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The Commodification of Water and Power Relations between Japanese Settlers and Koreans in Late Nineteenth-Century Pusan*

Sungwoo KANG
Chung-Ang University

ABSTRACT

This paper investigates how the construction of a water supply system in Pusan, Korea, changed the concept of water from a public good for communal use to a commodity for sale to residents. In doing so, it aims to analyze the shifting power relations between Japanese settlers and Koreans that occurred because of the construction and development of the water supply system. In tracing the process of the commodification of water, it will closely examine the construction and development of the water supply system in Pusan, centered on three phases of construction that took place in the years 1894-1895, 1900-1902, and 1907-1910. It will also analyze the impact of the water supply system on the everyday lives of local people at the time, including both Japanese settlers and Koreans in Pusan, in order to highlight how the power relations between them were shaped and defined as reflected in access to water and “hygienic modernity.”

Keywords: water supply system, hygienic modernity, Japanese settlers, Korea, Pusan, port city

Introduction

In the modern world, access to potable water is often taken for granted as an aspect of everyday life. However, this was not the case until the advent of modern technologies and a modern state in most countries. In fact, in the pre-modern world, “there were some saving customs that had served to render many of the people more or less immune to the disease germs that were so widely distributed... [and] cold water, for instance, was not the most common beverage as it is with us” (Oliver 1940, 353). Therefore, access to clean water still proves to be one of the fundamental bases for sustainable development and “an intrinsically important indicator for human progress” in today’s modern world (Kevin Watkins et al. 2006). The issue of urban water supply is important not only for securing convenient access to drinking water for citizens, but also for meeting the public health concerns of a “modern” state. However, the installation and maintenance of a water supply system requires a significant amount of time and money. Consequently, in modern states, especially in urban areas, clean water has become a commodity¹ that can be bought and sold, and the distribution of water has come to create inequality, reflecting power relations among citizens (Connolly 1974, 117). In particular, the unequal distribution of water in cities produces the physical-spatial segregation of urban populations according to “race, culture, occupation, and socio-economic status,” which, along with social relationships, determines the quality of life and a

particular standard of living (King 1990, 36).

With the increasing interest in urban public health, the development of water supply systems in urban spaces has attracted scholarly attention in various ways. For example, Jean-Pierre Goubert, in *The Conquest of Water*, demonstrated a changing perception of water in nineteenth-century Europe from a free gift of God to an industrial product manufactured by man (Goubert 1989, 169). According to Goubert, the domestication of water was driven by the introduction of new technologies in nineteenth-century Europe and the water supply system for individual users that was developed from 1870 onward. Gradually, the growing demand for clean water “conquered” Europe by transforming daily lives during the *belle époque*² (Goubert 1989, 25). In a similar vein, various scholars have examined water supply in relation to colonialism. For example, in *Colonizing the Body*, David Arnold argues that colonial medicine and sanitary reforms functioned as instruments of British colonial rule in India and created “a growing intervention and a quest for monopolistic rights over the body” (1993, 7). However, at the same time, they protected populations in India from widespread epidemics due to improved water supplies (1993, 167).

In recent years, several Korean scholars have examined the development of water supply systems in the urban spaces of Korea, particularly their development in Seoul (Kim Paegyŏng 2009; Kim Yŏngmi 2010, 255-88). Others analyzed the development of a water supply system in Pusan, the biggest port city in Korea. For example, Kim Sŭng (2009) traced the process of the developing water supply system in Pusan, and Kim Chŏngnan (2011) studied its development in relation to the spread of a water-borne disease, cholera. Although these studies provided important details on the development of the water supply in Korea (both in Seoul and Pusan), they were limited in analytical rigor in that they either just explained primary sources or highlighted the colonial influence (or exploitation) that may be observable in water supply development in Korea. As seen in the review above, studies focusing on Korea have failed to capture the fundamental changes brought by the development of a modern water supply system that occurred on groups and individuals in the community. This paper attempts to fill this gap by analysing how a modern water supply system in Pusan, built on the initiative of Japanese settlers, changed the concept of water in Korea. In particular, this paper will examine the process of commodification in Korea by looking into how a modern water supply system in Pusan³ was constructed by the growing number of Japanese settlers and

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¹ Commodification is characterized by “(1) exchanges of things in the world, (2) for money, (3) social context of market, and (4) in conjunction with four indicia (objectification, fungibility, commensurability, and money equivalence) of commodification in conceptualization” (Radin 1996, 118).

² The term *belle époque* refers to a golden age in European history, the period from 1871 (the beginning of the French Third Republic) to 1914 (the outbreak of World War I).

highlighting the power relations between them and Koreans that were created vis-à-vis the distribution of water.

The Opening of Pusan and the Construction of a Water Supply System

Korea remained within the Chinese world order until 1876, when Japan pressured it into signing the Kanghwa Treaty of Amity and Commerce (*Kanghwado choyak*), forcing open its doors. As a result of the treaty, Pusan became the first open port in Korea in which the Japanese, as well as other foreigners, could enter and settle.⁴ Moreover, with the conclusion of the treaty, Japanese settlers in the open ports were guaranteed protection through extraterritorial rights. Consequently, the Korean population in Pusan grew rapidly, as did the number of Japanese settlers: in 1876, there were only 82 Japanese, but, by 1910 that number reached 20,000. The Japanese settlement grew out of the Japan House in Ch'oryang, a seaside area in Pusan.

With the rapid development of Japanese settlement in Pusan, water problems became acute among Japanese settlers. With limited sources of water, which was generally obtained from wells and streams flowing from the mountains and hills in Pusan, it was impossible to meet their growing needs. In fact, until the 1870s the chief sources of water for the Japan House at Ch'oryang comprised two wells that had been dug for the Japanese by the Tsushima⁵ merchants residing there. Due to the hilly geographical features of Pusan, the adequacy and safety of drinking water supplies were always a serious issue for the inhabitants. The provision of traditional water sources, such as wells and streams from valleys, was not only inadequate, but also unsafe. While Pusan was geographically a natural port, it had always suffered from an insufficient water supply, because the land beyond the contour of the coastline is closed off by mountains, offering little hinterland from which to obtain water. Moreover, Tongnae and its hot springs, a potential source of water, were located beyond the hills that ring the harbour (Kim 2009, 240).

There were six other wells located around the county magistrate's offices at the centre of the town (or *üpsöng*) and three wells at the Left Naval Headquarters for Kyöngsang Province (*chwasuyöng-söng*) in Tongnae County.⁶ The number of wells must be considered in relation to the number of Koreans living in Tongnae

³ The establishment of waterworks in Pusan took place thirteen years earlier than in Seoul, the capital city, which had to wait until 1908 for its first waterworks.

⁴ Pusan was already an attractive market for the Japanese even before the treaty due to the pre-modern trade connection that existed between Korea and Japan via the Japan House (Waegwan), which had been established in Pusan before 1876 (Lewis 2003, 107-45; Kang 2012, 86-98).

⁵ Tsushima is an island approximately 53 kilometers away from the southern tip of Korea and 80 kilometers away from Kyūshū (Lewis 2003, 17). After the Imjin War (Hideyoshi's invasion of Korea), only Tsushima Japanese were permitted to engage in trade with Korea and the Japan House at Ch'oryang was the only installation through which diplomatic as well as commercial communication was allowed between the two countries (Lewis 2003, 21-22). The Japan House at Ch'oryang remained as the only trading post in contact with the Japanese via Tsushima until the 1876 treaty was signed.

⁶ *Tongnae-bu üpchi* (1740, 1759, 1832) is a local gazette from Tongnae (the traditional city centre of Pusan) (*Tongnae-bu chi* 1740, republished in 1995, 111-12); (*Tongnae-bu chi* 1832, 255-58); The *Tongnae-bu chi* for 1759 does not mention that there were three wells at the Left Naval Headquarters for Kyöngsang Province. Instead it states that there was only one well on Mt. Chöng (*Tongnae-bu chi* 1759, 207-209).

