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## Developing Informality: The Production of Jakarta's Urban Waterscape

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**ABSTRACT:** This paper argues the need for new conceptualisations of the relationship between water and development to better reflect the reality of cities in the Global South. Using a case study of Jakarta, Indonesia, it traces how the development narrative for urban water supply contributed to the understanding of informality as a binary opposite of the urban infrastructural ideal (undeveloped, temporary, transitional). The paper explores the implications of this framing as they emerged through the outcomes of the largest international development intervention in Jakarta's water supply in the 1990s, which culminated in the current private-sector concession contracts. The case illustrates how informality in Jakarta's water supply should be understood not as a failure of the state, technology, or development to achieve the urban infrastructural ideal, but rather as a particular mode of urbanisation that was reliant on, and productive of, a range of informal practices. Given the current heterogeneity in water supply strategies in many cities of the Global South, we need to accept the so-called informal as an enduringly dominant, rather than a remnant, mode of supply, and attend to ways in which the codification of informal practices reveal a more nuanced politics of access that reflect complex realities of southern urban waterscapes.

**KEYWORDS:** Urban water, informality, governmentality, development narratives, World Bank, Indonesia

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### INTRODUCTION

Development interventions in urban water supply have used various discursive framings to rationalise particular approaches to the so-called informal sector, a pervasive feature of water supply in cities of the Global South. However, although the backdrop of cities and casting of central characters have changed over time from *mafioso* to entrepreneurs, the storyline in which they are scripted has not. The development narrative dominating urban water supply interventions still foresees the eventual achievement of what is identified as the urban infrastructural ideal (Graham and Marvin, 2001) – a centralised piped network providing universal access to potable water. Although different points of view exist as to how long it will take, and the ways in which so-called informal water providers can facilitate and/or become enrolled in this process, the so-called informal sector is expected to either simply 'fade away' or merge into the centralised piped system (World Bank, 2003; ADB, 2004; Ahlers et al., 2013) in parallel to the expansion and rationalisation of the formal water supply utility.

Within this dominant development narrative for urban water supply the so-called informal sector<sup>1</sup> remains relegated to the early stages of a linear development trajectory: they are seen as a transitory

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<sup>1</sup> This term is commonly used to refer to a highly heterogeneous set of practices performing the extraction, treatment, and distribution of water. This encompasses various forms of artisanal access for individual or collective supply from ground, rain, and/or surface water sources, as well as various forms of mediated access to a centralised piped system through piped

phenomenon, providing for those residents who are not yet developed, and operating in spaces of under-development. As informal water providers are thus assumed to gradually disappear through the growth of the urban infrastructural ideal, they have only been recently recognised within development policies (Mitlin, 2004; Wakefield, 2004). However, although informal water providers are now recognised, and characterised in development interventions as entrepreneurial, innovative, and customer-oriented rather than the black market mafia of previous decades (Solo et al., 1993), they are still understood by the mainstream development community primarily as a solution for what the formal system cannot yet – or will not – service. UN-HABITAT states that informal water providers are a viable option to be encouraged where the public or private utility still lacks the capacity to provide to all (UN-HABITAT, 2003). The World Bank policy approach for informal water provision states this even more clearly, as informal providers are seen as a "second best policy where the broader approach of making services work for all is not possible" (World Bank, 2003: 177). Framed as complementary to utility water supply, so-called informal providers are seen as "particularly well placed to provide water services to the urban poor living in informal settlements" (Njiru, 2004: 455), who – given their socio-economic status, or insecure land tenure, or legal status – are not yet able to be formal customers of the water utility (ADB, 2003).

The historical and contemporary realities of water provision in cities of the Global South complicate this development narrative. Other papers in this special edition illustrate the continued significance, and growth, of this sector in parallel to urban growth and national development in major cities in the Global South (Bjorkman, 2013; Cheng, 2014). So-called informal provision has historically, and continues to be, the form through which a large percentage (sometimes the majority) of urban residents in the South secure water. Residents, across a range of income levels, access a variety of water sources and combine formally or informally mediated access to the urban water utility with access to a variety of other water suppliers (McGranahan, 2012; WHO-UNICEF, 2012). These heterogeneous household water strategies are driven by combinations of choice and necessity (Kjellén and McGranahan, 2006; Bjorkman, 2013; Misra and Nayak, 2013).

This paper argues that the persistence of so-called informal water supply in cities of the global South, and the absence of an urban infrastructural ideal, is not a reflection of lack of development. Rather, informality continues to be produced through the particular politics of development processes. To make this argument, I employ the concept of informality as developed by Roy and AlSayyad (2004), within the theoretical framework of governmentality (Foucault, 1991). Such a conceptual framework illustrates how informality in the urban water supply sector can be understood not as a failure of the state, technology, or development to achieve the urban infrastructural ideal, but rather as a particular mode of urban development that is reliant on, and productive of, a range of informal *practices* in urban water supply.

Applying this conceptual framework to examine informality in the urban waterscape reveals the following. First, understanding informality as a form of practice, rather than locating informality according to a particular spatial location (slum), level of socio-economic development (urban poor), type of water supply technology (decentralised), or form of regulation (state-sanctioned), makes visible the ways in which state – or development – actors themselves engage in informal practices. Second, the conceptual framework allows us to identify how the process of developing the formal networked infrastructure itself produces informal practices as: (1) informality is produced through government rationalities which, in support of various political or economic interests, alternately sanction or target certain water supply practices by defining them as informal; (2) informality is produced through the creation of zones of exception, within which certain actors are encouraged to engage in informal

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networks, water tankers, and standpipes, which are not state regulated or officially sanctioned (Solo et al. 1993; World Bank, 2003; Batley and Moran, 2004; Allen et al., 2006; Moretto, 2007).

activities, with the approval of the state; (3) and informality is produced by the contestation to rule, as subjects resist or redefine what is legal or illegal water supply practice.

