Citizenshit – The Right to Flush:
Sewage Management and its Meanings in
Villa Lamadrid, Buenos Aires, Argentina

by

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Abstract

Urban life means your shit is not your problem. It is commonly felt that for urban residents the management of sewage should not be a personal responsibility; instead, disassociation from sewage, its production, presence, disposal, and management is central to participating in a full urban citizenship. Connection to centralized and water-borne sewerage infrastructure affords this luxury of 'flushing and forgetting,' not having to know about or have contact with shit after the toilet is flushed (Hawkins, 2006).

This thesis is based on three months of fieldwork in Villa Lamadrid, a historically marginalized peri-urban neighborhood in Greater Buenos Aires. The neighborhood lacks connection to a centralized, water-borne sewerage system. During this period I spent considerable time in the neighborhood, engaging in participant observation, and conducted 36 semi-structured interviews with neighborhood residents.

I examine how, in the absence of centralized sewerage connection that makes this sanitation imaginary possible, residents work to claim urban citizenship by employing narratives of disassociation from sewage in its visible forms throughout neighborhood. Notable among these is a racialization of shit and the practices that result in its presence in neighborhood streets and zanjas. In addition, as a part of my interviews I presented two sewage management systems appropriate to aspects of the neighborhood's biophysical conditions, particularly its saturated groundwater table and vulnerability to flooding during storm events. Both of these systems were household level management systems, a common solution provided by development organizations to urban areas not connected to municipal sewerage service. Interviewees in Villa Lamadrid felt these decentralized sewage management options directly undermined the goal of participation in the urban sanitation imaginary, and their claims to full, rights-claiming citizenship by necessitating, and even relying upon, their personal engagement with the management of their own sewage.

This research raises important questions regarding expectations of urban sanitation and the paradigms in which we frame sewage management, and, acknowledging the high failure rate of sanitation interventions in poor communities globally, questions of where we are to go from here, in a rapidly urbanizing world where infrastructure already lags behind ever growing demand.

Preface

This research received approval from the UBC Behavioural Research Ethics Board. The certificate number of the ethics certificate is H11-01332.

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To my nemesis

CHAPTER 1: Introduction

This thesis is based on three months of fieldwork in a small peri-urban neighborhood named Villa Lamadrid, located in Greater Buenos Aires. In terms of centralized municipal infrastructure, the neighborhood is connected to water, electricity, and gas networks. What it lacks is sewerage connection. Instead, residents use septic tanks that often overflow into public spaces owing to a saturated groundwater table and the neighborhood's position in the flood zone of the Matanza-Riachelo River. I began my fieldwork with particular questions in mind about how this lack of centralized sewerage infrastructure impacted resident's daily lives, and what that meant – Did it reduce mobility? Were effects gender differentiated? And if we could design a local solution, what technical parameters would make it best suited to this community? They were questions I had picked up from the literature, largely based on what other studies had found to be obstacles to successfully implementing decentralized, ecologically sustainable sanitation solutions in poor urban neighborhoods globally. Overall, my thought was that by understanding resident's daily lives and the challenges of the current sanitation system, better solutions could be developed, particularly well-suited to the context and community of Villa Lamadrid. This framework has been called 'the appropriate technology movement' (Hollick, 1982).

As I spent time in the neighborhood my initial questions seemed progressively less relevant. Or perhaps it was that they seemed to be putting the cart before the horse. The framework I was working under, developing a context specific technical solution that responded to biophysical conditions as well as resident's daily lives and needs, did not seem paramount to interviewees. While serious obstacles such as impacts on mobility, or the price of pumping out overflowing septic tanks, were mentioned by participants, and many were even seriously frustrated by these issues, these difficulties weren't the guiding currents of our conversations. Instead, when I brought up sewage management, interviewees seemed concerned with two main things – first, the current situation, in which overflowing septic tanks often leak out into public areas, seemed embarrassing enough that participants worked to separate themselves from it in our conversations, often by blaming others and clearing themselves of culpability. Secondly, sewage management was not seen by interviewees as a process in which they should be personally involved. The concept of employing local solutions seemed to clash directly with

understandings of what sewage management in urban life should be - flushing the handle of the toilet, and having nothing more to do with it. Since my original research questions did not seem to fit residents' framing of sanitation, I decided to shift my research focus and instead learn more about these two main themes I was hearing in conversations.

This thesis centers around two chapters – Chapters 2 and 3 – each documenting one of these dynamics I encountered in conversations with residents of Villa Lamadrid. Each chapter examines what I believe to be an aspect of how residents understand what it means to be an urban citizen in terms of hygiene and sewage management. I will call this understanding of what sewage management looks like for an urban citizen an 'urban sanitation imaginary.' At its core, this imaginary is a feeling of cleanliness produced by the performance of distance from shit -- its production, presence, and management. Modern hygiene practices, and the sewerage infrastructure on which they rely, are built to create, defend, and reproduce this primary goal of securing a sense of disassociation from bodily waste (Benidickson, 2007; Hawkins, 2006). Taking part in this sanitation imaginary is not only part of a full, rights-claiming urban citizenship, but it is also one means through which citizenship is constituted. These two concepts – the urban sanitation imaginary and urban citizenship – form the theoretical framework I employ throughout this thesis. Each is explored more fully in the sections below.

In Chapter 2 I look at the importance of hygiene and purity as guiding notions of an urban life imaginary, and as part of the production of modern urban citizens. In terms of sewage management this imaginary includes the need for an immediate disassociation from sewage. Water-borne sewer systems accomplish this end quite effectively – from the moment of flushing sewage is transferred from a private space into the public sewers (Hawkins 2006). Because of this, flushing toilets and water-borne sewerage pipes are closely intertwined with conceptions of modernity, class, education, and citizenship in urban spaces (Benidickson, 2007; Black & Fawcett, 2008). In the context of Villa Lamadrid, where centralized sewerage infrastructure is not present, other means of creating this distance and separation from sewage are employed. Residents minimize the problem, discuss it as a problem of a degraded neighborhood they no longer identify with, and, most frequently, blame recent immigrants to the community for the presence of sewage in open spaces and the management practices that got it there. I argue that these racializing discourses tie the current wastewater management crisis in the neighborhood with some of the area's larger context, including changing immigration patterns of the last two

decades that have brought many Peruvian, Bolivian, Uruguayan, and Paraguayan immigrants to the neighborhood. Simultaneously these narratives allow Argentinean residents of the neighborhood to maintain their claims to urban citizenship by associating themselves with an imagined pure Argentinean past.

In Chapter 3 I look at the importance of the feeling of flushing and forgetting. Building on the ideas developed in Chapter 2, that maintaining disassociation from sewage is necessary and central to participating in an urban lifestyle and citizenship, connection to a centralized, water-borne sanitation system is understood as necessary in this disassociation. The centralized, water-borne sewerage model produces and permits the luxury of ignorance of sewage management, removing the user from any process beyond the flushing of the toilet handle (George, 2009; Hawkins, 2006). As a part of my interviews with neighborhood residents I presented two sewage management systems appropriate to aspects of the neighborhood's biophysical conditions, particularly its saturated groundwater table and vulnerability to flooding during storm events. Both of these were household level management systems, a common solution type provided by development organizations to urban areas not connected to centralized sewerage service. Interviewees in Villa Lamadrid felt these decentralized technologies directly undermined the goal of participation in legitimate urban citizenship by necessitating, and even relying upon, their personal and bodily engagement with the management of their own sewage.

As I detail in this work, there is something about shit in cities that makes sewerage markedly different from other urban amenities – it has a moral weight. Shit is dirty, disgusting, rural, uncivilized. Its presence stands in contrast to modern urban spaces that have developed around ideals of purity, cleanliness, and order (Bakker, 2010; Douglas, 1966; Gandy, 2004, 2011). In large part, these ideals are supported and performed by commonly accepted hygiene practices and the sewerage infrastructure on which they rely. Together these practices and infrastructure create, defend, and reproduce a feeling of cleanliness and purity through distance from bodily waste (Benidickson, 2007; Hawkins, 2006; Jewitt, 2011). Participation in these hygiene practices is a way of asserting legitimacy as a rights-claiming urban citizen. As I will argue in this thesis, in a municipal context with a centralized sewerage infrastructure, as in the case of Buenos Aires, connection to this network is not just sewage management for the sake of public health. It is also the text of who counts and who is recognized and included by the state. It is about who matters enough to have their shit taken away. In Villa Lamadrid, a community that

has been historically marginalized, participating in understandings of a modern urban citizen's life becomes particularly important as signs of their legitimacy as residents of Buenos Aires.

Buenos Aires is a particularly interesting urban context in which to explore these questions of hygiene and sanitation as processes of belonging. The culture of Buenos Aires has been profoundly influenced both by its colonial past and a continued look towards European cities and urban life as models for its own development (Feller, 2005; Keeling, 1996). As Joseph (2000) and Sutton (2008) argue, hygiene has become a particular marker of purity and modernity in Buenos Aires, and serves to lend strong symbolic weight to participation in hygiene practices as practices of belonging and urban citizenship in this city.

My findings have implications about the future of urban sanitation in a rapidly urbanizing world. With the dramatic rise in urban populations in recent decades, provision of basic services - water, electricity, sanitation, and durable and adequate living space - is becoming a growing challenge in many urban centers across the globe. In the case of sewerage in particular, many urban centers have been unable to keep up with rapidly increasing demand on infrastructure capacity. Efforts to address this crisis with decentralized, local sanitation solutions has proven to be leaky -- estimates suggest that between 30% and 70% of water and sanitation projects fail within a few years of implementation (Bliss & Bowe, 2011; Carter et al., 1999; Harvey & Reed, 2006; McConville & Mihelcic, 2007; Taylor, 2008; Thode, 2011), with sanitation projects thought to be at the higher end of this estimate (Hoque et al., 1996). How we are to approach urban sanitation in light of growing urban populations is becoming a pressing challenge, one that deserves serious reflection.

In the remainder of this introductory chapter I lay out the theoretical, contextual, and methodological frameworks of this study. I begin with a brief outline of the growing urban sanitation crisis globally, and then present citizenship as a concept that signals processes of social inclusion pivotal to these dynamics. From here I turn to examine how access to municipal services, particularly sewerage, serves to form and highlight social inclusions and exclusions in an urban context. Following this outline of the theoretical frameworks of this thesis, I turn towards the geographic, political, and historical context of Villa Lamadrid. Next I briefly examine the wider context of wastewater management in Buenos Aires, and finally return to Villa Lamadrid to look at how wastewater management plays out particularly in this

neighborhood. In the final section of this introduction I discuss my research methodology and data analysis.

Theoretical Starting Points

The Growing Urban Sanitation Crisis

The start of the 21st century marked the first time in human history where more than half of the world's population lived in urban areas. In 2007 the United Nations reported that 3.2 billion people worldwide lived in cities. Urban population are only expected to continue this growth in the coming decades, and the UN estimates that by 2030 the global urban population will reach 5 billion (UNFPA, 2007).

A large portion of this recent urban population rise is due to migrants from rural areas into urban and peri-urban areas, leading to a rapid spread of informal settlements and urban slums (UNFPA, 2011). The United Nations Human Settlements Programme defines a 'slum household' as one that lacks at least one of the following: a durable structure that provides residents protection against weather and climate, sufficient living space, access to adequate potable water, sanitation, and other infrastructure, and secure tenure (UN-Habitat, 2003). All uses of the term 'slum' in this thesis refer to this definition. According to UN-Habitat, as of 2001 approximately 1/3rd of Latin Americans lived in slum conditions (UN-Habitat, 2003). Between 2001 and 2006 the population living in urban slums, squatter settlements, and shantytowns within Greater Buenos Aires nearly doubled – from 639,000 to over 1.14 million. During this period the number of informal settlements similarly increased, rising from fewer than 400 in 2001 to over 1,000 by 2006 (Auyero & Swistun, 2009). The majority of this rise in informal settlements has been in the Matanza-Riachuelo River basin,[1] running through the southern portion of Greater Buenos Aires. Villa Lamadrid is located within this area.

