Water and Risk Society: Water Management and Historical Understanding of Water in Japan

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Abstract
My paper is based on applying the theories of social risk to water management and historical understanding of water in Japan. I illustrate the emergence of sophisticated systems of hygiene and sanitation that contributed to public health as well as provide examples of water management – well before historians usually are talking about modern environmental policy. For instance, the Edo period Japanese with its large-scale water systems minimised health risks, contributed to public health and avoided wasting and polluting environment and scarce natural resources. Without the early successes of these policies Japanese society would not have been able to increase its population so rapidly or maintain such large and dynamic urban concentrations as it did. Against the risk society discourse the key question is whether and when Japanese societies developed reflexive relationship with environmental risks and, in particular, an awareness of the need to save and manage water resources.

Introduction
The discourse of social risk owes much to the contributions of such German authors as Ulrich Beck and Niklas Luhmann (see e.g. Beck, 1992, Luhmann, 1991). The English language research was quick to follow with many authors further applying the theoretical framework and vocabulary in their work (see e.g. Lupton 1999). The key point in this discourse is the idea that modernity changed the thinking of people on environment, science and technology by making them aware of the risks involved in their decision-making. Much of the discourse has taken for granted the assumption that modern reflexivity is more or less a byproduct of Westernisation. Furthermore, Niklas Luhmann in his analysis of the roots of the concept of risk does mention a few examples of early cases of risk concepts among non-Christian civilizations, such as divination practices, but ends up dismissing non-European cases as ones without fully developed decision-making awareness *(Entscheidungsbewußtsein)* (Luhmann, 1991: 16-17). The Eurocentric origins of risk narrative or history, focusing on maritime insurance practices, have become widely accepted in English language literature, most likely because of lack of critical voices challenging its limitations. Instead, alternative narratives of risk histories could easily be located in different cultural spheres, with direct links to modern societies and the emergence of ever-deeper awareness of relationships between decision-making and risks in such fields as environment, science and technology. In particular, Japan, and, to some extent, other East Asian societies provide good examples of surprisingly early cases, where people have demonstrated rather "modern" forms of reflexivity in their relationship with environmental management, to the degree that there may be good reason to re-examine whether modern reflexivity and awareness of risk is as "Western" a phenomenon as many researchers seem to believe and whether the whole idea of "modernity" could also be problematic in the case of many non-Western societies. In Korea Journal's theme number on risk society Beck approvingly noted that Korean cases all added to the understanding that the analysis of risk society crosses cultural borders and continents Beck (1998: 196-206). In this volume some

Korean authors were struggling to define alternative Korean model of modernisation to better locate Korea on the rather Eurocentric map of previous risk society literature (see e.g. Kim Dae Hwan, 1998: 28-45). In Japan, there have been no attempts to identify alternative forms of reflexivity in the historic relationship with environmental management, although Japan has its share of writings on risk society, ranging from ones focusing on risk management and risk perception (see e.g. Ikeda and Sakai, and Tawada, 2004 and Nakayachi, 2003) to those which get close to Beckian and Luhmann's conceptions (see e.g. Yamaguchi, 2002 and Komatsu, 2003).

In the case reacting to new hazards and threats Japanese researchers and publishers often make great efforts to be the first to satisfy the need to have popularised knowledge of risks that often require quite a detailed understanding of natural science research results. For instance, soon after the SARS epidemic Japanese researchers rushed to publish books on the topic. Similarly, the BSE and environmental hormones are subjects of good quality natural science discourses in Japan with many good publications. However, such books have so far failed to apply the concept of risk (or come up with their own concepts) and use it to analyse the workings of Japanese society. In particular, publications mapping the social risk and environmental risk as part of it are scarce in Japan. As for the Japanese consciousness of the new age of risk, undoubtedly most people still have a sense of increased anxiety and lack of predictability in a society, which has persisted through years of economic stagnation and restructuring *(risutora)* while the realities of globalisation (including the new role of China) have changed the understanding of the Japanese place in the world. Furthermore, such issues as the war in Iraq, mad cow disease and avian influenza have all vividly demonstrated that Japan is not as much an island as was long thought. However, social risk discourse in Japan is still nowhere to be seen and much of the security debate is focused on very traditional security risks such as the military threat posed by North Korea. A special problem in Japan has been that Ulrich Beck's *Risikogesellschaft* (1986) was translated in 1988 by Azuma Ren under the title *Kikenshakai* (danger society) and because of this very unfortunate mistranslation the Japanese academic community (or at least a significant part of it) has largely missed the main point in German and English language risk society discourses when it has equated risk with danger(s).

