



ELSEVIER

www.elsevier.com/locate/worlddev

<http://dx.doi.org/10.1016/j.worlddev.2016.03.014>

Water Meters and Monthly Bills Meet Rural Brazilian Communities: Sociological Perspectives on Technical Objects for Water Management

COLIN ANDREW BROWN^a and JOÃO LUIZ PENA^{b,*}^a *FioCruz Minas, Centro de Pesquisas René Rachou, Brazil*^b *Universidade Federal de Minas Gerais (UFMG), Brazil*

Summary. — Lasting solutions for communities in need of improved water and sanitation services—notably rural ones—depend on a balanced consideration of what some have called natural, technical, and social factors. Worldwide deficits in access to appropriate water services in rural areas highlight the need to develop sustainable management models, which are increasingly being proposed with an emphasis on local user participation. The current research analyzes a case study of two rural communities in Northeast Brazil who recently began receiving water supply services through the SISAR, a state-affiliated organization underpinned by shared management with local actors. Using sociological frameworks based conceptually in Actor-Network Theory, the study's main objectives aimed to characterize what changes—if any—the application of the SISAR's model would produce upon local dynamics, be them wide-scale or intra-household. Field research was carried out over three months in 2014, in which the researcher interviewed a handful of professionals and several dozens of local residents during an extended *in situ* research phase. Our study finds that two technical factors (the water meter and monthly bill) were at the heart of key tensions and uncertainty for users in the new water management model. Lacking appropriate guidance, users acquainted themselves with these technical objects with what personal resources, interests, and intuitions they possessed. Users were without instruction on how the meter worked, how to understand the bill, and did not know that a price table even existed. Consequently, users revealed unknown qualities of these objects that countered the service provider's intentions to rationalize water use, and adopted attitudes and behaviors marked by subjective impressions of precaution and frugality. The findings show that technical objects have no self-evident qualities to users and, thus, users must learn or be taught how to interact with them in such a way as to produce desired outcomes. Rushed attempts at establishing low-cost, so-called participative models may indeed have heavy consequences. The most significant of which is an unfavorable climate for the formation of societies where informed individuals collectively possess the tools required to grasp the situations they live within and manage sustainable water supply systems. Awareness of one's environmental impact is predicated on knowledge of one's consumption. Thus, this research contributes to development-related discussions by demonstrating that producing particular user attitudes and behaviors on a mass scale vis-à-vis resource consumption requires regular efforts to understand and mediate the encounter between users and non-human actants.

© 2016 Elsevier Ltd. All rights reserved.

Key words — sociotechnical innovation, water management, environmental sociology, Actor-Network Theory, Latin America, Brazil

1. INTRODUCTION

Amidst concerted worldwide efforts to universalize access to water supply and basic sanitation services,¹ it is increasingly recognized that the obstacles in the way of achieving related internationally established goals are neither purely technical nor social. The pioneer efforts to provide sustainable water services to the world's citizens, such as the 1977 Mar del Plata Report, are explicit in emphasizing the need for “engineering and feasibility studies on projects ... based on a cost-effective technology appropriate to local conditions, with community participation...” (United Nations, 1977). Innovation in water supply and sanitation services has been an intensely researched theme since this era.² In years passed, a light has long been cast on technocratic—also denominated “top-down”—solutions that, although emphasizing on technological efficiency, do not endure for lack of consideration of what some have deemed “social” aspects.³ Thus, innovators or policymakers hoping to successfully “modernize” or “improve” a given society are increasingly aware that their “solutions” must retain a certain compatibility with otherwise organic, local modus operandi. The involvement of end users, in particular—“bottom-up” management—is often represented as a condition for success. Even major financiers like the World Bank have underscored the importance of ensuring

the participation of local, non-expert stakeholders in development projects as a prerequisite for loans.⁴

More recently, researchers influenced by Actor-Network Theory (ANT)⁵ and other “relational ontologies”⁶ have nuanced the tripartite social-technical-natural categorization of actors involved in water management and related innovations. For these researchers, so-called “successful” cases are often indicative of harmonious reconfigurations of an “actor-network”,⁷ which is to say the network of all relevant human and non-human actors in a given scope. Indeed, such research has unequivocally explained the benefits of considering the interweaving associations between “technical”, “natural”, and “social” actors. Similarly, the present research presents a case study analysis of a participative water management model in Northeast Brazil and its aspects of enforced metering and billing of users for water consumption. Discovering serious misunderstandings between users, water meters and monthly bills that led to harmful financial consequences for users, we join other such thinkers in beckoning policymakers and development project managers to incorporate this methodological perspective in their views of and plans for development. Notably, this requires including end users and

* Final revision accepted: March 3, 2016

local experts in the design, implementation and development phases of solutions in water supply systems. Indeed, with the recent recognition of the human right to water and the United Nations' ambitious efforts to extend water and sanitation services to all people by 2030 via the Sustainable Development Goals, the time is ripe to ensure that efforts to "modernize" or otherwise improve access to water does not actually put users at further risk.

