



Using Water Diaries to Conceptualize Water Use In Lusaka, Zambia

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Abstract

Most work on water in Africa focuses on issues of water access and quality in contexts discursively delimited as ‘Africa’s water problem.’ This paper identifies some of the shortcomings of this dominant approach and introduces water diaries as one promising methodology for overcoming them. The paper describes the value and challenges of using water diaries for qualitative household water research, with reference to a research project in Lusaka, Zambia. Water diaries were used to investigate how mothers and domestic workers in Lusaka develop alternative relational tactics, aesthetics and ethics around water, in specific technical water environments. The paper concludes that water diaries can be used productively to better understand the diversity, stability, and significance of urban water practices in Africa today.

Introduction

Two themes drive much of the research and policy-related work on water in Africa: water access and water quality. The importance of these themes is self-evident, but by themselves they present a rather narrow framework for conceptualizing and investigating the varied



meanings and uses of water in people's social lives, in relation – for example – to industrial processes (e.g., poultry-processing plants), commercial enterprises (e.g., hair salons), and consumption routines (e.g., purchasing bottled water on the way home from work). Poultry plants, hair salons and routines involved in purchasing bottled water are three of many African contexts where the use and meaning of water is connected in specific ways to work, entrepreneurship, opportunity, personal image, consumerism, mobility, and so on. To better understand these relationships around water, research approaches are needed that can elicit the ways that water practices are socially-constitutive and sustaining, diverse within a city, and subject to change in response to other social factors.

The purpose of this paper is to identify some shortcomings in the current preoccupations regarding water in Africa, introduce water diaries as a research approach that may help overcome some of them, and describe a research project in Zambia that is using water diaries as the primary methodology. Water diaries allow participants to generate topics through their entries, and they query everyday life at intervals, and thus can be useful tools for qualitative researchers interested in practices and meanings associated with water. A well-designed water diary can elicit various genres of self-narration, illuminate practices that would be difficult for a researcher to observe in person, and suggest differences in environments and norms relating to water. Like any other tool, however, diaries also present challenges for researchers. In the context of Lusaka, where around 68% of the population 25 years and older have not completed secondary school (UNDP, 2013, 17), an important one is the need for diarists to be comfortably literate. Nevertheless, my own experience suggests that diaries are a particularly good resource for studying water in African cities, because they provide data useful for developing a better understanding of how different water regimes co-exist within cities, and how stable water practices are shaped in urban African contexts today.

Existing Water Research in Africa

A preoccupation with water quality and accessibility has characterised household-level studies of water in Africa since White, Bradley and White published their pioneering *Drawers of Water: Domestic Water Use in East Africa*, in 1972. The work set the tone for household water research on the continent for the next four decades (Thompson and Cairncross, 2002, 61), and provided the context for the emergence of four main research strands: (a) the relation between poverty and access to water (e.g., Hope, 2006; Dungumaro, 2007, 2009; Budds and McGranahan, 2003; Moriarty et al., 2004); (b) similarities and differences among access and quality of water in urban and rural settings (e.g., Hall et al., 2014; Sugita, 2006; Boone, 2011; Dagdeviren, 2008); (c) the particular historical, geographical, and infrastructural political contexts within which water scarcity is constituted in specific African locations, as a way to deconstruct the supposed 'naturalness' of water scarcity (e.g., Dagdeviren, 2008; Van Koppen, 2003; Swyngedouw, 2003/2004; Loftus, 2007, 2009; Myers, 2006; Maganga, 2002;

Budds and McGranahan, 2003; Kjellén, 2006; Nilsson, 2006; and Nilsson and Nyanchaga, 2008); and (d) Africans' 'agency' in dealing with water environments that are generally regarded as less than ideal (e.g., Dungumaro, 2003; Manzungu *et al.*, 2013). Of these four themes, only the final one dealing with 'participation' or 'agency' begins to ask fresh questions about water in social relationships at a person level. However, even these authors focus primarily on water's availability and quality, and ignore the greater breadth of water practices in Africa.

The narrowness of African household water use studies is also reflected in their methodologies, which have been mostly designed around economic indexes, quantitative analysis of national survey information and some historical analysis of legal structures. By taking this systems-level approach, current scholarship is missing an opportunity to explore how water networks are conceptualized and lived in everyday practice in Africa. The problem is one of narrow questions, and of methodologies that do not readily support new questions.

One of the implications of this is inadequate conceptualization of the 'stuff' of the waterscape – the technical artefacts that support and frame water activity, including indoor water taps, outdoor standpipes, wells, water kiosks, containers for hauling and storing water, water meters, water purification devices, and the infrastructure of water service delivery that make specific water environments. Water scarcity remains a problem in many urban African neighbourhoods, but not everyone in the same neighbourhood experiences scarcity. The technical diversity of water environments in African cities such as Lusaka requires better conceptualizations of water practices within urban relationships. In Zambia, water processes have not been "literally black-boxed into unobtrusive metropolitan systems, standard domestic fittings and daily household routines" (Sofoulis, 2005, 446), as one might say about some other cities or countries. Instead, the shifting assembly of technologies, skills and user expectations are readily visible in the myriad water differences and water failures. This context provides an opportunity to investigate how water practices are formed with relation to the physical, technical environment, and to other users.

