

Anke Schwarz

Demanding Water

A Sociospatial Approach to
Domestic Water Use in Mexico City

Geographie

Megacities and Global Change
Megastädte und globaler Wandel
Band 22

Franz Steiner Verlag



Anke Schwarz
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MEGACITIES AND GLOBAL CHANGE
MEGASTÄDTE UND GLOBALER WANDEL

herausgegeben von

Frauke Kraas, Martin Coy, Peter Herrle und Volker Kreibich

Band 22

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Umschlagabbildung:

Drinking water for sale at a local purification plant in the Ermita Zaragoza housing complex, Iztapalapa, Mexico City, 2014. © Anke Schwarz

Bibliografische Information der Deutschen Nationalbibliothek:

Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über <http://dnb.d-nb.de> abrufbar.

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Druck: Hubert & Co, Göttingen

Gedruckt auf säurefreiem, alterungsbeständigem Papier.

Printed in Germany.

ISBN 978-3-515-11686-2 (Print)

ISBN 978-3-515-11690-9 (E-Book)

*In memory of Guadalupe Hernández Oliver,
Jorge Legorreta, and Berta Cáceres*

ABSTRACT

In the essentially water-rich basin of Mexico City, water taps are now installed in most homes. Yet in many of the city's poorer neighborhoods in particular, water is supplied intermittently and taps often remain dry. How does such a socially constructed water scarcity affect water-related everyday practices in the home? And, more in general, what is the relation between urban space and domestic practices of water use? In accordance with these questions, the present study aims to explore how people's everyday practices are linked to urban space, understood as a social product always in the making. A sociospatial approach is employed, setting Pierre Bourdieu's Theory of Practice in conversation with a relational understanding of space. Rather than identifying a 'habitus of water use', this involves a reflection on the implications of Bourdieu's famous statement that the habitus makes the habitat.

The research design is based on empirical fieldwork involving a set of qualitative methods. As it is assumed that both past and current water supply conditions in the home are key parameters for domestic practices of water use, the sphere of the dwelling lies in the focus. Taking subjective experiences and everyday practices as a starting point, it primarily draws upon in-depth interviews, conducted at the interviewee's home to allow for a simultaneous participatory observation. A total of 53 residents from several neighborhoods in two different boroughs within the jurisdiction of the Federal District, Mexico City, were interviewed to provide a range of different urban living conditions. Through the newly developed tool of habitat biographies capturing people's past dwelling experiences, the interviews also adopt a historical perspective. Focus group discussions and other empirical methods complete the picture, tackling practices of water use with respect to questions of materiality, knowledge and meaning.

This book demonstrates how using water can turn into a demanding everyday task even in cities where virtually all dwellings do have water taps. It sheds a light on everyday practices of water use in Mexico City in the realms of drinking, personal hygiene, and domestic storage, and their relation to past and current supply conditions. Across all these sets of practices, influential urban imaginations with respect to the logic of urban water supply and a widespread mistrust in the potability of tap water are at play, and marked differences arise between waters used for body-related and more technical purposes. Other than expected, current water supply conditions seem to influence much stronger on domestic practices of water use than people's past experiences. Keeping water in domestic storage tanks, waiting for water provision to resume, reusing domestic grey water, and the ubiquitous consumption of bottled water have all become essential everyday practices in Mexico City amidst unequal and often unreliable patterns of water supply reinforced by processes of neoliberal urbanization and infrastructural unbundling. Women in poorer parts of the metropolis are the ones bearing the brunt of such

exclusionary configurations of urban space. Serving as a reminder that a water tap in the home alone does not guarantee proper access to water, the present book develops a sociospatial, subject-based approach to explore everyday practices and experiences in the realm of water. Such an approach is relevant beyond the example of Mexico City presented here, as a permanent water supply of a potable quality remains the exception rather than the rule in many cities around the world.

KURZFASSUNG DER ARBEIT

Heute verfügen die meisten Haushalte im (an sich wasserreichen) Einzugsgebiet von Mexiko-Stadt über einen Wasseranschluss. Dennoch bleiben die Hähne oft trocken, da die Wasserversorgung besonders in vielen ärmeren Stadtvierteln unsteig bis erratisch ist. Welche Auswirkungen hat diese – keineswegs natürliche, sondern sozial konstruierte – Wasserknappheit auf wasserbezogene Alltagspraktiken im Haushalt? Allgemeiner gesprochen: Wie ist das Verhältnis zwischen urbanem Raum und Praktiken der Wassernutzung im Haushalt? Die vorliegende Arbeit geht diesen Fragen mit dem Ziel nach, zu untersuchen, in welcher Weise Alltagspraktiken mit dem städtischen Raum zusammenhängen; letzterer wird dabei als soziales Produkt andauernder Prozesse der Raumproduktion verstanden. Sie entwirft einen explorativen sozialräumlichen Zugang, der Pierre Bourdieus Theorie der Praxis mit einem relationalen Raumverständnis verbindet. Dies beinhaltet weniger die Suche nach einem ‚Habitus der Wassernutzung‘ als vielmehr eine Reflektion über die Implikationen des berühmten Bourdieuschen Diktums, dass der Habitus das Habitat mache.