The implications of this rapidly urbanizing global population on major urban infrastructure are profound. While informal settlements were initially thought of as a temporary phenomenon, a part of the transition stage on the way towards the production of modern cities, they seem to be becoming the norm of the modern urban neighborhood (Auyero & Swistun,

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[1] The Matanza-Riachuelo River basin is typically referred to as the CMR, from the Spanish 'cuenca' for basin.

2009; Davis, 2004; Gandy, 2004; Mamdani, 1996). Indeed, Gandy (2004) writes, "The urban slum is now the focal point for contemporary debate over the future of urban infrastructure" (372).

Municipal sewerage infrastructure has been unable to keep up with the rapidly growing demand of urban populations. This infrastructure lag is particularly pronounced in the case of sewerage as compared with other municipal networks such as potable water connections. The Joint Monitoring Program's (JMP)[2] 2012 report on global drinking water and sanitation coverage reported that, as of 2010 data, over 1/5th of the world's urban population lacked access to improved sanitation[3] facilities (Joint Monitoring Program (JMP) for Water Supply and Sanitation, 2012).[4] Though the percentage of urban dwellers without access to improved sanitation decreased between 1990 and 2010, the overall number of people without access increased during this period (from 531 million in 1990 to 714 million in 2010) (Joint Monitoring Program (JMP) for Water Supply and Sanitation, 2012). Many studies suggest that even reported coverage rates may be considerably higher than reality (Adhikari & Bhattarai, 2010; Rodgers, et al., 2007; Rojas & Chatterley, 2011), given overall lack of project monitoring and high rates of project failure. In the context of Buenos Aires, as of 2011, sewerage services reached only 59% of residents in Greater Buenos Aires served by AySA[5] (AySA, 2011a).

This trend is expected to continue into the future. Urban population projections suggest that the number of urban dwellers without access to improved sanitation will increase nearly

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[2] The Joint Monitoring Program is a partnership between the World Health Organization and UNICEF tasked with monitoring progress toward drinking water and sanitation goals (WHO/UNICEF, 2012). They publish one of the most widely used classifications of sanitation systems.

[3] The JMP (2012) defines 'improved sanitation' as a system which "hygienically separates human excreta from human contact" (33). Importantly, the definition of improved sanitation under the Millenium Development Goals does not include shared facilities, a predominantly urban sanitation phenomenon with over 60% of shared sanitation users living in urban areas. For a table of improved vs. unimproved sanitation system characteristics see Appendix A.

[4] Globally 63% of the world's population has access to improved sanitation facilities, leaving 2.5 billion people without access. Though the large majority of these 2.5 billion live in rural areas, 28% of them are urban dwellers, equating to over 1/5th of the global urban population (Joint Monitoring Program (JMP) for Water Supply and Sanitation, 2012).

[5] AySA is the city's public business for water and sewerage service provision; their service concession includes 17 municipalities and 9.7 million residents of the Greater Buenos Aires area.

46% between the baseline year of 1990 and 2015 (Foppen & Kansiime, 2009), and high rates of urbanization are also expected to continue for several decades beyond this (UN-Habitat, 2003). With this vision of the future of urbanization in mind, the problem of providing sanitation access in urban areas may become even more pressing in the coming decades (Joint Monitoring Program (JMP) for Water Supply and Sanitation, 2012).

Centralized sewerage infrastructure relies on water-borne transport through a citywide network of pipes to transport waste away from communities where health risks are greatest. Municipal sewer systems typically dispose of collected sewage (whether treated or untreated) into large water bodies, assuming that the natural environment can dilute the waste away (Esrey, et al., 2001). These systems can be thought of as linear sanitation solutions, transporting sewage from production sites to dumping sites. In some cases, pipes lead to treatment plants where some pathogens, nutrients, and bacteria may be removed from the sludge to further protect human and environmental health before sludge is disposed of (Mohit & Ludwig, 2000). Not all sewer systems include treatment plants though. Today 90% of sewage collected via sewer systems in Latin America is dumped untreated into the ocean and other surface water bodies; this statistic is the same for Argentina (Pan American Health Organization, 2005).

Linear, or conventional, sewage management has been called "an implicitly anti-poor technology" (Paterson, Mara, & Curtis, 2007: 901) owing to its high cost and intense requirements in terms of water volume and infrastructure construction. In large urban areas the incremental cost of collecting and treating sewage is often 1.5-3 times the cost of treating and supplying water, and is typically less well covered by user fees than the costs of water supply (Yepes, 2006). Further, poor and informal urban communities often develop on land that makes construction of centralized, water-borne sewer networks particularly difficult. These include river banks, steep hillsides, and low lying, often waterlogged, marsh land. These conditions not only make the laying of sewer infrastructure extremely expensive, but also make these communities particularly susceptible to floods, mudslides and other natural disasters, further compromising any long-term functioning of sewerage infrastructure (Beall, Crankshaw, & Parnell, 2011; Gandy, 2004; Swyngedouw, 2004). In addition, informal settlement populations and structural layout are typically dense and in constant flux, further contributing to complications in the construction of major infrastructure projects in poor urban areas (Munch & Mayumbelo, 2007).

Until recently unequal accesses to centralized sewerage and water services was thought to be a temporary phenomenon, another symptom of the transitional period as cities entered a new modern age, and soon to be remedied through continued urban planning (Davis, 2004; Gandy, 2004, 2006). However, differences in access have only continued to widen in recent decades (Auyero & Swistun, 2009; Gandy, 2004). This widening infrastructure lag in many fast growing urban centers is not only a result of the financial and technical challenges of major infrastructure construction. It is also a sign of continuing power inequalities between the urban poor, who have relatively little political and economic power, and more affluent social classes. Drawing on the work of Mamdani (1996), Gandy (2004) calls this lag a signal and "legacy of an incomplete modernity which rested on a brutal distinction between 'citizens' who could lay claim to potable water and mere 'subjects' who were left to make do as best they could" (Gandy, 2004; Harris, 2008a; Mamdani, 1996; O'Reilly, 2010; Swyngedouw, 2004).

In the absence of centralized sewerage connections, the majority of houses in slum areas are served by on-site sanitation systems such as pit latrines and septic tanks (Ingallinella, et al., 2002; Katukiza et al., 2010; Munch & Mayumbelo, 2007). Given the right biophysical conditions, as well as ongoing user maintenance and proper handling, these on-site sanitation systems can provide adequate protection of human and environmental health, and their products can be safely used in agriculture, enhancing soil quality and production (Steven Esrey et al., 2001; Tilley, Lüthi, Morel, Zurbrügg, & Schertenleib, 2008). However, this is dependent on groundwater conditions and other biophysical aspects of the area, as well as proper handling, operation and maintenance – often cost prohibitive processes. In addition, even provision of on-site sanitation facilities, such as pit latrines, typically costs double the amount required to provide on-site water supply (Caincross, 1992), making implementation and continued maintenance of such systems even lower priorities for the urban poor. Often waste collected from on-site sanitation systems is discharged untreated into the surrounding environment, secreted "indiscriminately into lanes, drainage ditches, onto open urban spaces and into inland waters, estuaries and the sea" (Ingallinella et al., 2002: 285), leading to the potential to create significant risk for human and environmental health.

Many feminist scholars (geographers and others) have examined other causes of the high failure rate of water and sanitation initiatives. For instance, studies by O'Reilly (2006, 2010), Sultana (2009, 2011), and Harris (2005), examine the importance of full community

participation, particularly from women and other marginalized sub-communities, in the design and management of these systems. Exclusion of marginalized groups from design, implementation, maintenance, and use of water and sanitation solutions can cause and exacerbate other causes of solution failure such as improper handling and inadequate system maintenance. Participation is meant to promote sustainable operation and maintenance practices by making solutions accessible and attentive to diverse needs within a community.

Already the health implications of inadequate sanitation coverage are staggering. Lack of effective sanitation services is a top cause of disease in poor urban areas; estimates suggest that insufficient sanitation has an even higher disease burden than lack of access to potable water (Esrey, et al., 1991). There are an estimated 4 billion cases of diarrhea worldwide annually, resulting in 2.2 million deaths per year. The UN estimates that at any one time, over half of the world's hospital beds are occupied by people suffering from water related illness (UN-Habitat & UNEP, 2010). In addition to the human health burden, lack of sanitation provision in urban areas is also a major cause of environmental pollution (UN-Habitat & UNEP, 2010).

As adequate sanitation remains an inaccessible reality for growing urban populations it continues to attest to unequal power relationships and deeply entrenched inequalities in urban settings. In the following section I present the concept of citizenship as a framework through which I explore the social inequalities produced and reinforced through unequal access to sewerage infrastructure.

Citizenship as Social Belonging

I use the concept of citizenship as a framework throughout this thesis to signify how social belonging and exclusion are constructed through social practices, including those associated with sewerage and waste. Some exploration of how I understand and apply this concept may be useful. After a general presentation of the term 'citizenship,' I turn to how these processes function particularly in Buenos Aires, and through sanitation and hygiene norms in this urban context.

Many authors have worked to broaden the understanding of 'citizenship' as more than a set of basic legal rights and responsibilities, to look at the larger social, political, and economic processes and systems of inclusion and exclusion in a society (Agarwal, 2010; Cunningham, 2011; Harris, 2008a; Marston & Staeheli, 1994; Pine, 2010; Sibley, 1995; Sieder, 2007; Staeheli

& Cope, 1994; Sundberg, 2003).[6] Citizenship, it is argued, is constructed and reconstructed, performed, enacted, and extended through a myriad of daily social processes of belonging and inclusion within a society. The performance of belonging is marked by adherence to a set of collective practices and meanings. Participation in these practices takes on a moral weight, indicating who is acceptable, who counts, whose rights matter, and whose do not (Holston & Appadurai, 1998; Sundberg, 2003). A feeling of collective belonging is predicated on a sense of unity and similarity with other citizens working towards a common, shared notion of the good life (Holston & Appadurai, 1998).

Citizenship must be continuously maintained. While legal citizenship may have a binary status (either one is, or is not, a citizen), broader mechanisms of social inclusion are continuously occurring and negotiated, so that belonging and commonality must be constantly contested and reaffirmed. Thus "active participation rather than the mere reception or inheritance" (Holston & Appadurai, 1998: 6) of citizenship, and its implicated rights, is central to this broadened conceptualization of citizenship.

These same social, political, and economic processes which can be markers of inclusion may also work to functionally exclude individuals or particular groups from sharing in a rights-claiming citizenship (Staeheli & Cope, 1994). Such exclusions may be based not only on social class or economic status, but also race, gender (Marston & Staeheli, 1994; Sundberg, 2003), and a range of other divisions. The function of these processes may be to exclude or withhold certain rights to which citizens are entitled. When these rights are central to participation and adherence in the practices of belonging, this serves as further proof of outsiderness, and supports their exclusion.

