

ARTICLE

# Water Infrastructure as a Technology of Control and a Site of Negotiation in Nineteenth-Century Batavia, Netherlands Indies

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## Abstract

This article examines the social and political aspects of late nineteenth-century water management in Batavia (now Jakarta), the capital of the Netherlands Indies. Through a detailed analysis of how a mixture of old and new water technologies featured in the city's public debates and decision-making, it argues that water infrastructure served as a key site of social control over the city's diverse population. From the 1870s onwards, deep-bore artesian wells linked to public hydrants were introduced to provide a reliable and hygienic supply of clean water. This was a response to long-standing concerns over the city's waste-blocked canals and their deleterious health effects. The article shows how these technologies came to be entwined with new, punitive social norms, enforced through both formal regulations on water use and informal complaints over wastefulness; moreover, these norms had a clear racial dimension, being directed primarily against the city's Asian communities and repurposing long-standing stereotypes. Yet, beyond official discourses, a close reading of these debates shows that Batavia's canals and hydrants also functioned as grassroots sites of negotiation, where different ideas – not just of water and land but of the very concept of public spaces and the colonial public sphere – met and occasionally clashed.

## I

On the sixth page of the 26 September 1884 issue of the Batavia newspaper *Java-Bode* there are two notices relating to the uses and abuses of water in the city, the colonial capital of the Netherlands Indies. In the first, the editors 'very seriously' call the attention of 'our administration and our enthusiastic police, and also of the health commission, in case that body still remains alive' to 'the natives' hobby of setting up little dams in the small streams and canals, in order to trap and catch the few miserable fish that swim

there'.<sup>1</sup> The story goes on for a few more paragraphs in the same incensed tone, which needs no further elaboration. Skipping ahead a little, the reader lands on another snippet, detailing the complaints of 'certain residents of Kwitang' over 'the unbearable stink spread everywhere by the unseemly ditch running from the hydrant behind the missionary church to behind the house of Mr Mars'.<sup>2</sup> Here, again, the editors' well-exercised finger of blame points squarely at 'some of the natives living in the vicinity', who 'make an all too greedy use of the artesian drinking water for bathing, blocking the flow of water and causing it to lie stagnant'. The lament ends on a pointedly plaintive rhetorical question: 'Can the police do nothing about this?'

The two pieces, seemingly randomly thrown together among the other news and talking points of the day, are worth quoting here at length as they offer a revealing glimpse into the everyday politics of Batavia's water infrastructure in the period. They refer to two technologies that were central to the city's management of water: firstly, the canals that sought to channel the water flowing into the city via rivers from the adjacent highlands and to direct it into the sea along the most functional routes; and, secondly, the hydrants – water distribution points connected to deep-bore artesian wells – providing reliably clean but scarce water for the population. These two technologies themselves represented the past and the future of water management at a moment of gradual transition, the former centuries old and the latter still in the very early stages of being rolled out. Both were meant to facilitate the lives and everyday habits of the city's inhabitants but, unsurprisingly, some users and uses had clear priority.

The root of the conflict in both cases was the perceived misuse of public water infrastructure by 'natives' (*inlanders* in the Dutch original), causing trouble to that class of people represented by the paper's mostly European middle- or upper-class readership, or to the ambiguous public at large. Stink is mentioned in both snippets, referring to a social inconvenience – especially for Mr Mars, whose house had the misfortune of adjoining the newly created ditch. More seriously, the former notice also goes on at length about the danger to health caused by the 'malaria germs' (*malaria-kiemen*) spread by the vapours from the stagnant water in blocked canals. The parasite that is the main vector of the disease had been identified just a few years previously in colonial Algeria, but the traditional miasma theories of malarial spread held firm in the popular imagination to the turn of the century and beyond.<sup>3</sup> Scientific accuracy aside, the concern was readily understandable, given the city's atrocious historical record of malaria mortality.<sup>4</sup>

<sup>1</sup> 'Een groot gevaar voor de gezondheid...' ('A grave danger for the health...') [untitled], *Java-Bode*, 26 Sept. 1884, p. 6. All translations are mine unless indicated otherwise.

<sup>2</sup> 'Enige inwoners van Kwitang klagen...' ('Certain residents of Kwitang complain...') [untitled], *Java-Bode*, 26 Sept. 1884, p. 6.

<sup>3</sup> Sheldon Watts, 'British development policies and malaria in India 1897–c. 1929', *Past and Present*, 165 (1999), pp. 141–81, at p. 148.

<sup>4</sup> P. H. van den Brug, 'Malaria in Batavia in the 18th century', *Tropical Medicine and International Health*, 2 (1997), pp. 892–902.

From the opposite perspective, the actions complained about in these pieces were no doubt meaningful and reasonable to the inhabitants responsible: procuring fish for food, for free or at a very low cost, and within one's own neighbourhood; and taking care of personal hygiene by bathing in the clean water provided by the newly introduced artesian wells. These behaviours represented adaptations to the cityscape, urban life finding its shape within the public space of Batavia, even if not quite in line with the administration's initial designs. The duality of uses exemplifies Vincent Lemire's conceptualization of water as 'a laboratory for the actors of history': an object of attention and desire as well as a basis for claims, practices, and forms of knowledge.<sup>5</sup> The clash between top-down and grassroots notions of public water provision led to conflict and called for action, which might have taken various forms. In the event, the newspaper editor resorted to the easiest option: requesting a crackdown from the many political, scientific, and regulatory branches of the administrative system, from the city administration and the health commission down to the police.

Like many ports, Batavia, the self-described 'Queen of the East' and the crown jewel of Dutch colonial possessions in Asia, had engaged in a prolonged struggle with unruly waters throughout its history. The Dutch city was built in the early seventeenth century on the site of an earlier Sundanese settlement named Sunda Kelapa or, later, Jayakarta, with the pre-existing port town mostly destroyed in the process. Stagnant water formed along the continually silting Ciliwung river, which the city straddled. In particular, the coastal area around the port near the old town was in constant danger of turning into swampland. This, in turn, increased the risk from malaria alluded to above.<sup>6</sup> Flooding and sedimentation were inevitable given the city's location in the river delta at a place where the gradient of the landscape suddenly turns relatively flat after the descent from Java's central highlands; resistance generated by high tides added to the sluggish water flow through the city.<sup>7</sup> Beyond environmental necessity, another set of causes was human in origin, as widespread rice cultivation around the urban area, which was required to feed the population, contributed to the accumulation of loose earth and manure in the water flow.