Das Forschungsdesign basiert auf empirischer Feldforschung unter Einsatz unterschiedlicher qualitativer Methoden. Die Arbeit ist auf der Ebene des Wohnraums angesiedelt, wobei davon ausgegangen wird, dass sowohl vergangene wie auch gegenwärtige Wasserversorgungsbedingungen wichtige Parameter für die Haushaltswassernutzung sind. Da subjektive Erfahrungen und Alltagspraktiken als Ausgangspunkt dienen, stützt sie sich in erster Linie auf individuelle Tiefeninterviews, die direkt in den Wohnungen der Interviewten durchgeführt wurden, was zugleich eine teilnehmende Beobachtung ermöglichte. Um eine Bandbreite an unterschiedlichen urbanen Lebensbedingungen abzubilden, wurden insgesamt 53 Personen aus mehreren Stadtteilen in zwei Bezirken des *Distrito Federal*, Mexiko-Stadt, interviewt. Mittels des neuentwickelten Instruments der Wohnbiographie, das vergangene Wohnerfahrungen graphisch dokumentiert, wurde dabei auch eine historische Perspektive eingenommen. Fokusgruppendifkussionen und andere empirische Methoden vervollständigen das Bild, indem sie Fragen der Materialität sowie der Wissens- und Bedeutungsproduktion im Kontext der Wassernutzungspraktiken angehen.

Dieses Buch macht deutlich wie Wassernutzung sogar in solchen Städten zu einer Herausforderung werden kann, in denen so gut wie alle Gebäude über einen Wasseranschluss verfügen. Es beleuchtet alltägliche Praktiken der Wassernutzung den Bereichen des Trinkens, der Körperpflege und der Vorratshaltung und setzt diese ins Verhältnis zu gegenwärtigen und früheren Versorgungsbedingungen in Mexiko-Stadt. Quer zu diesen Praktiken liegen einflussreiche *imaginarios urbanos* zur infrastrukturellen Versorgungslogik und ein generelles Misstrauen in die Trinkbarkeit des Leitungswassers. Dabei werden deutliche Unterschiede gemacht zwischen Wasser, welches für körperbezogene Zwecke verwendet wird, und

solchem, das im Haushalt als Nutzwasser dient. Anders als erwartet scheinen aktuelle Versorgungsbedingungen diese Wassernutzungspraktiken weitaus stärker zu beeinflussen als frühere Erfahrungen. Praktiken wie das Speichern von Wasser in privaten Zisternen, das Warten auf die Wiederaufnahme der Wasserversorgung, die Weiterverwendung von Grauwasser im Haushalt und der allgegenwärtige Flaschenwasserkonsum sind vor dem Hintergrund ungleicher und oft unzuverlässiger Versorgungsmuster, die durch neoliberale Stadtentwicklungsprozesse noch verstärkt werden, für viele Bewohnerinnen und Bewohner Mexiko-Stadts unentbehrlich geworden. Die Hauptlast solcher ausschließender Konfigurationen des urbanen Raumes tragen Frauen in den ärmeren Stadtteilen. Die vorliegende Arbeit erinnert somit daran, dass ein Wasseranschluss an sich noch keine Garantie für einen angemessenen Zugang zu Wasser ist. Darüber hinaus entwickelt sie einen sozialräumlichen, subjekt-orientierten methodischen Zugang zu Alltagspraktiken und Alltagserfahrungen im Bereich der Haushaltswassernutzung. Da eine permanente Wasserversorgung in Trinkwasserqualität in vielen Städten weltweit eher die Ausnahme als die Regel ist, erscheint ein solcher wissenschaftlicher Zugang auch jenseits des hier untersuchten Beispiels Mexiko-Stadt als überaus relevant.

RESUMEN

En el Valle de México, esencialmente rico en agua, hoy casi todas las viviendas cuentan con una llave de agua. Sin embargo, el agua está suministrada de manera intermitente y las llaves frecuentemente quedan secas, sobre todo en muchas de las colonias pobres. ¿De que manera afecta tal escasez de agua – siempre entendida como un producto social – a las prácticas cotidianas de uso del agua en el hogar? Y, más en general ¿cuál es la relación entre el espacio urbano y tales prácticas domésticas? Acorde a estas preguntas, el presente libro tiene como objetivo explorar la manera en que las prácticas cotidianas se vinculan con el espacio urbano, entendiéndolo como un producto social en constante proceso de producción. Se emplea un enfoque socio-espacial basado en la introducción de un concepto relacional del espacio a la teoría de la práctica, de Pierre Bourdieu. En lugar de identificar algún ‘hábitus del uso de agua’ esto implica una reflexión sobre las repercusiones de su famosa frase que fuera el hábitus que haga el hábitat.

El diseño de la investigación se basa en trabajo de campo, involucrando una serie de métodos empíricos cualitativos. Se enfoca al ámbito de la vivienda, asumiendo que tanto las actuales como las pasadas condiciones de abastecimiento en el hogar son parámetros principales para las prácticas domésticas de uso del agua. Tomando las experiencias subjetivas y las prácticas cotidianas como puntos de partida, el estudio recurre principalmente a entrevistas profundas realizadas directamente en el hogar de la persona entrevistada para permitir, al mismo tiempo, una observación participativa. Un total de 53 habitantes de diversas colonias en dos delegaciones del Distrito Federal, Ciudad de México, han sido entrevistados para incluir una gran variedad de condiciones de vida en la urbe. Además, las entrevistas toman una perspectiva histórica a través del nuevo método de las biografías del hábitat él que documenta las experiencias del habitar. Para completar el panorama se realizaron grupos focales y otros métodos empíricos dedicados a las prácticas de uso del agua con respecto a las materialidades, conocimientos y significados involucrados.