County, the traditional centre of Pusan. Considering that in 1740 there were 21,241 people (9,616 males, 230 monks, and 11,625 females) and 5,641 households in the town centre (*Tongnae-bu chi* 1995, 123-24) and six wells, there were approximately 940 households to one well. Even if the number of wells located at the Naval Headquarters is included, the number of people dependent on them remains astoundingly high: 627 households (2,360 people) to one well. Under these circumstances, it is probable that rather than the wells the Nakdong River was the main source of water for most Koreans in Tongnae County. Thus, Koreans were at the mercy of nature, suffering greatly, for instance, when drought occurred in the winter. The situation proved even worse for the first Japanese settlers in Pusan. Whereas the Koreans living in Tongnae County had access to natural water sources from various mountains and hills, the Japanese settlers in Pusan were bound to the limited water sources of the Japan House. Although the number of Tsushima Japanese (82 in 1876) who were allowed to live in the Japan House was relatively small, its two wells could not supply adequate drinking water to the increasing number of Japanese settlers (*Nitchō tsūkōshi Fu Fusanshi gohen (Kindaiki)* 1916, 205).

The Construction of Waterworks from 1894 to 1902: The First and Second Construction Phases

The Japanese settlers were aware of the shortage of water during the early open-port period, and thus attempted to secure sources by building a water supply facility for the Japanese settlement. A committee of settlers (J. *Kaigisho*; K. *Hoeüiso*), under the supervision of the superintendent sent by the Japanese government, appointed a representative (J. *Sōdai yakusho* or K. *Chongdae yōkso*) to manage settler-related affairs. “The Regulations for the Control of Communal Shallow Wells in the Settlement” (*Kyoryūchi kyōdō horiido torishimari kisoku*) was promulgated in December 1887. This was the first “modern” regulation concerning drinking water in Korea.⁷ It was comprised of six articles that aimed to protect wells by preventing these sources of water from being damaged or polluted (*Fusan rijichō hōki ruishū* 1909, 155-56). However, this regulation had a limited influence because of its passive nature in that it sought only to maintain the *status quo* and therefore could not satisfy the needs of Japanese settlers. With their numbers increasing and the wealth generated by business growing, settlers in Pusan united into an assembly (*Kaigisho*; an earlier form of the Settlers’ Association) and formed a Chamber of Commerce (founded in 1879) in Pusan. Through such organizations, the settlers would respond more actively to the increasing demand for water, launching a series of water supply projects beginning in 1894.

In the meantime, a rumour that Koreans were poisoning Japanese wells in Pusan was circulated among Japanese settlers, as the following quote from a Korean newspaper reports:

⁷ The first regulation concerning drinking water in Japan was passed with the name “The Drinking Water Caution Regulation Act” in 1878 (Fukuda 1994, 389).

A grave charge which we can scarcely credit is made against Koreans in Fusan that they are poisoning Japanese wells. When one of the culprits is caught, tried and convicted, then it will be time to publish such a report. But to circulate such a rumour without any confirmation can do no good and can only reflect upon those who invented it. (*The Independent*, April 16, 1896)

*The Independent*⁸ urged those who invented and spread the rumour to cease repeating it until the truth of such reports could be confirmed. However, once these rumours started, they were very difficult to quell. No one could be sure how many Japanese read *The Independent*, but the rumour had already spread quickly in settler society long before this warning was published. The anxiety and indignation that were aroused from the “unproven” rumour probably played a role in convincing Japanese settlers of the need to build waterworks.

The construction of the water supply system was conducted in three phases between 1894 and 1910, with one phase beginning about every five years. The continuing expansion of the water supply was directly linked to the increase in the number of Japanese settlers in Pusan. The first phase was initiated by the Japanese settlers and involved the construction of a catchment area that allowed the upper stream of the Posuch'ŏn River to be used as the primary source of water for the Japanese settlement as well as for large ships coming to Pusan. This first phase of construction, which was completed at a total cost of 25,000 yen, was solely financed by the representatives of the Japanese settlers from June 1894 to January 1895. In the beginning, the estimated time for construction was about 100 days, including the installation of a catchment area, a reservoir, pipelines, and drainage, as well as a single public water faucet,⁹ fire hydrant, and water control valve (Kim Ŭi-hwan 1973, 41-42).

However, construction was delayed more than seven months due to rising wages caused by the Sino-Japanese War of 1894-1895. Difficulties in supplying manpower and a shortage of shipping to supply construction materials also contributed to rising costs. The construction included establishing a dam for the catchment area with a natural filtration device at the Posuch'ŏn River and creating a reservoir at Taech'ŏngjŏng (J. Ōchōmachi), which was a road that ran along a raised site in the settlement area. The water flowed from the catchment area to the reservoir via a six-*ch'ŏn* diameter (≒ 5.71 centimeters) clay pipe and then traveled through iron pipes from the reservoir to seventy public water faucets established in the Japanese settlement. While the water supply facility of 1895 was small by modern standards, there was no charge for water. Moreover, it benefited the population of 4,000 Japanese settlers by adequately supplying them with water. The expenses of managing the facility were paid by contributions from the Japanese

⁸ *The Independent* (Tongnip sinmun) was a bilingual newspaper written in Korean and English. It was launched by Philip Jaisohn (Sō Chaep'il) on April 7, 1896 in order to promote the reform and self-strengthening movement in Korea (Pratt and Rutt 1999, 478).

⁹ The word “faucet” here does not refer to a “modern day” faucet; rather, it is simply a standpipe.

settlers and from fees paid by fishing vessels. The Japanese consulate promulgated regulations (J. *Suidō torishimari kisoku*) to protect faucet water, the water supply facility, and to prevent people from abusing the water supply. This was the first known regulation of the water supply in Korea (*Pusan riji chōhō kiruishū* 1909, 181-82). The following quote provides the details of the regulation:

- I. In the area of the catchment areas and reservoirs the following is prohibited:
 1. Bringing animals or taking a bath and doing laundry.
 2. Littering or throwing stones and polluting the water source.

- II. Digging up the water pipe and waterworks facilities, and any other activities that may obstruct the water works, are prohibited.

- III. Public water faucets, fire hydrants, and other related facilities should not be abused or neglected.

- IV. Cows or horses should not be chained at the public water faucet and nothing should be set on top of the public water faucet.

- V. It is prohibited to litter or throw stones and other pollutants in the stream of water to the public water faucet. It is prohibited to set up [any structures] in the area of the public water faucet. No materials should be washed at the site.

- VI. Those who violate Article I and II will be forced to carry out cleaning and refurbishing according to the fourth clause of Article 426 of the Criminal Law Code; and those who violate Article III, IV, or V will be sentenced according to Article V on minor offenses in the regulations of the settlement.

- VII. In the use of public faucets the following is prohibited:
 1. Abusing the public water faucet by drinking water [directly from it] or taking a bath or doing laundry [at the site].
 2. Leaving the public water faucet on without turning it off after use.

- VIII. Those who violate regulations in Article VII will be sentenced to at least one day in detention or they will be fined between 5 *sen* and 1 yen 95 *sen*.

After the Sino-Japanese war of 1895, the demand for waterworks continued to rise as a result of the increase in the number of Japanese settlers in the Pusan settlement. Thus expansion of the water supply system was necessary. Therefore, the Japanese settlers established a reservoir in 1895 in a valley neighboring Mt. Ōmgwang (J. Mt. Takatōmi) that had a 2,602,600 cubic-foot capacity reservoir. The representative body of settlers (*Kyoryūmin sōdai*, a precursor to the Settlers' Association), with the Japanese superintendent (K. *kwalligwan*, J. *kanrikan*) residing in Pusan, hired an engineer, Tatsumura Yōkichi, to undertake a site investigation and decided to build the waterworks according to the following plan. The first step

was to construct a reservoir in the valley under Mt. Ōmgwang and construct two filter basins of 80 *kan* each.¹⁰ The second step was to add an extension for another reservoir, so that 1,500 square meters of water could be stored, an amount that could meet the daily needs of the population of 6,000. The third step was that a reservoir of the same shape should be added each time the population increased by 3,000 people. The fourth step was to repair and use as a supplementary water source the reservoir that had been built in the first construction. The fifth step was that wooden pipes, which were used in the first construction, should be replaced by new clay and iron pipes (*Pusan rijichō hōki ruishū* 1909, 8-25). While this plan both expanded the capacity of the water system to provide water for home use and provided a greater possibility of extending capacity in the future, it was complicated and technically demanding.