Porteño Citizenship and the Urban Sanitation Imaginary

Practices of belonging in an urban context are constituted through participation in a culturally developed and defined urban lifestyle. This lifestyle is made up of the myriad of relationships and practices of daily life – accepted ways in which urban citizens should act and

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[6] A number of terms have been used to distinguish the narrower legal, from broadened social definitions of citizenship – Chatterjey (2004) and Holston and Apparadui (1998) differentiate between 'real' and 'formal' citizenship; Cunningham (2011) calls this broadened definition 'robust citizenship.' For the remainder of this thesis I will simply use the word 'citizenship' to refer to the broadened conceptualization of how belonging is constructed within a society.

live, the 'urban imaginary.' Strauss (2006) describes the concept of the 'imaginary' as "just *culture* or *cultural knowledge* in new clothes" and a means to talk about "a shared mental life" (322). Zukin et al. (1998) describe the urban imaginary in particular, as "a set of meanings about cities that arise in a specific historical time and cultural space" (Zukin et al., 1998: 629). A number of authors have worked with this notion of the urban imaginary, applying it to a variety of urban contexts from Tokyo to Miami to Coney Island (Iwabuchi, 2008; Lipuma & Koelble, 2005; Zukin et al., 1998). In the context of Buenos Aires, Keeling (1996) describes the process by which an urban identity and culture developed in Buenos Aires for porteños,[7] emerging from the mythologies about sense of place – how individuals feel about spaces, landmarks, and historical figures – and how these mythologies become central components of what life in Buenos Aires is and means – the porteño urban life imaginary.

In Buenos Aires mythologies about sense of place have been strongly influenced by the city's colonial roots; Buenos Aires' urban identity has, in many ways, been modeled after European-style cities and imaginaries of European urban life. Argentina has, in some ways, modeled itself as a European city in a foreign continent (Feller, 2005; Keeling, 1996). As a result, the cosmopolitan, clean and civilized European urban life has been juxtaposed, implicitly and explicitly, with the rural, savage, and dirty indigenous (Feller, 2005; Joseph, 2000; Rotker, 2002; Sutton, 2008). This tendency towards, and nearly veneration of, European style urban development and life in Buenos Aires is reflected not only in the city's architecture and urban plan, modeled after Paris' 19th century urban design (Feller, 2005; Keeling, 1996; Meik, 2011), but is also linked with what some of called a deeply entrenched racism in the city's social fabric, influencing immigration and migration patterns (Feller, 2005; Joseph, 2000; Meik, 2011; Rotker, 2002; Sutton, 2008). As I will explain, all of these factors are closely intertwined with the moral and symbolic weight of hygiene and sanitation practices as signifiers of participation in a civilized modern lifestyle central culture in the context of Villa Lamadrid.

An important result of the central role imaginaries of the European urban lifestyle have played in the formation of Buenos Aires is through impacts on national migration patterns. Urban life imaginaries hold particular importance in the country and the city of Buenos Aires is

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[7] Porteño, or 'people of the port,' is the Argentine word for a resident of Buenos Aires, signifying the historic feeling that the Argentine "descended from the boats" (Sutton, 2008). Though it is traditionally used to refer only to residents of the Federal District (the capital of the province) (Keeling, 1996), here I use it to refer more to the ideology of the Buenos Aires citizen.

seen as the essence or center of Argentina. The late 19th century was a time of great social and cultural development in Argentina, and it was during this time that the city "matured into the 'Paris of Latin America'" (Feller 2005: 11). As one author put it, during this period in particular, "Buenos Aires represented a civilized, modernized European world" to porteños while "the interior [of Argentina] was barbaric and backward" (Feller 2005: 13; see also: Keeling 1996; Joseph 2010; Sutton 2008). Throughout the 19th century Argentina's interior came to be seen as a site for harvesting resources largely to maintain the capital, leading to increased migration patterns towards Buenos Aires. Today over 32% of all Argentineans live in and around Buenos Aires (INDEC, 2010), and Argentina is considered the second most urbanized country in the world, with 92% of Argentineans living in urban areas (Central Intelligence Agency, 2012; Feller, 2005).

In addition to migration patterns within the country, Argentina saw and encouraged continued immigration from Europe throughout the 19th century, a phenomenon unique among Latin American countries. This encouragement of European immigration was interpreted by some as a means of 'flushing out' darker skinned people, and purifying the area from its indigenous past (Feller, 2005; Joseph, 2000; Sutton, 2008). Today over 85% of Argentina's population is of European descent, a prevalence unlike any other country in Latin America (Feller, 2005).

Many authors have written about a deeply entrenched Argentine racism in the country's social fabric, part of a long history of colonization, followed forced expulsions of minority groups, including African descendents, originally brought over as slaves in the 18th century (Feller, 2005; Joseph, 2000; Rotker, 2002; Sutton, 2008). Unlike European immigrants of the 19th century, immigrants from the country's interior, and more recent immigrants from neighboring countries in the 20th century have not been so warmly welcomed; these more recent immigrant groups have been referred to as the *aluvión zoológico* (zoological flood), or *cabecitas negras* (little black heads), as they were seen as 'darkening' the city (Feller, 2005; Joseph, 2000; Keeling, 1996; Sutton, 2008). Additionally, indigenous peoples have historically been located in the country's lower classes, and the majority of more recent immigrants from neighboring countries have settled in the city's villas (Sutton, 2008; Feller, 2005).

An emphasis on 'purity,' signified by European practices and norms, also led to a particular emphasis on European-influenced hygiene practices as part of the Argentinean, and

particularly porteño, urban imaginary and citizen identity (Joseph, 2000; Meik, 2011). Late 19th century Europe saw a wave of centralized water and sewerage infrastructure construction in response to public health impacts of new urban spaces of the Industrial Revolution (Bakker, 2010; George, 2009). Water intensive hygiene practices, reliant on this infrastructure, including daily washing and flushing toilets, emerged as a major component of the European modern urban citizen's lifestyle (Bakker, 2010; Benidickson, 2007; Gandy, 2004; Swyngedouw, 2004).

Stemming from their importance in maintaining public health in dense urban areas, emerging hygiene practices reliant on these centralized systems took on moral weight in many European cities, one that I argue is also relevant to Buenos Aires. Bakker (2010) describes how participation in these hygiene practices became a 'material emblem(s) of citizenship' in parts of Europe (52),

> "The bourgeois residents of nineteenth-century European cities, for example, celebrated hygiene as a moral virtue... They encouraged the lavish use of water in newly interiorized, private spaces such as the bathroom and boudoir, with (then) new technologies such as the flush toilet... water supply was a material expression of political inclusion. Citizenship, they argued, must be conceived not only in terms of political representation but also services provision" (Bakker, 2010: 54-55).

Buenos Aires' sewerage system was designed by John Frederick Bateman, a British engineer whose work had a significant impact on the design of waterworks in the UK (Tartarini, 2010), a circumstance which both increased and symbolized the influence of European sanitation imaginaries over Buenos Aires' development.

Just as sewerage connection can be a symbol of urban modernity and participation in a rights claiming urban citizenship, differential water and sewerage infrastructure accesses highlight and create social exclusions and marginalizations in urban contexts (Bakker, 2010; Gandy, 2004, 2011; Swyngedouw, 2004). In Chapter 3 I explore this in greater depth, attending to how, in a municipal context with a centralized sewerage infrastructure, as in the case of Buenos Aires, connection to the central, water-borne sewerage network is never just sewage

management for the sake of public health. Network connection is also the text of who counts, who is recognized by the state, and who is included in participation in an urban life imaginary of purity and cleanliness.

Study Context

Geography and Demographics

Villa Lamadrid is a neighborhood in the municipality of Lomas de Zamora, one of 24 municipalities that together make up Greater Buenos Aires in the Province of Buenos Aires. According to Argentina's 2010 census, the total population of the municipality of Lomas is estimated at 616,279 (Instituto Nacional de Estadística y Censos, 2010). Lomas is located south of the Federal Capital (the central city area we typically think of as Buenos Aires), and the Matanza-Riachuelo River forms the border between Lomas and the Capital. This river is frequently called the most polluted river in Latin America, and even one of the most polluted places in the world (Blacksmith Institute, 2007).
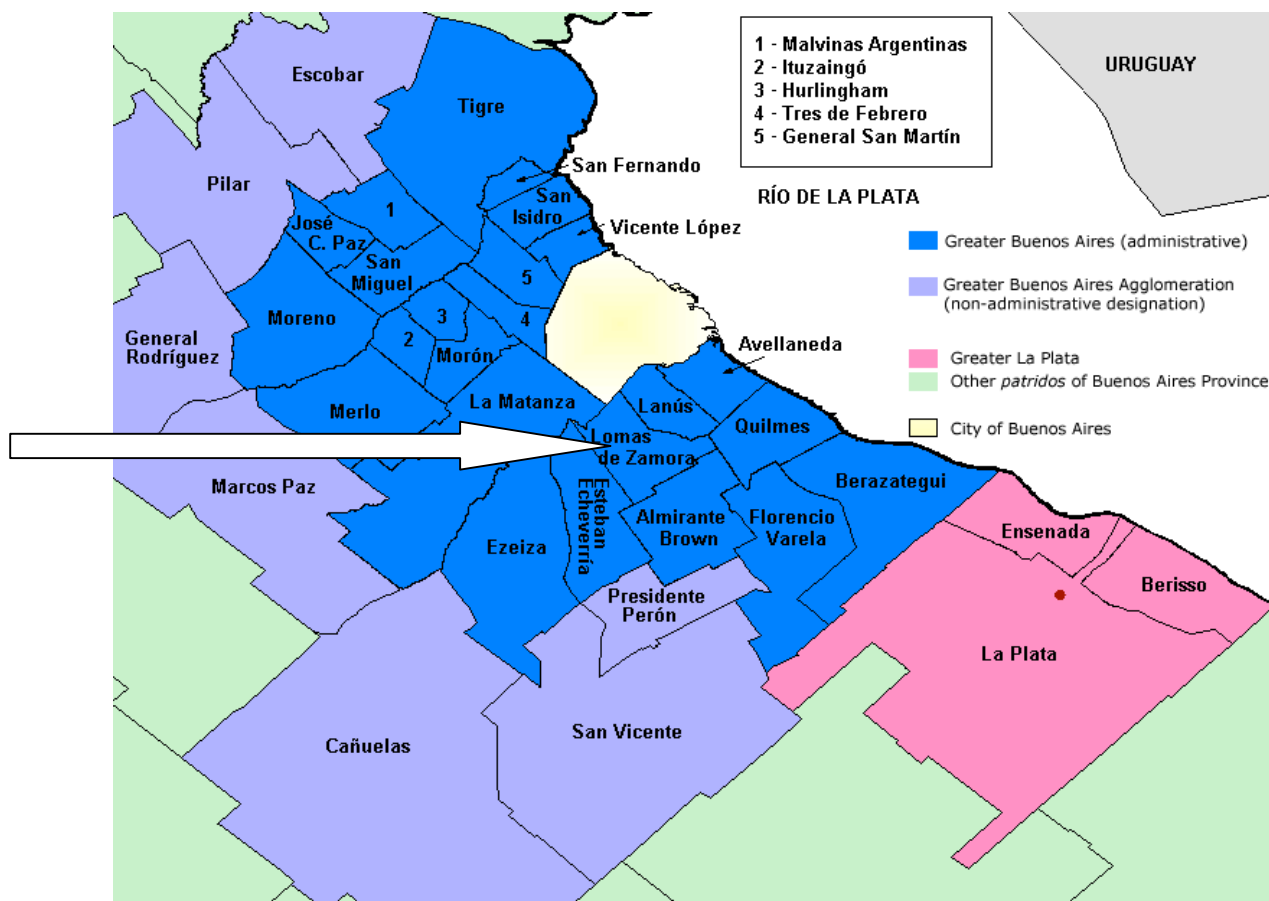
Figure 1: Map of Greater Buenos Aires
(Source: Public Domain; "Map of Greater Buenos Aires," 2012; used with permission)

The neighborhood Villa Lamadrid sits at the northwest edge of Lomas, bordering the Matanza-Riachuelo as it forms the boundary of the municipality. It is located within an area of Lomas is known as Cuartel IX, where the majority of the informal areas exist in the municipality (Municipality of Lomas de Zamora, 2012). The Lomas de Zamora website estimates that approximately 270,000 people live in Cuartel IX, indicating a higher population density than in any other area of the municipality. Cuartel IX contains two major sectors, Fiorito and Ingeniero Budge, with Villa Lamadrid located in the latter (Municipality of Lomas de Zamora, 2012). Villa Lamadrid is estimated to have a population between 5,500 to 6,000 people, with nearly 30% under the age of 20 (Medicos del Mundo & Foro Hidrico, 2011).

