to undertake long-term planning of massive civil engineering projects concentrated heavily on water management and flood control, expenditures for which financial resources were largely unavailable in the pre-war period.

Shifting National Responsibility for Flood Control. In the Tokugawa era, responsibility for flood hazard amelioration lay with the villages and their daimyo overlords, but this arrangement began a drawn-out transformation with the onset of the Meiji Restoration (1868). Japan moved from a national balance of power among daimyo, presided over by the Shogun who, powerful as he might be in some respects, never had access to a national administration, treasury or revenue stream. The new Meiji government quickly set out to remove daimyo from office, and to set up a national administrative system funded by a national tax system. These basic elements of a modern state were in place within ten years of the Restoration.

⁷ Shoup Mission. and Supreme Commander for the Allied Powers., "Report on Japanese Taxation," (Tokyo, Japan: General Headquarters, Supreme Commander for the Allied Powers, 1949)., Appendix A, Section G

⁸ This plan, especially focused on the Kanto region in which Tokyo is located, is the source of today’s highly publicized controversy over the Yamba dam. Philip C. Brown, "Dam Japan No More! A Half Century of Planning and Protest," in *The environmental histories of Europe and Japan* (Nagoya, Japan2010).

The land tax became the foundation of national revenue streams. Prefectures replaced daimyo domains.

While the government quickly solidified the basic foundation of national administration and prefectural superstructures, local administration structure changed frequently well into the twentieth century. The collapsing of some 250 daimyo into 47 prefectures was matched at the village level by periodic consolidation of villages into larger administrative units, with more than 63,000 villages at the conclusion of the Tokugawa era reduced to one-fifth that number by the turn of the century. Counties were made an important element of administration at first, but their authority was eliminated early in the twentieth century. At the end of this trajectory the national government siphoned off the majority of tax revenues and directed them as it saw fit, leaving at best a modest revenue base for local governments. In addition, the central government closely directed many facets of prefectural and local government. All governors were centrally appointed, and national laws closely regulated village, town and city governments. Information and desirable programs could be presented for consideration by the national government, and they frequently were, but it was only the national government that possessed sufficient resources and allocated funds for large modern projects.

What happened to flood amelioration expenditures during this period of national transformation? At the national level, there was quick movement to deal with riparian projects, as illustrated by the planning and commencement of the Okōtsu diversion channel in 1869. However, it was only in 1874 the central government claimed control of Japan's rivers. While it exercised some such control, it was largely over Japan's largest rivers and some early commitments were abandoned as Japan faced the reality of its budgetary constraints. Indeed, given other government restructuring associated with the move to constitutional government and the establishment of a national, elected assembly, a formal code for administering rivers

was not issued until 1896, when the River Law was passed.

How did local governments deal with flood amelioration during this transition and after?

The Great Tochio Flood. Not as widely known as the typhoons and floods of the immediate post-war years, the 1926 floods in the Tochio district (now part of Nagaoka city) in Niigata nonetheless epitomized the experience of many rural areas of pre-war Japan. Bucketsful of rain began to fall on the evening of July 27, a concentrated downpour.

By the next day rivers and streams overflowed causing significant local damage. Late in the day there was a respite, but by the 29th the deluge began again. All the areas' current efforts to prevent flooding came to naught: Dikes were breached in some 170 places; they were destroyed completely at 42 places, roads, rail lines and bridges washed away. Numerous houses were lost. Some sixty people died. Of more than 1500 houses prior to the flood, fifty-nine were washed away entirely, twenty-seven houses not swept away were completely lost, 239 were counted as half lost, twelve were buried in mud, and water came up above the floors of 917 homes. Undamaged homes numbered only 148. In addition, damage to crops in the fields reached 65,000 yen, to factories, 1,000,000 yen, and in addition, extensive damages to other business, roads, electric power and telephone equipment.⁹

Through the town flowed two major rivers, the Kariyata and the Nishitani, but also four smaller streams, the Shiodani, Raiden, Yatsu and the Sengoshi. All overflowed their banks and flood plains. The district's rivers were modest streams, nothing on the order of the Shinano River (Japan's longest) into which they flow. The Shinano's flood plain is as much as three miles wide, but the Kariyata, the largest of the Tochio rivers, represented a small fraction of that scale as it flowed through the district. That said, the destruction along the river banks was substantial. Table 1 presents the salient details and provides another

⁹ Tochio Shishi Henshū Inkai., *Tochio-Shi Shi*, 6 vols. (Tochio-shi, Niigata-ken1977), Chū, 688-91.

dramatic perspective of the losses Tochio district confronted..