The above outline for the expansion of the water supply facility was beneficial for the following reasons. First, in case of emergency, existing fire hydrants could extinguish fires not only in two-story buildings, but also three-story buildings in several critical places in the city. Second, apart from drinking water for daily use, the water system could provide an additional supply for ships, locomotives, and factories, which was important because Pusan functioned as a port and was developing manufacturing. By levying fees for usage, funds could be raised to repair the water supply facility. Third, if the quantity of water was sufficient, the water supply could be used to help drain sewage and to clean roads to prevent the ruining of goods in the stores by dirt or dust. In other words, the water facility was not only beneficial to the quality of life but also for aiding the expansion of business. Because of this, the Chamber of Commerce in Pusan also engaged in the construction of water supply facilities from an early stage and continued to be engaged throughout its development and management. On the basis of the above plan, the second phase of construction was launched at Mt. Ōmgwang (*Fusan riji chōhō kiruishū* 1909, 19-25).

The second construction required more advanced technology to build this “modern” water supply structure, with facilities to create a catchment area and a reservoir. The Nagasaki Civil Engineering Stock Company was selected by bid in open competition to undertake construction. The company began work in January 1901 and the celebration of the opening of the waterworks was held in January 1902. For the second construction, the settlers attempted to create a water supply large enough to equal the average daily consumption per person in comparison to major cities of Japan, such as Tokyo (25 gallons), Yokohama (18 gallons), Hakodate (15 gallons), Nagasaki (20 gallons), Ōsaka (19 gallons), and Kōbe (14.5 gallons).¹¹ This proved to be a success, as in Pusan the estimated daily consumption on average was 15 gallons (*Fusan josuidō shōshi* 1914, 9-13).

There were many differences between the first and the second construction

¹⁰ One *kan* is a unit for the space enclosed by four pillars and is equivalent in length to 1.82 meters.

¹¹ The daily per capita consumption of water in Pusan lagged far behind most European and US cities, such as London (31 gallons), Paris (36 gallons), and New York (60 gallons) (*Fusan josuidō shōshi* 1914, 10-11).

phases. The first noticeable change was filtration control. In the first construction natural filtration was utilized, while the second facilitated filtration by building a catchment area. The capacity of the reservoir was also greatly enlarged. Another noticeable change in the second construction was that all the pipes for both the supply and drainage of water were made of iron. The pipes also became longer (*Fusan josuidō shōshi* 1914, 5, 41). The establishment of water supply facilities in the first and second phases of construction was intended to meet the needs of public use. In fact, water faucets were considered to be public property so that there was no charge for Japanese settlers. Instead, a small levy on water was collected from foreign ships and the charge for water supply was fixed per faucet, rather than being based on metered use.

Transition to the Concept of Water as a Commodity

One noteworthy change that occurred as a result of the second phase of water supply construction was that the number of public water faucets for common use was reduced from seventy to twelve. Since the distribution of the water supply in Pusan was limited, the simplest way to expand the distribution rate would have been to establish more faucets for public use; however, policy moved in the opposite direction. This reduction in faucets reveals a fundamental change in the definition of water. In other words, “water” was transformed from a basic essential need into a commodity. The commodification process transformed water from a source of life for the greater public good to something that had to be purchased.

Since the construction of the water supply system cost a large amount of money, a charge for its use as a form of taxation was inevitable. The taxpayers, that is the Japanese settlers, while acquiring a claim to water in Pusan, had to shoulder the financial burden of paying for the water supply system. Since there was no subsidy from the Japanese government, the local representatives needed to secure a source of revenue. In fact, Sahara Junichi, on behalf of the Representative Body of Settlers (*kyoryūmin sōdai*), had to take out a loan to cover the expenses of the second phase of construction, which were estimated at 87,000 yen. This amount was raised by borrowing 60,000 yen from the Daiichi Bank and 13,500 yen each from the Daijūhachi Bank and the Daigojūhachi Bank at a low interest rate (1% per year). In other words, the total amount of 87,000 yen needed for construction was borrowed. The loan was to be paid back in instalments over a seven-year period from 1901 to 1907 (*Fusan josuidō shōshi* 1914, 30-31).

In the presence of the Japanese consul, a representative of the Association, Ōta Hidetarō, Chairman of the Association Takafuji Shoichirō, and the Pusan branch chief of the Daiichi Bank Arai Eizō, signed the contract on August 20, 1900. The contract they signed reads as follows (*Fusan josuidō shōshi* 1914, 36-38):

- I. From the day of the signing of the contract to the completion of the construction, the Daiichi Bank in Pusan will provide a loan to the settlement of up to 60,000 yen.
- II. The total amount of the loan is the same as above in Article I. The Representative body of the Association and Chairman of the Association will sign the promissory note.

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- III. The bank should be informed of the amount of the loan [to be taken out] ten days before it is claimed.
- IV. For Article I, the interest for the loan is 1% per year.
- V. The loan in Article I should be paid back in instalments over a seven-year period from 25 December 1901 to 25 August 1907. The amount of repayment will not be less than the agreement above under any circumstance. However, if the settlement association has a surplus in its budget, the terms of repayment can be reduced by adding up the amortized costs after a mutual agreement has been reached.

Each item of the contract, which composed the agreement, will be enforced by the Japanese consul with the permission of the emperor of Japan, the representative of the Association, and the Pusan branch chief of the Daiichi Bank.

Though the loan was made to the representative body, the budget was not sufficient due to the appreciation of land values, so a revised supplementary budget of 20,000 yen had to be drawn up. The budget for the second phase of construction was four times greater than that of the first. The following table shows the estimated budget to be raised from projected tax revenues.

As table 1 shows, most revenue for this supplementary budget was collected from the first levy for improving the water supply system and charges levied on a per person basis. The plan to repay the loan was also based on the collection of taxes. Charges per person amounted to a little over 30 percent of the total budget. For the construction, the representative body began to impose public governance. In other words, the representative body began to provide public services (water supply in this case) on the basis of taxation, meaning that the representative body became a “government” for the inhabitants of Pusan.

Table 1. Supplementary Budget for Repair of Water Supply Facilities in 1900 (Unit: yen)

| Category | Budget | Percentage | Note |
|--|--------|------------|--|
| The first levy for improving the water supply system | 12,724 | 50 | |
| Charge on per person basis | 8,127 | 32.21 | People over four and under seventy years of age will be each charged 15 <i>sen</i> (actual rate was about 15.133 <i>sen</i>) per month for twelve months (4,515 people would be so charged) |
| Fishing ship charges | 1,425 | 5.6 | 30 <i>sen</i> per person Estimated number of 4,750 people |
| Sake brewing charges | 900 | 3.5 | 1 yen 50 <i>sen</i> to be charged for 1 <i>koku</i> , estimated 600 <i>koku</i> |
| Imported wine charges | 2,000 | 7.9 | 50 <i>sen</i> per bottle, estimated 4,000 bottles |
| Charges on soy sauce | 80 | - | 40 <i>sen</i> per 1 <i>koku</i> , estimated 200 <i>koku</i> |
| Charges on imported soy sauce | 120 | - | 15 <i>sen</i> per 1 bottle, estimated 800 bottles |
| Total | 25,448 | 100 | |

Source: *Fusan josuidō shōshi* 1914, 30.

Table 2. Type of Water Supply and Number of Faucets in June 1905

| Types of Water Faucets | | Number of Faucets | Percentage |
|--------------------------|---|-------------------|------------|
| Private Water Faucets | Water faucets to special places (i.e., government offices, local offices) | 34 | 8.54 |
| | Faucets to single households | 271 | 68.09 |
| Public Water Faucets | Faucets to more than two households | 34 | 8.54 |
| | Public faucets | 12 | 3.01 |
| Fire hydrants | | 45 | 11.30 |
| Water supply for ships | | 1 | 0.26 |
| Fire hydrants and supply | | 1 | 0.26 |
| Total | | 398 | 100 |

Source: *Fusan hōsei ippan* 1905, 175-76.

Table 3. Type of Water Supply and Charges in 1907 [Unit: yen, *sen* (1/100th of a yen), *rin* (1/1000th of a yen)]

| Different Charges | | Standard | For One Month | |
|-----------------------------------|------------------------|---------------|---------------------------|---|
| Fixed charge | Private use | 1-5 persons | 1.5 yen | Use of horses and cows = 50 <i>sen</i> |
| | | 6-10 persons | 2 yen | |
| | Private for common use | 1 faucet | 40 <i>sen</i> | |
| | Public for common use | 1 faucet | 20 <i>sen</i> | |
| Charge based on consumption level | Business use | 1 <i>koku</i> | 2 <i>sen</i> | For the use of water pump per month |
| | Ordinary use | 1 <i>koku</i> | 1 <i>sen</i> 5 <i>rin</i> | |
| | Bath house | 1 <i>koku</i> | 1 <i>sen</i> | |
| | Ship | 1 ship | Within 20 <i>sen</i> | |
| Private fire hydrants | | 1 time | 1 yen | |

Source: *Fusan suidō kyusui kisoku*; re-quoted from *Pusan sangsudo paltalsa*, 1997, 182.