Cuartel IX was an industrial area and many of its neighborhoods have considerable toxic waste load in their soil and water. In addition, like many areas along the Matanza-Riachuelo, the area has served as a dumping site for industrial and household waste from other parts of the city

(Auyero & Swistun, 2009). This contamination is discussed further below in the Matanza-Riachuelo River and Basin section. Industrial contamination forms an important narrative and explanation of disease within the neighborhood. In their ethnographic research in a similar villa located along the banks of the Matanza-Riachuelo, Auyero and Swistun (2009) discuss how discourses of contamination form a central part of how inhabitants represent themselves.

The neighborhood has two major sections: the formal neighborhood, which was founded in 1906 as a barrio popular (Municipality of Lomas de Zamora, 2012), and the newer informal areas, known as villas, constructed along the banks of the Matanza-Riachuelo and its tributaries running through the neighborhood. The homes in the villa areas are built of corrugated metal or other found materials. These areas have no formal roads and are represented by white spaces on maps of the area; in addition residences do not appear to have formal access to electricity or water services.

This study however focuses mainly on the older, and formal sector of the neighborhood in the barrio popular. Though homes and businesses in this area are not located directly on river banks as in the villas described above, the area is still in low-lying and flood-prone marshland. Homes are cement or brick and most are connected to municipal water, electricity and gas services. However, Villa Lamadrid's barrio popular still remains one of many neighborhoods in Buenos Aires with no municipal wastewater management infrastructure. Except for a few storm water drains located on main streets in the neighborhood that feed directly into the bordering Matanza-Riachuelo, the residents are provided with no means of removing liquid waste from their homes and businesses – including sewage and water used for cleaning.

History

According to the Lomas de Zamora municipal website, the land which became Cuartel IX was owned by Capitan Francisco Garcia Romero from 1608-1717 as part of his 30,000 hectare ranch, the Estancia El Cabezuelo. In 1736 Juan de Zamora purchased the land and the area grew in notoriety. Zamora's major contribution was the improvement of the bridge crossing the Matanza-Riachuelo that connected the area to the Federal Capital. In 1765 Zamora sold the land to the Jesuit Bethlehem College, who controlled it until 1776. At that time the land reverted to the control of the Temporalities Board who sold the ranch. In 1801 the Spanish Royal Treasury took ownership of the land and, owing to its good pasture, used it as the grazing land for the

horses in the Spanish military (Municipality of Lomas de Zamora, 2012). The name 'Lomas' comes from the Spanish 'little hills,' as the municipality is characterized by seven small hills.

In the early 20th century the area was auctioned off as a 'barrio popular.' Barrios populares, or 'working class neighborhoods,' were a common urban development phenomenon in Buenos Aires until the 1970s. Real estate companies would buy large tracts of rural land, fraction it into household lots, and then sell the lots in installments (Merklen, 2009). This was often done in areas already informally inhabited by squatters, thus formalizing their tenure (AySA, 2009a), though the area would remain without connection to municipal infrastructure and services; in Ingeniero Budge these came later. This barrio popular development trend was a part of the city's rapid industrialization during the early 1900s, a period which saw considerable migration from Argentina's interior into the capital following the promise of jobs (Gingold, 1997). The area which was to form Ingeniero Budge was particularly attractive to real estate companies, and to buyers, as the Midland Railway company planned to build a rail through this area which would run from the city's outskirts into the capital (Gingold, 1997). In 1906 the real estate company Fiorito and Co. auctioned off 4,000 house lots in what became Ingeniero Budge. This area, originally called Villa Riachuelo, was renamed in 1909 in honor of the Midland Railway's first president, Ingeniero Oliverio Budge (Municipality of Lomas de Zamora, 2012).

Over time the area received more and more public amenities and services. In 1967 Ingeniero Budge received water service, followed by electricity in 1968, and in 1973 some of the main roads in the area were paved (Gingold, 1997). In 1995 Ingeniero Budge became one of 15 delegation areas within Lomas de Zamora, meaning that the area has a designated respondent in the Municipal Offices of Consumer Information, which provides information to individuals on rights and services in the municipality (Municipality of Lomas de Zamora, 2012).

As Lomas de Zamora, and particularly Cuartel IX, was a growing industrial area throughout most of the 20th century, many migrants to Buenos Aires settled in Budge. As of 1997 data, estimates suggested that 1 in 3 residents of Ingeniero Budge were from interior provinces in Argentina (Gingold 1997). In addition, many immigrants from outside of Argentina settle in Budge. Argentina's 2010 census showed that 9% of the population of Lomas de Zamora is foreign born, nearly ten times the average of all of Greater Buenos Aires (Instituto Nacional de Estadística y Censos, 2010).

Hydrology of Villa Lamadrid

Lomas de Zamora has 5 sub-watersheds. Of these, three flow west into the Matanza-Riachuelo – Arroyo Santa Catalina, del Rey, and Unamuno (Merlinsky, 2009a); of these, only del Rey remains uncovered. The other two sub-watersheds in Lomas flow north into bordering municipalities, feeding other rivers, and eventually flow directly into the Rio de la Plata. Villa Lamadrid is located within the sub-watershed of Arroyo del Rey, and within the river basin of the Matanza-Riachuelo River, known as the CMR from the Spanish *cuenca* for basin.

The Matanza-Riachuelo River and basin

The Matanza-Riachuelo River runs through the southern portion of Greater Buenos Aires, through the Capital and 14 surrounding municipalities (Merlinsky, 2009b). The historic North-South class divide of Greater Buenos Aires, in which the southern portion of the city has been home to a larger portion of the poorest residents of Greater Buenos Aires, is in many ways marked by this river (Feller, 2005). The banks of the Matanza-Riachuelo in particular have been the site of much of the recent growth in Buenos Aires' informal areas. According to 2006 data, nearly 3.5 million people live in the CMR, 1.2 of these below the poverty line, and 10% of these living in informal settlements; 55% of the river basin's population did not have sewers and 35% lived without access to potable water (Libhaber & Drees-Gross, 2009).

Within Lomas de Zamora 64.5km² lie within the CMR; 25% of the municipality, including Villa Lamadrid, is located within the river's flood zone and is highly flood prone (Merlinsky, 2009a). The population in Lomas living within this flood zone who also live in villas,[8] or slum conditions, as defined by UN-Habitat (2003), is estimated to be 91,034 (AySA, 2009b).

The river has been declared the country's most contaminated river basin, and most "visible environmental issue" by the World Bank (Libhaber & Drees-Gross, 2009). Historically the river has been the sewage sink for all of Buenos Aires, as well as a dumping site for much industrial waste. A 2009 report on the Matanza-Riachuelo river basin for the World Bank cites an estimate that over 4,000 industrial facilities are located within the middle and lower portions of the CMR. These facilities, largely meat-packing plants, chemical industries, and tanneries,

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[8] It is unclear whether 'villas' in this case includes more formal areas of Villa Lamadrid, the area which was originally a barrio popular.

dump huge amounts of heavy metals into the Matanza-Riachuelo, particularly arsenic, cadmium, chrome, mercury, cyanide, and phenol, as well as organic pollutants (Libhaber & Drees-Gross, 2009). This industrial contamination comes in addition to the raw sewage and solid waste from surrounding settlements and households that are also dumped into the Matanza-Riachuelo. According to some measurements, pollution levels in the lower Matanza-Riachuelo far exceed local environmental standards, and "evidence shows that compliance [with standards] is minimal as a consequence of unclear responsibilities across government jurisdictions, weak enforcement systems, and inadequate monitoring and control capacity" (Libhaber & Drees-Gross, 2009).

The map below details water quality of the Matanza-Riachuelo and coastal waters of the Rio de la Plata. The 'Clases de Calidad' box to the bottom left of the image shows a color ranking system for water quality, with blue indicating the highest water quality, and black indicating the lowest. Notable on this map is that the pollution levels in the Matanza-Riachuelo are middling (orange) upstream of Lomas de Zamora. This changes to very poor (black) shortly after the municipality boundary, indicating a significant decline in water quality due to contamination sources within Lomas de Zamora. The change in the river's quality seems to occur with the entry of the tributary Arroyo del Rey, a significant site of industrial waste dumping, and a boundary of Villa Lamadrid.

Figure 2: Matanza-Riachuelo River Water Quality
  (Source: (AySA, 2012a); used with permission)

Ground water

One thing that makes Villa Lamadrid a unique neighborhood, and a particularly interesting place to study wastewater management, is that its soil is absolutely saturated with water – press your foot firmly into the earth and water will spring up. The groundwater table in the area is extremely high, owing to a combination of naturally occurring biophysical circumstances as well as three man-made factors, described below (Del Piero, de la Calle, & Cornejo, 2005; Merlinsky, 2009a). This high groundwater table makes the area even more flood prone, and increases difficulties with local wastewater management.

One major man-made factor that has contributed to this high groundwater table is that Aguas Argentinas S.A. (Sociedad Anónima - Limited Company), the private water and sewerage management company for most of Greater Buenos Aires from 1993-2006, rapidly expanded the water network at a much faster rate than the sewerage system. This served to increase inflow of water to the area without increasing outflow capacity via a functional sewerage network. This unequal infrastructure pacing was a result of two key factors: first, water provision infrastructure is considerably cheaper to expand than wastewater infrastructure, meaning that more customers could be added via expanded water networks at a faster rate than by sewerage expansion. Secondly, reliable access to potable water is typically prioritized more highly than sewerage service access by users (Paterson et al., 2007). This unequal pacing proved to be a short-term gain as there was inadequate means of drainage for the water brought into newly connected communities (Del Piero et al., 2005). For a time this net water imbalance was counteracted by Aguas Argentinas' encouragement of industry to move into peri-urban areas of Lomas by making groundwater prices extremely cheap. Local industries withdrew large amounts of water from the area's aquifers for their operations, counteracting the net water imbalance caused by the infrastructure lag.

After the concession with Aguas Argentinas was cancelled in 2006, AySA took a different approach with industries, raising prices for groundwater and driving many industrial plants out of the area in a relatively short amount of time (Merlinsky, 2009a). This transition coincided with an economic recession that also led to the closure of many factories in the opening years of the 21st century (Gasparini, 2007). Evidence of this recession can be seen on the bus ride into Villa Lamadrid, which passes a number of closed factories and industrial facilities along the Matanza-Riachuelo. The withdrawal of industries from the area during this time compounded the water imbalance in the area caused by the sewerage infrastructure lag, as factories' use of groundwater in had somewhat balanced groundwater levels.