One of the methods by which the Dutch tried to manage the city's waters was the digging of canals (Figure 1), partly based on historic models they had learned back in the Netherlands. In general this was not very successful, providing an occasion for humour for many foreign visitors. As one British travel account put it, rather snidely, in 1828: 'The Dutch, ever addicted to canals,

<sup>5</sup> Vincent Lemire, *La soif de Jérusalem. Essai d'hydrohistoire (1840-1948)* (Paris, 2011), p. 572: 'un laboratoire pour les acteurs de l'histoire' (emphasis in original).

<sup>6</sup> Van den Brug, 'Malaria in Batavia', pp. 897-8; Karel Davids, 'Hydraulic experts and the challenges of water in early modern times: European colonial cities compared', in Tim Soens, Dieter Schott, Michael Toyka-Seid, and Bert De Munck, eds., *Urbanizing nature: actors and agency (dis)connecting cities and nature since 1500* (New York, NY, 2019), pp. 188-9.

<sup>7</sup> Prathiwi W. Putri and Aryani Sari Rahmanti, 'Jakarta waterscape: from structuring water to 21st-century hybrid nature?', *Nakhara: Journal of Environmental Design and Planning*, 6 (2010), pp. 59-76, at p. 66.



**Figure 1.** Map (detail) of Batavia's old town (c. 1780), showing the many canals, as well as projected plans to ameliorate the situation: the numbers 6, 7, and 8 indicate suggested points for cutting through the walls to let more water into the inner city. Nationaal Archief, The Hague, Collectie Familie Vosmaer – Kaarten en Tekeningen, access number 4.VMF, item 849.1.

have formed several in this city.<sup>8</sup> The canals suffered from chronic lack of water and exacerbated, rather than improved, the situation. Eventually, the worsening sanitary circumstances, especially over the course of the eighteenth century, gained the city the less than flattering moniker of ‘the graveyard of the Europeans’. By the beginning of the nineteenth century the situation had got so bad that radical changes were required. Batavia's European population largely moved away from the low-lying old town area and towards the south, where the new elite neighbourhood of Weltevreden was formed.<sup>9</sup>

Against this historical background, this article aims to clarify the political connection between water and the public in the specific context of Batavia in the nineteenth century. Here I am indebted to foundational work from the past fifteen years by scholars who have analysed the city's ecopolitics. In particular, Prathivi W. Putri has argued that the introduction of a public water system starting in 1873 should be understood against the broader framework of the contested emergence of modern citizenship in Batavia, in which specific infrastructures were made available to the population in exchange

<sup>8</sup> M. J. Horne, *The adventures of Naufragus* (London, 1827), p. 205.

<sup>9</sup> John J. Valentine, *Dutch colonizers in Malaysia* (San Francisco, CA, 1899), p. 13; Leonard Blussé, ‘An insane administration and insanitary town: the Dutch East India Company and Batavia (1619–1799)’, in Robert Ross and Gerard J. Telkamp, eds., *Colonial cities: essays on urbanism in a colonial context* (Dordrecht, 1985), pp. 65–6; Davids, ‘Hydraulic experts’, p. 189.

for their economic input.<sup>10</sup> Crucially, Putri points out that, in centralizing urban water management, the authorities neglected to pay attention to a range of localized needs and expectations in the city's many neighbourhoods, which unsurprisingly created discord. This construction of normative citizenship through water infrastructure also entailed the creation of racialized and increasingly spatialized difference between communities. Batavia's diverse population was by no means one that could be naturally divided into clear-cut racial categories, but water management was wielded as a tool to construct such taxonomies from above while also enforcing the behavioural norms associated with each label.<sup>11</sup>

The incipient citizenship embodied in minor disputes over water uses and examples of everyday unruliness should not be exaggerated: it was not primarily national or imperial in scope, but rather community-level and localized. It represented an ad hoc adjustment to mundane experiences and technologies, much like the 'material politics of everyday life' described by Vanessa Taylor and Fank Trentmann in their work on responses to water infrastructure in late nineteenth-century Britain – although in a distinctly colonial, racialized setting.<sup>12</sup> On the macro level, unlike the better-known case of the French empire, Dutch law made no distinction between citizens and subjects before 1910: until 1892, the population of the Netherlands Indies held Dutch nationality, although under an unequal, racially differentiated system; due to a legal oversight, they were technically stateless in the intervening eighteen years.<sup>13</sup> This meant that there was some scope to use the language of citizenship as a 'claim-making construct', following Frederick Cooper: a rhetorical device to argue for rights in the colonial context.<sup>14</sup> However, what was at stake in Batavia's water disputes was not a broad-based movement for colonial citizenship. More appropriately, these interactions can be understood as a contested and localized working out of the limits and possibilities of the colonial public realm, a debate about alternatives to a singular vision of colonial modernity.

The work on the specific regimes of hygiene in Batavia should be viewed against the global picture of a late nineteenth- and early twentieth-century shift towards what Matthew Gandy has termed the 'bacteriological city'. This was a technocratic vision of an 'emerging interface between water, space

<sup>10</sup> Prathwi W. Putri, 'Moulding citizenship: urban water and the (dis)appearing kampungs', in Sarah Bell, Adriana Allen, Pascale Hoffmann, and Tse-Hui Teh, eds., *Urban water trajectories* (Cham, 2016), pp. 193–207.

<sup>11</sup> Remco Raben, 'Batavia and Colombo: the ethnic and spatial order of two colonial cities 1600–1800' (PhD thesis, Leiden, 1996), pp. 294–5; Michelle Kooy and Karen Bakker, '(Post)colonial pipes: urban water supply in colonial and contemporary Jakarta', in Freek Colombijn and Joost Coté, eds., *Cars, conduits, and kampongs* (Leiden, 2015), p. 68.

<sup>12</sup> Vanessa Taylor and Frank Trentmann, 'Liquid politics: water and the politics of everyday life in the modern city', *Past and Present*, 211 (2011), pp. 199–241.

<sup>13</sup> Guno Jones, 'Tussen onderdanen, rijksgenoten en Nederlanders: Nederlandse politici over burgers uit Oost & West en Nederland, 1945–2005' ('Between subjects, compatriots and Dutchmen: Dutch politicians on citizens from the East and West and the Netherlands, 1945–2005') (PhD thesis, Vrije Universiteit Amsterdam, 2007), pp. 58–9.