As table 2 shows, public faucet use (3.01 percent) came to be far overshadowed by faucets to single households (68.09 percent). The commodification of water was now overtaken by its domestication. In other words, water shifted from a public good to a commodity and even a domesticated good as it travelled from the hillside to the urban centre and finally to homes in Pusan. Needless to say, not only did its domestication change how water was conceptualized, but it transformed social and economic life in the urban centre and households of Pusan.

Then, on what basis were the fees for water charged and what was their amount? The following table provides a clue to understanding the types of water charges.

As table 3 shows, fees for water supply in Pusan were mainly fixed charges based on the number of households and water faucets. Water prices were not actually set based on consumption, but were calculated per faucet. For private use, a single faucet for a household of less than five family members cost 1 yen 50 *sen* per month; a single faucet for a household of between six and ten cost 2 yen per month; and, in cases of households of over ten family members, 10 *sen* per month was added per additional person. Multiple households using the same faucet were

charged in a similar way, with five households sharing a charge of 2 yen per month. This rate increased by forty *sen* per month for each household beyond six. Thus, eight households would share a bill of 2 yen and 80 *sen* per faucet (*Fusan josuidō shōshi* 1914, 115-17).

Rates for business use were charged differently in that they were based on the amount of water consumed. For the sake of convenience and expense, water meters were not used. Instead, the water supply fee was charged on a monthly basis, with owners of cattle and horses reporting how many animals they owned and paying a charge per head for water consumption. Private and public faucets for common use were not open to the public. Rather, they were limited to those who paid more than 25 yen in annual tax. Also, for the business use of water, faucets were limited to those who paid a monthly rent of 25 yen. Those households that were in arrears for two months would be cut off (*Pusan sangsudo paltalsa* 1997, 182-83).

The Third Phase of Construction, from 1907 to 1910: Sōngjigok

After the Russo-Japanese war of 1904-1905, the rapid growth of the Japanese settlement demanded an expansion of the water supply. The third phase of construction sought to provide a more stable water source for the growing city of Pusan. Without the expansion of the water supply, water shortages were bound to occur. In fact, the Settlers' Association had already been forced to restrict hours for communal faucets as capacity was limited. It is not surprising that there was sometimes quarrelling amongst people who had to queue for water. The shortage of water again became an important concern for the Settlers' Association.

The Settlers' Association launched a survey of possible reservoir sites for the water supply system, which was entrusted to the engineer (*kishi*) at the settlement, Kurashige Tetsuzō. Kurashige, together with Sakade Narumi, surveyed sites and decided to plan the construction of water supply structures. The third phase of construction would be on a massive scale. In fact, its cost was to be about ten times larger than that of the second phase. However, the Settlers' Association was aware that they would not be able to finance the entire cost of construction alone, as they had numerous expenses. As a result, after the protectorate was established, the Settlers' Association exercised power as a self-governing body by promulgating laws in 1905, making Pusan a completely self-governing territory of the Japanese. With its increasing governance functions, the Settlers' Association also launched various other construction projects, such as taking on the financial burden of providing a port facility, refurbishing the urban area, and organizing newly created districts (Kim Minyōng and Kim Yanggyu 2006, 191).

Ishihara Hanishiemon, who was Chief of the Pusan Settlers' Association, appealed for financial assistance from the Resident-General of Korea, Itō Hirobumi. At the same time, he applied for a subsidy from the Japanese central government. However, at that time, the Japanese government was financially drained because of outstanding foreign loans as well as a trade imbalance resulting from the Russo-Japanese War. Moreover, there were no reparations following its victory, unlike after the Sino-Japanese War. The Settlers' Association turned elsewhere and filed

a petition for financial support from the Korean government (of the Great Han Empire) via the Administrative Bureau for Japanese Residents in Pusan. Kanyū Yoshiaki, as a representative of the Japanese settlers, delivered the petition to Megata Tanetarō, who was the Japanese advisor to the Finance Ministry of Korea.¹² The Korean government agreed to provide 350,000 yen. The remaining amount (1,170,000 yen) was borrowed from a bank, the Nippon Kōgyō Ginkō. The Korean government stood as surety for the loan. As a result, the Korean government and the Japanese Settlers' Association in Pusan made an agreement on August 11, 1906 to manage water supply facilities in Pusan. The following is the agreement submitted to the Settlers' Association (*Fusan josuidō shōshi* 1914, 55-58):

Agreement on Water Supply Management between Korea and Japan (J. Kannichi kyōdō jōsuidō keiyaku)

- I. Water supply in Pusan will be managed jointly by the Korean government and the Japanese Settlers Association.
- II. The Korean government will invest 350,000 yen of the total cost of water supply facilities, which will be 1,520,000 yen, over eight years.
- III. Profits from water supply will be distributed in proportion to the amount invested.
- IV. The population using water will be thirty thousand people at the time of completion, forty thousand three years after completion, and fifty-five thousand ten years after completion.
- V. The loan will be paid by all residents [in Pusan], except Koreans. Foreign settlers [in Pusan] will be charged per water faucet installation at a rate of no more than 1 yen per person a year.
- VI. Koreans should also pay for the water supply, but the amount should be less than that paid by foreigners.
- VII. The Korean Treasury will subsidize the water supply for six years, but the total amount subsidized should be no more than thirty-five thousand yen.
- VIII. The loan should be paid back beginning from the fifth year. All loans should be paid off in 15 years.
- IX. [In case the loan is not paid off after 16 years from the beginning of construction] beginning from the 16th year, the loan will be paid back with the [expected] surplus of 170,000 yen [from the management of the water supply]. From this [16th] year, the price

¹² According to the document called "the agreement on the invitation to Megata," Megata not only advised the Korean Ministry of Finance, but also had authority to administer all affairs related to finances in Korea. Without his approval, no project could be implemented.

of water will be reduced, so that the surplus will remain within 100,000 yen.

- X. With the surplus described in the previous article, the subsidy from the Korean government should be paid back.
- XI. The goal of managing the water supply is to collect taxes from all residents [both Korean and Japanese] on a per person basis. However, if this not convenient, then tax will be collected only from the Japanese. This regulation is made because of the need for financial assistance from the Korean government.
- XII. As for construction, the loan may be reduced by about 70,000 yen of office expenses if the Water Supply Bureau under the Takchibu (Ministry of Finance) takes over construction.

One may be surprised to see that there were some clauses advantageous to Koreans in the contract. For example, in clause V, Koreans in Pusan were exempted from a levy on the water supply used to repay the loan. In addition, clause VI stipulated that, though the water supply charge would be collected from Koreans, the collected amount would be lower than for others. These were indications that the Korean government's participation was necessary to complete the project. On the basis of this contract, eventually an official agreement was made. The agreement for the management of the water system in Pusan (K. *Pusan sangsudo kyōngyōng kongdong kyeyak*; J. *Fusan josuidō keiei kyōdō keiyaku*) was concluded on August 11, 1906, and its provisions were as follows:

- 1. Pusan's water supply will be managed by both the Korean government and the Japanese Settlers' Association in Pusan.
- 2. In the beginning, the Korean government will contribute 350,000 won to the total cost of construction [which is projected to be] 1,520,000 won.
- 3. The revenue from the water supply will be divided equally in proportion to the amount invested.
- 4. After the completion of the water supply construction, maintenance and repairs will be handled by the Korean government in the interest of the Korean government and Koreans.
- 5. In the future, the Korean government should give its share for the investment in the waterworks to the [Korean] local authority, which will be established as the Korean community [in Pusan] grows. In this case the Korean government guarantees that the local government will inherit shares in the waterworks.

[Signed by] Chief of the Water Supply Bureau in the Ministry of Finance of Korea Yi Kōn-yōng and Chief of the Japanese Settlers' Association Ishihara Han'ishiemon.