The arguments of this paper are advanced through a case study of an urban water infrastructure development project in Jakarta, Indonesia, a city of 12 million residents where over a century of development towards the urban infrastructural ideal has not established its dominance. Approximately 60% of the city's residents are connected to the centralised piped network, but do not rely on this source for all water needs (BPS, 2010; Ministry of Health, 2010; PAM Jaya, 2012). Surface water has always been abundant (13 rivers and numerous canals cross the city), and groundwater (shallow and deep) is accessible and a preferable source for most households, except in areas of the North where groundwater has historically been and is increasingly brackish and saline (Delinom et al., 2009). Households rely on a range of strategies, often combining artisanal access to alternative sources (surface, ground, rain), to formal access to private and/or decentralised sources, and informally mediated access to the centralised network sources (water vendors, tankers, illegal connections). The current urban waterscape holds various implications for ecological sustainability (Kagabu et al., 2012), and social equity (McGranahan et al., 2001), but the preferences, characteristics, cost, and governance of the practices of water provision are to date little understood, as it has been assumed that dependence on so-called informal supplies would fade away with expansion of the centralised network.

In contrast to this assumption, I illustrate how relations of rule under the long authoritarian New Order regime (1960-1998) followed a trajectory of urban development which operated through informal practices – in the water sector (Loveli and Whittington, 1993; Braadbaart and Braadbaart, 1997), land development (Leaf, 1994), housing (Firman, 2004), and other urban services (Server, 1996; Robertson-Snape, 1999). Concurrently, the relationship established between urban governance and urban infrastructure under the New Order meant that securing water through informal practices was made more or less necessary, or preferable, for different population groups (Kooy and Bakker, 2008b).

The contribution of this paper to the edited volume is twofold. First, the paper adds to an existing body of evidence challenging the development narrative of the urban infrastructural ideal, and arguing the need for new conceptualisations of water and development that go beyond the formal/informal dichotomy. Second, the analysis highlights how informality is produced through development processes, rather than 'fading away' alongside the development of an urban infrastructural ideal. Finally, the analysis highlights how the politics of access to urban water supply in cities of the Global South cuts across binary categories of connected vs. unconnected to the centralised piped water supply infrastructure. With a high level of differentiation within each technology of water infrastructure, and a variety of informal practices mediating access to various technologies, the differentiation in access is not always so much in form of water supply, or distribution technology. Rather, the politics of water are evident in the *variety of practices* used by different urban populations to establish, and keep secure, forms of access, and how these practices are codified according to relations of rule (legal vs. illegal; developed vs. primitive; rational vs. uneducated).

The remainder of this paper proceeds as follows. I begin with a brief overview of the conceptual framework applied to understand the production of the urban waterscape, and to interpret relations of power and informal practices in urban water supply. This framework is then used to examine the outcomes of the largest international development intervention in Jakarta's water supply – the decade-long PAM JAYA System Improvement Project (PJSIP) in the 1990s. The analysis illustrates how by constructing informal water supply as temporary, transitory, non-state, and existing only in under-developed spaces, the World Bank development project ignored the historically mediated, political process of everyday access to water in Jakarta. As a result, the project consolidated, rather than remediated, uneven access to water supply in Jakarta. The final section of the paper identifies how these informal practices had emerged under the New-Order-led urban development and economic modernisation, as well as through the contradictions and contestation to the New Order rule. The

paper concludes by calling for a broader examination of the politics of water access across the urban waterscape.

### **THEORETICAL FRAMEWORK: CONCEPTUALISING INFORMALITY**

In this section of the paper, I explain how the conceptual framework of governmentality can contribute to a new understanding of informality in urban water supply. Specifically, it can be used to explain the persistence of informality, as it continues to be produced through the discursive and material practices enrolled within relations of rule, and the contestation to rule.

As originally employed by Foucault, the term governmentality refers to a specifically modern (and Western) form of rationality that emerged in Europe during the 16th and 17th centuries (Foucault, 1991). The term denotes a new, diffuse form of power through which an increasingly administrative, bureaucratic state comes to rely less on physical force and military might, and more on a new set of 'savoirs' or rationalities (such as statistics) which enable an unprecedented degree of control over individuals (Barry et al., 1996; Dean, 1999). The concerns of this new form of rationality are populations and resources; the interrelationship between societies and environments thereby becomes a central concern of the state.

As developed within the social sciences, the theoretical framework of governmentality is an analytic used to examine the operations and relations of power (for a background see Burchell et al., 1991). In this framework, power is defined as relational, operating through both discourse and material practice. Empirically, employing the concept of governmentality implies a focus on power (both domination and subordination) as exercised by both the governors and the governed through both discourses and practices. In other words, a focus on governmentality calls for analysis of the interrelationship between actions and knowledge. Specific attention is paid to the continual process of constructing knowledges through which 'subjects' are governed (Boelens, 2013). However, populations also actively resist and reshape these knowledge systems and categorisations.

A focus on colonial contexts provides a useful counterpoint to Foucauldian readings of urban life focused on the West (e.g. Joyce, 2003). Exploring the limitations and possibilities of the Foucauldian framework within colonial contexts has led to a greater emphasis on discursive constructions of ethnicity, relations of rule, resistance, and heterogeneity in subject populations (see, for example, Legg, 2006; Rao, 2006). In addition to emphasising the heterogeneous ways in which power works across different racial and ethnic groups in colonial contexts, post-colonial governmentality also calls attention to the contradictions and compromises to rule in both Western and colonial contexts (Valverde, 1996; Li, 1999; Dean, 2001). Exploration of the contradictory and contested nature of governmentality by postcolonial scholars has also usefully corrected earlier readings of governmentality in the West as complete and totalising projects (O'Malley, 1996; Li, 2007).