<sup>14</sup> Frederick Cooper, 'Citizenship and difference in France: colonial histories and postcolonial controversies', *Citizenship Studies*, 26 (2022), pp. 418–25.

and society' in urban settings, combining technological, scientific, and administrative methods to institute social control and physical as well as moral hygiene through control of water infrastructure in the modern cityscape.<sup>15</sup> Yet, as Gandy rightly points out, this ambitious ideal for a rational reorganization of urban realities was never fully completed. Its weaknesses were most strongly apparent in colonial cities, where both a lack of resources and limits to political representation stood in the way of wholesale reform.<sup>16</sup> Unsurprisingly, the limited and partial infrastructure that was introduced in such settings generally served the interests of the colonizer, or of specific sectors of the colonial extractive economy, in the cause of what Sara Pritchard has termed 'hydroimperialism'.<sup>17</sup>

Urban waters became a key site for working out processes of colonial separation and hierarchy-building, partly because the growth and increasing population density of colonial cities necessitated ever closer control over their waters. As Corey Ross has shown, at approximately the same time in the second half of the nineteenth century, colonial governments around the world launched projects to manage and control their cities' water flows as part of a broader modernization drive. Urban sanitation efforts were at the heart of the oft-proclaimed civilizing mission.<sup>18</sup> In a drive to export Western technocratic expertise to serve the colonizers' interests, water infrastructure became a powerful symbol of colonial modernity and of the power of the colonial state.<sup>19</sup> Yet, as Freek Colombijn and Joost Coté have noted, the existing literature too often takes a simplistic view of this process, framing 'modernity' as an external imposition on the 'traditional' lifestyles of colonized communities.<sup>20</sup>

By contrast, this case-study of Batavia shows the complexities inherent in the process. Firstly, as the opening quotations on the canals and hydrants show, it is apparent that the old did not immediately disappear with the introduction of the new. 'Traditional' or 'outdated' technologies continued to co-exist side by side with 'modern' ones and to play active roles in the day-to-day lives of the people, providing local variations on the gradual evolution of the urban water frontier. Secondly, new technologies, though designed to uphold a racialized order of colonial modernity, inevitably escaped the straitjackets of abstracted plans, becoming fields for grassroots contestation and mundane repurposing.

<sup>15</sup> Matthew Gandy, 'Rethinking urban metabolism: water, space and the modern city', *City*, 8 (2004), pp. 363–79.

<sup>16</sup> Matthew Gandy, 'The bacteriological city and its discontents', *Historical Geography*, 34 (2006), pp. 14–25, at pp. 18–19.

<sup>17</sup> Sara B. Pritchard, 'From hydroimperialism to hydrocapitalism: "French" hydraulics in France, North Africa, and beyond', *Social Studies of Science*, 42 (2012), pp. 591–615.

<sup>18</sup> Corey Ross, *Liquid empire: water and power in the colonial world* (Princeton, NJ, 2024), esp. pp. 241–78. With thanks to the author for sharing a draft of the relevant chapter before publication. See also Radjimo Sastro Wijono, 'Public housing in Semarang and the modernization of kampongs, 1930–1960', in Colombijn and Coté, eds., *Cars, conduits, and kampongs*, p. 173.

<sup>19</sup> Rudolf Mrázek, *Engineers of happy land: technology and nationalism in a colony* (Princeton, NJ, 2018), p. 56.

<sup>20</sup> Freek Colombijn and Joost Coté, 'Modernization of the Indonesian city, 1920–1960', in Colombijn and Coté, eds., *Cars, conduits, and kampongs*, p. 3.

Examining cases like the ones with which this discussion opened, this article provides a focused historical analysis of the changing landscape of Batavia's water debates in the nineteenth century. Through a close reading of both administrative and technical documents as well as debates in the public sphere, it interrogates the highly localized and often contested processes through which water came to serve as a conduit for novel ideas concerning the nature of the public realm of the colonial city. In this analysis, 'public' has a dual meaning: both as the physical environment of the city and its attendant everyday behaviours; and as a contested determinant of more abstract notions such as public goods, rights, and duties. It is important, however, to note that debates over the latter were essentially bound up in the former: given the biases and silences of the colonial archive, it is through the habits of the people inhabiting the public spaces of the city – its canal-sides and water distribution points – that we can see the politics of the colonial city take form. Moreover, while these debates were by no means unique to the colonial context, they were significantly shaped and exacerbated by the racialized hierarchies and alien rule inherent to colonial rule in the Netherlands Indies.

The discussion below is divided into two sections. The first focuses on the use of hydrants from the 1870s onwards in different neighbourhoods, while the second situates this innovation against the longer nineteenth-century history of canal waterfronts as a contested site of the bodily human–water encounter. The analysis shows that the colonial authorities sought to frame the inevitable inadequacies in water supply as racial or moral failings rather than technical ones, pointing the finger at the subject population rather than the government itself. Embedded in the authorities' response was a concept of public goods that presented them as gifts rather than something earned, requiring simple gratitude rather than active engagement on the part of the inhabitants. However, it proved impossible to micromanage users once the infrastructure had been set up: the very omnipresence of water across everyday life gave residents a taste for public goods and rights embodied in a readily graspable, desirable object. Both hydrants and canals became staging grounds for a spatially situated negotiation of the shape and limits of public life in nineteenth-century Batavia. On the one hand, flows of water were carefully managed from above to delineate the racialized boundaries of colonial society; on the other, sites of water infrastructure came to be repurposed from below as novel public spaces for forms of sociability beyond – and sometimes against – the designs of urban planners. Like water, the life of the colonial city was always finding new courses to flow through.

## II

The system of hydrants and artesian wells that was initiated in 1873 was a major intervention of the colonial government into Batavia's water infrastructure and it spread gradually, although unevenly, throughout the city.<sup>21</sup> The

<sup>21</sup> Michelle Kooy and Karen Bakker, 'Splintered networks: the colonial and contemporary waters of Jakarta', *Geoforum*, 39 (2008), pp. 1843–58, at p. 1846.



**Figure 2.** Map showing Batavia’s artesian wells (circled in red) and hydrants and fountains (round black dots), 1879. From the *Jaarboek van het mijnwezen in Nederlandsch Indië* (*Yearbook of the mining industry in the Netherlands Indies*), 8, no. 1 (1879). Red annotations by present author.

map in [Figure 2](#), published in 1879, shows half a dozen wells (marked in red) in working order and supplying the public, with three others marked as ‘in execution’. These are notably clustered around the Weltevreden area of the new town, for both practical and political reasons. It was easier to draw water from the higher ground inland, but this was also where the wealthiest inhabitants of the city lived. Aware of this political dimension, Kooy and Bakker have argued that the development was not merely a technological solution to a

problem – the city’s centuries-long history of insanitary water supply – but moreover reflected a change in the Dutch governing mentality.<sup>22</sup> Artesian water served both as a yardstick of the kind of modernity that was used to legitimize colonial rule and also as a means to satisfy the city’s growing European population. These newcomers had been brought in by developments like the end of the so-called cultivation system (*cultuurstelsel*), a colonial command economy that was replaced by an approach oriented more towards private investment. In this sociopolitical context, the cleanliness assured by the water infrastructure, which primarily served Europeans, came to stand in for a wider ideology of racial hygiene that swept aside the earlier, more mixed ‘Indies’ culture.