The Korean government worked together with the Settlers' Association in Pusan to construct and manage the city's water supply system. In this respect, it is necessary to examine how much was contributed by the Korean government to the third phase of construction. According to the *Kwanbo* (Official Gazette), the Korean government not only provided financial support but also sent technical officials, such as engineers (*kisa*), clerks (*chusa*), and lower engineer officials (*kisu*), for the construction of the water supply in Pusan (*Kwanbo* July 13 and 15, 1908; *Sunjong sillok* 1908, sixth month, eleventh day).

The investment in the Japanese settlers' water supply system in Pusan by the Korean government is related to a series of investments made earlier in other cities in Korea. The government began to build water supply systems from 1906 onwards, starting in Seoul. The first Seoul Tokto [Ttuksöm] Catchment Water Supply Facility was established in 1908, and the water supply in Mokp'o was established in 1909, with financial assistance from the Korean government. In P'yöngyang, the construction of the water supply system was launched in January 1907 and completed in July 1910. The water supply system in Inch'on was completed in October 1910. In the case of the construction project in Seoul, the Korean government initiated and funded it, with a plan to expand the water systems to other regions in Korea. In contrast, for the project in Pusan, the Korean government could conveniently achieve its plan by providing financial assistance to the Settlers' Association for the construction of the water system, since the Settlers' Association desperately sought to enlarge the water supply in its own region. Such cooperative projects were only possible when the needs of the Korean government and those of the Settlers' Association overlapped.

In Pusan, the Korean government also sought to persuade landowners to sell their land for public use, that is, for the construction of the water supply facility. The Administrative Bureau for Japanese Residents (J. *rijichō*) also participated in this process and the magistrate of Tongnae County and the ministry of finance were active in purchasing land. However, the rising cost of land made it more difficult to buy and sell land around the reservoir, contributing to the increasing costs of construction. Moreover, although the third phase of construction was a collaboration between the Korean government and the Japanese autonomous authority in Pusan, most Koreans who did not directly benefit from the water supply were reluctant to give up land for construction. After much persuasion, Korean landowners agreed that compensation for land would be made after the completion of construction. And yet, because the water source for irrigation in Pusan was taken over by the Japanese, some three thousand agricultural workers protested against the water supply system because it was dominated by the Japanese (*Fusan josuidō shōshi* 1914, 87-88).

To manage the water supply, the Chief of the Bureau of Water Supply, Sano Tōjirō, established the details regarding the distribution of responsibilities between the Settlers' Association and the Korean government. The Korean government had the Bureau of Water Supply, under the Ministry of Finance, take charge of the water supply in November 1906. It was decided that it would be run by the Korean government and its general office was established at Sōsanhajōng (Nishiyamashita-

Table 4. Comparison of the Third Phase of Construction at Söngjigok (J. Seshiru-tani) and the Second Phase of Construction at Mt. Ömgwang (J. Mt. Takatömi)

| | | Söngjigok / Seshiru-tani (3 rd phase of construction) | Mt. Ömgwang / Mt. Takatömi (2 nd phase of construction) |
|--------------|--------------------|--|---|
| Catchment | Capacity | 1,358,000 cubic <i>ch'ök</i> (enough water to supply 45,000 people for 150 days) | 2,520,000 cubic <i>ch'ök</i> (enough water to supply 10,000 people for 90 days) |
| | Source | [height] 88 <i>ch'ök</i> | [height] 30 <i>ch'ök</i> |
| | Filled to the brim | [height] 310 <i>ch'ök</i> | [height] 208 <i>ch'ök</i> |
| Setting Pond | Capacity | 384,000 cubic <i>ch'ök</i> (enough water to supply 45,000 people for 40 hours) | |
| | Filled to the brim | [height] 315 <i>ch'ök</i> | |
| Filter Basin | Capacity | 19,000 cubic <i>ch'ök</i> | 40,440 cubic <i>ch'ök</i> . 4 types of filter distribution |
| | Speed | The whole day (day and night), [height] 8 <i>ch'ök</i> | The whole day (day and night), [height] 8 <i>ch'ök</i> |
| Distribution | Capacity | 1,100 cubic <i>ch'ök</i> | 12,432 cubic <i>ch'ök</i> |
| | | 35,200 cubic <i>ch'ök</i> | |
| | Filled to the brim | [height] 249 <i>ch'ök</i> [height] 180 <i>ch'ök</i> | [height] 166 <i>ch'ök</i> |
| Water Pipes | Length | 13,700 m | 7,560 m |
| | Inside diameter | 350 mm | 210 mm |

Note: 1 *ch'ök* equals about 30 cm.; 1 *ch'on* equals 0.1 *ch'ök*.

Source: *Fusan nippo*, 1910. 2. 19, and *Chösen Jihö* 1910. 9. 25; Re-quoted from Kim Süng 2009, 252-53.

machi) in 1907. Asami Chüjirö was invited to act as a superintendent to oversee construction. The following table compares the various aspects of the second and third phases of the construction of the water supply system in Pusan.

The third phase of construction was intended to create facilities that would supply water to 55,000 people in ten years. After its completion, the catchment area in Söngjigok was able to provide enough water for 150 days for 45,000 people. Compared with the catchment in Mt. Ömgwang, which was capable of holding water for 90 days for 10,000 people, the third phase of construction provided a more stable water source for the growing city of Pusan.

Distribution of Water Supply System by Ethnic Group

The water supply system in Pusan brought about fundamental changes in the quality of life, even though the accessibility of the water supply was limited. As expected, those who first benefitted were the Japanese settlers since the first and second phases of constructions were financed and designed to supply water to the Japanese settlement. However, after the completion of the third phase of construction in Pusan, Koreans also benefitted from the “modern” technology of the water supply system. The following table summarizes the features of this system after the completion of the first, second, and third phases of construction.

Table 5. Number of Faucets, Wells, and Rivers in December 1911

| Total Households | | Number of Faucets in Use | Wells or Rivers | Summary | |
|------------------|------------|---|-------------------------------------|-----------------|---|
| Households | Population | 4,508 (available supply rate of 41.4%) | 6,391 (5,944 rivers + 447 wells) | Number of wells | Quality of water |
| 10,899 | 48,178 | | | 447 | Water quality in wells is not acceptable. |

Note: Both Korean and Japanese were included in the data of total households

Source: Jōsui kyōgikai nenhen, *Dai 10-kai jōsuidō kyōgikai gijiroku*, 321; Re-quoted from Kim Sūng 2009, 267.

As shown in table 5, while the number of faucets increased, the population they covered remained at about 41.4 percent, with there being 2.42 households per faucet, even after the completion of these water supply projects in Pusan. The rest of the households, which constituted 58.6 percent of the total population, were still not able to benefit from the waterworks. Most of those who did not benefit from the water supply received all or most of their drinking water from the river rather than from wells. Although limited, the distribution rate in Pusan was higher than in Seoul, which had a coverage of 32 percent in 1912. However, the main difference between Seoul and Pusan lay in the distribution of water supply by ethnicity, as the following table suggests.

As table 6 shows, Koreans benefitted more from the Seoul water supply system, which was built for the Korean government by an American company, Collbran-Bostwick, than the Japanese. However, while the Korean government focused on the establishment of the water supply system, it neglected maintaining

Table 6. Distribution of Water Supply Based on Ethnic Group in Seoul in 1912

| | Water Supply Household | Ratio (%) |
|------------------|-------------------------------------|---------------------------------|
| Koreans | 10,013 | 55.5 |
| Japanese | 7,981 | 44.2 |
| Other Foreigners | 39 | 0.3 |
| Total | 18,033 (of 56,148 total households) | 100 (32.1% of total households) |

Source: Son Chōngmok 1982b, 146.