El presente libro muestra como el uso del agua se puede convertir en una demandante tarea cotidiana hasta en las ciudades donde casi todas las viviendas están conectadas a la red de suministro de agua. Arroja luz sobre las prácticas cotidianas de uso del agua en la Ciudad de México en los ámbitos de su ingesta, de la higiene personal y del almacenamiento doméstico, y a su relación con las condiciones de abastecimiento tanto actuales como pasadas. También existen poderosos imaginarios urbanos con respecto a la lógica de suministro de agua y una desconfianza generalizada sobre la potabilidad del agua de la llave, los que atraviesan todas estas prácticas. Como resultado surgen diferencias marcadas entre las aguas consideradas aptas para los usos relacionados al cuerpo humano y las empleadas en usos más técnicos en el hogar. Inesperadamente parece que en el uso del agua, las actuales condiciones de suministro de agua en el hogar influyen mucho más sobre

las prácticas domésticas de la gente que sus experiencias históricas. El almacenamiento en cisternas domésticas, la espera al restablecimiento del suministro, el reuso de aguas grises en el hogar, y el omnipresente consumo de agua embotellada, todas se han convertido en prácticas cotidianas esenciales en la Ciudad de México bajo patrones de suministro desiguales y a menudo erráticos reforzados por los procesos de urbanización neoliberal y la privatización gradual de la infraestructura urbana. Son las mujeres en las colonias pobres las que cargan el mayor peso de estas configuraciones excluyentes del espacio urbano. El presente libro sirve para recordar que la mera presencia de una llave de agua en el hogar no garantiza un acceso adecuado al agua. Desarrolla un enfoque socio-espacial basado en la percepción subjetiva para explorar las prácticas y experiencias cotidianas en el ámbito del agua. Dado que un suministro permanente de agua de calidad potable, sigue siendo la excepción más que la norma para la una parte significativa de la población urbana alrededor del mundo, tal enfoque parece de suma importancia mucho más allá del ejemplo de la Ciudad de México.

ACKNOWLEDGEMENTS

The present book is mainly based on intense research in Mexico, and many people have contributed to its success along the way. First of all, I owe credit to my supervisors Christof Parnreiter and Kathrin Wildner for all their encouragement, advice and patience during this project. Moreover, I want to express my gratitude to Timothy Moss for his comments on earlier versions of the manuscript. Invaluable feedback was also granted by Patricia de Guadalupe Mar Velasco, Roberto Eibenschutz Hartman, and Flor López Guerrero.

I am deeply indebted to Carmen Hernández Oliver for everything and her bright heart and mind, to Monika Streule for co-producing urban trajectories in multiple ways, and to Friedrich Tietjen for his refreshing thoughts and comments. Without the unrestrained support of Margarita García Arteaga and Ana Laura Landa Chávez, I hardly would have been able to engage in this project as fully as I did. I also wish to thank Alejandro Cerda García, Anna Kunath, Catalina Rojas Ugarte, Chloe Begg, Christian Hartz, Clara Salazar Cruz, Cristina Guerra Mancilla, Daniel Salazar Nuñez, Fredi Maier, Gertrud Neumann-Denzau & Helmut Denzau, Giovanni Civardi, Jana Ringer, Katja Fritsche, Kerstin Krellenberg, Maricruz Carmona, Melanie Kryst, Nathalie Jean-Baptiste, Oscar Pérez Jiménez, Ricardo Landa, Rocío García Arteaga, Ruth Schaldach, and Xanath Sánchez Serrano for their comments, support and encouragement at different stages of this project. Luise Bartels and Aurelia Markwalder of Ernst und Mund, Leipzig, did a great book design and always had the freshest ideas for graphics and else. Sylvia James fine-tuned my English and edited the manuscript with great care. Claudia Rojo Hernández did an excellent job transcribing endless hours of interview material and providing support during focus group discussions, together with Óscar Torres Arroyo and Luis Alvarado Jauriguerri. My colleagues from the Department Urban and Environmental Sociology at the Helmholtz Centre for Environmental Research encouraged my work, and Gabriela Torres fine-tuned some of the habitat biography figures. As always, I am fully responsible for the content of the book and any remaining errors are entirely my own. In addition, I would like to thank the people from FARO del Oriente in Iztapalapa, Luis de la Cruz Fierro and Gerardo Palacios Sánchez from Agua, Trabajo, Servicio y Vida A.C., Jaime Rello of the Unión Popular Revolucionaria Emiliano Zapata, Brenda Rodríguez from Mujer y Medio Ambiente A.C., and the International Network for Urban Research and Action (INURA). The Heinrich Böll Foundation, Berlin, provided funding for my research in Mexico City and a three-year scholarship, which were essential for the realization of this project. But most of all, I wish to thank my interview partners in Mexico City, for welcoming me to their homes and sharing their experiences and thoughts about water – this is what made the present book possible.