As the quotations that started this article clearly indicate, contemporary newspaper discourse invested artesian water with a distinct quality of ‘Europeanness’, in the sense that only Europeans were assumed to know how to make proper use of it. The colonial authorities were similarly suspicious of the Asian population’s ability to productively co-exist with the city’s much older canal network. Taken together, the stereotypes meant that there was constant tension between the people and the government on issues of water use and infrastructure maintenance. As much as the Dutch insisted, and perhaps genuinely believed, that the use of dirtier river or canal water came naturally to the local population who could not properly appreciate the benefits of the modern technology, it was evident that those people were in fact very curious about the newly introduced hydrants and had their own ideas on how to use them. The situation required the authorities to employ a dual strategy. On the one hand, they insisted that there was no real demand for scarce clean water among the populace; on the other, they called upon the full force of regulatory and punitive forces to make sure that excessive or unsanctioned use did not go unpunished. This internal contradiction was readily apparent in the little debates around the hydrants in Kwitang and other similar *kampungs*. This word, from the Malay for ‘village’, was commonly used for majority non-European neighbourhoods in colonial towns in the Netherlands Indies, although their residents often included lower-class Europeans, with class and racial designations habitually blending into one another.<sup>23</sup>

The situation in Kwitang appeared to be a long-standing one. More than three years earlier, in June 1881, a reader’s letter in the *Java-Bode* had made the same complaints about bathing and stagnant water. What that letter shows is that the site, in a public location by the missionary church where services were held in both Dutch and Malay, had become a bustling centre of the neighbourhood’s social life: ‘from 3 in the morning until 9 or 10 in the evening’ the hydrant was in constant use, with men, women, and children bathing, washing clothes, and washing rice.<sup>24</sup> This was common in *kampungs* throughout the city, and the bathing and playing of children seems to have attracted

<sup>22</sup> Kooy and Bakker, ‘(Post)colonial pipes’, pp. 66–7.

<sup>23</sup> *Ibid.*, p. 72, n. 7.

<sup>24</sup> ‘Ingezonden stukken’ (‘Received items’), *Java-Bode*, 22 June 1881, p. 3.

particular ire, judging by newspaper commentary and readers' letters. Yet, considerations of public hygiene aside, bathing at the hydrant was not only practical but also safe, when read against contemporary notices of deaths by drowning in the river at Kwitang, including that of a man in an 'accident while bathing' or, particularly relevant, that of a three-year-old girl 'while the mother was busy with washing'.<sup>25</sup> The attraction of the clearly demarcated and controlled space of the churchyard as a place where children could wash and entertain themselves while mothers took care of housework seems evident enough in context.

It would be misleading to read these clashes between different notions of the proper uses of public water infrastructure as simply the inevitable friction between the rational, farsighted planner and the thoughtless, uneducated user. Rather, they amounted to different visions of the politics of the colonial city, and of the role and functioning of the colonial public. An 1880 editorial, calling once again for police intervention, lamented how 'the public, for whose benefit [the hydrants] were built ... spoils that which, from sheer self-interest, it should hold in the highest regard'.<sup>26</sup> Conversely, a report in 1881 told of a 'European' coming across a group of women and children bathing at a hydrant at Gang Zecha and scolding them for the transgression. The newspaper gives the considered answer of a 'native bystander': 'Why not, sir, we are not wasting the water; we pay the quartermaster our yearly taxes, and therefore we must have free use of the water.'<sup>27</sup> Perhaps even more wounding than the response itself was the laughter of the women that reportedly sent him on his way.

Other voices made similar calls for clean water as a basic right of urban citizenship, both in newspaper missives and through more diplomatic channels. In 1876, a commission from the city's Arab community made a visit to the administration to officially request hydrants to be installed in their residential area.<sup>28</sup> An editorial in 1880 appealed for artesian water provision to the northern *kampungs* of Baroe and Gedong Pandjang to meet the 'first needs of the numerous tax-paying natives and Chinese'.<sup>29</sup> Lower-class Europeans or Indo-Europeans also felt left out, as a letter written in Dutch to one of the newspapers from the outlying Sawah Besar neighbourhood bitterly called out: 'We pay taxes, too!'<sup>30</sup> In all these scattered calls, and in the laughter of the washerwomen – however anecdotal – one can hear the echo of a new kind of active and conscious citizenship, making claims for specific rights and for the benefits of the much-advertised modernity that colonialism was supposed to bring. These demands inevitably chafed against the official vision of public goods as a paternalistic system of one-way, top-down provision.

<sup>25</sup> 'Uit de rivier bij kampong Petjambon...' ('From the river by *kampung* Petjambon...') [untitled], *Bataviaasch Handelsblad*, 2 Jan. 1875, p. 4; 'Uit Batavia 3 Januari' ('From Batavia 3 January'), *De Locomotief*, 12 Jan. 1877, p. 3.

<sup>26</sup> 'Meer politie-toezicht...' ('More police controls...') [untitled], *Java-Bode*, 27 Mar. 1880, p. 3.

<sup>27</sup> 'Ook ad rem' ('Also ad rem'), *Java-Bode*, 25 Feb. 1881, p. 3.

<sup>28</sup> 'Vervolg der nieuwstijdingen' ('News items continued'), *De Locomotief*, 26 Aug. 1876, p. 3.

<sup>29</sup> 'Nederlandsch-Indie' ('Netherlands Indies'), *Bataviaasch Handelsblad*, 12 July 1880, p. 4.

<sup>30</sup> 'Misdielden' ('The deprived'), *Java-Bode*, 28 Jan. 1880, p. 3.

The latter conception of the colonial public was embedded not only in infrastructure but also in ceremonial. The first public hydrant in Batavia was officially opened with a great deal of pomp on 24 May 1876. There were numerous guests of honour, and speeches were given. The resident of Batavia addressed the indigenous population:

You surely share with me the conviction that the Great Master watches over your welfare without rest; no cost is spared to secure for those, who before had to drink the red *kali* [stream] water, the free use of good water, giving health to the little man and the whole population.<sup>31</sup>

Elsewhere, too, the opening of hydrants was coupled with a celebration of the benevolence of colonial authority. Sometimes, this celebration took on questionable associations. In Glodok, Batavia's Chinese quarter, the opening was timed to coincide with the unveiling of the statue of Jan Pieterszoon Coen, the city's seventeenth-century founder figure and an infamously controversial, brutal character whose legacy was already contested at the time.<sup>32</sup> The provision of water – clean, healthy water, as identified and dug out by European science – was everywhere presented as a show of benevolent strength by an all-powerful administration, rather than as a fulfilment of that administration's basic responsibilities.