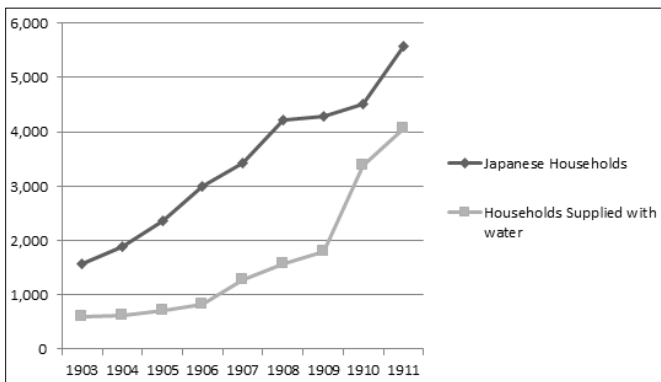
Figure 1. Japanese Households and Households Supplied with Water

Table 7. Correlation of Japanese Households and Households Supplied with Water (Unit: Yen)

| Year | Japanese Households (A) | Water-Supplied Households (B) | Ratio (B/A) Percent | Fee for Water Supply |
|------|-------------------------|-------------------------------|---------------------|----------------------|
| 1902 | 1,352 | 524 | 38.75 | 6,441 |
| 1903 | 1,582 | 609 | 38.49 | 7,638 |
| 1904 | 1,890 (1,891) | 611 | 32.32 (32.31) | 7,666 |
| 1905 | 2,363 | 706 | 29.87 | 10,351 |
| 1906 | 2,987 (2,981) | 835 | 27.95 (28.01) | 11,721 |
| 1907 | 3,423 | 1,278 | 37.33 | 18,277 |
| 1908 | 4,213 (4,508) | 1,568 | 37.21 (34.78) | 20,412 |
| 1909 | 4,284 (4,213) | 1,804 | 42.11 (42.81) | 26,207 |
| 1910 | 4,508 | 3,379 (3,378) | 74.93 (74.93) | 34,722 (35,578) |
| 1911 | 5,583 | 4,153 (4,054) | 74.38 (72.61) | 44,751 (62,094) |

Source: *Fusan yōran*, 1912, 8-10, 88-89.

wells and natural water sources, such as the river. This is important evidence to show that the Korean government did not consider water a public good, because, if water had been perceived as such, the government would have focused on managing and maintaining natural water sources to better serve public needs (Kim Yōngmi 2010, 288). In the process, the accessibility to water came to depend on social capital as it was determined by the income of residents. Being a temporary expedient, the policies of expanding the supply system therefore did not solve the fundamental issue of water access in Korea at that time.

However, in the case of Pusan, the data tells a different story and that is why the case of the water supply system there, developed through the initiative of the Japanese settlers, can shed significant light on the development of hygienic modernity in both colonial and East Asian contexts. Due to a paucity of sources, it is impossible to find a direct correlation between the ethnicity of households and the number of households supplied with water, but a deeper understanding can be obtained by comparing Japanese households with households supplied with water, as the following table suggests.

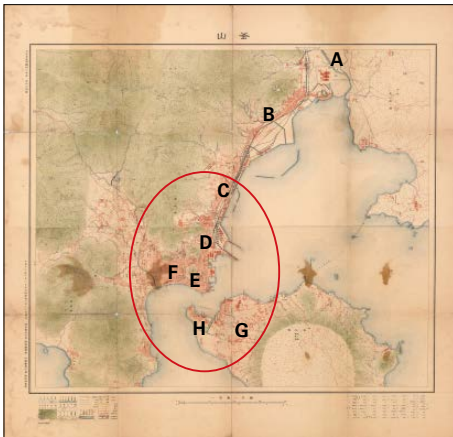
As table 7 and Figure 1 show, there is a positive correlation between Japanese households and households supplied with water. Moreover, this connection becomes clearer when the area from which the water supply could be accessed is examined. The following two tables, table 8 and table 9, are based on a source that reported where Japanese households were mainly located.

As table 8 shows, the number of Japanese settlers who resided in Pusan exceeded twenty thousand. More than 80 percent of Japanese settlers lived in the area of the Japanese Settlement (45.33 percent), which included the former Japan House, and the new districts (26.65 percent), which were located to the west side of Mt. Yongdu and Ch'oryang (12.87 percent). The areas within the red circle on figure 2 were predominately populated by Japanese settlers. This information, combined with the data given in the next table (which reflects the situation after the completion of the third phase of construction in Pusan) indicates a positive correlation between the location of the faucets and Japanese households.

Table 8. Japanese Households and Population in Pusan in 1910

| | Households | Population | Percentage of Total Population |
|--|------------|------------|--------------------------------|
| Pusanjin | 130 | 473 | 2.15 |
| Ch'oryang | 605 | 2,603 | 12.87 |
| Kogwan | 182 | 572 | 2.60 |
| Subtotal | 917 | 3,648 | 17.62 |
| Reclaimed Land | 91 | 490 | 2.23 |
| Settlement ¹³ | 1,722 | 9,942 | 45.33 |
| New Districts | 136 | 5,846 | 26.65 |
| Subtotal | 1,949 | 16,278 | 74.21 |
| Yōng-do (J. Bokushi-shima) | 288 | 1,060 | 4.83 |
| Chugap (J. Misaki-machi) ¹⁴ | 227 | 942 | 4.29 |
| Subtotal | 515 | 2,002 | 9.12 |
| Total | 3,381 | 21,928 | 100 |

Source: *Fusan nippō*, September 25, 1910; cited in Kim Sūng 2009, 266.

**Figure 2.** Map of Pusan in 1924

Note: The red circle in the map is the area in which Japanese settled down. The traditional urban centres where most Korea lived at the time were Tongnae and Pusan-jin, which were primarily located far behind the “A” area and are not shown in this map. (A: Pusan-jin; B: Ko-gwan; C: Ch'oryang; D: Reclaimed land (*maech'ukchi*, including Satō-machi, Ōkura-machi, Takashima-machi, Keifu-machi, and Kishi-machi); E: Japanese Settlement (Nihon senkan kyoryūchi, where Hon-machi was located); F: New Districts (including Tomihira-machi and Minamiura-machi); G: Bokushi-shima (K. Yōng-do); H: Chugap (J. Misaki-machi)¹⁵

¹³ “Settlement” here refers to the Japanese settlement, the oldest part of which was the Japan House (Waegwan or Ch'oryang Waegwan) established prior to the opening of Korea in 1876. In the early years of the open-port period, many Japanese settled down in the area of the Japan House, where Japanese had lived since the early Chosŏn period. Naturally, the Japanese settlement grew out of the Japan House. The new Japanese settlement” initially covered the area of the old Japanese House” (Deuchler 1977, 72). The Japanese called this area Hon-machi.

¹⁴ Chugap (J. Misaki-machi) is the name of an area in Yōng-do (J. Bokushi-shima).

¹⁵ Reclaimed land (*maech'ukchi*) refers to the area made up of newly reclaimed land where the area of Japanese residence, including Satō-machi, Ōkura-machi, Takashima-machi, Keifu-machi, and Kishi-machi, was expanded. Through the first and second reclamations (1902-1909), the Japanese acquired 41,374 *p'yōng*, or about 12,530 square metres (Kim Ŭi-hwan 1973, 55-57); The term new district is merely a reference term. The new districts were located to the west side of Mt. Yongdu where the “old district” for the Japanese settlers was located. These were newly developed by the Japanese in the open-port period due to the increase of Japanese settlers in Pusan. This area includes Tomihira-machi and Minamiura-machi.

Table 9. Households and Water Faucets in Pusan in 1911

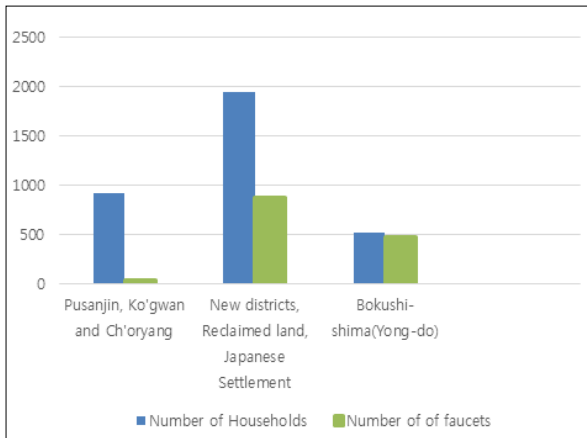
| | | No. of Faucets | Ratio of Faucets to Total | No. of Households | Ratio of Households to Total | Place Names with the Number of Faucets to Households |
|-------------------------------|-----------------------------------|----------------|---------------------------|--|------------------------------|---|
| Exclusive faucets | Fixed charge | 511 | 48.02 | 511 | 14.27 | Bokushi-shima (Yōng-do) 8, Ch'oryang Pusan-jin 8, new districts 16, and the remaining 479 in the Japanese administrative area |
| | Charge based on consumption level | 159 | 14.94 | 122 | 3.40 | Bokushi-shima (Yōng-do) 8, Ch'oryang and Pusan-jin 6, new districts 3, and the remaining 105 in the Japanese administrative area |
| | Special | - | | 359 | 10.02 | Bokushi-shima (Yōng-do) 56, Ch'oryang and Pusan-jin 25, New districts 21, and the remaining 257 in the Japanese administrative area |
| Subtotal | | 670 | 62.97 | 992 | 27.71 | |
| Private faucet for public use | | 167 | 23.22 | 719 | 20.08 | |
| Public faucet for public use | | 71 | 6.67 | 1,868 | 52.17 | |
| Subtotal | | 238 | 22.37 | 2,587 | 72.26 | Bokushi-shima (Yōng-do) 408, Ch'oryang and Pusan-jin 454, new districts 78, and the remaining 928 in the Japanese administrative area |
| Ships | | 1 | | 1 | | |
| Fire hydrants | | 155 | 14.56 | - | | Bokushi-shima (Yōng-do) 3, Ch'oryang and Pusan-jin 28, and the remaining 124 in the Japanese administrative area |
| Total | | 1,064 | 100 | 3,580 (3,381 in 1910) ¹⁶ | 100 | |

Source: Keishōnandō 1911, *Keishōnandō dōsei yōran*, 250-51.