To summarize, empirical social science research on water use in Africa has thus far focused on priorities largely set by *Drawers of Water*; studies have demonstrated water shortages and quality challenges from legal, political, historical, and socio-demographic perspectives. In doing so, they implicitly acknowledge what Philosopher Ian Hacking describes when he writes that ways of naming or classifying people via laws, education campaigns, job categories, political parties, etc., open different possibilities for "what to do and to be" within a given context (Hacking, 2004, 285). Understanding the ways that water infrastructure design, water safety messages and regulations classify and 'name' people in a city like Lusaka – and to what end – is important. But this quantitative, big-picture research on water resources for households has not really recognized the importance of technical artefacts in this context or engaged questions about how water is relationally important for urban dwellers. We need new research

approaches that are better able to elicit water practices in urban Africa, to situate water practices as constitutive of a variety of social possibilities, and to account for the significance of technical artefacts in enabling and constraining these possibilities.

Using Water Diaries

One method with a lot of potential in African contexts (and elsewhere, as others have shown: Sofoulis, 2005; Lahiri-Dutt and Harriden, 2008; Wutich, 2009) is the use of ‘water diaries,’ or records of daily water activities. Diaries more generally are an intensive longitudinal method and useful for investigating both inter and intra person questions (Bolger and Laurenceau, 2013). They are certainly not new to the social sciences; daily diaries have been profitably used in many research contexts (Belli *et al.*, 2009; Bolger, 2003; and Wutich, 2009 describe some), and diaries were used in household water research in Australia (Sofoulis, 2005). Diary methods offer several strengths, including that the exercise of tracking behaviour or beliefs over time, and as close as possible to when they occur, can be more reliable than information recalled in interviews (Bolger and Laurenceau, 2013; Wutich, 2009; Belli *et al.*, 2009). In water and energy contexts, diaries have been used to raise participants’ awareness of consumption patterns and to promote conservation behaviours, either directly or as the basis for policy changes (Mullaly, 1998; Sofoulis, 2005; Allon and Sofoulis, 2006). More importantly for my purposes, water diaries can yield data that is useful for understanding the diversity, stability, and significance of urban water practices in Africa today. One of the benefits of longitudinal methods is their ability to demonstrate change. *Drawers of Water* eventually became a longitudinal study when the original 1972 study sites were re-visited and the results published in 2001 (Thompson, 2001). Among other findings, the 2002 results highlighted a decline in urban water infrastructure services since the first study. While long-term longitudinal studies such as *Drawers of Water* show that things have changed and how much, shorter term longitudinal methods such as diaries can yield insight into how things change, by narrowing the temporal scope and the research object to individuals and their daily and weekly rhythms.

The particular water diary approach I used in Zambia was designed to learn how women in Lusaka develop alternative “relational tactics,” “aesthetics” and “ethics” (Michel de Certeau in Eckert and Jones, 2002, 7-8) around water, in the context of specific technical water environments. The premise of the research project is that everyday water technologies are an important formative element in the various water environments that co-exist in a city like Lusaka. These environments, including the expectations they reveal and the water practices they enable or foreclose, open different possibilities for the meaning of water in the city. I use the diaries to investigate how water habits and routines are sustained alongside water technologies.

My research focuses on women's water practices because of the disproportionate time women invest in water practices (Ray, 2007; Wajcman, 2010). It is estimated that where water is not available on the premises, women in sub-Saharan Africa spend around 16 million hours each day collecting water, compared to men's 6 million hours and children's 4 million hours (UNDP, 2012). Diaries were collected from two groups of women: mothers with children at home, and domestic and hospitality workers (who participate in waterscapes at home and professionally, often doing the same types of work in both places, via different means).

Designing the Water Diary

The water diary method I used in Lusaka in February and March 2013 was refined after a pilot data-collection round conducted in 2012. I modelled the pilot water diary study on one used in Australia (Sofoulis, 2005), where householders were asked to write about their own observations, reflections and water habits. The diary included a chart portion, which was kept over waking hours for seven days, and aimed at soliciting a gender-disaggregated picture of how much water is used, and for what purpose, in the participant's family or household. This information was complemented by open-ended questions about what water and sanitation technologies they use, and how they access their water. I distributed this diary in packets together with an information sheet, instructions, a consent form, and the questionnaire. Most participants in the pilot study lived in Garden Compound, a low-income peri-urban area of Lusaka. A few participants were interviewed in person, using the questionnaire, but most selected questions that interested them and answered independently. I distributed 40 packets and 32 were returned. For this preliminary work, I relied on opportunistic and snowball sampling.