The planners' ideas about the proper uses of hydrants depended largely on questions of who and where. An early commentator had responded to the initially low uptake of artesian water in 1876 by assuring that 'one should not imagine that there will ever be crowds of native women queueing up for water, like Dutch maids on Saturday mornings at the pump', since 'one does not splash and scrub here like in Holland'.<sup>33</sup> That prediction soon proved to be totally misguided, and the residents of *kampungs* like Kwitang were increasingly exhorted to limit their lingering around the water point. Elsewhere, great efforts went into making them as attractive as possible. Contemporary photos of hydrants and artesian wells in the Koningsplein and Wilhelminapark (Figure 3), in the elite new town neighbourhood of Weltevreden, show elaborate structures with sculpted human figures and lion heads. These locations were intended as sites of outdoor elite sociability and leisurely evening drives, showpieces of the city's rulers' ideas of the colonial urban public. Yet even the Weltevreden strollers' thirst came second to another need in the city's hierarchy of water uses: hydrants in the vicinity of the Batavia theatre, around the corner from the Koningsplein, were ordered shut on evenings when shows took place, to allow the reservoirs time to fill up for emergency use in case of fire.<sup>34</sup> This points out the essential problem at the root of all

<sup>31</sup> 'De Indische mail' ('The Indies mail'), *De Locomotief*, 21 July 1876, p. 1. The Dutch term used in the original for 'the Great Master' is 'de Grootte Heer', from the Malay *tuan besar*, often used to refer to European bosses and here specifically to the colonial administration.

<sup>32</sup> 'Uit Batavia', *De Locomotief*, 9 Sept. 1876, p. 3.

<sup>33</sup> 'Uit Batavia', *De Locomotief*, 14 Aug. 1876, p. 1.

<sup>34</sup> 'Verspreide Indische berichten' ('Divers Indies news'), *De Locomotief*, 16 Dec. 1884, p. 3.



**Figure 3.** Photographer unknown, hydrant in the Wilhelminapark, c. 1890. Leiden Digital Collections, Leiden University, KITLV I14066.

these squabbles: the fundamental scarcity of water as a resource, and the consequent need to prioritize some uses over others.

A significant amount of detailed planning went into drawing up these lists of priorities and their parameters. A largely mathematical exercise published in a specialist colonial journal in 1880 provided estimates of the water drawn into each of the Batavia's ten interconnected public wells per day, as well as of the needs of the city's population. The latter was calculated in explicitly socio-ethnic terms: 10 per cent of the population was reckoned to be 'Europeans and wealthy natives, Chinese etc.>'; these were allocated 80 litres per day; additionally, half of them were estimated to use artesian water for bathing twice daily, requiring an extra 100 litres. As for the remaining 90 per cent of 'ordinary natives, Chinese etc.', two-thirds were estimated to live close to a river, thus needing only 15 litres per day for drinking and cooking; the rest were allowed 50 litres altogether for washing and other uses.<sup>35</sup> The text is a little ambiguous,

<sup>35</sup> R. Fennema, 'Over de meest doelmatige afmetingen van reservoirs boven artesische putten' ('On the most appropriate dimensions of reservoirs above artesian wells'), *Jaarboek van het*

especially in terms of who was expected to bathe, where, and how often, but the numerical differences paint a stark picture of an urban socio-economic hierarchy.

These figures, calculated by the engineer R. Fennema, were intended as abstractions whose primary purpose was to mathematically check the adequacy of the city's infrastructural capacity, rather than as rules that the population was bound by. Nevertheless, the estimates obviously contained distinct racialized preconceptions about the lifestyles and habits of the city's various communities. A person's daily use of artesian water was assumed to range from a mere 15 litres to as much as 180 litres (exactly twelve times as much), depending on ethnicity, wealth, and access to rivers – which only the Asian inhabitants were thought to be willing to use. The luxury of bathing in clean well-water was reserved to the wealthiest 5 per cent of the population, who were largely, but not exclusively, European. It is notable that the language of the highly specialized article frames these assumptions not as societal expectations, or even conscious choices, but merely as abstract statements: 'let us calculate that ... half use artesian water for bathing'; 'we calculate that 2/3 ... use water only for drinking and cooking'. Such technical plans deliberately hide and deproblematize their politics in generalized statements: there is no conception of asking people what they want or need, or how they might be willing to compromise for societally optimized outcomes.

The differential requirements and entitlements embedded in Fennema's calculations were therefore implicitly considered to be natural, at least by the city's technocratic elites. However, far from being self-evident, these assumptions were in fact relatively recent innovations of the European imperial imagination. Earlier in the century, by contrast, the people of Java had been considered to be particularly careful with their personal hygiene. The British colonial official Thomas Stamford Raffles, in his agenda-setting 1817 work *The history of Java*, described the Javanese as 'distinguished by neatness and cleanliness' and 'more cleanly than the Chinese and even the European'. He also assessed that 'the common people generally bathe once a day', comparing them favourably to other groups.<sup>36</sup> In general, regular bathing was less common among Europeans than in the Asian societies they colonized until well into the nineteenth century. As Kees van Dijk has argued, colonizers – whether the British in India or the Dutch on Java – tended to pick up the habit from contact with locals, and it was only in the latter half of the century, partly through the spread of industrialized soap manufacture, that cleanliness came to be coded as an exclusively European virtue.<sup>37</sup>

Whatever the preferences of the people, the limits of hydrant use were enforced with municipal regulations. As early as May 1876, rules had been set up to penalize misuse, at a time when the first segments of the new

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*mijnwezen in Nederlandsch Oost-Indië* (Yearbook of the mining industry in the Netherlands Indies), 9 (1880), pp. 39–93, at pp. 86–7.

<sup>36</sup> Thomas Stamford Raffles, *The history of Java* (2nd edn, 2 vols., London, 1830), 1, p. 395.