Note: "Japanese administrative area" refers to the neighbourhoods within the boundary for Japanese settlers' activities (kanghaeng ijōng), which stood under the administrative control of the Japanese settlers.

As the far right column of Table 9 and Figure 3 show, most exclusive faucets were located in three areas, Yōng-do (Bokushi-shima), the new districts and the rest of the Japanese administrative area (which included both reclaimed land and the Japanese settlement) while a considerably smaller number (8) of exclusive faucets were located in Ch'oryang and Pusan-jin, where Koreans resided. The distribution of faucets demonstrates who had access to the water supply system in Pusan. The data given in tables 8 and 9 have already indicated that there was inequality between the Japanese settlers and Koreans in terms of the distribution of faucets per household. The distribution of exclusive faucets in Pusan was 0.68 faucets per household (670 [faucets] / 992 [households] = 0.68), meaning that about 70 percent of households had access to exclusive faucets (private faucets). However, if we look

¹⁶ Due to a paucity of sources, I combined 1910 data for the total number of household with 1911 data for the location of the number of faucets in order to analyze the distribution of faucets in Pusan (the total number of households in 1910 was 3,381 while that in 1911 was 3,580).

Figure 3. Number of Households and Faucets

into the distribution of exclusive faucets by location, it is even more clear: only 39 exclusive faucets (8 + 6 + 25) were used by 917 households in Pusan-jin, Kogwan, and Ch'oryang, while 881 exclusive faucets (16 + 479 + 3 + 105 + 21 + 257 = 881) were used by 1949 households in the settlement, in reclaimed land, and in the new district. In other words, exclusive faucets were shared at a rate of 0.042 faucets per household ($39 \text{ [faucets]} / 917 \text{ [households]} = 0.042$) in Pusan-jin, Kogwan, and Ch'oryang and 0.45 faucets were available per household ($881 \text{ [faucets]} / 1,949 \text{ [households]} = 0.45$) in the settlement, in reclaimed land, and in the New District. Therefore, the distribution of faucets located in Japanese residential areas was ten times greater than that in the areas where Koreans resided.

If public and private faucets are considered together, the number of faucets of Korean residential areas and Japanese residential areas was comparable. While the proportion of faucets in Korean residential areas (454 for Ch'oryang and Pusan-jin) was 0.53 faucets per household ($454 \text{ [faucets]} / 917 \text{ [households]} = 0.53$), that in Japanese residential areas (new district and the Japanese administrative area) was 0.52 faucets per household ($1,006 \text{ [faucets]} / 1,949 \text{ [households]} = 0.52$). However, these numbers are only comparable because large proportions of households in the Japanese residential areas already had access to exclusive faucets (private faucets). In other words, the water supply was heavily concentrated in the reclaimed land, the settlement area, and new districts, or the Japanese administrative area, where Japanese settlers resided. Moreover, it was essential for the fire hydrants, which mainly were installed in commercial areas. The majority (124) of the fire hydrants were located in the Japanese administrative area, which included Saya-machi (K. Haengjōng), reclaimed land, Hōsui-machi (K. Posujōng), Sayamachidōri (K. Haengjōngt'ong), and Hig'yōin (K. Piyōngwōn). Therefore, although Koreans received some benefits from the water supply system of Pusan, the figures presented above suggest that the benefits were mainly concentrated in areas where Japanese settlers resided.

Additionally, it is interesting that Bokushi-shima (Yōng-do), which is

Table 10. Comparison of Japanese and Korean Populations in Pusan

| Year | Japanese | | | | Koreans | | | |
|------|----------------------|------------|--------|--------|----------------------|------------|--------|--------|
| | Number of households | Population | | | Number of households | Population | | |
| | | male | female | total | | Male | female | Total |
| 1909 | 4,284 | 12,293 | 9,404 | 21,697 | 4,317 | 10,503 | 10,065 | 20,568 |
| 1910 | 4,508 | 12,194 | 9,734 | 21,928 | 4,276 | 10,800 | 10,190 | 20,990 |
| 1911 | 5,583 | 13,983 | 11,269 | 25,252 | 4,639 | 11,400 | 11,210 | 22,610 |

Source: Fusan Shōkō Kaigishō 1912 *Fusan Yōran*, 8-9 and 14.

an island located 360 meters southeast of Pusan, was included as a place to be supplied with water. It was not originally a part of the plan for the third phase of construction, but the island was an area in which about two thousand Japanese had settled, mainly because they sought to avoid spatial limitations on their activities (*kanhaeng ijōng*).¹⁷ There was no specific regulation to apply the *kanhaeng ijōng* boundary to the island, so a large number of Japanese settled in Bokushi-shima (Yōng-do) and Misaki-machi (Chugap). During the third phase of construction, water supply to Bokushi-shima and Misaki-machi was installed with the surplus money from the budget, and this indicates that the Japanese settlers attempted to supply water to as many Japanese as possible. Faucets in Bokushi-shima and Misaki-machi were available to 94 percent of households, as 483 faucets (both exclusive faucets [72] and public faucets [408] plus fire hydrants [3]) were used by 515 households (483 [faucets] / 515 [households] = 0.94). As these statistics demonstrate, Bokushi-shima (Yōng-do) was an example which displayed the unequal distribution of water in Pusan according to ethnic lines. For example, the decision to supply water to the Japanese settlers who predominated on the island shows special favour to the latter at a time when larger numbers of Koreans in Pusan still had limited access to piped water.

As table 10 shows, although Japanese settlers slightly outnumbered the indigenous Korean population, the number of Koreans also increased in Pusan and their number became almost the same as that of the Japanese. In other words, while the water supply system was rapidly developed for Japanese settlers, there were no waterworks to support the increasing number of Koreans who settled on the outskirts of Pusan. Consequently, Koreans suffered greatly from the shortage of water even after the construction of the water supply system in Pusan.

Everyday Life and “Modern” Water

Access to water in Pusan depended not on its availability, but on the uneven development of the water supply system according to where one lived. The asymmetric control of shared water resources reflected power relations between

¹⁷ The spatial expansion of the boundary for Japanese settlers' activities (*kanhaeng ijōng*) allowed the Japanese to travel and conduct business further and further from the site of the Japan House. The spatial boundary for Japanese settlers' activities was expanded by a series of amendments and additional articles to the Kanghwa Treaty.

Koreans and Japanese,¹⁸ which was manifested by the distribution of water, bringing about different qualities of life for these two populations in Pusan. In other words, uneven access to water between Koreans and Japanese turned the issue of water resources into one of power relations. Since the water supply system was constructed by the Japanese primarily for Japanese settlers, the benefits of the newly constructed water supply system were predominantly appropriated by them. Consequently, the inequitable distribution of water resources resulted in radical differences in the development of urban spaces in Pusan and the quality of life experienced daily by Koreans and Japanese (Lefebvre 1971, 53-55).