However, the Japanese risk society and the Japanese risk society discourses are two separate things. My research shows how water management in Japan has long history and surely contains good examples of well-developed awareness of complex relationships that characterise water management. Without such awareness the scale and sophistication of water management practices in Japanese society would be difficult to explain. However, using the theoretical tools of the social risk discourse provides an opportunity to analyse the significance of water management and environmental awareness in Japanese society, as well as identify problem areas in modern environmental practices in Japan, in particular, those with linkages with water management.

Methods

My paper uses the social risk discourse as the theoretical starting point. The analysis of Japanese historical and contemporary water management practices is based on written documents and research literature. In other words, research on water history in Japan can rely far more on historical written documents and go back far longer than in most other parts of the world. The analysis on contemporary situation of water issues in Northeast Asia is supported by my recent book chapter, which contains more data and details (Merviö, 2007).

Social risk and the narratives of Japanese history of water

The premodern Japanese household in most cases was relatively poor, but in terms of hygiene and sanitation Japan was well ahead of all the European countries in the 19th century, after industrialisation had already had abundant time to change such societies as Britain. The population density of Japan reached high levels relatively early, and people had to pay attention to hygiene in a country where climatic conditions could easily pollute the water. One practical way to ensure the safety of drinking water has been, and continues to be, drinking water in the form of tea. Water has also contributed to public health in Japan by being used for bathing. In addition, the bodily wastes of people and animals had been taken into good use for centuries as fertiliser and therefore they did not contaminate water resources. The water distribution and sanitation systems of such major Japanese cities as Edo and Kyôto during the Edo period had no parallel in the rest of the world. When the city of Edo (later, Tôkyô) was selected as the capital Shôgun Tokugawa Ieyasu realised that major works were needed to secure an adequate water supply. He ordered Ôkubo Tôgorô Tadayuki to build a system, which has then served the city for centuries and has for its part made it possible that Tôkyô is today the largest city on earth (Merviö, 2001: 2-3 and Steele, 2000: 39-50). The old Edo system was so effective that when it was modernised at the end of the 19th century the only major work was in replacing the wooden pipes with metal ones (Hanley 1997: 107-109. For the history of the Tama River and Tôkyô water system, see Steele 2000: 39-50). In addition to a rapidly increasing number of private family bathing facilities, the city of Edo had some 600 public baths in operation at the beginning of the 19th century and most people seem to have had good access to them, while, for instance, most contemporary European city populations had very poor bathing facilities (cf. Hanley, 1997: 97-101).

The examples from the Edo period in Japan illustrate how a country that by definition was supposed to be premodern and due to its security concerns even limited foreign contacts to a minimum, was still able to design effective large-scale systems that effectively minimised health risks, contributed to public health and avoided wasting and polluting environment and scarce natural resources. The key policy element was an optimal use of water and other natural resources in the long run rather than maximum use in the short run. Without the early successes of these policies Japanese society would not have been able to increase its population so rapidly or maintain such large and dynamic urban concentrations as it did. Modern Japan for a long time turned its back on its premodern roots and the wisdom of many earlier achievements did get lost in many cases. However, designing sustainable life-styles and "managing the risks" of our times may in Japan produce solutions that, for instance, in the optimal use of water resources come remarkably close to some of the premodern practices. One of the most important lesson from Edo history is that social infrastructure can serve people well and minimise a whole range of risks. Japanese early investments in massive water engineering projects both in urban and rural settings speak volumes about awareness of the link between efficient water management, hygiene and welfare of people. For instance, the wisdom of both pre-modern and modern Japanese bathing culture is seldom fully understood by those observers, who are brought in cultures, where it had been inconceivable to invest to heavily on providing as good bathing facilities to huge populations. Bathing culture has never constituted a major environmental concern in Japan (or been perceived as a waste of water resources). In modern Japan sometimes these teachings seem to be lost since locally neglect in investment in the social infrastructure has resulted also in Japan in imbalances, distortions and anomalies. Japan has its share of incidents demonstrated how local decision-makers have compromised the safety of water management especially when agricultural or industrial use of water has polluted or