Using the analytic of governmentality to examine informality in urban water supply can thus make visible both its discursive construction, and its material production through relations of rule. Some examples from the history of Jakarta's waterscape are used below to illustrate this argument. First, we can identify how certain practices, behaviours, and relations to urban water supply are codified according to rationalities of rule. For example, within the period of late colonial rule, government sought to reinforce race- and class-based distinctions within the colonial population through codifying what were formal or informal water treatment practices of households. Households using and valuing chemical treatment processes to produce a standardised (formal) biochemical composition of water, were European and modern (Maronier, 1929). Households using sensory perception to (informally) identify 'clean' water procured through artisanal sources (groundwater, surface water) through taste, colour, and odour, were native and undeveloped (Gomperts, 1916). Thus, relations to water as either scientific and modern, or backward and undeveloped/unhygienic were used to classify formal vs.

informal treatment processes, and secure the desired classification of colonial populations into rulers vs. ruled.

Practices of securing water supply in the late colonial period were also classified as formal vs. informal, according to rationalities of rule. Formal water supply was delivered to households through the centralised infrastructure network, and available only to European households and elite Eurasians (Eggink, 1930). Informal water supply was a system designed by the same set of engineers to provide an unregulated service of water vending from public hydrants through native carriers to non-European households. Although the lack of formal regulation by the government resulted in non-European households paying twice the cost per unit volume, the colonial government chose not to formalise the service, believing it a 'temporary measure' until the full modernisation and development of indigenous populations (Heetjans, 1923). Informal water supply was thus both materially produced, and discursively codified, through colonial rationalities.

Thus, informality emerges within different projects of colonial and post-colonial development as water supply, treatment, and use practices either threatened, or supported, authority and structures of power. The post-colonial government of Indonesia also mobilised discursive classifications of formal vs. informal water supply to reinforce the social differentiation needed to legitimise state authority. The post-colonial New Order government required an under-class, defined and reproduced by their use of 'primitive' water supplies, to contrast the development progress of middle-class, obedient citizens (Kooy and Bakker, 2008b). Alongside this, neoliberal rationalities of mainstream development actors like the World Bank have discursively constructed water supply outside the centralised piped network system as a lower form of development, and a transitional technology for lower-income population (rather than involving the state, private-sector actors, or the centralised network infrastructure itself). Through these various discursive classifications, certain practices and populations then become amenable to material interventions, while others remain less so.

Following this, by using the analytic of governmentality, we can identify how, and why, other so-called informal practices remain less visible. For example, within Jakarta, the practices of water supply utility staff complicit in illegal connections to the piped network, the practice of negotiations over the water meter readings and billing between utility staff and public hydrant operators, or the practice of negotiation between utility staff and local politicians for connection to larger diameter pipes, or negotiation over the tariff block classification, may all be unregulated, and technically illegal, but not codified as informal. Tacitly condoned by the state, these practices are rationalised according to how they further the project of rule (either of the state, or development actors). Thus, these practices are tolerated through the creation of zones of exception, whereby they are allowed to persist (Roy, 2005, 2009). Though widely visible in the urban landscape, they are much less amenable to public sanctioning, or development programming. As the paper will go on to discuss, on the one hand, the Indonesian government legitimised some of the above practices through the creation of zones of exception and, on the other, it rendered other urban populations and urban spaces as illegal in order to rationalise non-provision of piped water supply. These zones of exception in Jakarta are visible in the ways that political and economic elite under the New Order were able to alternately use, or suspend, laws for purposes of capital accumulation and authority.

The analytic of governmentality also attends to how informal water supply practices are materially produced, not only discursively constructed as the material practices of rule allow and encourage particular actions, either through denying provision of piped water to particular urban populations, or allowing illegal connections amongst others. Relations of rule, however, also elicit reactions. It is not only through the successful application of rule, but also through resistance to rule that informal practices emerge. The analytic thus helps us to uncover ways in which informal water supply practices are produced not only by the governors, but also by the governed as they actively resist or reshape relations of rule. Urban residents opting for informally mediated access to the piped network, or artisanal sources, rather than formal access, make these choices based on combinations of preference

and necessity (Susantono, 2001; Bjorkmann, 2013), as they engage in what Simone (2010) would term the politics of anticipation. These choices are related to contestations over the ways in which government rationality classifies them as illegal, undesirable urban residents, or creates conditions by which settlement is only possible in marginal, non-networked, urban spaces.

Finally, by bringing together the analytic of governmentality with the definition of informality by Roy (2009), the politics of access to water supply in cities of the Global South becomes more visible across the urban waterscape. As the differentiation in access is not always so much in form of water supply, or distribution technology (e.g. piped vs. non-piped), we can see how the politics of water are evident in the *variety of practices* used by different urban populations to establish, and keep secure, forms of access. I turn now to the case study to mobilise the analytic of governmentality to understand the production of informality through development in Jakarta's urban water supply.

### 'FAILED DEVELOPMENT': THE PAM JAYA SYSTEM IMPROVEMENT PROJECT, 1990-1998

The PAM Jaya System Improvement Project<sup>2</sup> was the largest infrastructure investment program in the history of Jakarta's water supply development. Investing US\$124 million over eight years, its stated objective was to secure the urban infrastructural ideal through massively increased coverage of the centralised piped network (World Bank, 1990). Within the development narrative guiding the project's design and implementation, increased coverage of the centralised network and accompanying institutional restructuring were to modernise Jakarta's water sector, and reduce informal practices that then characterised the urban waterscape. However, analysis of the project outcomes versus the objectives reveals instead how informality was produced through the politics of this development processes, and did not 'fade away' in parallel to the pursuit the urban infrastructural ideal. I illustrate below how this was the result of 1) the implications of the development narrative and its framing of informality, and 2) the politics of formal and informal access to water supply as shaped by New Order government rationality.