Table 1 Damage to Tochio Area Riparian Facilities

River	Kariyata	Nishidani	Shiodani	Raiden	Yatsu	Sengoshi
No. Dikes Desroyed	53	7	108		2	
Length of Destruction	4,783 ken	1,220	4,444		250	
No. Dike Breeches	19	2			5	16
Length of Breeches	395 ken	170			350	300
Bridges Lost	14	10	15	9		4
Length of Bridges	215	112	115	24		32
Damaged Bridges	18	3		3		
Roads Destroyed	5	27	25	11	7	9
Length of Roads Destroyed	200 ken	995	48	200	1,530	200

Source: *Tochio-shi shi*, Chū, 707-708, Chart 144)

The floods' destruction of bridges severely hampered residents' ability to go anywhere in town or to get assistance to them.¹⁰ . Of course, damage extended to nearby towns like Mitsuke, Sanjō and Kamo, all closer to the great Shinano. This was a regional catastrophe, not purely local.

The district was familiar with floods. Most residents knew the local lore on the “five great floods” of the Tokubawa era (Genbun 1, Tenmei 7, Kansei 1 [the so-called “three great floods”] and those of Genroku 13 and Tenmei 8), but there were many more on a smaller scale.¹¹ In the modern era, the Nishidani and Yatsu rivers flooded in the summer of 1897, twenty-two towns and villages flooded in August of 1913, and also hit Tochio in 1924, to name just the most significant cases.¹²

This history notwithstanding, local residents thought this flooding exceptional; more interestingly, they blamed this flood on the lack of ground cover at the headwaters of the Kariyata River (double-check). Locals certainly felt that there had been a failure to manage harvesting of timber on Sumonsan (Sumon Mountain), and recent, smaller floods had caught their attention. Perhaps the mountain had been managed as commons (*iriai*) during the Edo era, but clearly in the new regime any such mechanisms had broken down and a “tragedy of the commons” had occurred.¹³

¹⁰ 枋尾町起債理由書 Taisho 15 Aug 6 (Sueyoshi Otake, *Tochio Gō Daisuigai Shi* (Niigata, Japan Tochio-machi: Tochio Gō Daisuigai Shi Hakkōsho 1928), 325-6), issued even before the flooding was over; “Statement of Rationale for Issuance of Bonds.”

¹¹ *Ibid.*, 33.

¹² Iinkai., *Tochio-Shi Shi.*, Chū 306, 345, 632.

¹³ On “tragedy of the commons” see the classic work, Garrett Hardin, “The Tragedy of the Commons,” *Science* 162, no. 3859 (1968).; for an analysis of common lands management see Margaret A. McKean and Thomas R. Cox, “The Japanese Experience with Scarcity: Management of Traditional Common Lands,” *Environmental Review: ER* 6, no. 2 (1982). and others by the same author. Iinkai., *Tochio-Shi Shi.*, 632-33, also indicates that locals had earlier planned re-forestation as a means of protecting water supply – something that had become an issue in 1924 (T13) after another flood.

This development suggests the disruption of local ecological management practices. Degradation of such control was certainly evident in parts of early modern Japan.¹⁴ It is hard to argue explicitly that such developments were a direct result of the Meiji economic transformation.

Yet it is equally hard to avoid the conclusion that the abolition of the Tokugawa village played a role. Over the course of the Meiji era, the progressive amalgamation of traditional Tokugawa villages into larger administrative units more directly subject to central government direction gradually altered the most important loci of local administrative control. The cooperative control of mountains and other commons traditionally had been exercised by either a single village or a multi-village collective. These practices were re-contextualized by administrative reform even where they continued.¹⁵

Villagers' observation that Sumonsan had suffered denuding must be taken seriously, but there is reason to believe other late nineteenth and early twentieth century factors more directly linked to changes in local administration were critical.