A second factor contributing to the rising groundwater level in Lomas was Aguas Argentinas' forced closure of most household wells in 1994. This was primarily a means of increasing customers by forcing residents to rely solely on their services for water provision. The amount of water taken up from groundwater sources by these wells was significant and had played an important role in maintaining the groundwater table up to that point (Del Piero et al., 2005; Merlinsky, 2009a). In 1993, just before the forced well closure, of the 2.5 million people

in the concession area not connected to the water network (30% of the total population), 95% received their water from ground wells (Loftus & Mcdonald, 2001).

A final factor contributing to rising groundwater levels in Lomas de Zamora is the increasing precipitation in the region which some studies have detected over the last several decades (Del Piero et al., 2005).

Foro Hídrico

During my time in Villa Lamadrid, I worked closely with the community organization Foro Hídrico (Water Forum), a group aimed at securing water and wastewater access for poor and marginalized communities in Greater Buenos Aires. Foro has chapters in several municipalities throughout the metropolitan area. The Lomas de Zamora chapter is focused on obtaining sewerage infrastructure for the entire municipality, and Villa Lamadrid is a key focus of its efforts. Foro's work during my time in the neighborhood centered on a resident-conducted epidemiology project, done in coordination with the non-profit organization Medicos del Mundo (World Doctors).[9] Their goal was to demonstrate the public health impacts in Villa Lamadrid of the industrial contaminants and lack of infrastructure in the area.

The epidemiology project centered on a four-page questionnaire that volunteer interviewers took door to door in the neighborhood, surveying household heads. The questions focused on employment and working conditions, household living conditions, waste disposal practices, access to medical services, and family health.

At the end of October, two months into my own fieldwork, Medicos del Mundo and Foro Hídrico held a community celebration with the purpose of disseminating initial data from the census, based on 114 households surveyed. In addition the festival was intended to further raise awareness regarding health impacts of the lack of wastewater management and industrial contamination in the neighborhood. Some initial data from the census presented at this festival are as follows:

64% of families work in precarious or informal jobs
14% of residents do not know how to read or write

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[9] Medicos del Mundo is a different organization than the more widely known Doctors Without Borders.

62% of residents have suffered flooding in their house or their yard

75% of families do not have health coverage

45% throw their solid waste in the street or give it to an informal trash collector

15% burn their trash

65% of toilet drains flow to the zanja[10]

      (Medicos del Mundo & Foro Hidrico, 2011)

      The following graph is adapted from the census data regarding health conditions of respondents. Volunteers conducting the surveys often expressed that they suspected respondents did not want to disclose their total health histories. While the main health conditions included in the survey related to industrial and heavy metal contamination, and the burning of solid waste, the survey also asked household members about presence of gastroenteritis (resulting in diarrhea, vomiting, and abdominal pain), dengue, and parasites, all of which could be a result of inadequate wastewater management and fecal matter contamination.

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[10] Zanjas are open-air ditches for transport of greywater; they border all the streets in the neighborhood. This system is discussed more fully in Chapter 2.

Percent of Respondents Reporting Presence of Illness in their Household
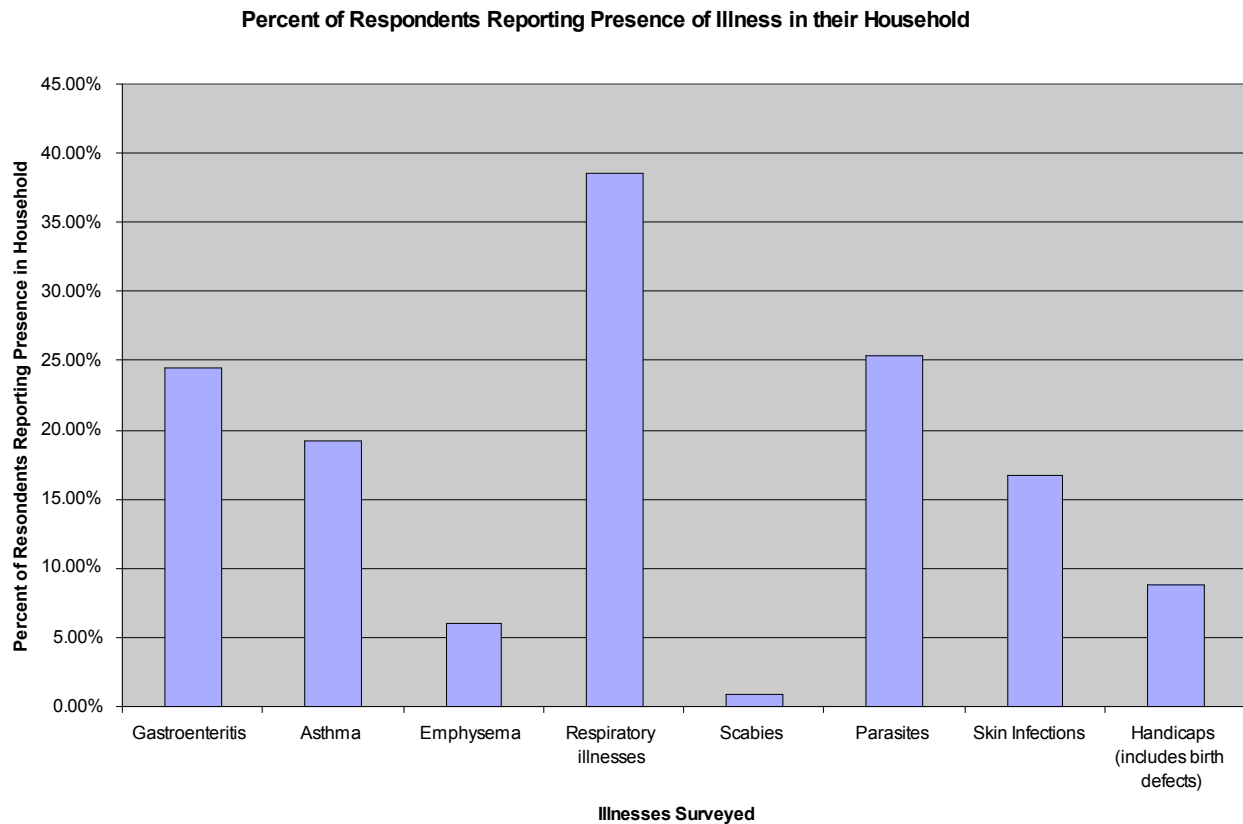
Figure 3: Villa Lamadrid Health Data
(Source: modified from Foro Hídrico/Medicos del Mundo census data
(Medicos del Mundo & Foro Hidrico, 2011))

Wastewater Management in Greater Buenos Aires

A short history

In 1989, in response to a national economic downturn, Argentine president Carlos Menem began to privatize nearly all public services in Argentina by issuing concessions to private business for management and operations of certain systems. Because the president had declared a state of emergency, he was able to issue these concessions without public consultation or consent (Loftus & Mcdonald, 2001). At that time privatization of municipal services was hailed by the World Bank and other international lending institutions as the solution to providing public services more efficiently and with lower cost (Loftus & Mcdonald, 2001; Moccia, 2007). In 1993 Menem awarded Aguas Argentinas S.A. with a 30-year concession for the management

of water and wastewater services to Buenos Aires and 17 surrounding municipalities in the province. The main shareholder of Aguas Argentinas was Suez, a French based multinational company heavily involved in water provision (Loftus & Mcdonald, 2001; Moccia, 2007).

Though the World Bank initially used Buenos Aires as a 'success story,' encouraging implementation of similar privatization models in other cities globally, many authors and reports have found that Aguas Argentinas' management of water and wastewater management services resulted in higher prices for users, environmental degradation, and continued lack of service to poor urban areas, widening gaps in service access (Loftus & Mcdonald, 2001).

In March of 2006, after considerable negotiations, President Nestor Kirchner cancelled the concession with Aguas Argentinas (Merlinsky, 2009a). This cancellation of the contract occurred as one of a number of high profile privatization failures in other major urban centers globally around this time (Gandy, 2011). A new public business was inaugurated to undertake responsibility for potable water and sewerage service provision in the province: Agua y Saneamientos Argentinos S.A. (AySA). 90% of AySA is held by the national government while the remaining 10% remains in the hands of AySA employees (AySA, 2006). The area in their coverage includes the capital and 17 municipalities in the province of Buenos Aires (see figure below for full area of their concession). The area covers approximately 1800km², containing about 9.7 million residents as of 2011 data (AySA, 2011a). This concession accounts for 25% of the population of all of Argentina, and makes AySA one of the biggest providers of potable water and sewerage services globally (AySA, 2006).
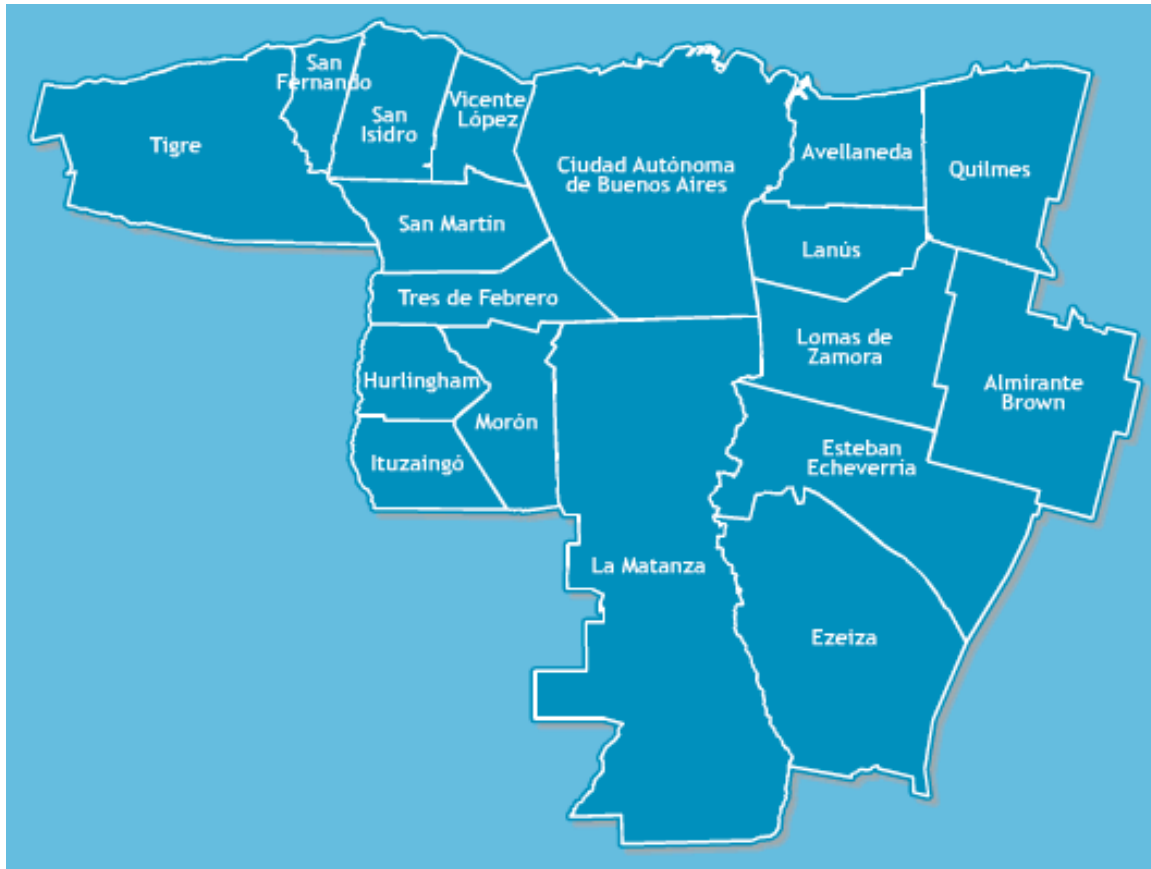
Figure 4: Map of AySA's Service Concession
     (Source: (AySA, 2012b); used with permission)

Current management

        Wastewater infrastructure and service provision in AySA's concession remains grossly
inadequate. According to AySA, in 2011 only 59% of the population (5.7 million people) within
the concession had access to sewerage services (AySA, 2011a).