When I began to work with the data from this pilot phase, I realized that the approach could be refined in two ways to better suit my goals. First, the diary asked about the daily water activities of everyone in the household, but I was primarily interested in women's water practices, and in the intra-person analysis possibilities of an approach focused on individuals. Although it makes sense to understand women's water practices in relation to those performed by others in a house, the design seemed to put the household, rather than the person, at the centre of the research, which did not align well with my interests. Second, I wanted to elicit narratives about water environments and practices, and the chart-style diary was too structured to support that.

In my second round of data collection I eliminated the rigid chart in favour of an open-ended diary format. This time, I started with semi-structured introduction interviews about participants' water environments (participants were recruited again via opportunistic and snowball sampling). I left each participant a notebook with writing prompts to support daily entries about anything relating to water and water technology that she wished to record. In addition, I asked participants to keep more detailed records of their 'water moments' for just two days during that

time. This part of the exercise was supported with a three-column form (see Table 1) on which to document each water moment, who or what was involved, and where they were. These water diary packets were distributed in neighbourhoods across Lusaka, to a broader socio-economic cross section than in the pilot study. All diary packet documents were written in English and Nyanja, and diarists were encouraged to write in any Zambian language they wished. They all wrote in English, but interviews were conducted in Nyanja and English, with a research assistant translating.

<p>Nthawi na Manzi</p> <p>Kukamba pali manzi, ngati mugula, chamene muyasebenzesela, hygiene navingangu. Nanga manzi yamabwela bwanji pakomo lamu?</p> <p>Water Moment</p> <p>Conversation, activity, purchase, specific chore, hygiene, etc. How did water show up?</p>	<p>Nindani olo panepne nichani chamene chilipafupi naimwe?</p> <p>Kodi munasebenzesa chani ndipo munakamba nabandani pali manzi?</p> <p>Who and What, besides you?</p> <p>What technology did you use? Whom did you interact with over water in this instance?</p>	<p>Nthawi ndi kwamene mulili</p> <p>Kunyumba, kunchito, kotapa manzi 7 ola, 10 ola mwachidule</p> <p>Time and Location</p> <p>Home, work, kiosk, NWASCO, 7 am, 10 pm, etc.</p>
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Table 1 Two-Day Water Chart Instructions

Lusaka's water diaries

Diarists in Lusaka established a range of topics in their entries that suggest fresh avenues of inquiry for water research in Africa and elsewhere, including managing technology, enjoying water, conflict over waste, bathing preferences, back up water supplies, parenting, and neighbourliness. For the sake of example here, I include several extracts from two diarists writing about baths:

Diarist 1

Day 2 - Woke up a bit late today. Still felt sleepy after a long night shift at work. 30 min late makes a difference with water flow. The good part is the outside tap always has water, so that makes it easy to draw in a bucket and have a warm nice bath. Hot water was available this morning from my [illegible] geyser.

Day 5 - Rush hour as usual, had 3 lady visitors at home meaning there was a queue for who goes first to the shower. This means I used more water than

normally and am happy because at least today my water charge is normal. Ladies take longer in the shower plus they want to have a nice cooked breakfast.

(Claudia, 2013)

Diarist 2

Day 7 - We use a lot of water when washing my face, for cleaning in the house, for cooking for bathing and for drinking. As for me I think we use a lot of water when bathing cause for me I like using both taps when bathing and lot of water is used when bathing in a bathtub than using a bucket or a washing dish.

Day 13 – [...], when washing I use much water cause I like when washing using a bathing tub and I open both taps which are in the bath room. So I think and use much water but I do not know if I have used much water or not cause we do not have the meters.

(Pauline, 2013)

The value I see in these entries is the way the practical organization of an activity such as bathing is revealed to be important to the nature of the experience. Technology features in the diaries, but not primarily as a guarantor of water in the personal space of the home. Rather, technology provides a means to manage the bathroom by altering customer relationships and providing information about others ‘out there’ against which to measure one’s practices. Elsewhere, the diaries also suggest an important relationship between water practices and the establishment of trust in Lusaka’s water environments. Anthony Giddens writes that “attitudes of trust, or lack of trust, toward specific abstract systems [such as water infrastructure] are liable to be strongly influenced by access points” (Giddens, 1990, 90-91). In these diaries, the back-up practices described seem to speak to the unpredictability of water access points and to the ways that water stability is achieved regardless. The ways in which urban water practices are shaped by trust relationships, as well as the ways in which baths become enjoyable activities through technical organization, are two trajectories our research group is developing based on these diaries.