In the late 1980s, just prior to the initiation of the PJSIP, 70% of Jakarta's eight million residents accessed water through a range of informal practices, often securing household water needs through a combination of sources, providers, and qualities (World Bank, 1990). This was not too surprising, given that the city's centralised piped network covered less than half of the city's geographical area, and there were only 228,000 registered connections in a city with a total population of 8.4 million (ibid). Framed according to the development narrative outlined in the introduction, the low coverage rates of the centralised water supply network were seen to demonstrate a developmental gap. The lack of universal access thus represented the state's 'failure' to establish the urban infrastructural ideal. Project documents attributed this 'failure' to a lack of public finance and lack of infrastructure, a lack of technical knowledge and skill, and low institutional (poor management) capacity (World Bank, 1990).

This diagnosis led to a corresponding solution, as articulated in the program implementation plan of the PJSIP, centring on a two-part strategy of infrastructure investments and institutional re-design, towards the commercialisation of the sector. Beginning in 1990, the project allocated a total of US\$190 million to the Government of Indonesia to support improvements in Jakarta's water supply infrastructure and management; US\$124 million of this total was allocated for the PJSIP.<sup>3</sup> The objectives of the project were ambitious: increasing the city's fixed infrastructure assets by fourfold, extending the distribution network to cover 70% of Jakarta's urban area, doubling the number of house connections, and decreasing the unaccounted for water (UFW) from over 50 to 30% (World Bank, 1990). By the end

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<sup>2</sup> PAM Jaya (Perusahaan Air Minum – water supply company of Jakarta) is the public water supply utility for Jakarta.

<sup>3</sup> An amount of US\$190 million was divided up into: \$19 million to the city of Jakarta, \$92 million to Pam Jaya, \$13 million to Tangerang PDAM. At the close of the project in 1998, \$15.3 million of the total remained undisbursed (World Bank, 1998).

of the project in 1998, the goal was to have 50% of Jakarta's residents served by the centralised supply system (ibid).

The strategy for modernising Jakarta's urban water supply coupled investments in physical infrastructure with institutional reforms to rationalise its management according to neoliberal principles of efficiency and cost recovery (World Bank, 1990, 2004). Mirroring the global trends in the water sector, Jakarta's water supply utility was to operate on a commercial basis, covering operation, maintenance, and future investment costs through tariffs, rather than subsidy (Bakker, 2003). The project introduced new management policies to generate increased efficiency within PAM Jaya (reducing staff ratios, improving data management, generating records of customers, increasing tariffs), while improved physical operations (reduce UFW, build leak detection systems and introduce 'management zones' in the city) were to expand the customer base and increase revenues along with the revised tariffs for piped water supply. Together, both the institutional and physical programs of development undertaken as part of the PJSIP would improve efficiency, cost-recovery, and commercial viability of Jakarta's water sector.

What this strategy for developing Jakarta's urban water supply ignored was a historical continuity of reliance upon the so-called informal suppliers. The assumption implicit in the development model is that given physical access to the city's centralised water supply network, residents will prefer this source based on convenience and low per unit volume costs of supply. However, consumer preferences for artisanal and informally mediated water sources were not transitional but continued over time, and despite other development interventions. These preferences were documented in reviews of WHO and World Bank development programs: residents who could have physical access to piped water did not always access it (World Bank, 1974; Berry and Sierra, 1978), and socio-economic status was not a reliable indication of those using informal water supplies (Taylor, 1983).<sup>4</sup> However, these observations were simply presumed to be a justification for continued development support, and throughout the 1980s and 1990s donors continued to concentrate investment into the achievement of the urban infrastructural ideal.<sup>5</sup>

The lack of interest in investigating reasons behind the persistence and growth of the so-called informal water-supply sector was further encouraged by what Li (2007) has identified as the discursive technology of 'rendering technical'. Through this discursive technology, development planners excised political relations, and were unable to diagnose the ways in which informal water practices were the product of relations of rule. World Bank experts were also unable to acknowledge realities which cast doubt upon the completeness of their diagnoses or the feasibility of their solutions. Thus, project planners perhaps did not want to understand how the relationship established between urban infrastructure and urban governance under the authoritarian state of the New Order dictated a politics of supply and access that required and perpetuated a variety of informal practices of water supply. However, these politics of access would have dramatic implications for the establishment of the urban infrastructural ideal.

Indeed, by the end of the project in 1998, the centralised network still covered roughly only 25% of the population, versus the targeted 50% (World Bank, 1998). Unaccounted for water had actually increased during the project period, peaking at 57% a year before the project ended, and plans for network extension and rehabilitation were not achieved (ibid). As the overall quality of piped water

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<sup>4</sup> The World Bank's 2004 background sector report on urban water supply infrastructure in Indonesia finally officially acknowledged the permanence of the informal and self-supply water sector (World Bank, 2004), but this of course followed both the PJSIP project, and the private sector partnership.

<sup>5</sup> From the late 1970s until 1990 donors helped to finance increases in the production capacity (from 6600 to 10,400 liters/second by 1990) and the distribution network (509 to 3672 km) of the centralised piped system (World Bank, 1990, 1998; JICA 1997).

distributed in Jakarta did not improve, the project also failed to reach its targets for reducing groundwater abstraction, and the only component of the project addressing increased access to low-income urban residents through installation of water standpoints was abandoned (ibid). Nonetheless, despite this dismal performance, private sector participation was achieved, with the project ending prematurely due to the signing of 25-year concession contracts.<sup>6</sup>

### **NEW ORDER URBAN DEVELOPMENT**

The outcomes of the largest development intervention in Jakarta's water supply were never placed under any scrutiny, or identified as a topic of public debate, despite the debt accrued by the Government of Indonesia as a result of this failed investment, and its contribution to what are still controversial private-sector concession contracts. The project ended prematurely with the initiation of the private-sector contracts (1997), followed shortly by the Asian Financial crisis, and the deposition of President Suharto to end his 30 plus year reign: the PJSIP became eclipsed by larger events that gripped the country. However, the ways in which the project misread the process of development through informalisation operating under the New Order government had impacts which continue to shape the contemporary urban waterscape of Jakarta.