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ABBREVIATIONS

CEPAL	Comisión Económica para América Latina y el Caribe
CONAGUA	Comisión Nacional del Agua
CONAPO	Consejo Nacional de la Población
CEDS	Consejo de Evaluación del Desarrollo Social del Distrito Federal
FAO	Food and Agriculture Organization
FG	Focus group discussion
GDF	Gobierno del Distrito Federal
IADB	Inter-American Development Bank
IMSS	Instituto Mexicano del Seguro Social
INEGI	Instituto Nacional de Estadística y Geografía
INFONAVIT	Instituto del Fondo Nacional de la Vivienda para los Trabajadores
ISSSTE	Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado
OECD	Organisation for Economic Co-Operation and Development
PNUMA	Programa de las Naciones Unidas para el Medio Ambiente
SACM	Sistema de Aguas de la Ciudad de México
WHO	World Health Organization
ZMCM	Zona Metropolitana de la Ciudad de México

1. INTRODUCTION

Tap water may be scarce in some parts of Mexico City but there is definitely no lack of it in literature on the subject. Whether adverting to water stress, water crisis, water conflicts, water wars, or even water torture – a steady stream of academic reports, books, newspaper articles and all sorts of publications referring to Mexico City’s water supply situation in similarly dramatic terms is constantly being fed by new releases (see Peña Ramírez 2004, Perló Cohen/González Reynoso 2005, de la Luz González 20.01.2009, Oswald Spring 2011a, Castano 22.02.2012, Hollander 05.02.2014, Watts 12.11.2015, Kimmelman 17.02.2017, to name only a few¹). Many (though not all) of these writings seem either oddly detached from the urban, or are somehow fascinated by the extreme, the scandalous, by a ‘megacity’ or ‘megalopolis’ painted in vivid colors as an exotic monstrosity and imagined by some as the outcome of a largely uncontrollable urban growth beyond all ‘reasonable’ scale (see Davis 2006, Burdett/Sudjic 2007). Without any doubt, water supply in Mexico City is a formidable, controversial and, above all, immensely complex issue. The urban water system and the enormous hydraulic engineering efforts on which it depends to provide tap water for a city of roughly 22 million inhabitants (and dispose of its waste water) resemble a “paradox” (Connolly 1999: 61), local groundwater sources are overexploited, and social struggles about an ever-increasing water extraction in the region are ongoing. Within the metropolis, water distribution is all but equal, and a dry water tap is a daily reality for many of its residents. Still, it can be argued that a ‘scandalizing’ approach – illustrated by terms such as ‘water crisis’ – tends to obstruct the view on Mexico City’s water questions in a dual sense.

First, both the depletion of natural resources and the production of highly differential urban living conditions are not the result of some disastrous yet natural process of urban growth. A host of research has already been undertaken in this area – in what follows, I will only mention some of the most relevant literature for the present venture. The urbanization of nature, and with it the construction and operation of large technical infrastructures such as water supply networks, is product of a certain path of capitalist development and are essential for its survival (see Smith 1984, Harvey 1985 and 1996, Santos 1996). In other words, the production of modern cities was enabled by a simultaneous production and regulation of nature particularly through urban infrastructure networks. For urban water supply in particular, the power relations engrained in modernist supply regimes and their role as enablers of capitalist urbanization is analyzed in the writings of Erik Swyngedouw

1 This is only a small selection of academic and non-academic publications on Mexico City’s water supply situation bearing these terms in their title. A profound analysis of the involved metaphors and discourses would be interesting; along with the concepts of water scarcity and water stress (as coined by Falkenmark/Lindh 1976), many of these gloomy terms were apparently borrowed from earlier publications such as Gleick (1993) and Shiva (2002).

et al. (2002), Matthew Gandy (2004), and Maria Kaika (2005), amongst others. In consequence, it seems appropriate to “move away from thinking of water as a resource that is external to social relations, towards one in which social relations are *embedded*” (Budds 2009: 420). Upon this backdrop, a lack of water at the domestic tap can be read as the result of a socially constructed water scarcity (see Mehta 2010) rather than of natural limits to the resource. As we will see later, this is probably even more evident in the essentially water-rich basin of Mexico City.

Effects of the current logic of supply are, however, directly experienced by Mexico City’s residents, leading to a second aspect potentially hidden behind the narrative of a ‘water crisis’: the way such infrastructures influence everyday life. The urbanization of nature through infrastructures and social practices, or, in other words, the production of urban space and everyday life are clearly linked—something Henri Lefebvre set out thoroughly in his writings (see Lefebvre 1974 and 1991). When I first learned about often haphazard and erratic water supply patterns as part of people’s everyday experience during previous research in one of Mexico City’s *colonias populares*² in the borough of Iztapalapa (see Schwarz 2009), I recall being impressed by how my interview partners tended to treat them essentially as something to be taken for granted. After an initial period without any proper access to utility grids, they had eventually achieved a connection to the electricity and later the water supply network for their neighborhood. When I visited in 2008, water taps seemed to be installed in all dwellings. During our interviews, however, people mentioned rather casually that water provision was restricted to one or two days per week, and even then, water would be available for no more than a couple of hours. The way they put it, this seemed to be the natural course of things – yet it left me puzzling which role water actually played in their daily life. While reports on water fetching and other strategies imposed by a lack of piped water abound (see Sorenson *et al.* 2011), these were households that the World Health Organization (WHO) would, according to their own definition, file as having access to ‘improved drinking water sources’ as they dispose of a water tap in their dwelling. In addition, some of my interview partners back in 2008 emphasized that they actually experienced a deterioration of living conditions in comparison to former dwellings when moving into that Iztapalapan neighborhood. Along with reports on socially differentiated water supply and consumption patterns in Mexico City, which were usually quite general and not scaled down so much as to consider individual neighborhoods or dwellings (see Libreros Muñoz 2004, Tortajada 2006), this took me to consider the sociospatial nature of everyday water use in the domestic realm. There is, I would argue, a need to gain a better understanding of everyday experiences with water supply and of domestic practices of water use under these conditions.