<sup>37</sup> Kees van Dijk, 'Soap is the onset of civilization', in J. Gelman Taylor, ed., *Cleanliness and culture: Indonesian histories* (Leiden, 2011), pp. 11–22.

water network were only just getting finished. Four types of transgressions were listed: the hanging of buckets or other vessels on the taps; the damaging or removing of the equipment or associated metalwork; the binding or forcing open of self-closing tap mechanisms; and the bathing or washing of goods under the taps.<sup>38</sup> There was, in reality, nothing specifically Asian about such supposed misuses, as these actions track closely with the ‘everyday disruptions’ and ‘adaptive practices’ recorded by Taylor and Trentmann among working-class Londoners around the same time.<sup>39</sup> Colonial rule did, however, allow for harsh punishments: up to six days of imprisonment, eight for repeat offenders. Newspaper editorials and letters played their part in calling for action, as we have already seen. Apart from the usual bathers and laundry-washers, complaints ranged from the very large-scale, such as a man who used a hydrant to wash his entire cart, to the apparently minor, such as people washing their feet.<sup>40</sup> There was also an apparent epidemic of copper-knob stealing, leading to replacement with lead parts; and acts of seemingly wanton, occasionally juvenile vandalism, such as the scraping off of paint or smearing with tar.<sup>41</sup>

### III

While functional artesian wells were only introduced in the 1870s, there had been earlier, abortive attempts in 1843 and 1854 that failed to yield the desired results.<sup>42</sup> These should be seen as parts of a long-term process of seeking solutions to the city’s long-standing clean-water problem, where deep-bore wells were only one of several possible technological interventions. An earlier attempt in the late 1830s, slightly predating the first well-boring, had focused on the introduction of sophisticated filtering mechanisms from Europe, which could be employed to purify the muddied water of the city’s waterways to a drinkable standard. A statement of the problem in the government gazette of 1840 explains the issue in not merely hydrographical but also deliberately racial terms. After giving the reasons for why the water becomes mixed with earth and other matter before reaching the city, the author continues:

No wonder therefore, that it [the water] takes on a brownish and filthy appearance, which by sight alone makes a distasteful effect, which is then unpleasantly stirred by various circumstances, when we for example see, in that same water that we subsequently drink, a number of Natives

<sup>38</sup> *Verzameling van reglementen en keuren van politie benevens verschillende andere politiebepalingen voor de Residentie Batavia (Collection of regulations and bylaws with various other police provisions for the Residency of Batavia)* (Batavia, 1888), pp. 43–4.

<sup>39</sup> Taylor and Trentmann, ‘Liquid politics’, p. 200.

<sup>40</sup> ‘Nederlandsch-Indië’, *Bataviaasch Handelsblad*, 8 Jan. 1881, p. 5; ‘Misbruik van het artesisch water’ (‘Misuse of artesian water’), *Java-Bode*, 8 Sept. 1880, p. 6.

<sup>41</sup> ‘Nederlandsch-Indië’, *Bataviaasch Handelsblad*, 26 Feb. 1877, p. 3; ‘Uit Batavia’, *De Locomotief*, 26 July 1879, p. 2.

<sup>42</sup> *Verslag over de burgerlijke openbare werken in Nederlandsch Indië over het jaar 1893 (Account of the civil public works in the Netherlands Indies during the year 1893)* (The Hague, 1895), p. 150.

and Chinese, many among them afflicted with skin and other diseases, bathing and washing, and carrion and other filth floating by.<sup>43</sup>

In this framing, the water becomes a kind of medium of undesired intimacy between European and Asian, elite and underclass: a marker of the limits of the government's control over the exchanges and encounters that make up the city. Through the water, the skin of the colonized presses upon the skin of the colonizer, even reaching inside it in the act of drinking.

Filtering was supposed to sever that unwanted contact by inserting intervening layers of minerals, coal, and other materials to absorb the impurities. The Ministry of Colonies in the Hague, mindful of complaints coming from Batavia, sought out expert reports to decide between various newly patented technologies. Two systems came under particular consideration: the pressurized set-up invented by Louis-Charles-Henri de Fonvielle, which had been implemented in the Hôtel Dieu hospital in Paris (Figure 4); and that of the Leiden-based Dutchman Arent de Bruijn.<sup>44</sup> Although the expert consulted on the matter, the inventor Antoine Lipkens, favoured the former invention – because it had been proven to work at scale and its patent protections did not cover the Dutch colonies – the government nonetheless ended up favouring De Bruijn, who arrived in person to take over Batavia's water purification in 1840.<sup>45</sup> (It cannot but be seen as ironic that the man chosen to save Batavia from its infamously 'brownish' water was himself named 'Brown'.) It is unclear how successful this introduction was in expanding the city's inhabitants' access to drinking water. The primary function of De Bruijn's purification appears to have been to supply water to the ships calling in the port, for which purpose he enjoyed a lucrative, fifteen-year monopoly.<sup>46</sup>

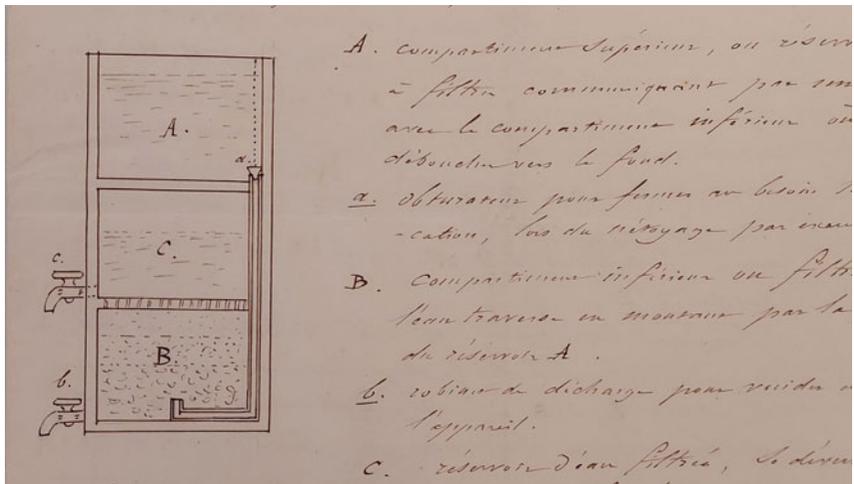
While the sight of Asian bodies in Batavia's waters was enough to cause discomfort and inspire calls for technological intervention, there was another, parallel and pointedly gendered discourse surrounding public bathing and washing. The aestheticization of local washerwomen had long roots in Dutch colonial culture, certainly predating hydrants and almost certainly photography too. In Batavia, specifically, it was considered a major part of the attraction of the cityscape. In his book-form urban portrait, *Batavia in 1858* (published in 1860), A. W. P. Weitzel describes an idyllic and refreshing morning walk away from the European new town and towards the *kampung* life of – again – Kwitang. There he observes 'men, women and children splashing and playing with each other, diving and coming up again, shaking the water from their long, free-hanging hair' and 'washers who, in the water up to their midriff, strike their linens on wooden banks as if they wanted to destroy it, add

<sup>43</sup> 'Drinkwater te Batavia' ('Drinking water in Batavia'), *Javasche Courant*, 25 Jan. 1840, p. 1.