The project contained four key assumptions as to the problems and solutions for urban water supply in Jakarta. First, informal practices were seen as external to the centralised network: informality was associated with artisanal or lower forms of technology. Second, informal practices were equated with a lack of development: informality was located within socio-economic status, and spatial locations (undeveloped areas of the city). Third, the expansion of the centralised piped network was correlated with the disappearance of the so-called informal sector: informality was a temporary phase within the process of economic modernisation. Finally, the project assumed that the New Order government had the same rationality as development planners: informality was undesirable and it has to be eliminated through the desired urban infrastructural ideal and provision of water to all.

All of these assumptions were guided by a myopic fixation on the urban infrastructural ideal, and encouraged project planners to frame informality as a lack of development, rather than the process through which development occurred. As a result, the development project ended up consolidating uneven access to water supply in Jakarta. However, as I illustrate below, the informal practices produced through the politics of the development process reveal a much more complex politics of access than represented by binary categories of connected vs. unconnected to the centralised piped water supply infrastructure. As I will go on to illustrate, the project (re)produced a variety of informal practices, which took place between a variety of subjects (utility employees, government officials, urban poor, middle class households), and across a variety of urban spaces and infrastructure technologies, as provision of water through connections to the centralised piped network remained either unattainable, or undesirable. However, the codification of these practices according to relations of rule under the New Order made these informal practices either more or less visible for sanctioning against implicit permissions.

### **Informal practices as external to centralised network**

The first assumption of the PJSIP was how it conceptualised informal practices in water provision as existing external to the centralised network. This failed to acknowledge that within the model of

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<sup>6</sup> The stated objective of the project was to improve commercial viability (World Bank, 1990) and the World Bank undertook a pre-feasibility study in 1994 (World Bank, 1999). However, in 1995 the President had already selected the private-sector companies (consortia involving members of his family and an extended network) and instructed the Minister of Public Works to prepare the Private Public Partnership (Braadbaart, 2007).

development followed under New Order governmentality certain informal practices were legitimised within the management and bureaucracy of the centralised network system. Under the New Order, benefits of development were to 'trickle down' to those who were politically obedient and economically established, and the state apparatus was used to neutralise dissent through either repression or co-option (Morfit, 1981; Heryanto, 1988). Economic growth averaged at 8% annually under the New Order's two decades of 'development and progress' agenda, and political authority was supported by enabling key figures in bureaucracy and military to benefit economically from their loyalty. This included (unofficial) economic benefits from public office and public services (Hill, 1994; Server, 1996; Robertson-Snape, 1999).

Within the public water supply company, the culture of bureaucracy that sanctioned the use of public office for private gain led to a variety of informal – yet legitimised – practices by utility staff and managers. These informal practices were not sanctioned, but normalised, and thus – to this day, remain less visible and less amenable to any official actions (PAM Jaya, 2013).

Perversely, these practices involving exchanges within the formal utility both perpetuated the reliance of residents not yet connected to the centralised system on so-called informal water supply, and created disincentives for residents who could connect to the centralised system. Household connection fees were often much higher than the official charge, and household water meters were mis-read based on bribes to the meter readers (Loveli and Whittington, 1993). Also, as noted by Loveli and Whittington (1993), the granting of licences by the public utility to public hydrant operators (who distributed water through vendors), and negotiations between utility staff and private water tankers for sale of water from the centralised supply system, generated lucrative profits for water utility employees. Many of these fees were unofficial and negotiated between water utility staff and operators, and in some documented cases, involved a monthly sharing of profits (Berry, 1982; Crane, 1994; Yayasan Dian Desa, 1990). Loveli and Whittington illustrate how the actual number of public hydrants licensed by the utility in Jakarta (a low number in comparison to a similarly sized city in Indonesia) turns out to represent a system of maximum illegal profit for the operators (1993). By restricting the number of (legal) public hydrants the utility thus informally regulated competition between hydrant operators and associated vendors, in order to ensure market monopolies. This would also raise the unofficial rents the utility was able to collect from public hydrant operators (*ibid*), and raise the 'bidding price' for licence applicants, as profits were virtually guaranteed. Not coincidentally, the very small number of public hydrants installed over the New Order government period to serve low-income areas of the city was supported by a government rationality labelling urban poor populations as undesirable, and urban poor settlements not to be encouraged through the provision of basic services (cf. Kooy and Bakker, 2008a).

One is tempted to relate these established informal practices between water hydrant operators, water tankers and water utility staff to the unexplained cancellation of all 2800 public hydrants scheduled to be installed as the sole pro-poor element of the PJSIP, but there is a more important point relating to the co-constitution of formal/informal water supplies. These informal practices between utility staff and water hydrant/water tanker operators limited the possibilities for centralised supply. The illegal profits lowered official revenues and created disincentives for network extension to these areas, while informally regulating the conditions for the so-called informal sector (degree of competition, regularity of bulk supply). This contrasts the development narrative in which the informal is understood for how it fills the voids of the formal system, rather than the other way around: formal systems enter into voids of the informal. Therefore, although following the PJSIP project, the World Bank's 2004 background sector report on urban water supply infrastructure in Indonesia finally admitted the permanence of the presumably temporary informal water sector, it still fell short in its understanding. Stating that "two significant areas of activity have developed in parallel to the investments in centralised network water supply – communal or private self-provision and informal sector services around network and groundwater supplies" (World Bank, 2004: 2), the Bank still misses

the point. Their development was intimately connected and intertwined under the political context of the New Order era, not two separate strands of parallel growth.