2 As a product of popular urbanization (see Scheingart 1989, Azuela de la Cueva 1989, Gilbert/Varley 1991), this kind of self-built habitat serves as the main source of housing for those excluded from the formal housing market. It was the dominant mode of urbanization in Mexico City (and elsewhere) during the second half of the 20th century; in the year 2000, *colonias populares* were home to more than half of all inhabitants of the Metropolitan Region of Mexico City (ZMCM), housing some 9.2 million people in total (see Duhau/Giglia 2008: 177).

Research Question and Rationale

The present work explores links between the production of space and domestic practices of water use in Mexico City, employing the following research question: *What is the relation between urban space – as a social product always in the making – and domestic everyday practices of water use in Mexico City?* First of all, this approach draws on a relational concept of space. Urban space is, in other words, not a simple container within which social relations are spun, but it is itself a social process always in the making (see Massey 1999: 6 ff.). Space is, therefore, essentially about the social practices which constantly form and constitute it, and an ever-unfinished product of everyday practices (though it is, of course, also produced on other scales). As such everyday practices form the centerpiece of the present work, the term water use is employed deliberately, following Pierre Bourdieu's conceptualization of practices as routinized, non-intentional strategies (see Bourdieu 1977: 177 f., and chapter 2.1). In contrast to a purely (market)economic perspective embodied by the term *water consumption* – which is widely employed for instance in research involved in modelling residential water demand (see Worthington/Hoffman 2008) and, unsurprisingly, in studies on consumers and consumption (see Warde 2005, Halkier *et al.* 2011) – the present work is mainly interested in people's everyday practices involving water. Reducing water use to quantifiable values (such as metered and consumed volumes of water) would miss the point, particularly as such approaches tend to be based on the idea of rational choice. Rather than looking at questions of water consumption, the present work hence opts for the term water use. The latter is conceptualized as a set of everyday practices involving (tap) water which are always of a social as well as spatial nature. Water use forms part of everyday life, which under capitalist conditions indeed essentially constitutes a space of consumption and social reproduction – but also one of lived experience and potential social transformation (see Lefebvre 1991: 352 ff.). The domestic sphere is thus not only of relevance as cities are usually considered one of the key water consumers along with the industrial and agricultural sectors, but also as a crucial product and site of these everyday routines. A research perspective following this line of thought is concerned with subjective experiences, perceptions and narratives involving water. Rather than striving to generate the picture of an average water consumer, it asks how water is used on the micro scale, in the home on a daily basis in order to identify social regularities and patterns of practices (see Fam *et al.* 2015: 642). For this purpose, the present work takes subjective experiences of Mexico City's inhabitants as a starting point, and employs a sociospatial approach combining Bourdieu's Theory of Practice – which provides a social contextualization of everyday practices (see Bourdieu 1977) – with a relational understanding of space.

Why locate such a study on domestic water use in Mexico City? Given the city's location in an essentially water-rich basin, it displays a surprising array of socially produced water problems, many of which are the result of a regime of large-scale technical water regulation running back centuries. Local fresh and salt water lakes have been drained ever since the early colonial period, and the very same logic of water governance continues into the 21st century (for a historical

overview, see Legorreta 2006). Today, the region is well-known for its technically highly complex trans-basin water transfers, particularly its large-scale exports of untreated waste water to neighboring basins, and a severely diminished groundwater recharge due to the massive size of urban built-up area. Amidst all this, local aquifers suffer an overexploitation, as the city's water resources are put under a pressure of 173% (see Oswald Spring 2011b: 500, Peña Ramírez 2012). In consequence, Mexico City suffers continuous soil subsidence, groundwater contamination, and periodic flooding in some areas; it provides an example of environmental problems which are also experienced in other urban areas in Mexico and elsewhere (see Peña Ramírez/López López 2004: 160). But perhaps more importantly for the present study, there are strong indications that access to Mexico City's tap water is both socially stratified and spatially differentiated (see Constantino Toto *et al.* 2010: 250, Consejo de Evaluación del Desarrollo Social del Distrito Federal (CEDS) 2010: 94). Water supply problems in the largest Mexican city are in fact a recurrent issue in public discourse, and (local) press reports on the topic invariably show pictures of water tankers dispensing the liquid to plastic barrels lined up in the streets. Yet the image of the water tanker is somehow misleading – at least when it comes to the Federal District³, which was chosen as the focus of the present work as it is provided by one sole water utility, the *Sistema de Aguas de la Ciudad de México* (SACM), and represents a more or less homogenous entity in terms of water policies⁴. In the Federal District, domestic water connections are by now an almost universal feature: less than 3% of all inhabited dwellings within its jurisdiction had no water tap installed in 2010 (see Instituto Nacional de Estadística y Geografía (INEGI) 2010). In consequence, supply by water tankers is by now mainly a substitute during temporary supply disruptions locally known as *cortes de agua*, which