Moreover, residential areas for Koreans and Japanese were distinguished as a result of the differential development of the water supply system, creating social segregation according to ethnic lines. A memo from Richard H. Sidebotham, a missionary to Korea at the time, described the socio-physical segregation in Pusan:

There are three Fusans: The old walled city of Fusan; then, a settlement of Chinese, then a settlement of Japanese... The Japanese town looks very quiet indeed compared to the Korean town as does China town. In the Jap[anese] Fusan, the streets are wide and clean... The other day was to get rid of germs of the plague. Much a dusting and swirling!... The sight [of the Japanese settlement] is very foreign to barren Korea, but a delightful one. (*Pusan Kündae yöksagan* 2009, 81)

Sidebotham's testimony not only witnesses to the surface appearance of the city of Pusan but also uncovered the "unspoken" division of the city into different areas by cleanliness, which was connected to the ethnicities of their inhabitants. From a public health perspective, this socio-physical segregation of the water supply system in Pusan was notable since it indicated not only the availability of water resources, but also the advancement of hygienic modernity (cleanliness) in Pusan by incoming Japanese, though it was at first confined to their own residential areas. In this respect, access to clean water and the development of the water supply system in Pusan, by enabling the local population to meet the basic needs for hygienic modernity, brought about a growing awareness among Koreans of its importance. This view was also hinted at by the detailed description of Pusan by British traveller Isabella Bird:

[Pusan] is a fairly good-looking Japanese town...It has substantial retaining and sea walls, and draining, lighting, and roadmaking have been carried out... Waterworks have been constructed by a rate of 100 cash levied on each house, and it is hoped that the present abundant supply of pure water will make an end of the frequent epidemics of cholera. (Bird 1897, 23-24)

¹⁸ King (1976) identifies characteristics of power relations in colonial cities. One of the characteristics that is most relevant here is uneven distribution of technological resources. For a further discussion on power relations in colonial cities, see Anthony King's *Colonial Urban Development: Culture, Social Power, and Environment*.

As revealed by her testimony, waterworks in the “Japanese town” enabled the residents in that area to protect themselves from the “frequent epidemics of cholera.” This particular aspect is in stark contrast to her description of the “Korean town” in the following passage:

Turning away from the bustle of the main street into a narrow, dirty alley, and then into a native compound, I found the three Australian ladies who were the objects of my visit to this decayed and miserable town. Friends urged these ladies not to take this step of living in a Korean town 3 miles from Europeans. It was represented that it was not safe, and that their health would suffer from the heat and fetid odours of the crowded neighbourhood, etc. (Bird, 1897, 28)

In contrast to the “fairly good-looking Japanese town,” the “Korea town” in Pusan was “decayed and miserable.” Although not explicitly pointed out in her description, access to clean water must have influenced public sanitation in the different residential areas occupied by Koreans and Japanese. While the Japanese settlement became clean and healthy with the development of the water supply system, the Korea town remained unclean and unhealthy. In other words, power in the context of “urban space” created the uneven development of the water system which resulted in an unfortunate distinction between cleanliness (Japanese) and uncleanliness (Koreans). In this respect, “hygienic modernity” fundamentally determined the social relationship between Japanese settlers and Koreans in Pusan by manifesting itself around the spatial and hierarchical boundaries of cleanliness and uncleanliness.

Conclusion

Water and sanitation are crucial to the well-being of human lives and this principle again proved to be true for the Koreans in Pusan during its entry into the “hygienic modernity” that was brought about unexpectedly by Japanese settlers. The water supply system, introduced by the Japanese settlers with the opening of the port in Pusan, was the first of its kind in Korea, and as such it brought about fundamental changes in the inhabitants’ quality of life. Without a doubt, the establishment of waterworks in Pusan became a symbolic step towards the development of sanitation and “hygienic modernity” in Korea.

However, as it is possible to overemphasize the rhetoric of the entry into modernity for Koreans, it is important to remember that the water supply system in Pusan was built foremost by and for Japanese settlers, who launched various hygienic infrastructure projects, including waterworks, though the pace of construction could not keep up with Pusan’s growth. The development of the water supply system and the promotion of sanitation did not merely reflect the increasing Japanese sphere of influence in Korea, but predated the expansion of Japanese influence and control over urban space and human bodies there. During this process, the concept of water was changed from a public good for communal use to a commodity for sale, and even a private good, through its domestication. Ultimately, the distribution of water also created hierarchical social distinctions

between cleanliness and uncleanness (those who could or could not have water and those who could embrace hygiene as a “modern” experience or not). While it is necessary to recognize the contribution of the Japanese efforts to establishing a “modern” water supply system, and, with it, the notion of “hygienic modernity” to Pusan and wider Korea, it is equally essential to remember that a distinctive power relationship between Koreans and the Japanese settlers emerged in the process.

GLOSSARY

| | | | |
|---------------------------------------|-----------|--|--------------|
| Arai Eizō | 荒井榮造 | <i>kwalligwan</i> (J. <i>kanrikan</i>) | 管理官 |
| Asami Chūjirō | 淺見忠次郎 | Kyōngsōng (J. Keijō) | 京城 |
| Benten-dōri | 弁天通 | Kyoryū mindan | 居留民團 |
| <i>ch'on</i> | 寸 | <i>kyoryūmin sōdai</i> | 居留民總代 |
| Ch'oryang | 草梁 | <i>Kyoryūchi kyōdō horiido torishimari</i> | |
| Chusa | 主師 | <i>kisoku</i> | 居留地共同堀井戸取締規則 |
| Chwasuyōng-sōng | 左水營城 | <i>maech'ukchi</i> | 埋築地 |
| <i>Daiichi</i> Bank | 第一銀行 | Megata Tanetarō | 目賀田種太郎 |
| <i>Daijūhachi</i> Bank | 第十八銀行 | Minamiura-machi | 南浦町 |
| <i>Daigojūhachi</i> Bank | 第五十八銀行 | Nihon senkan kyoryūchi | |
| Haengjōng (J. <i>Saya-machi</i>) | 幸町 | | 日本專管居留地 |
| Honcho-dori | 本庁通 | Nippon Kōgyō Ginko | 日本興業銀行 |
| Honmachi | 本町 | Ōkura-machi | 大倉町 |
| Isach' ōng (J. <i>rijichō</i>) | 理事廳 | Ōmgwang, Mt. | 嚴光山 |
| Ishihara Han'ishiemon | 石原半石衛門 | (J. Takatōmi, Mt. 高遠見) | |
| Itō Hirobumi | 伊藤博文 | Ōta Hidetarō | 太田秀太郎 |
| Kaigisho | 會議所 | Piyōngwōn (J. Higyōin) | 避病院 |
| <i>kan</i> | 間 | Posuch'ōn (J. Hōsui-kawa) | 寶水川 |
| kanhaeng ijōng | 間行里程 | <i>Pusan riji chōhō kiruishū</i> | |
| <i>Kannichi kyōdō jōsuidō keiyaku</i> | | | 釜山理事廳法規類集 |
| | 韓日共同上水道契約 | Pusan-jin | 釜山鎮 |
| Kanyū Yoshiaki | 官有吉明 | <i>rin</i> | 厘 |
| Keifu-machi | 京釜町 | Sahara Jun'ichi | 佐原純一 |
| <i>kisa</i> | 技師 | Sano Tōjirō | 佐野藤次郎 |
| Kishi-machi | 岸町 | Sakade Narumi | 坂出鳴海 |
| Kogwan | 古館 | Satō-machi | 佐藤町 |
| Kurashige Tetsuzō | 藏重哲三 | <i>sen</i> | 錢 |

| | | | |
|---|-------------|------------------------------------|--------|
| Shinshiga | 新市街 | Tomihira-machi (K. Pup'yōng-chōng) | |
| Sōngjigok (J. Seshiru-tani) | 聖知谷 | | 富平町 |
| Sōsan hajōng (J. Nishiyamashita- machi) | 西山下町 | <i>Tongnae-bu chi</i> | 東萊府誌 |
| <i>Suidō torishimari kisoku</i> | 水道取締規則 | <i>Tongnae-bu ūpchi</i> | 東萊府 邑誌 |
| Taech'ōngjōng (J. Ōchōmachi) | 大廳町 | <i>ūpsōng</i> | 邑城 |
| Takafuji Shoichirō | 高藤昇一郎 | yen | 円 |
| Takashima-machi | 高島町 | Yi Kōn-yōng | 李健榮 |
| Tatsumura Yōkichi | 達邑容吉 | Yōng-do | 影島 |
| Tokto suwōnji, che il chōngsujang | 麤島水源地 第一淨水場 | (J. Bokushi-shima 牧之道) | |

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