The Course of Riparian Civil Engineering at the Local Level. This flooding might have been preventable, or it might not have been.¹⁶ That issue aside, a clear pattern emerges when we examine changes in the locus of responsibility for funding riparian projects from the early Meiji era into the early twentieth century. Early in the period local government at the village level had budgets for such projects, but over time, those budget lines were replaced by other

¹⁴ In English, see Kären Wigen Lewis, "Common Losses: Transformations of Commonland and Peasant Livelihood in Tokugawa Japan, 1603–1868" (University of California, 1985)., in Japanese, see Toshimaru Harada, *Kinsei Iriai Seido Kaitai Katei No Kenkyū: Yamawari Seido No Hassei to Sono Henshitu* (Tokyo: Hanawa Shobō, 1969)..

¹⁵ Where the status of mountain common lands could not be established, they were incorporated into the national forest system.

¹⁶ Jenny Edkins, "Conclusion," in *Whose Hunger?: Concepts of Famine, Practices of Aid*, ed. Jenny Edkins, *Borderlines* (Minneapolis, London: University of Minnesota Press, 2000). presents a critique of the idea that problems like flooding are, in fact, solvable.

items at the behest of the central government, and these expenditures were not replaced by prefectural expenditures. What funding for local flood control efforts there was could not fund more than minimal efforts, projects that relied almost exclusively on traditional Tokugawa era technologies.

Slow and vacillating national movement on riparian control noted previously was matched by a clearer direction in village-level efforts, an effort that saw the decline of expenditures for river maintenance and improvements. Never large, these investments disappeared entirely from village budgets. Table 2 shows civil engineering expense data for the Tochio area and the entire prefecture beginning with 1880. Data is scattered, but it shows that such village expenditures which include roads, dredging, dikes and bridges, could be quite varied. Nonetheless, such expenditures could constitute up to 84% of a village's total expenditures.

Table 2 Civil Engineering Expenditures in Multiple Tochio Area Villages

	1879 (M12)	1880 (M13)	1881 (M14)	1882 (M15)	1888 (M21)	1894 (M24)	1892 (M25)	1893 (M26)
Village	%	%	%	%	%	%	%	%
Niigata Aggregate Local Gov' t Expenditures		56.33	52.64	64.82				
Kita Nigoro				5.51				
Kiyamasawa/Naka (dike only)	29.02	24.91						
Kiyamasawa (all civil engineering)					47.375			
Naka (all civil engineering)					84.154			

Nishinomata (all civil engineering)					25			
Morikami (all civil engineering)					68.76			
Nigoro							13.98	
Tochio-machi						0.119716	0.28913	0.068117

Note. In some instances expenditure data is available but includes no expenditures for civil engineering projects. These are not noted here. Source, *Tochio-shi shi* Chū, various.

These data for aggregate civil engineering expenditures are broken down further in some instances. Table 3 shows several examples. In these instances, the proportion of expenditures occupied by dredging and dike repair is substantial. Although earlier in the era some villages raised funds for dredging through a tax on those who used irrigation facilities in their farming (paid at a rate sent based on the area of irrigated land they cultivated), a process that suggests that dredging was important to watering crops.¹⁷ While this was certainly true, dredging of rivers and streams was also important in limiting flooding. Erosional soils and debris carried downstream raised riverbeds and contributed to flooding.¹⁸

Table 3 1888 (M 21) Details Local Government Expenditures

Expenditure	Village			
	Kiyamasawa	Naka	Nishinomata	Morikami
Total	47.38%	84.15%	25.00%	68.76%

¹⁷ Iinkai., *Tochio-Shi Shi.*, Chū, 99.

¹⁸ Traditionally, Japanese farmers used the nutrient-rich river-bottom mud to enrich their farmlands.

Of which				
Dredging	20.36	20.16	12.2	
Dikes	13.255	49.694		
Bridges	13.76	2.50		
Roads		12.25		

Source: *Tochio shi-shi*, Chū, 120.