- 3 Rather than covering the entire metropolis, the present study is focused on the situation in the Federal District, which with its 8.8 million inhabitants is home to roughly half of Mexico City's population; the other half lives in the surrounding Estado de México.
- 4 Narrowing down the scope of the present work to the Federal District is mainly motivated by the strong political division between the capital district and the surrounding Estado de México – each with its own regulatory framework regarding water supply (along with the federal policies implemented by the *Comisión Nacional del Agua* (CONAGUA), the federal water agency). The water supply networks serving the Federal District and those serving the adjoining urban municipalities, for instance, are not physically interconnected in any way. Most likely, this is an indirect result of longstanding political tensions between these two entities dating back to at least the 1950s, and thus predating the strongest period of industrialization and rapid urban expansion of Mexico City. With the *Sistema de Aguas de la Ciudad de México* (SACM), there is, moreover, a single water utility serving the Federal District. SACM is in public ownership as a decentralized institution under the head of the Federal District's environmental ministry. However, a partial privatization began in 1994 with an outsourcing of some of SACM's tasks via the granting of concessions to four private joint ventures. In a first step, concessions were granted for ten years, and then renewed subsequently in 2004 and 2014. These 'unbundled' tasks initially included metering, billing and the repair of leakages, and were extended to the operation and maintenance of the secondary water network (and hence part of water distribution) in the latest concession round, which indicates an even more increased opening to private capital under the slogan of 'decentralization' in the future (see Pradilla Cobos 1994, CEDS 2010: 125 f., Romero Lankao 2011).

are scheduled by the federal water agency CONAGUA and affect large parts of the metropolis several times per year. On a day-to-day basis, however, the main issue in the Federal District is not the absence of a domestic tap but questions of water pressure and steadiness of supply, along with reservations over tap water quality. According to official census data from 2010, as much as 18% of all dwellings connected to the Federal District's public water network were not supplied permanently (see INEGI 2010). Non-permanent supply is mostly a matter of rationing schemes imposed by the water utility (see Sistema de Aguas de la Ciudad de México (SACM) 2013) and shows a clear spatial bias as it spares the centrally located boroughs⁵. In this sense, the modern infrastructural ideal, which sought to advance 'social progress' and homogenize space through universal, hierarchically organized infrastructural networks (see Graham/Marvin 2001: 40 ff.) has never been fulfilled for each and every one living in Mexico City, particularly when it comes to water. This observation undoubtedly applies to a majority of cities in the so-called Global South and highlights long-standing theoretical shortcomings of this paradigm, which is already subject to a much-needed reconsideration (see Furlong 2010 and 2014). With domestic taps failing to fulfill their promise, or doing so only erratically, it can be assumed that water plays a particular role in the everyday life of the Federal District's residents, in particular when it comes to securing water availability for daily practices in the home. More details on the Federal District's landscape of water supply, including the characteristics of supply in terms of water quantity and quality are provided in chapter 4.1; later chapters illustrate how everyday practices of water use form part of this landscape.

State of Research

Large technical infrastructures facilitating 'modern' urban life and improving living conditions in today's cities have become a common research topic in several of the academic fields bearing the 'urban' in name – be it geography, planning or urban studies. This is hardly a surprise, given the changes all kinds of utility grids, from telecommunications and electric power to sewage and water, have undergone in the context of neoliberal reforms over the last decades (see for instance Bakker 2003). In what follows, I will provide a brief overview on the existing literature concerned with urban water supply and water use, discussing in how far these approaches treat questions of space and spatiality. The literature roughly falls into three domains: a socio-geographical perspective focusing on water supply regimes and urbanization processes on the meso scale, an economic perspective concerned with quantifying and modelling water demand, and a qualitative, practice-centered perspective.

First, relations between water infrastructures and processes of urban development are tackled from a socio-geographical perspective specifically for the Mexico City context by a number of authors (see Peña Ramírez 2004 and 2012, Legorreta

5 The Federal District is subdivided in 16 administrative boroughs (*delegaciones*), which are partially responsible for duties held by municipalities elsewhere in the country (water supply not being amongst them in the Federal District).