        Currently four wastewater treatment plants exist within AySA's concession[11] (AySA,
2011a). According to a 2005 report published by the Fundación Metropolitana (Metropolitan
Foundation), an organization focused on strategic planning for greater Buenos Aires, these
treatment plants have the capacity to serve, at most, 810,000 people (Del Piero et al., 2005) – or
10% of the wastewater collected in the existing infrastructure (Merlinsky, 2009a; Pan American
Health Organization, 2005). The remaining 90% of wastewater collected in AySA's sewerage
infrastructure is released untreated into the Rio de la Plata, a situation becoming increasingly
problematic as the river also serves as the city's drinking water source (Malpartida, 2001).

Figure 5: Wastewater Treatment Plants in AySA's Concession
  (Source: (AySA, 2012c); used with permission)

The area to the south of the Federal Capital of Buenos Aires, including the municipality of Lomas de Zamora, has the lowest rate of coverage in sewerage provision, with an estimated 64% deficit (AySA, 2006). Other studies suggest the deficit may be even higher; Fundación Metropolitana's 2005 report estimated a 72.9% of the population lacks sewerage access in Lomas de Zamora (Del Piero et al., 2005). Argentina's 2010 census estimated that of 188,844 households within Lomas de Zamora, only 58,329, or 30%, were connected to the centralized sewerage system, indicating a 70% coverage deficit in the municipality (Instituto Nacional de Estadística y Censos, 2010).

Región Capital Federal
Déficit: 1 %
30.000 habitantes

Región Norte
Déficit: 43 %
620.000 habitantes

Región Oeste
Déficit: 47 %
1.050.000 habitantes

Región Sur
Déficit: 64 %
1.800.000 habitantes
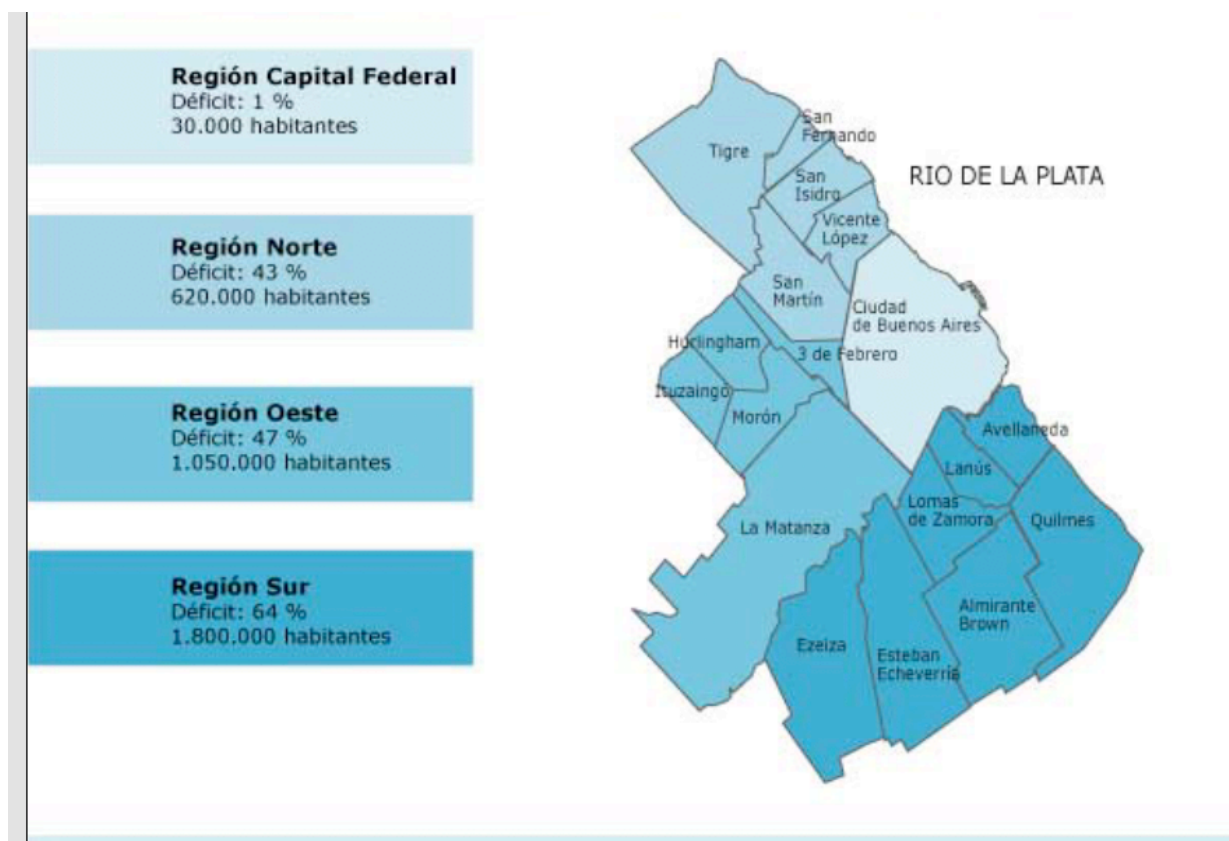
Figure 6: Sewerage System Coverage by Region, 2006
(Source: (AySA, 2006); used with permission)

AySA's plans for increasing coverage

With the granting of the concession in 2006, AySA was required to create a management and implementation plan outlining how they would address the coverage deficit. This document, called the Plan Director 2006-2020, presents AySA's plans to achieve 100% coverage in potable water access and 80% coverage in sewage service coverage by 2011, and 95% coverage in sewerage services by 2020. The document also outlined expansion, as well as continued operation and maintenance plans for both systems (AySA, 2006). By 2011 AySA's sewerage coverage had reached only 59% of the concession (AySA, 2011a), falling considerably short of their original goal of 80% coverage by this date.

According to AySA's 'Strategic Plan 2011-2020' (an update to the 2006 document), over 750,000 new users had been incorporated in the sewage system services since 2006. This progress is somewhat unclear given that AySA's reported coverage in 2006 (6 million users and

64% coverage) was higher than their 2011 report (5.7 million users and 59% coverage) (AySA, 2006, 2011a).

Two additional wastewater treatment plants in the concession are planned and listed on AySA's website. The first is Del Bicentenario. This plant would have the capacity to treat liquid waste of an additional 4 million people and would be located in the municipality of Berazategui (AySA, 2010). Construction has begun on the plant, though it has yet to come on-line as of this writing. The second additional plant planned came about in part as a result of Foro Hídrico's lobbying. This smaller treatment plant will be located in Fiorito, Lomas de Zamora, and have the capacity to serve 270,000 people, or all residents of Cuartel IX (AySA, 2011b), including Villa Lamadrid. Construction was planned to start at the beginning of 2011. As of the writing of this document, September 2012, construction on the plant is still in very initial stages due to financial obstacles (personal communication, Victor Hugo Frites, member of Foro Hídrico Lomas de Zamora).

Wastewater Management in Villa Lamadrid

It is difficult to know how the Joint Monitoring Program would categorize Villa Lamadrid's wastewater management situation today – improved or unimproved? The majority of residents have flushing toilets connected to septic tanks – a system that technically meets the JMP's standards for improved sanitation. However, the function in practice of this septic tank system far from accomplishes the goal of a system that "hygienically separates human excreta from human contact" (WHO/UNICEF, 2010: 33).

Due to the high groundwater table, septic tanks fill fast and must either be pumped out regularly, or overflow into residents' yards as well as public spaces such as roads and zanjas (zanjas are open-air ditches lining every street in the neighborhood intended for the transport of greywater). The atmosférico is the name of the truck service that can be hired for pumping out a septic tank. The price for a servicing from the atmosférico was quoted to me as around $260 Argentine pesos (Interviewee #16 and others), equivalent to approximately $65USD. This represented a large chunk of money given salaries in the area. Foro estimated that 80% of families in the neighborhood did not have salaries high enough to cover even their basic monthly needs (Medicos del Mundo & Foro Hidrico, 2011). Interviewees varied in how often they told me they needed to call the atmosférico – reports ran everywhere from a monthly servicing to

biennially, to something that they had never done. Even if residents were able to invest in occasional visits from the atmosférico, there were times and areas of the neighborhood where septic tanks filled constantly due to groundwater infiltration, and a single pumping could not do much to reduce the problem. As one interviewee explained,

> E: Lo que pasa que acá es un lugar que es muy bajo y las napas de agua están muy arriba. Hoy el camión atmosférico te vacía el pozo, y mañana ya está lleno de nuevo.

> *E: What happens here is that this is a very low spot and the groundwater table is very high. The atmosférico truck comes to empty the septic tank today, and by tomorrow morning it is full again.*
>
> (Interviewee #19)

Residents' experiences correspond with similar reports regarding septic tank systems in urban areas globally where groundwater levels are high (Brikke & Bredero, 2003; Kulabako, Nalubega, Wozei, & Thunvik, 2010; Tilley et al., 2008). Given that the current septic tank system remains untenable in Villa Lamadrid, it is arguable that the ecological impacts, as well as occurrence and spread of pathogens in the neighborhood, are similar to those in communities practicing open defecation. However, the widespread existence of flushing toilets in Villa Lamadrid households makes user-end experience of defecation significantly different from open defecation in terms of privacy and safety. Also, the social meanings of owning and using flushing toilets, including symbolism of modernity, cleanliness, and success (Benidickson, 2007; Black & Fawcett, 2008; Jemsby, 2008; Jewitt, 2011), make the meanings and feelings associated with defecation in Villa Lamadrid significantly different than they might be in a community practicing open defecation.

Other wastewater, including greywater from washing and showering, is directed into the zanjas. As described above, zanjas are open-air ditches approximately 1.5' wide by 1.5' deep, bordering every street in the neighborhood and located in front of residents' homes. Often the contents of overflowing septic tanks, intentionally or unintentionally, find their ways into the zanjas as well. It is unclear who originally built the zanja system – whether it was Aguas

Argentinas, AySA, the public road building authority, or the residents themselves. However, continued maintenance of the system falls to the shoulders of residents, and AySA does not mention the zanjas in the Plan Director (AySA, 2006).

Though Villa Lamadrid may not be considered one of the most desperate sanitation cases – indeed residents have what technically counts as 'improved sanitation' (flushing toilets and septic tanks) – it may be among the hardest to reach. Construction costs of water-borne, centralized sewerage infrastructure would likely be extremely high in Villa Lamadrid owing to the same hydrological conditions that render the current septic system useless, making AySA's promises of sewerage provision in the near future dubious at best. Even if AySA did undertake this massive infrastructure project, the long-term sustainability would likely be highly compromised by the area's overflowing water table. Simply put, marshland is not good land for sewer pipes. Villa Lamadrid is also a particularly difficult area to work in both socially and politically. The state has promised service to the neighborhood in the near future, most recently with the Fiorito treatment plant, the construction of which has already been postponed by nearly two years (personal communication Victor Hugo Frites, Foro Hídrico). These continued promises make many residents hopeful of imminent change and hesitant to consider either moving or implementing sanitation alternatives more suited to the area's biophysical conditions. Many communities built in ecologically precarious or contaminated locations face this dilemma – undertake relocation or continue down the path of technical adjustment and daily struggle to make current living situations marginally livable until more permanent infrastructure promises are fulfilled. Auyero and Swistun (2009) discuss a similar situation in another villa in Buenos Aires, this one highly contaminated with industrial toxins. Residents find the decision to move particularly difficult owing to continuous promises from the state and local industries of financial support for health conditions resulting from the contamination. Though such promises are often pushed back and unfulfilled, residents remain at the mercy of this not-knowing.