<sup>44</sup> 'Stukken betreffende een vergelijkend onderzoek tussen de drinkwaterzuiveringsapparaat van het Hôtel Dieu te Parijs, dat van Batavia en het door A. de Bruyn te Leiden uitgevondene' ('Items regarding comparative research between the water purification system of the Hôtel Dieu in Paris, that of Batavia and that invented by A. de Bruyn in Leiden'), Nationaal Archief, The Hague, Collectie 174 A. Lipkens, access number 2.21.110, item 7.

<sup>45</sup> 'Drinkwater te Batavia', pp. 1–2.

<sup>46</sup> 'Advertentien' ('Advertisements'), *Javasche Courant*, 19 Aug. 1840, p. 3.



**Figure 4.** Diagram of the water filtration system invented by Louis-Charles-Henri de Fonvielle. From the correspondence between Antoine Lipkens and the Dutch Ministry of Colonies (see n. 44).

liveliness to the tableau (*tafereel*).<sup>47</sup> He adds a footnote ‘so as not to insult the chaste feelings of my countrymen’, assuring readers that ‘the natives never undress entirely while bathing’. This aside serves to neuter the scene of any unwanted eroticism, useful in a mainstream publication at a time when sexual digressions and mixed marriages in colonial life were increasingly coming under a critical spotlight in Dutch culture.

A later (1891) travel guide for tourists also raised the issue of bathing. Praising Batavia’s then still relatively new network of artesian wells and hydrants, the author, Marius Buys, noted that there was no need for public bathing establishments, seeing as ‘every European and also every dignified native or Chinese house is equipped with a bathroom, while the natives make heavy use of the waters that stream through Batavia in order to refresh and wash themselves’.<sup>48</sup> The insinuation is the same as in Fennema’s more technical article discussed above: that the lower-class population, coded in simplistic terms as indigenous, did not need access to artesian water as they were inclined to use the rivers and streams. Buys seems unaware of the broad base of evidence in the newspapers and beyond that underlined the people’s desire to have and use this resource. Unlike the engineer Fennema, but much like Weitzel, Buys then shifts the debate from a practical to an aesthetic level, assuring would-be tourists that ‘the discretion that is innate to the Oriental, at least on Java, makes the spectacle of the men and women bathing

<sup>47</sup> A. W. P. Weitzel, *Batavia in 1858. Schetsen en beelden uit de hoofdstad van Nederlandsch Indië* (Batavia in 1858: sketches and images from the capital of the Netherlands Indies) (Gorinchem, 1860), p. 23.

<sup>48</sup> Marius Buys, *Batavia, Buitenzorg en de Preanger. Gids voor bezoekers en toeristen* (Batavia, Buitenzorg and the Preanger: guide for visitors and tourists) (Batavia, 1891), p. 28.

in the open air less than shocking'. Evidently this had become a standard formulation of public chastity over the course of the second half of the century.

Shocking or not, outdoor bathing was in any case evidently considered a spectacle (*schouwspel*) to be visually enjoyed, but not participated in, by Batavia's elite inhabitants. This can be seen from the extensive presence of Dutch photography depicting local women bathing and washing laundry in public within the visual record of the city in the period. The photos act as a counterbalance to a tendency, noted by Jean Gelman Taylor, to photograph the European body's contact with water in strictly controlled environments: swimming pools, leisure resorts, covered in bathing suits, attended to by local servants, but otherwise safe from unexpected encounters.<sup>49</sup> By contrast, photos of the city's local population show women lined up or in groups alongside canals. The elevation difference between the street and the water, and the railings that generally lined the roadsides, create a strong sense of separate worlds, between the cityscape with its flow of traffic and commercial facades on the one hand, and the intimate enclave opening up to the water on the other. The latter was largely off limits to the city's colonial elites and their daily routines, creating an alternative public space much like the squares and street corners considered above with their hydrants and fountains. But the exclusion did not mean that these scenes were without interest to the imperial imagination – perhaps indeed the opposite, given the amount of photographic material that has survived.

A typical arrangement, such as that in [Figure 5](#), shows individuals standing in the water, with others on the characteristic steps that led from the street level down to the water. This particular example illustrates a mixed group of bathers, with perhaps a servant or other worker waiting on the steps with a bucket. Three of them stare into the camera, but the picture is not posed, as is evident from the blurred outline of the central figure in the water, turned away. On the side there is a basket with perhaps laundry in it; someone's clothes have been hung on the guard rail by the road, while another bundle has been tucked away more carelessly on the railing by the steps. A number of figures linger at the top, including a child who has climbed over to the other side of the rail and is balancing on the edge of the embankment. The image is not sexualized as such – there is that ambiguous 'discretion' mentioned by Buys – but simply by showing this amount of naked skin, in such a public setting, it plays to well-established, aestheticized tropes of 'Indies' mores, even if in a – metaphorically – sanitized way. This visual genre soon became codified, and examples in the Leiden Digital Collections proliferate once one gets to the 1920s. It was also heavily commercialized, as is evident from specimens that were sold as postcards.<sup>50</sup> The washerwomen and bathers became one sight among others, a landmark employed to sell Batavia to multiple audiences.

<sup>49</sup> Jean Gelman Taylor, 'Bathing and hygiene: histories from the KITLV images archive', in Taylor, ed., *Cleanliness and culture*, p. 47.

<sup>50</sup> See, for example, the postcard KITLV 182405 in the Leiden Digital Collections, Leiden University.



**Figure 5.** Photographer unknown, washing place by a canal in Batavia, c. 1890. Leiden Digital Collections, Leiden University, KITLV 106072.

The overall effect of these waterscapes, whether literary or photographic, was to emphasize a kind of cosy, familial femininity in Batavia's cityscape, as embedded in the human-water frontier. Simultaneously, they effected a deliberate distancing of that public frontier from the more respectable experience of modernity, which engineering and service labour had allowed to retreat from the canal-side into the privacy of the home. Improving technologies like filtration or well-boring and, more reliably, the division of the city into its elite new town and the downtown abandoned to the lower classes, changed the tenor of how the waterways were seen by Europeans. The professed horror at filth remained, but the personal sense of vulnerability gradually disappeared, replaced by a kind of public-minded technocracy. In 1882, an anonymous correspondent in the *Bataviaasch Handelsblad* described a walk in the Chinese quarter near the old town, with scathing commentary on the public hygiene of the neighbourhood:

Oh that ditch! It makes one shudder more than even the Styx ever could, for the latter is navigable; it flows and thus shows life. But by contrast this stagnant water that drips between the crumbling quays of Gang 'Rotten' [a pun on the name of the canal, Gang Rottan], thick and slow, ill-coloured

and stinking, what would it not bring to mind to anyone familiar with the excellent work of Nägeli on the lower organisms.<sup>51</sup>

There is, in the whole piece, a curious mix of references to both European mythology – the Augean stables are mentioned as another simile for the state of the neighbourhood – and Western science, such as the work of the Swiss botanist Carl Wilhelm von Nägeli, famous for his studies on fungal infectious diseases. The general tone of disgust is much the same as in the 1840 quotation discussed earlier, but the framing and conclusions drawn are strikingly different. The author similarly lays the blame for this state of filth squarely at the door of the Chinese and their manners, but, rather than stopping there or calling for solutions that protect the wider community from any ill effect, he turns the problem into a public one. Consequently, it becomes an issue that the city administration has a responsibility to solve or mitigate by different regulatory and infrastructural actions: the filling in of canals; improvement of drainage; and increased police surveillance of public hygiene.