2006, Barkin 2006, Fuerte Celis 2013, as well as Ward 1998). The works of José Castro in particular link social contestations around Mexico City's water to questions of citizenship and power (see Castro 2004, 2006 and 2007). Others have analyzed the neoliberalization of the Mexican water sector (see Pradilla Cobos 1994, Wilder/Romero Lankao 2006, de Alba *et al.* 2006, Montero Contreras 2009), though not necessarily from a spatial perspective. More in general, an entire section of urban geography is dedicated to the links between spatial development and technical infrastructures as well as the power relations engrained in these supply regimes, with literature on the urbanization of nature cited above as a point of departure. With respect to water networks in particular, the works of Timothy Moss (2000), Karen Bakker (2003), Erik Swyngedouw (2004), Maria Kaika (2005) and Kathryn Furlong (2006) should be mentioned as examples for this approach. And Stephen Graham and Simon Marvin, with their seminal 2001 book *Splintering urbanism*, drew attention to the inherent social logic of networked urban infrastructures (including water), and their interdependency with processes of urban development, particularly under conditions of neoliberal restructuring and global transformation (see Graham/Marvin 2001). Infrastructural unbundling and urban fragmentation should be studied as parallel, interconnected processes – this claim has been highly influential and inspired a critical debate which makes reference to different case studies around the world⁶. Urban water networks and their relevance for processes of urban differentiation and segregation are a centerpiece of this critical debate (see *Geoforum* 39 (2008)⁷, Moss 2008, Naumann 2009). The analysis in Keller Easterling's 2014 *Extrastatecraft* extends this path with respect to other emergent infrastructural elements of globalization and their politics (see Easterling 2014). The entire body of literature in this field is characterized by a clear geographical approach drawing strongly on a relational understanding of space. Its main contribution to geographical thought lies in its ability to analyze cities and their (water) infrastructures as dynamic, integrated sociotechnical processes rather than treating each of them as separate entities. Primarily concerned with the spatiality of infrastructural unbundling from a supply perspective, empirical research in this realm is usually located on the meso scale, choosing the infrastructural networks of entire cities or regions as their objects of inquiry. The present work seeks to complement this body of work by shifting attention to practices of water use on the micro scale. Infrastructural conditions form an integral part of this sociospatial approach, keeping processes of potential 'unbundling'

6 Yet to my knowledge, so far there are no studies involving a Splintering Urbanism perspective for the Mexico City context. As regards water, one can only speculate whether this is related to the relatively low-profile character of water infrastructure unbundling in the Federal District, which the local government has been careful not to tag as privatization, – or simply to an absence of the modern infrastructural ideal of universal water supply to begin with.

7 The 2008 special issue of *Geoforum* (Volume 39, Issue 6) contains empirical explorations of the Splintering Urbanism approach (see Botton/Gouvello 2008, Jaglin 2008, Kooy/Bakker 2008, MacKillop/Boudreau 2008, Pflieger/Matthieussent 2008). Product of an international workshop in 2005, these contributions coincide in voicing a strong critique on Graham and Marvin's assumed universality of the modern infrastructural ideal (see Coutard 2008).

in Mexico City in mind without assuming a general applicability of the modern infrastructural ideal to begin with.

Second, turning to publications concerned with water use on the micro scale (rather than supply) it can be stated that domestic water use was so far largely an object of economic inquiry with respect to levels of consumption, willingness to pay, and the modelling of future demand. Numerous studies are dedicated to quantifying household water consumption through indicator-based modelling feeding on surveys or statistical data (see Morales Novelo/Rodríguez Tapia 2007 and Adler 2011 for the Mexico City context, and for an overview: Nieswiadomy 1992, Worthington/Hoffman 2008). In this context, social status is often treated as one of many indicators influencing on domestic demand. As a result, urban water consumption is usually thought to be socially differentiated in some way or the other (see Anand 2007, Kenney *et al.* 2008). Dwelling-specific indicators and water-consuming household devices are also considered at times, as well as certain types of water use assumed to have a strong influence on consumption levels, for instance car washing (see Mylopoulos *et al.* 2004). However, these studies tend to treat some selected elements of urban space as static parameters (if not ignoring spatiality altogether), and are usually not interested in gaining an understanding of water-using practices itself but only in quantifying consumption.

Third, there is a body of literature dedicated to water use as a social practice. The work of Elizabeth Shove and colleagues was paramount in shifting attention to the consumption side, giving rise to the field of social practice theory (see Shove/Pantzar 2005; Shove *et al.* 2012). This focus on sustainable consumption and the role of infrastructures (see Southerton *et al.* 2004) broadened the perspective in water research, complementing the body of works related to the Splintering Urbanism paradigm and others centered on socio-technical systems and water governance from a perspective of supply. Hereby, social practice theory contributed a great deal to an understanding of the emergence, evolution and transformation of social practices, including those related to domestic water consumption. Certain sets of water-using practices such as showering (see Hand *et al.* 2005, Berker 2013), or the irrigation of private gardens under drought conditions (see Chappells *et al.* 2011) were analyzed from this perspective. Yet in these studies, urban space often seems to feature in passing. Apparently, it may alternatively (and at times simultaneously) represent a resource for practices, their stage, and/or their product (see Shove *et al.* 2012: 130).

The micro level of the home – as a site of gendered carework – is a central element of research dedicated to questions of water and gender (often in combination with questions of poverty or class), which are concerned with the reproduction of social inequalities through a limited access to water (see Bennett 1995, Cleaver 1998, Crow/Sultana 2002, Bapat/Agarwal 2003, Dugard/Mohlakoana 2009) – though space is usually not a core issue of these studies. Contributions from cultural studies on water use are also numerous, for instance in the anthropological and ethnological field (see Stoffer 1966, Böhme 1988, Bergua Amores 2008; and for an overview on more recent water-related anthropological research, Orlove/Caton 2010), or with

respect to water use and health (see White *et al.* 1972) – but again, these works are usually not directly concerned with spatial questions.