Methodology

My interests in this research focused on daily life, lived experience and perceptions of wastewater and other community issues among Villa Lamadrid residents. Participant interactions

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and experiences, as recounted through informal interviews and my own observations while spending time in the neighborhood, served as the main sources for data.[12]

Before beginning my fieldwork I formulated somewhat flexible research questions, rather than overly specifying them prior to meeting the community. This process was in keeping with Carspecken's (1995) *Critical Ethnography* methodology with the purpose of not narrowing my observations and research focus prematurely before entering the field. My initial interests centered primarily on wastewater negotiation practices in Villa Lamadrid, especially as these were gender differentiated and related to daily labor practices.

These interests were refined as I spent time in the field and began to learn more about daily life in the neighborhood, and especially how it is understood and narrated by the residents with whom I interacted. The importance of La Salada, a clothing fair in the neighborhood explored more fully in Chapter 2, as well as reactions to changing immigration patterns were mentioned by nearly all participants and emerged as important themes to understanding wastewater negotiation in the community. Additionally, the symbolism of sewerage connection as a sign of modernity and recognition in the eyes of the state was a theme in nearly every conversation I had during my time in Villa Lamadrid.

As I began my data analysis phase more specific research questions emerged which guide the focus of the following chapters. In Chapter 2 these questions are: How does daily wastewater management and negotiation in Villa Lamadrid influence discourses surrounding social difference generally? How do these processes happen specifically in regards to immigration? And how do these discourses serve as a means of socially and mentally managing sewage in the community by providing separation of self from contamination? In Chapter 3 my guiding questions are: What are the urban imaginaries of sewage management in Villa Lamadrid? And how are these important for the ways that residents react to and understand technically sustainable, household level, low resource use wastewater management options?

The data was generated over three months of fieldwork in Villa Lamadrid between September and December of 2011. I spent 20-30 hours per week in the neighborhood over these months, observing daily life on the streets and in households of residents whom I got to know

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[12] Research methodology received ethics approval from the University of British Columbia Office of Research Services (H11-01332).

well, sharing maté[13] and meals. I became particularly comfortable in four different homes and visited with these families frequently. I also attended community meetings of Foro Hídrico one or two times a week. Finally, I was asked by Foro Hídrico to film and edit a short documentary in the neighborhood regarding their main environmental and human health concerns.

Over my time in the field I conducted 36 unstructured interviews with residents and workers in Villa Lamadrid. Interviews and all interactions with participants were conducted in Spanish without the use of a translator. Though not entirely fluent in Spanish, I had spent significant time in other Spanish speaking countries and had a good foundation in the language to begin interviews. After the first five interviews I became significantly more comfortable with the specific wastewater management vocabulary. In addition, participants offered me a lot of grace when I had trouble understanding their sentiments. All interviews were recorded with the permission of the interviewee. These recordings afforded me a chance to listen more carefully to interview segments that I was uncertain of.[14]

I hired a native Argentine Spanish speaker to transcribe the interviews to improve accuracy and understanding of local Argentinean vernacular. Though the transcriber was not from the neighborhood, for confidentiality reasons, their knowledge of particular lingo was extremely helpful in producing accurate interview transcriptions.

I met interviewees through a variety of means, including through patronizing businesses in the neighborhood and through Foro Hídrico. Interviews took place in beauty parlors, in remis[15] offices, in a pet food store, and in participant's homes. I used a snowball method to ask participants to refer me to neighbors and acquaintances for further interviews. Five interviewees lived in a neighborhood bordering Villa Lamadrid; these interviews focused mainly on perceptions of Villa Lamadrid and experiences of transportation into and out of the community during flooding events. Of the interviews conducted, 16 were with male collaborators, and 20 were with females. Their ages ranged from 20 to 70. Participant occupations were also quite diverse; some participants were retired, others stay-at-home moms, others worked at home doing

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[13] Maté is a typical argentine tea shared among groups. I was offered some nearly every day for one reason or another!

[14] Interviews were recorded only with participant consent, following UBC ethics guidelines from the Office of Research Services.

[15] Remis are cars for hire.

piecework for La Salada, others ran shops and businesses in the neighborhood, and finally some had jobs in the Capital or other parts of Greater Buenos Aires which took them out of Villa Lamadrid on a daily basis.

Because of the precarious nature of their work and living conditions, it was harder to make connections with recent immigrants in the community and with those who were living in informal housing or undertaking informal labor positions. Engagement with residents of the informal areas of the neighborhood during this period of fieldwork did not occur because I was not able to find a comfortable social entry point into these parts of the neighborhood. As a result, the majority of my interviews in this study were with Villa Lamadrid residents who were born in Argentina and lived in the older, barrio popular regions of the neighborhood.

An additional portion of the interview was added part way through the study. This part of the interview solicited feedback regarding two decentralized wastewater management systems as outlined in EAWAG's "Compendium of Sanitation Systems and Technologies" (Tilley et al., 2008). As the data from this portion of the interview applies solely to the discussion in Chapter 3 of this thesis, I will reserve a description of this additional methodology for that chapter.

Data Analysis

Following work in the field I engaged in an iterative process of data analysis and a return to the literature for further focus on themes that emerged from the data. This again was in keeping with Carspecken's (1995) ethnographic methodology. All data analysis was conducted on the Spanish version of transcripts. Quotes in this text are provided in their original Spanish form first, followed by my own translations into English, shown in italics.

Transcript coding was an iterative and cyclical process. Transcripts were first coded using a line by line descriptive coding process, as described by Saldaña (2009) to separate participant responses into basic themes such as 'zanjas,' 'flooding,' 'solid waste,' 'neighbors,' and 'mobility.' These larger categories were then assigned more specific subcodes as described by Miles and Huberman 1994, referenced in (Saldaña, 2009), to denote how participants referenced and described their experiences with the larger categories. Subcodes included more emotive and relational codes such as how participants felt about their neighbors, or how participants constructed problems based on their perceptions of issues in their daily lives. This

coding process served as the basis for writing about how participants constructed their wastewater negotiation perceptions, experiences and priorities.

I conducted a refined literature review at this point with attention to previous work on social impacts of informal wastewater management practices and infrastructure. In addition I looked at literature social impacts of urban infrastructure more broadly, first in informal and peri-urban settlements, and also in urban environments generally. In addition, I conducted literature searches on theories of racialization, social connotations of human waste, citizenship, and the urban imaginary. Relatively little has been written regarding social and community impacts at a neighborhood level of zanjas, the open-air ditches for greywater transport. While similar systems do appear to exist in many locations globally, and are known by a variety of names, when they are studied they are typically examined for their contribution to disease and health risk factors for communities. In addition, few researchers have looked at how urban imaginaries of sewage management impact and form local perceptions of dry, household level wastewater management technologies frequently offered as toilet systems to neighborhoods not connected to municipal sewerage services.

Limitations

The described methodolgy brought some limitations to the research. Though I did conduct all interviews in Spanish, my knowledge of Spanish was an obstacle at many points during the research. There were times when I did not fully understand a participant's response and was not able to ask adequate follow-up questions. In addition, at times when I did not know a word for a concept I had to phrase a question awkwardly to get at my meaning. This may have changed how participants received me and my research, perhaps making it seem less official or serious. While this could in some ways have been a benefit, reducing some of the power differential that often exists when outsider researchers spend time in a marginalized community, it may have also made participants less likely to answer fully or less interested in the research in general.

Another limitation is that the majority of participants were Argentine-born residents of the barrio popular area of Villa Lamadrid, and owned their homes. This represents only one portion of the neighborhood, as many residents either live in more precarious slum housing in the area, or are recent immigrants and renting rooms in the barrio popular. Although I did interview

two very recent immigrants from Peru, who were renting a small room at the back of a larger home in the barrio popular area, the immigrant perspective in this research remains limited. The addition of the voice of more recent immigrants to the neighborhood might have added depth and additional perspective to the reflections in this thesis.

A Note on Subjectivity

This research is reported through my eyes and my voice, and, given that you will be at the mercy of them for the next 70 pages or so, it bears mentioning why I did all this. If I take a step back for a moment, I can still see that sewage is a very weird topic to get interested in... All possible jokes aside, my interest in sewage and sewage management in Latin America was sparked by a trip I took while in college. During the spring break of my junior year I spent nine days in Managua, Nicaragua supposedly building some community center for a very low income neighborhood. We also visited a neighborhood located in the city's dump.

I am not too big a fan anymore of spring break service trips for 20-something people but, the trip did seem to do what the brochure said it would – "change your life."

For several weeks after the trip I was not able to speak. I mostly just sat. It may sound funny or overdramatic now, but at the time it just felt empty. I'm still wondering what to do with that experience, that knowing. So here I am in graduate school, writing this thesis, trying to fill holes.

CHAPTER 2: "Bolivians Piss in the Ditch" -
Managing Wastewater With Narrative

Introduction

Many authors have explored how notions of dirtiness and cleanliness are mechanisms for ordering daily life, determining boundaries between social belonging and exclusion (Douglas, 1966; Hawkins, 2006; Sundberg, 2008; Ross, 1995). Rituals of cleaning and hygiene are perhaps as much or more about producing social order as they are about health (Douglas, 1966; Hawkins, 2006). Accepted social practices of cleanliness and hygiene are powerful vehicles for demonstrating or naturalizing belonging and citizenship, just as their absence can be evidence for exclusion and backwardness.

In this study I look at Villa Lamadrid as a community that has particular difficulties conforming to accepted hygiene practices of the modern urban citizen – there is simply no structure to take their sewage 'away.' At the same time this community is firmly embedded in a city and cultural context doing its best to maintain its European roots (Joseph, 2000; Sutton, 2008), in which personal hygiene practices have long been used to delineate the educated, modern, and urban citizen from the dirty, rural, and backward outsider (Feller, 2005; Sutton, 2008). Villa Lamadrid in particular is made up of people who have traditionally been outsiders, beginning with the neighborhood's founders trying to transition their identities from poor, underclass immigrants to the city to legitimate residents and citizens of Buenos Aires. In 1995 Ingeniero Budge, the larger area in which Villa Lamadrid is located, was recognized as an independent sector within Lomas de Zamora (Municipality of Lomas de Zamora, 2012). While this did mark some more formal recognition and legitimacy for the community, it also served to underscore the community's continued outsider status. The neighborhood had grown in economic importance during this time owing to a clothing feria, La Salada, which brought in significant financial influence to the municipality, but simultaneously attracted many undocumented immigrants to the area who were received with considerable prejudice.