Both the supply and demand for the so-called informal sector were, in fact, integrally tied to the centralised network: water production capacity expanded during the 1970-1990s, but formal distribution pipes limited circulation to economically productive areas in the city. This ensured a 'captive market' in areas of the city where the piped network did not extend, groundwater was not of a sufficient quality (brackish or saline), and/or residents were not formally able to access the centralised network. Many of these areas were in the northern part of the city, which is still the area of the city with the highest concentration of urban poverty. Coding many urban poor residents as 'illegal' (due to lack of land tenure documentation or residency permits) justified both the non-provision of public water to the urban poor,<sup>7</sup> and secured a profitable market for water through a system of water hydrants, tankers, and various middlemen who were connected to, licensed by, and formally and informally regulated by water utility staff (Berry, 1982; Yayasan Dian Desa, 1990; Server, 1996). The New Order state therefore tacitly condoned informal water supply to some residents of the city by approving the use of public office for private gain (Roy's zone of exception), while simultaneously coding an informally housed urban poor population as illegal to rationalise lack of provision of public water services, and restrict the distribution of benefits from New Order economic growth.

### **Informality located in spaces of underdevelopment**

The second assumption embedded within the project design was that informal water provision was only equated with a 'lack of development'. Residents relying on informally secured water supply were presumably living in low-income settlements, and were the urban poor. However, this overlooked the informal practices by utility staff and middle/upper income residents which led to a large number of illegal connections. In some cases, the water utility staff provided network connections to households who thought they were being legally connected: the connections had the full semblance of legality, as households were billed, and paid, monthly bills for water use, but the revenue went directly into the pockets of those staff who connected them (Berry, 1982). In other cases, the households were also participants in the informal transactions, requesting the connection, or negotiating a connection in a low-pressure area to a high pressure water main rather than the tertiary pipeline. The close of the PJSIP project revealed the extent of these tacitly condoned illegal connections, as all of these previously illegal connections were suddenly converted to legal status, achieving the project target of an additional 234,000 connections (World Bank, 1998).<sup>8</sup> This indicates that the connections happened in areas where the network was already established, and could be legalised – therefore, they were not in areas of the city where no tertiary networks yet existed (by and large correlated with urban poor settlements), and had the requirements of residency permit and land tax payment documents held by the middle class.

### **Informality as a temporary, and transitional form of access**

The third assumption embedded within the PJSIP was the linear correlation it made between network expansion and new connections. The project presumed that expanding physical access to the network

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<sup>7</sup> For a connection to the piped network households need to have a citizenship card for Jakarta and a document which shows that they have paid their Land and Building Tax. Many of the poor do not have these documents because they do not own the land they live on, and/or they have migrated from outside of Jakarta without having a job in the formal sector (required to get a citizenship card).

<sup>8</sup> This was motivated by the transfer of management from the public utility to the private-sector operators. The closely connected individuals we interviewed, hypothesise that the utility managers did not want private-sector operators to be able to get credit – and meet their performance targets – for these connections.

was all that was needed to have residents switch over from other supply strategies, as the centralised network was the urban ideal. This overlooked the percentage of Jakarta's unserved population who were already modern, but not connected to the network. Given the gradually declining water quality and service levels of the centralised piped system throughout the 1970-1980s as a result of under-investment in operation and maintenance, the public water supply network was not seen as the modern standard of the city for many of the middle and upper class residents who actually had the option to physically connect. Informal practices in groundwater licensing and regulation facilitated the transfer of many households to this as a primary source (Braadbaart and Braadbaart, 1997), with piped network water as a back-up source. This practice continues to frustrate the achievement of the urban infrastructural ideal in the contemporary city, and indeed – the achievement of profits by the private-sector water utility operators. In 2006, 15% of the total household connections were identified as zero consumers.<sup>9</sup>

Shifts to groundwater use were also supported by the growth of high-income residential enclaves and suburban 'new towns', themselves facilitated by informal practices in land development policies tolerated between Suharto-connected companies and government agencies (spatial planning, land registration) (Dowell and Leaf, 1991; Leaf, 1996; Han and Basuki, 2001). Some of these elite residential areas were located within the network coverage area, but residents drew largely groundwater supplies instead. Others moved outside of the network area, as opting out of public water networks occurred parallel to opting out of public transport, and onto private toll roads to access private housing estates on the urban periphery (Leisch, 2002; Firman, 2004). Under the rationality of the New Order, obedience to the authoritarian regime would ensure personal benefit from high levels of national economic growth, providing sufficient wealth to enable 'good citizens' to opt out of public services. Although the private-sector contracts stipulated a new regulation of groundwater use, and efforts have been made to force groundwater users within the network area to switch to the centralised system, this is difficult to enforce and has been only partially successful (Colbran, 2009). Groundwater abstraction in Jakarta has been increasing consistently, with withdrawals from deep wells beyond their legal limits (Kagabu et al., 2012).

### **Informality as the result of a lack of development**

Finally, yet most fundamentally, the project presumed that the New Order government had the ambition of establishing universal access to the centralised system. In contrast, the Indonesian government had never been the provider of water to all citizens, and under the New Order authoritarian government of General Suharto, it had never had the target of universal access (Kooy and Bakker, 2008a). Citizenship in Indonesia was only ever very tangentially equated with access to public water supply, and residents in Jakarta had long been customers of various providers, and various sources (Abeyasekera, 1989).<sup>10</sup> Within the New Order government, national economic development was the highest political priority (Robison, 1990), and this guided the development of the city's water supply system. The limited investments made into urban water supply infrastructure in Jakarta were

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<sup>9</sup> These are residents who are connected but consume less than 10 m<sup>3</sup>/month for three consecutive months. In 2006, there were 110,000 of these zero consumption households – approximately 15% of the total number of current network customers. In a minority of the zero consumption households (14%) the reason was lack of pressure in network pipes to receive sufficient supply, but the majority (86%) chose not to use it even though they did have access (Palyja, 2006; TPJ, 2006).