strained the water resources. Similarly the local authorities may have a temptation to save costs by resorting to cheap and easy solutions with basic water management infrastructure. In the Japanese case the (immediate) public health concerns have been addressed much more effectively than environmental concerns and occasionally it looks like some of the old pioneering systems were built to be far more sustainable than some of the present ones. While many modern Japanese cities and houses have no effective municipal sewage systems (and are far behind both the more advanced premodern Japanese models and modern European cities) Japan has all too many bridges and roads that lead nowhere and other public projects whose official purposes and financial calculations defy logic (cf. Hanley, 1997: 176-198). All in all, the Japanese model of water management may be interpreted both as a pioneer, because its remarkably "modern" solutions at times when nothing in the similar scale was built elsewhere, or as an enigma since after all the emphasis placed on modern science and very detailed administrative guidance and control of the central government the present situation of local water management is characterised by huge diversity, in terms of quality of water and environmental sustainability, as well as cost.

Inspite of its less than perfect record in public works, Japan still provides a good example how a society can effectively organise itself to deal with the issue of water pollution and management of water resources. After rapid modernisation from the Meiji Period on, industrial pollution quickly became a major problem in Japan. The pollution caused by Ashio Copper Mine became nation-widely known already in the 1880s (see e.g. Nimura, 1997). However, the state was slow to act and was generally seen to favour industry at the expense of public health and environmental protection. Things started to change only in the 1970s when environmental protection had become a major political issue after Minamata mercury scandal and other high profile pollution cases had made it impossible to ignore the consequences of industrial pollution. The ruling party LDP changed its attitude and soon the parliament passed laws that set strict standards for both water and air quality. In both areas progress was quick and today these achievements stand as the biggest successes of Japanese environmental policy. Japan is also helped with its abundant water resources and topography (for Japanese modern water management, Okada & Peterson, 2000).

From the point of view of risk society discourse, the effective response of Japanese government to deal with the issue of water pollution tells about the benefits of having an effective central government working in close cooperation with industry, with easy access to most modern science and technology. The reason for changes in political attitude rests in increased awareness of health risks among public and authorities, alike. Japanese environmental legislation has from the beginning to present days focused on protecting humans from environmental risks and "balancing" the interests of industry and environmental protection. It is not that Japanese people were totally unaware of these risks from Meiji period to the 1970s, but the economic growth and profits were simply put ahead of public health and environmental values. While modernisation has contributed to the destroying of environment, many old ideas on the spiritual and health benefits of good environment have continued to live on. Many Japanese people go to great lengths to find the purest water for drinking and bathing and the history of Japanese visual arts can easily be used to demonstrate the sensitivity to aesthetic values of water in its different forms and as a key element of natural environment. However, it is clear that Japanese government is not keen to protect environment for biocentric reasons and that also among the Japanese public the support for non-anthropocentric environmental protection is limited. Despite all of this, especially in the area of water management Japanese record is in its own class in East Asia and may serve as the best available model for many other Asian countries.

Conclusions

My research shows that the narratives of water history in Japan contain elements demonstrating that different forms of reflexivity and awareness of complex relationships between water system management and social/environmental risk were present very early. Japanese society is suitable for studying this kind of risk awareness for the following reasons: 1) good availability of historical sources, 2) long history of large-scale water works, including both urban and rural works of water engineering, 3) the fact that Japanese society has modernised with different social models than its Asian neighbours and all European societies, 4) that as a non-European society with highest level of technology and science (including environmental sciences) Japan is particularly suitable for testing whether the reflexive modernisation is as Western a phenomenon as the social risk discourse has claimed. My results indicate that Japan, China and Korea have all developed their own alternative ways of experiencing social risk, each learning from their historical experiences and that Japan clearly marks a specific case. My examples in this article deal with water management, but I am confident that there would be other social and environmental issues where similar results could be obtained. My research also shows that there are major differences in the history of water management in various locations within Japan and also between Japan and its neighbours. The Japanese historic water management solutions and policies are very diverse, reflecting differences in popular attitudes and political/administrative systems, and even persons in charge of these policies/systems. The Japanese history of water management also can be used to demonstrate that presence of problems in water management does not necessarily mean that there is low awareness of the seriousness of the problems, as, for instance, the dangers as well as the water engineering challenges of flood prevention have been well-understood for centuries and only in recent decades the number of human casualties has been brought to remarkably low levels (compared to both history and the present situation in the neighbouring countries). Both the understanding of problems and chosen responses are tied to the historical narrative. Reflexive modernity does not mean that earlier civilizations were as short of developed decision-making awareness as has often been claimed in the social risk discourse.

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