This data indicates several characteristics of local expenditures for flood amelioration expenditures through mid-Meiji. Unsurprisingly, village and town expenditures varied from community to community, and even from year to year in the same community. Expenditures, while they might comprise a considerable portion of local government expenditures and revenues, still comprised small absolute amounts. These amounts, typically no more than a few hundred yen, were too small to allow for the development of extended, modern dikes, the use of modern dredging equipment and the like. Finally, the budgets do not indicate any propensity to collaborate with other local administrations. Occasionally we see evidence of extraordinary expenditures for civil engineering projects, but these appear to have been restricted to local labor costs.¹⁹

Expenditure levels witnessed so far represent a peak in local disbursements for flood control and related projects. The third decade of Meiji marked a transition in the pattern of local expenses, one harmful to flood amelioration efforts. Nonetheless, it is hard to argue that key reasons for the shift – those expenditures that increased – were in some sense reasonable.+++

Let us look first at the case of Nigoro village. In 1892 (M25), Nigoro spent just over 151

¹⁹ Iinkai., *Tochio-Shi Shi.*, Chū, 251-52.

yen on civil engineering expenditures, an amount equal to almost 14% of its budgetary expenditures. Significant, but not particularly high. From 1897 (M30) to 1901 (M34), there were NO expenditures for such public works. This despite an expansion of total expenditures from 1,147 yen to 2,299 yen over the same time period.

Where did expenditures go instead? The main culprit was expenditures for education. These rose from 596 yen in 1892 to 1,249 yen in 1901, more than doubling over the decade. A second benefactor of increased expenditures was administrative expenditures, which almost doubled from 377 yen to 642 yen over the decade.²⁰

Changes such as these were a direct result of new obligations imposed on local governments by the central administration beginning with the era of the Sino-Japanese War. This trend accelerated again after the Russo-Japanese War.²¹ Military-related expenditures were directly related to active states of war, and school staffing expanded.

Although a reorganization of Nigoro classified civil engineering as one of 13 categories of business, expenses were not broken out in budgets, and much of the responsibility for maintenance of dikes, dredging and roads was left to those directly affected.²² Thus the disappearance from budget lines of a heading for civil engineering did not mean a disappearance of such efforts from village and town activities, but it does suggest restricted levels of expenditure and a reliance on “neighborhood” support – both indications of a restricted ability to take advantage of modern technological innovations to aid in flood prevention and a continued reliance on traditional dike construction and dredging techniques, all at low expenditure levels.

This conclusion of restricted expenditures is born out by the funds the different wards in

²⁰ Ibid., Chū, 293.

²¹ Ibid., Chū, 295-96.

²² Ibid., Chū, 296-97 ff.

Nigoro village expended in 1901 (M 34). Amounts ranged from 100 to 691 yen for each ward, and approximately one half of expenditures were directed to public works of all sorts.²³ While ward chiefs were also likely to be a member of the village public works committee, it is clear from these numbers that expenditures that could be devoted to flood control were limited, since wards necessarily directed some public works funding to maintain roads, bridges and other expenditures unrelated to flood control. Among detailed expenditures were those for planting of trees, certainly important for control of runoff, but hardly capitalizing on new technologies of the modern era.²⁴

In principle, it is conceivable that higher level administrative entities were investing in flood control in the Tochio district, but I have discovered no such evidence to date. The multi-volume history of Tochio city mentions no such effort and other evidence indicates that higher level administrators re-acted rather than took positive, preventative measures. Response to district flooding in 1897 (M30) is illustrative.²⁵ In this instance, rains commenced on July 12th and continued through the 13th by which time the Nishidani and Yatsu rivers had begun to flood. Losses totaled some 10,600 yen, and one local observer classified it as a one hundred year flood. In August, floods again drenched the same communities along the two rivers. Remarkably, local civil engineering expenditures did not

²³

Village	Total Budget
Kita Nigoro	691
Hirei	148
Hontsu	100
Ono	244

²⁴ Iinkai., *Tochio-Shi Shi.*, Chū, 298-300. Many villages on the Echigo Plain also planted trees to act as windbreaks, so the assumption of this comment that tree planting was for flood control is, in itself, a generous interpretation of flood amelioration investments.