Turning to our case study, Northeast Brazil has gained international attention since the 1990s for the prominence of water management models that are supposedly anchored in participatory principles, especially in its abundant, semi-arid rural territories.⁸ Yet, numerous studies⁹ have concluded that the specific types of participation in practice do not always reflect entirely democratic principles and do not always produce the promised outcomes. Indeed, local residents may become discouraged instead of empowered when they are merely allowed to sit in on esoteric conversations between experts and politicians. However, the interest of the Northeast Brazilian experience goes beyond these aspects. In the past few decades, the presence of adequate water supply services has rapidly improved in rural areas, notably via local distribution networks.¹⁰ A key characteristic of many of these services, one that is of relevance to discussions on the commoditization of water worldwide, is that they often demand user payment. Highly relevant in these developments, the example to be discussed in this article is the state-supported NGO, SISAR-CE (State of Ceará). Founded in 1996 via the state utility, CAGECE, it is Ceará's rising star and prime example of a bottom-up approach to providing low-cost water services to rural communities via local distribution networks that are mostly managed by local residents. Its particular management model is responsible for a number of significant modifications to user communities, but in this article we will focus on the actants involved (human and non-human) in user billing.

This subject is of particular relevance as the economic character of water supply services is at the heart of important discussions and controversies worldwide. The 1980s and 1990s saw the rapid expansion of neoliberalization and the privatization of water provision internationally.¹¹ Throughout the 1990s, the global anti-privatization movement grew worldwide, largely in protest of unmanageable price hikes imposed by private service providers.¹² In 2002, the UN Committee on Economic, Cultural and Social Rights laid the ground for the definition of the human right to water (and sanitation) via General Comment 15, and the human right to water was formally recognized by the General Assembly and Human Rights Council in 2010. Nevertheless, despite this apparent achievement, the UN organization still maintains that water services must be affordable whether provided by public or private actors.¹³

As an exclusive service provider to rural communities, the case of the SISAR is of interest to this debate. While rural areas are often neglected due to their high costs to service providers and little prospect for return, the SISAR's apparent emphasis on community involvement in systems management¹⁴—an aspect aligning the NGO with global trends of alternative management models¹⁵—appears to be a factor allowing the organization to provide services at a low cost. Given that this management model is predicated upon user payment for service (a novelty to many areas in the Ceará where water used to be supplied for free), this research was interested in analyzing the multiple changes that this model presupposed on user communities: on the one hand, from invoking community participation in management and, on the other, enforcing regular payment for water. The particular

findings presented herein focus on the role of particular technical objects (the monthly bill and the water meter) as potential vehicles of rationalizing change in the SISAR's client communities. It is concerned with the ways in which users apprehended these essential objects, the relationships that were ultimately not forged between some users and these objects, and the implications of this for the SISAR's goals of rationalizing water usage and promoting local participation in water systems management.

It should not be considered unusual to direct special attention to the problematization of encounters between humans and nonhumans, as opposed to those strictly between humans. Whereas humans can more easily explain their attitudes and inclinations, it is precisely because of communicative voids between human and nonhuman entities that orchestrated encounters between the two seem susceptible to so easily going awry—that is, from the perspective of the humans behind the orchestrating. In this case, the reasons behind users' poor appropriation of water meters and the monthly bill were also indicative of the reasons why increased local user participation in systems management was not attained either.

As Law and Callon (1992) point out, successful projects and institutions tend to more easily hide processes of inefficiency and potential failure. Therefore, in presenting our findings we aim to contribute to an expanding analytical framework¹⁶ for the description and understanding of user interaction with the necessary technical and natural entities involved in water provision. This article proceeds by describing the methodology used to obtain the findings. It then contextualizes the emergence of the SISAR in Ceará and its arrival in the communities under analysis. It follows by presenting the dynamics between users, the previously mentioned technical objects (water meter and monthly bill), and other relevant stakeholders (SISAR employees and local delegates). The discussion explores why local users did not unanimously adopt attitudes of rational consumers and engaged citizens in local water management. We conclude by exposing important sociotechnical difficulties to creating sustainable, participative water management services.

2. MATERIALS AND METHODS

The current research was developed over twenty-two weeks in mid-2014 as a part of the DESAFIO Project, whose overall objective was to research socio-technical innovations in water governance. The communities chosen were Andreza and Arataca, two neighboring rural communities managed via the SISAR for approximately one year when the research began. Given the conceptual stance adopted by the DESAFIO project, what with the binary designation of socio-technical innovations, Actor-Network Theory appeared to constitute a worthy methodological inspiration that would allow the research to tease out the meanings behind what some stakeholders might come to qualify as "social" and "technical" aspects of the SISAR's water management model. Thus, the questions that oriented this specific research study consisted in: understanding how the SISAR's particular water management model affected local life, what such changes consisted in and which actants were specifically responsible for them, who was most affected by such changes and in what ways, and if these changes were consensually considered to be positive or negative by all stakeholders involved.

Qualitative socio-ethnographical methods were applied consisting in a combination of bibliographical and documentary research, approximately 80 semi-directive interviews with a

Download English Version:

<https://daneshyari.com/en/article/7392535>

Download Persian Version:

<https://daneshyari.com/article/7392535>

[Daneshyari.com](https://daneshyari.com)