<sup>10</sup> In the immediate postcolonial period, the Old Order government of Sukarno had sought legitimacy and demonstration of independence through programs of public infrastructure development, including expanding production capacity of city's water utility. However, piped water supply was intended as an aspiration for the nation, equated with the promise of development yet to come, and therefore limited to elite and internationally visible spaces in city rather than intended as the norm for all (Kooy and Bakker, 2008b).

clearly aimed at generating revenue rather than providing to low-income urban areas,<sup>11</sup> with the stated mandate of the public water utility to support economic growth (PAM Jaya, 1992). Revenues of the utility systematically went to the municipal government, rather than being reinvested into maintenance, or network expansion (World Bank, 1990). Under the long New Order reign, the centralised water supply network only expanded into profit-generating urban spaces, such as higher-income residential compounds, and industrial estates (Kooy and Bakker, 2008a).

In light of the ways in which the city's water supply had historically been used to support economically productive activities in the city, specifically private-sector enterprises connected to the Suharto network, and in light of the ways in which economic growth in Indonesia was intimately tied to the political elite through a system of crony capitalism, the linkages between PJSIP and the premature privatisation of Jakarta's water supply are more than 'parallel activities', as described by the World Bank (1998). Liberalisation policies in Indonesia in the 1980s had already provided the opportunity for a rapid expansion of the business interests of members of Suharto's network<sup>12</sup> and private-sector participation in the water sector followed this trend: two international firms partnered with members of two of the most important conglomerates in Indonesia – Salim Group (run by Bob Hassan, a crony of President Suharto) and Sigit Group (run by Sigit Harjojudanto, Suharto's eldest son) (Braadbaart, 2007). The process of awarding the contract for Jakarta's water supply was characterised by 'collusive corruption' rather than a public tendering process, and was eventually signed by the order of the President despite protracted dissent from the utility (*ibid*). Creating a zone of exception to allow private-sector contracts to go ahead despite their contravention of existing legislation (Harsono, 2003) can be seen as merely the final practice of informalisation by the New Order before its downfall.

### **Persisting informality**

The story of Jakarta's water supply since 1997 has been well documented (Harsono, 2003; Braadbaart, 2007; Bakker et al., 2008) and is still unfolding. Although the contracts for Jakarta were expected to be lucrative for both local and international partners, this was based on the assumption that the millions of unconnected residents in Jakarta were potential customers. In reality, not all residents are actually thirsty for piped water, and profits have, like in other cities of the Global South, been much lower than anticipated. In 1997, Thames Water withdrew from the contract and was replaced by Aetra, a Singapore-based consortium of Indonesian investors. In 2006, Suez sold 49% of its shares,<sup>13</sup> and is attempting to exit the contract and sell its shares to Manila Water, although this is not yet approved by the government (Jakarta Post, 2012). While the inability of the private-sector operators to meet performance targets for network extension and new connections, and subsequently realise profits is the product of a complex of social, economic, political and ecological factors (see Bakker et al., 2008), the legacy of New Order informalisation has no doubt contributed to these. I lay out the evidence in the following paragraphs.

First, the large numbers of zero consumer network customers, and refusal of many high-income and commercial consumers to switch from groundwater sources, coupled with lack of regulation of the groundwater sector, have meant that informalisation continues to shape the possibilities for network

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<sup>11</sup> The only large scale water supply infrastructure investment during the New Order period was the domestically financed Pulogadung water treatment plant (WTP), completed in 1982. Pulogadung was built to serve the Pulogadung Industrial Estate, an area of the city that Suharto had targeted for the initiation of the New Order strategy of industry-led economic growth. While Pulogadung's production capacity was never been fully utilized (Jaya Raya, 1991); the distribution network in eastern Jakarta remained limited to industrial areas (Argo, 1999).

<sup>12</sup> Robison and Hadiz (2004) document how members of Suharto's network ended up owning major interests in key sectors (roads, car manufacturing, telecommunication) as state-led economy was liberalised and deregulated to promote private-sector growth.

<sup>13</sup> Bought by one of Indonesia's largest conglomerates, PT. Astratel Nusantara.

expansion. Simply put, due to the conditions of the contracts, the inability of water supply operators to connect upper-income and commercial consumers reduces its ability to connect lower-income customers,<sup>14</sup> those that in theory would most likely benefit from having additional options for water supply due to lower per volume unit costs and better water quality from piped water.

However, in initiatives targeting connections for the urban poor supported by development financing, the 'thirsty poor' have also proved an elusive population to connect and pro-poor urban water supply projects have so far been able to establish far fewer connections than planned.<sup>15</sup> In one community in North Jakarta, historical grievances against the water operators (both public and private) for the poor quality of water supply<sup>16</sup> supported the informal practices of illegal hydrant operators and local water operators and severely delayed the expansion of the network through an Output Based Aid project<sup>17</sup> (Padawangi, 2011). Local political support for the pilot evaporated after the network of illegal hydrant operators, informal leaders, and religious leaders opposed the project and threatened utility staff. Protracted negotiations were unable to resolve the conflict until the utility agreed to hire the local leaders to act as their representative in the community (Menziez and Setiono, 2010). There is no further information given in project documents as to what this representation involves, or what payments are made, and gives rise to speculations of a pay-off by the utility to enable network expansion. Although this is only one example, it gives an indication of further challenges ahead, as it is the only initiative to date taken to serve the large population of lower-income residents in Jakarta who are coded by the state as illegal occupants.