The focus on practices eventually leads us to Bourdieu-inspired research on water questions, which are of particular relevance to the present work which rests in part on his praxeological approach. Most do not address the household level but study the reproduction and transformation of social practices on a meso scale in processes of societal transition. Agricultural practices and their impact on or relation to land use and water resources are a common topic, analyzed for instance in the context of post-socialist societies (see Orderud/Polickova-Dobiasova 2010: 205, Eichholz *et al.* 2012), with respect to local responses to the neoliberalization of the agrarian sector and its impact on Mexican *ejidos*⁸ (see Wilshusen 2010), or under conditions of climate change (see Beilin *et al.* 2012). The praxeological approach was also employed to tackle questions of urban water governance; more precisely decentralized water supply solutions in La Paz (see Eichholz 2012). These works coincide with other practice-centered approaches introduced earlier as they typically treat space as either a static, non-relational matter framing social developments, or as their expression – which is unsurprising given the rather abstract and two-dimensional conceptualization of space in Bourdieu's writings (see 2.4.1). In this linear interpretation, these practices are not understood as something that itself shapes or interacts with urban space. The same accounts for another study on showering as a 'symbolic' practice (see Jensen 2008), one of the few publications dedicated explicitly to domestic water use that directly draws upon Bourdieu's Theory of Practice. The work of Louise Askew and Pauline McGuirk comes closest to a relational understanding of space in that it explores the irrigation of suburban gardens in Australia as a practice seeking to accumulate cultural capital and thus as a tool of social distinction (see Askew/McGuirk 2004). Though not explicitly Bourdieu-based, there is also the inspiring work by Jeff Wiltse on how social distinction along the categories of race and class was negotiated in the realms of public and private swimming pools in post-WWII cities in the United States (see Wiltse 2007). As for literature on domestic water use in Mexico City in particular, again there are, to my knowledge, only few academic publications approaching the issue from a spatial perspective on the micro level – Enrique Ayala Alonso for example discusses the strive for social distinction and modernization represented in early 19th century bourgeois dwellings in Mexico City and the installation of the first private bathrooms (see Ayala Alonso 2010: 53 ff.). From an equally historical

8 In close resemblance to other contemporary forms of collective land use such as the Soviet *kolkhoz*, the agricultural collectives of the Mexican *ejido* were essentially a territorialization of demands for land reform by parts of the revolutionary movement. Expropriating land from huge haciendas, around 28,000 *ejidos* – under public ownership, but with partly private, partly collective usufruct – were established during and after the government of Lazaro Cardenas in 1930s, re-inventing pre-Columbian forms of collective land use. Afterwards, this *ejidal* land played an ambiguous role in Mexico City's urbanization as it turned into a prime source for (irregular) industrial and urban construction during the era of import-substituting industrialization, from the 1950s onwards. Whereas most of these land use changes contradicted formal plans, a 1992 reform of *ejido* laws led to a drastic change of land use regulations, allowing for a further commodification of communal land (see Cymet 1992, Salazar Cruz 2014a).

perspective, Sharon Bailey Glasco analyzes water use in public bathhouses during the colonial period (see Bailey Glasco 2010: 91 ff.). But as already mentioned, a vast majority of the literature is concerned with supply questions and the interaction between processes of infrastructural and urban development on a city-wide scale or beyond.

Aims of Research

Generally speaking, little research in the field of urban geography has so far been dedicated to everyday practices of domestic water use from a sociospatial perspective. The present work develops a sociospatial approach that aims to take us beyond earlier works by shifting attention from the meso scale to everyday practices of water use on the micro scale, employing a qualitative, subject-centered perspective. For this purpose, it drafts a research design based on existing and new empirical methods able to grasp everyday practices of water use in their past and present spatiality. Following calls for a down-scaling of research on domestic water use (see Fam *et al.* 2015), it aims to complement the existing geographical literature on urban water infrastructures, supply regimes and power relations by re-introducing everyday practices. It thus strives to contribute to a more empirically grounded water research, which nevertheless keeps the social fault lines along which differential urban water supply is organized in mind.

There have long been calls to link Bourdieu's approach to social practice with a concept of relational space (see Painter 2000: 258), or more in general, to employ time and space as core elements in a conceptualization of social practice and social structuration (see Thrift 1996: 71). According to both geographical (see Haferburg 2007: 342) and sociological literature (see Schroer 2006: 176), there is a need to further clarify in particular the relation between habitat and habitus drawn from Bourdieu's praxeological approach. As already mentioned, the here proposed sociospatial approach to everyday practices draws upon a combination of the Bourdieuan Theory of Practice with the concept of relational space. I would argue that it is precisely such a perspective that will allow us to conceptualize tap water as something which "captures and embodies processes that are simultaneously material, discursive and symbolic" (Swyngedouw 2004: 28).

For the present purpose, this theoretical approach is to be operationalized through a research design able to capture everyday practices of water use in both their past and current spatiality. It draws upon fieldwork-based qualitative empirical methods which seem apt for such an explorative venture. These are, first and foremost, individual in-depth interviews, based on a semi-structured interview guideline and conducted at the interviewee's home to allow for a simultaneous participatory observation, and focus group discussions. Through the newly developed tool of habitat biographies capturing people's past dwelling experiences, the interviews also adopt a historical perspective. An explorative though theory-informed approach, putting an emphasis on understanding relations between everyday practices and spatiality, seems appropriate in that there is, at least to my knowledge, no prior