This 1882 article appears to have been successful to some extent; at the very least, it managed to hit a nerve among Batavia's officialdom. The city's surveyor of buildings, C. F. Deeleman, who felt the author's criticism landed most harshly on him, took the somewhat unusual step of responding in the very same forum. To defend his honour, he went as far as to quote from official correspondence between himself and the police authorities to prove that the highlighted issues had already been noted and that his concerns relating to them had been conveyed to the proper authorities. The clear message was that he, just another cog in an inefficient machine, was not to blame. He accepted that 'the public can and must expect that not the press, but the surveyor of buildings keep the government informed of matters such as those raised by you', before going on to reproduce several lines from two separate missives to the assistant resident in charge of police affairs as evidence that this had been done.<sup>52</sup> The framing of the matter as a question of both official responsibility and official accountability, and the playing out of this debate in public view in the pages of the liberal-leaning, Dutch-language *Bataviaasch Handelsblad*, mapped out the contours of water management as a public issue in late nineteenth-century Batavia.

The story of Gang Rottan did not end there. Two months later, reports circulated of the police going around with orders to destroy all latrines in the Chinese quarter that had been built on canals. This was justified with reference to existing regulations, although commentators questioned whether those rules could properly be applied retrospectively, as seemed to be happening.<sup>53</sup> Clearly, however desirable the reform, its implementation took the immediate needs and interests of the Chinese community into account only to a very limited extent. Less than two years later, Gang Rottan had been filled in as one of the first steps in a broader programme of sanitizing the canals of the

<sup>51</sup> H., 'Door dik en dun' ('Through thick and thin'), *Bataviaasch Handelsblad*, 5 June 1882, p. 5.

<sup>52</sup> 'Ingezonden stukken', *Bataviaasch Handelsblad*, 7 June 1882, p. 5.

<sup>53</sup> 'Nederlandsch-Indië', *Java-Bode*, 10 Aug. 1882, p. 4.

downtown area; other parts of the network were dredged instead, to clear up the flow of the remaining waterways.<sup>54</sup> There is no evidence that it was the anonymous published missive that provided the spark for this action, but it clearly reflected broader concerns that were reaching a fever pitch at the time and, moreover, were becoming framed in such a way as to make large-scale government intervention necessary.

#### IV

Unlike Batavia's colonial elites, who over the course of the nineteenth century reinvented personal water uses as an essential but private part of their everyday lives, the city's lower classes and the majority of the local population largely took to the public sphere for their aqueous needs. 'Public' here should be understood in two distinct senses. On the one hand, there was the public space of the city: the squares and street corners with hydrants, as well as the canal-side steps and quays where people congregated to bathe and do their laundry, to rinse their feet, and to wash their produce. On the other, there was the public in the abstract: the site of working out the relationship between individual and society, which was in flux in the colonial context of the period. Focusing on disputes over water use in a specific location brings into view how the latter, political debate was intimately interconnected with the physical processes of the first. Closely intertwined ideas of colonial modernity and the civilizing mission were employed to legitimize European imperialism, on the grounds that it served to uplift subject populations, yet studying the hydropolitics of Batavia shows how limited that vision proved in reality. Moreover, it draws attention to the range of community responses to the colonial modernity on offer: not just wholesale rejection or acceptance, but also negotiation and improvisation. The visibility of public bathing or washing was in itself a staking of a claim to a presence in the city and to the rights that went with it, one that the colonial authorities did their best to restrict and regulate by policing between acceptable and unacceptable water uses.

Over time, technological interventions old and new became layered in the cityscape of Batavia. Yet none of these alone, whether canals or filters or artesian wells, proved capable of resolving the fundamental sociopolitical issues that stemmed from a permanent scarcity of clean water, and the threat that it represented to the ideal of colonial modernity as an all-purpose social panacea. One top-down strategy to square that circle was to regulate differential access in order to prop up the colonial hierarchy. In the process, bathing indoors became an elite virtue, while the 'native' was paradoxically both blamed for an innate lack of hygiene and castigated for any attempts to wash with the water that was available. Grassroots attempts to assert rights, or, at least, to make creative use of the resources newly available, were framed as delinquency. What had always been a culturally and ethnically diverse and hybridized city was subjected to ever-hardening strictures of racialized

<sup>54</sup> 'Nederlandsch-Indië', *Java-Bode*, 24 Apr. 1884, p. 4.

hierarchy as authorities sought to explain away technological and administrative deficiencies as moral failings.

A focus on nineteenth-century Batavia provides a vibrant case-study underlining the complexities of a process that played out around the world: how a singular vision of top-down colonial modernity clashed with alternative, community interpretations across the public spaces of the city. Yet, from a close reading of the wealth of complaints in Batavia's press and beyond, what emerges is not just a map of a heated political struggle – although that simmered in the background – but a whole parallel experience of the colonial public: people, male servants, washerwomen, and families with children gathering daily around hydrants and by the canals to wash, play, chat, and prepare foods. This waterside world existed separately from the more elaborate spaces of sociability in the elite neighbourhoods – the parks, theatres, and clubhouses with their more formal norms of behaviour – and was therefore legible only with difficulty to the city's rulers. Instead, they tried to force these spontaneous manifestations of urban life into frameworks of mathematical formulae and disease vectors, themselves poorly understood by all but the most educated experts.

In fact, it was precisely from the encounter and occasional intersection of those two worlds of sociability that a new notion of the colonial public, and of colonial urban citizenship, arose towards the end of the nineteenth century. Sara Pritchard has noted how the smoothness implied by the popular historiographical metaphor of flows and circulations often serves to hide contingencies and power dynamics.<sup>55</sup> Here, another watery metaphor suggests itself: the unruly flow of the city, difficult to contain within its prescribed boundaries, taking unpredictable turns and occasionally spilling over. In the puddles around Batavia's hydrants, the messy and contested reality of the global project of colonial modernity played out in microcosm.

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<sup>55</sup> Pritchard, 'Hydroimperialism', p. 605.

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