Other lucrative informal practices have also been more difficult to eradicate than presumed. While some illegal networks drawing water supply from the centralised system were detectable through the monitoring of district meters, other are difficult to detect as many illegal connections maintain all the semblances of legality, outfitted with the standardised diameter of pipe materials, and even water meters recording consumption (see 'Sweeping Operation Against Illegal Connections', JWSRB 22 October 2007; 'Water is going down the drain', Jakarta Post 6 September 2002; 'New investors, old problems in water industry', Jakarta Post 19 January 2007). In 2006, the private-sector operator for the western half of the city reported estimates of 40,000 illegal connections, which comprised 80% of the unaccounted for water in the western half of the city (Jakarta Post, 19 January 2007). A six month campaign, assisted by the police, was able to shut down only 1% of these. In 2011, a staff member from the private-sector company managing water supply for the eastern half of the city predicted that 70% of their non-revenue water is still due to illegal connections (Padawangi, 2011).

In conclusion, defining informal water supply in opposition to the urban infrastructural ideal – backward, undeveloped, and transitory – obviated the ways in which different socio-economic classes relied on different kinds of informal practices based on their spatial location (access to particular sources), ability to pay, and associated sanctions. This legacy of informality has shaped the conditions of

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<sup>14</sup> Operators are paid based on water volume delivered in US dollars, not water charges and revenue collected in local currency, so the subsequent impact of the Asian financial crisis on the currency devaluation created a period of shortfall between revenues earned – in Indonesian Rupiah – and what is owed to the private-sector operators in US dollars. This has required the maintenance of an average tariff rate, which requires balancing the number of connections between tariff bands. Effectively, it requires enough middle-/upper-income consumers to support lower tariff band consumers and is limiting the number of new connections the utility can make.

<sup>15</sup> Less than half of the total 20,000 new connections for the urban poor under the World Bank Output Based Aid project in Jakarta were achieved (Menziez and Setiono, 2010).

<sup>16</sup> Households in this neighbourhood had been protesting since 1997 when household water supply from connections to the centralised system ran dry. A lawsuit was filed in February 2010 (Haryanto, 2010).

<sup>17</sup> The Output Based Aid project financed through the World Bank was in effect a public subsidy for the British- and French-owned private-sector water operators in Jakarta, who were struggling to meet performance targets and had not been able to demonstrate any pro-poor management gains following the Asian financial crisis and contract renegotiation in 2002 (Menziez and Setiono, 2010).

possibility for network expansion, and has maintained a landscape of unequal access to water within Jakarta. The frequent statement justifying development interventions (lower-income residents not connected to the network pay high per-unit volume costs for clean water) is true, but there are additional inequitable outcomes, outside of the network system. Shallow groundwater sources used by low-income residents for non-potable uses are drying up with the continued over-extraction of deep wells by industry and commercial users (Delinom et al., 2009), and the poor quality of surface water sources (used for washing, cleaning) is the result of continued illegal wastewater practices by industrial and commercial water users (Fulazakky, 2010).

### **RE-CONCEPTUALISING INFORMAL WATER SUPPLY AND DEVELOPMENT**

The Pam Jaya System Improvement project shows how the mainstream development narrative, positing a linear trajectory towards the urban infrastructural ideal, led to a particular framing of informality in the water sector in Jakarta, Indonesia, as a transitional phase in the development process. However, as documented above, the development of Jakarta's centralised piped system has instead been compatible with, and in fact required, the persistence of informality in the sector. Relations of rule under the long New Order period (1960-1998) followed a trajectory of urban development which operated through informal practices – in the water sector (Loveli and Whittington, 1993; Braadbaart and Braadbaart, 1997), land development (Leaf, 1994), housing (Firman, 2004), and other urban services (Server, 1996; Robertson-Snape, 1999). Concurrently, the relationship established between urban governance and urban infrastructure under the New Order dictated a particular politics of access, one that required and perpetuated a variety of informal practices of water supply by state and non-state actors. These served both urban poor and economic elites, through networks that were socially, economically, and politically connected to the centralised network system, if not always physically.

For Jakarta, this particular historical context has meant that securing water through informal practices was made more or less necessary, or preferable, for different population groups (Kooy and Bakker, 2008b). Informality in Jakarta's water supply is therefore not an emblem of the lack of modernisation, or state (or private sector) failure, but is a function of the historically mediated, political, process of development. The analytic of governmentality allows us to see these informal practices as emerging from both relations of rule, and resistance to rule. It also highlights that while informality is a discursive construction, it has material effects in the types of practices it condones and/or denies. The illegal connections and informally regulated access to public hydrant licences within the rationality of the New Order government carried repercussions for the expansion of the centralised piped system: high rates of unaccounted for water, lower revenues, and loss of bulk water within the system limited the possibilities for expansion. Concurrently, lack of maintenance and rehabilitation of the centralised system legitimated under the New Order's approach to public (vs. private) services encouraged the development of an additional informal water supply practice: high rates of unregulated groundwater withdrawal. Meanwhile, responses of the urban poor populations living in areas of the city denied access to piped water under New Order rationality continue to take its toll. High rates of illegal connections serving low-income areas still persist in the contemporary city.

In addition, the experience of Jakarta illustrates the results of mainstream development processes which ignore the historically mediated, political process of everyday access to water. As the World Bank project continued to implement an ideologically informed trajectory of development towards the urban infrastructural ideal, it obviated the politics of access in the city which promoted informal water supply practices. The impact of this inability to account for ways in which informal water practices were made more or less possible by New Order government development strategies resulted in the consolidation of an even more uneven urban waterscape under the private-sector contracts.

Finally, using this analytic of governmentality together with Roy and AlSayed's (2004) understanding of informality as practice illuminates the broader politics of access across the urban

waterscape. Attending to the ways in which relations of rule, and resistance to rule, continue to produce informality in the urban waterscape should go beyond the measures of inequity visible in the rates of connection to the centralised piped network. We now need to examine the politics of access to water evident in the variety of practices used by different urban populations to establish, and keep secure, other forms of extraction, distribution, treatment, and discharge evident in the heterogeneous waterscapes of the urban South.

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