²⁵ *Ibid.*, Chū, 306.

increase a penny (literally, one *sen*), and local communities were incapable of dealing with the flood damage. This forced the wards back on their own resources, at least initially. The prefecture ultimately chipped in, recognizing the need for aid in reconstructing dikes and offering some economic assistance to those injured by floods.²⁶ To accomplish both objectives simultaneously, it planned re-building of dikes using local labor and businesses. Once again, however, this meant a reliance on traditional techniques of dike-building and relatively low-budget, labor-intensive designs.

Tochio was hardly alone in its plight. The citizens of Nagaoka, a large town near Tochio, complained in Meiji 31 (1898) that recent floods had been worse than in the past and blamed the problem on poor maintenance of rivers and their dikes. In the former case, this was primarily a failure in appropriate dredging, allowing the Shinano River to become shallow and carry less water. In this context, they also pointed to the limitations of modern technology. Written after a sequence of major floods, such criticisms did not result in an immediate, major series of countermeasures or a coordinated flood relief plan, in large part due to lack of funds. To the degree that some effort was made, it continued to be short-term responses prompted by individual flood incidents.²⁷ Here, too, we have evidence that local resources were relatively scarce forcing local governments to short-change river and dike maintenance in favor of central government mandated alternative investments in education and the like.

Conclusion

Despite the presence of impressive, modern flood and water control efforts such as the Iwabuchi and Okōtsu projects, pre- World War II Japan never had the resources to transform

²⁶ Ibid., Chū, 306.

²⁷ Nagaoka-shi Hensan Iinkai, *Nagaoka-Shi Shi*, 8 vols. (nagaoka: nagaokashi., 1992-1996)., *Tsūshi-hen ge*, 327-28, citing “Hokuetsu dai ni no kōzui,” *Gōyūkai zasshi* 29, July, 1898. The one large project that ultimately resulted from the devastation of these floods, the Okōtsu diversion channel.

its efforts to control its rivers and streams. Projects such as Iwabuchi and Okōtsu, schemes that required tens of thousands of yen and more, were funded only after competition within and between prefectures, each scrapping for funding from the central government.²⁸ Absent financial benefits from the *bête noire* of modern Japanese history, imperialist adventures, even these projects might not have been undertaken.

A la James Scott, the early and mid-Meiji modernizers thought big, and their efforts to transform Japan certainly ran roughshod over local desires in many instances, even in realms where locals saw some benefit from central plans.²⁹ Local knowledge was ignored. At some level, many of the state's goals were understandable – self-defense, the spread of literacy, promotion of public health – and many Japanese certainly thought them laudable even though these policies generated domestic friction and historians today view them in a critical, or at best, mixed light in association with the rise of Japanese imperialism.

What I have attempted to illustrate here is that pursuit of nationally directed policies of a new, centralized administrative structure -- self defense, education, and public health in particular – shifted scarce resources away from certain alternative forms of modernization that would also have benefited to Japan and the Japanese. In the realm of flood amelioration, adoption of modern dike designs and materials, as well as equipment for dredging, would have prevented substantial economic losses and promoted economic growth, two clear objectives of the new Meiji state even if one cynically presumes that actual protection of human life was not in the least a priority. This is true even if one presumes that promotion of modern industry

²⁸ In addition to Philip C. Brown, "Constructing Nature," in *Japan's Natural Legacies*, ed. Brett L. Walker, Julia Adeney Thomas, Ian Miller (forthcoming)., see Michael Lewis, *Becoming Apart : National Power and Local Politics in Toyama, 1868-1945*, Harvard East Asian Monographs (Cambridge, Mass.: Harvard University Asia Center, 2000)., who also discusses local competition for national support of riparian enterprises.

²⁹ Brian Platt, *Burning and Building : Schooling and State Formation in Japan, 1750-1890*, Harvard East Asian Monographs (Cambridge, Mass.: Harvard University Asia Center : Distributed by Harvard University Press, 2004). takes up this theme in regard to education.

was viewed overwhelmingly as the key to creating a nation capable of protecting itself, for agriculture was the goose that laid the golden egg which financed industrial development, and rural men who filled the ranks of the armed forces. Further, such projects had the potential to augment domestic demand for industrial output. Here, the domestic priority regime favored one interpretation of national interest over others in ways that directly cost the lives, property and fortunes of many Japanese who never served on a military battlefield.

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