Beyond what diaries can reveal about water practices in Lusaka in particular, water diaries as a data collection method represent several opportunities and challenges for household water research more generally. Some of these are specific to African urban research contexts. First, in the limited contexts where water diaries have been used before, there is one dominant water regime (Sofoulis, 2005). People get their water and dispose of it through very similar (if not identical) means, and there is a monopoly on the supply side. The technical infrastructure inside consumers’ homes is also predictably similar; there may be variations in the number of taps, showers, toilets, outside hoses and so forth, but the technological devices that support household water practices are largely consistent. But in Lusaka, the plurality of water regimes – including different technical, financial, and

social environments that complement and compete with one another – means that practices shared across the city are enacted in more diverse ways than in most European or North American cities. People have more options for taking up practices in Lusaka, but also feel and react to personal economic constraints that their neighbours may or may not share. Water activities in these contexts may appear unstable or disorganized. One strength of the diaries for urban research in developing countries is that they can empirically reveal the ways that water stability is maintained through practices that otherwise are likely to be obscured. They also suggest where practices and the meanings associated with practices diverge across the city.

In African cities, empirical data gathered in diaries may be difficult to access via other collection means that work for water research in other cities. User-end technical data based on meter readings, for instance, is not uniformly available in Lusaka. Even taps that have meters are often shared among four or five houses, making it difficult to measure individual household use. The diary format solves some of the practical challenges of gathering empirical data in household water research in a city like Lusaka.

That said, the water diary format also introduces challenges. Researchers must design a diary format coherent with their research aims – either time based (and then fixed interval or random, or some combination?) or event based (then what defines the event?) or a combination (Bolger, 2003). In a time-based diary design like mine, the diary interval should be carefully chosen to fit the phenomenon of interest (Bolger, 2003, 590-591). Too far apart, the data may suffer from unnecessary recall bias or be too burdensome for participants; too close together, and the diary will fail to show longer-term processes as they unfold over time. A diary kept each day, for example, chronicles the inconvenience of broken pipes, frustration with slow-moving landlords, and extra work until the leak is fixed in ways that an hourly or weekly interval would not.

Diaries require participants to read and write, or have someone available who can help them. In some research contexts, this may limit participation in a diary-based research project in ways that could omit certain practices or experiences. Even where literacy is not a challenge, the prolonged, high engagement that diaries require of participants introduces uncertain compliancy (Bolger, 2003; Kaun, 2010). The need to write regular entries on similar-seeming activities can encourage diarists to write abbreviated entries rather than developing more thorough narratives about events, and if they miss an entry, they may go back and ‘fill in’ what they missed (undermining one of the purposes of using diaries) (Bolger, 2003). A monitoring system to verify diary compliance and encourage participants to stay engaged with the diary can limit these problems.

Diarists also tend to interpret the diary genre in dissimilar ways (Kaun, 2010), and that was certainly the case in Lusaka. Some writers listed water volume by activity, some wrote narratives directed at me personally, some returned abstract

mini-essays on water issues in their communities. For some research goals, it would be profitable to provide training for diarists so that results are more similar and aligned with the analysis plan. In this study, however, preserving this interpretive flexibility was helpful. The variety of actions recorded, associations and intentions that are expressed in the diaries support my purpose in using diaries in the first place: they generated fresh topics in connection with household water.

How participants talk about water brings us back to the way that water in Africa is discursively framed. Water diaries invite researchers to think outside (or at least at the edges) of the paradigm of ‘Africa’s water problem.’ If we take a step back from this pervasive formulation, different and potentially more interesting problems emerge. To date, water access and quality have guided the research agenda: how many people have access, how many hours a day, and is the water safe? Those are important questions, and relate to important Millennium Development Goals indicators. “Yet,” Garth Myers (2006, 305-306) writes about Lusaka, “the politics of place can be so intertwined with those real and present points of crises as to demand an understanding of cultural and historical geographical experience [...]” Water diaries can provide a better understanding of how people construct and reproduce the stable water practices that sustain the city specifically because diaries can help us see how water is significant in relationships (Shove, 2014). This in turn may contribute to insights about exclusionary water politics and differences in a city which ultimately converge in ‘water crises.’ Water diaries can support analysis that takes the conversation about water in Africa in this direction.

Conclusion

If we are to move beyond conventional ideas about ‘Africa’s water problem,’ we need new approaches to conceptualizing and investigating the significance of water in Africa. In Lusaka, I have found that water diaries can elicit various genres of self-narration, indicate practices and meanings that would be difficult for a researcher to observe in person, and suggest differences in water environments and norms. Written diaries are, however, embedded in literary traditions, and researchers working cross-culturally or in contexts where literacy might be a barrier to participation need to especially work with this in mind. Wherever diaries are used, the genre is likely to be open for interpretation. Nevertheless, water diaries have significant potential to yield new insights into the diversity, stability, and significance of urban water practices in Africa today.

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