As a result of the uncomfortable and contradictory position Villa Lamadrid and its residents inhabit, trying to perform belonging while remaining fundamentally unable to conform to hygiene norms, discourses and narratives surrounding sewage management fulfill a central

function of the lacking waste management infrastructure – a separation of the self from the community's wastewater management struggles. These 'discourses of distancing' employed by interviewees included describing the problem at a physical distance by indicating that it was worse in other parts of the neighborhood than around their house, describing the problem as temporally distant, indicating that it was not a problem in 'their' time, or would soon be resolved, and indicating that the problem was socially distant, caused and exacerbated by people fundamentally different from themselves. The most common means of creating distance from sewage waste in the community was through racializing the waste and blaming 'dirty immigrants' as primarily responsible for improper sewage management practices. Discourses about blame for fecal contamination serve as a means of demonstrating citizenship by indicating who is an outsider. This particularly occurs through narratives that naturalize and reinforce stereotypes about 'dirty immigrants.' These discourses permit the performance and maintenance of a self that is conforming to socially accepted hygienic practices, maintaining distance from sewage waste, even in the midst of inadequate sewage management systems. As this narrative of racialization came up most frequently in my interviews, the majority of my analysis and discussion will center on this mechanism of distancing employed by interviewees.

My intent is not to explore whether recent immigrant groups in fact contribute more to fecal waste contamination than residents born within Argentina, or whether differing practices of waste disposal have varying hygienic value. Instead, I am interested in how racializing narratives of immigrants to Villa Lamadrid are co-constructed through and with informal waste disposal practices. Immigrants are racialized as 'dirty' through the presence of fecal matter in the neighborhood streets and the fecal waste itself becomes a sign of the presence of immigrants in the neighborhood, and the contamination they have brought to the neighborhood. Ultimately my aim is to show that wastewater management is never just about infrastructure and technology; it is a process that connects neighbors and communities, forming and influencing relationships.

In addition to discourses that forge a distance between residents and sewage in the neighborhood, residents also employ another mechanism to separate themselves from the presence of fecal matter in the zanja system - blaming the state for its neglect of the neighborhood. Though this too is an important part of the discourse surrounding waste management in Villa Lamadrid, I will explore this facet more fully in the following chapter.

I look particularly at the presence of shit in the zanja system, a network of open-air water ditches for storm water and greywater[16] collection, as a concrete expression of the struggles with wastewater management in the neighborhood. Overflowing septic tanks, exacerbated by a saturated groundwater table and high prices for pumping tanks out, are often managed by pumping tanks directly into the zanjas.

I begin this chapter by presenting important context to this study, including a look at how hygiene works as a social indicator of inclusion and exclusion, a look at Villa Lamadrid's immigration history and present situation, and a description of the neighborhood's zanja system. Following this, I turn to the physical zanja system and how it both impacts social relationships, and articulates social norms, practices, and expectations, as seen through the discourses used to explain and ameliorate the sewage waste contamination in the zanja system.

Hygiene as Politics of Exclusion and Citizenship

Hygiene practices are performances of belonging. Douglas' (1966) work *Purity and Danger* proposes that dirt is socially constructed, a sign of the presence of social order, and fundamental to social systems. Being dirty indicates social deviance, inappropriate action, and grounds for social exclusion. Similarly, purity and cleanliness are a part of social norms, indicating belonging and keeping with social order. Ultimately purity is a sign of inclusion, while dirt naturalizes exclusion. It is difficult to tell when a subject's dirtiness is proof of their deviance or a result of it as these blend together.

The process of differentiation between the insider and outsider is intimately intertwined with notions of disgust and dirtiness (Sibley, 1995). It is the very act of differentiation which signals, and creates, the elite as separate from the 'commoner,' and indeed the act of exclusion of others has served as a part of the performance of cleanliness for elite classes (Vigarello, 1988). Swyngedouw (2004) writes that in late 18th century Europe the elimination of body odors became necessary for social acceptance and upward mobility. In many cultures water in particular is a fundamental symbol of cleanliness and purity (Bakker, 2010; Gandy, 2004; Swyngedouw, 2004). For instance, drawing on a case study from Ecuador, Guayaquil,

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[16] Greywater includes all wastewater from households for cleaning or cooking purposes. It excludes any water containing fecal matter or urine; this category of wastewater is referred to as black water. As the zanjas are open to the air, they also perform storm water collection and transport (Carden et al., 2007).

Swyngedouw (2004) writes, "Images of the smelly peasant and unhygienic indigenous population re-enforce the position of water as an integral element of social power in the city" (35), a means by which a person could differentiate themselves from the dirty commoner or indigenous. In this way the act of cleaning, of purifying and removing bodily odor with water, is often a process of becoming socially acceptable.

Though the particularities have varied greatly over time and space, rules governing defecation, hygiene, pollution, and cleanliness have existed in nearly every culture through history (George, 2009; Jewitt, 2011). The regulation of the body through hygiene norms and practices (here I draw on Foucault's notion of biopower as described by Hawkins (2006)) not only creates societal norms, but also functions as a means of claiming and performing personhood, belonging, and citizenship. Deviance from accepted hygiene practices and unsanitary conditions have been associated with a range of social taboos and connotations including lack of education, class, modernity, and propriety, and seen as signs of immorality and even crime (Gandy, 2004; Hawkins, 2006; Jewitt, 2011; Ross, 1995; Sundberg, 2008).

Social connotations of dirtiness are particularly pronounced when it comes to liquid waste – shit (Hawkins, 2006; Jewitt, 2011; Sundberg, 2008). As Jewitt (2011) describes, many cultures assign the task of handling human fecal waste to marginalized groups of people, excluded from the rest of society (as in India's Hindu cultural customs, these functions are often assigned to 'untouchables') (Ramaswamy, 2005), or certain immigrant groups (as in Ghana where waste handlers are typically people who originated from Sierra Leone and Liberia (van der Geest, 1998)). Their task and association with human waste both creates their social exclusion, and is evidence of it. Some authors have described 'shit,' and discussions of its management, as the last great taboo topic because of the enormous social and cultural meanings associated with it[17] (Jewitt, 2011; Black and Fawcett 2008).

Despite the stigmas associated with waste, the ability to produce it is a sign of affluence in many societies. Being able to throw resources away demonstrates comfort and modernity, a progression from basic survivalist activities, as well as an awareness, and performance of, propriety and class (Veblen, 1899). Flushing toilets and attendant water-borne sewerage systems are symbols of power as they advertise the access and ability to consume enormous amount of

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[17] In concert with other scholars (George, 2009; Mehta & Movik, 2011; Black and Fawcett 2008), I use the word shit openly in this research to work against this taboo.

water resources for the transport of a relatively small amount of sewage, where feces typically make up less than 1% of all matter flushed into the sewer system[18] (Benidickson, 2007; Swyngedouw, 2004); Bakker (2010) calls this "the effluence of affluence" (55). In many areas where water-borne sewerage is not taken for granted, owning a flush toilet is often a sign of economic and social success (Benidickson, 2007; George, 2009; Jemsby, 2008). Access to unlimited amounts of water continues to be a marker of class differentiation today, as it is the connections of affluent neighborhoods that are often prioritized, while lower classes and more marginalized populations are frequently left to suffer without connection to water and sewerage infrastructure (Mamdani, 1996; Swyngedouw, 2004). I discuss this idea of waste production as a sign of power, particularly as manifested through flushing toilets and water-borne sewerage, further in Chapter 3 as I look at dry sanitation options commonly suggested for the urban poor.

The association of water-borne sewerage and flushing toilets with class is also due in part to the major growth of water-borne sewerage systems in 19th century Europe (Bakker, 2010; Gandy, 2004). As described in Chapter 1, this infrastructure symbolized and encouraged emerging hygiene practices. Hygiene practices took on a moral weight, becoming signs of participation in modernity and the "hygienist city" (Gandy, 2004), part of a response to new public health awareness from urbanization patterns of the Industrial Revolution. Water was seen as a sign of purity and naturalness (Swyndeouw 2004), and the flushing away of fecal matter in a rush of water became a sign of cleansing and purification of the waste.

The contradiction between the importance of waste production for performing class, and the stigma of association with waste has led to a heavy reliance on waste disposal systems (Bakker, 2010; Gandy, 2004, 2011; Swyngedouw, 2004). As Gay Hawkins (2006) states, "the elimination of waste became a marker of civilized modernity" (1), simultaneously allowing for demonstrations of power through the production of water waste, and distance from the negative connotations of dirtiness associated with feces and wastewater. In order to demonstrate this modernity waste disposal practices and systems facilitate immediate disassociation of the

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18 An average person using a flush toilet discharges 50 liters of feces, 400-500 liters of urine, and 15,000 liters of pure water annually. Additionally that person will send 15,000-50,000 liters of grey water over the year into the sewerage system. The result is that the water borne sewage system facilitates the contamination of a huge amount of pure and grey water with a comparatively tiny amount of feces (S Esrey & et al., 1998). Feces comprise far less than 1% of matter flushed into the sewerage system.

household or individual from its waste. Waste disposal systems, particularly for liquid waste, are designed so that almost as soon as waste is generated, it is flushed out of the private domain and enters a public, anonymous space – the sewers (Hawkins, 2006). Thus the real work and logic of the water-borne sewer system is that it "transform[s] shit to effluent, from private waste to public problem" (Hawkins 2006: 67), as, after all, "publics don't shit" (Hawkins 2006: 47).

Purity and Racism in Buenos Aires

Not surprisingly, immigrants are often cast as dirty and alien in the context of urban spaces, particularly as they are frequently the most recent and obvious outsiders in a community. Constructing immigrants as dirty or as a threat to public health is not new or unique to the Argentine context (Ross, 1995; Sundberg & Kaserman, 2007; Zulawski, 2007). In the United States, "Narratives labeling immigrants as a health menace have been used to draw boundaries around who belongs in the nation and to justify the exclusion and social policing of entire groups of people" (Sundberg & Kaserman, 2007: 739). The representation of immigrant groups as essentially dirty, unaware of their failure to conform to accepted hygiene norms, and particularly their lack of control in defecation, is also used to weaken immigrants' claims as "civilized, rights-claiming individuals" (Sundberg and Kaserman, 2007: 738).

Many authors have written specifically about Argentina's deeply entrenched racism, part of a long history of European colonization, and cleansings of the country's indigenous roots and other mintority groups (Feller, 2005; Rotker, 2002; Sutton, 2008). Disappearances of Afro-descendents, originally brought to Argentina as slaves in the 18th century, and indigenous peoples have often been framed in the country's history as results of wars and disease outbreaks when in fact these groups were often victims of forcible expulsions and genocides (Feller, 2005; Sutton, 2008). These events often explicitly or implicitly juxtaposed the cosmopolitan, civilized, and pure European with rural, backward, and dirty indigenous peoples of the interior of Argentina, as well as from other Latin American countries (Keeling, 1996; Rotker, 2002; Sutton, 2008). As one example of these racializing discourses, immigrants from Argentina's interior have been referred to as '*cabecitas negras*,' or 'little black heads' (Joseph, 2000; Sutton, 2008). Similarly, as Sutton (2008) describes, immigration from Argentina's interior in the 1930s was often referred to by upper-class porteños as the *aluvión zoológico*, or zoological flood. Linked to this, immigration from Europe was formally encouraged through immigration policies

throughout the late 19th, and early 20th centuries, serving in part to sever and purify Argentina from its indigenous roots (Feller, 2005; Joseph, 2000; Meik, 2011; Sutton, 2008). This immigration history is unique among Latin American countries; indeed Argentina was the first country in Latin America to have an Immigration Policy, and formed its Immigration Commission in 1824. Today over 85% of Argentineans are of European descent, an ethnic prevalence unlike any other country in Latin America (Feller, 2005).

Since the 1940s the majority of immigration to Argentina has been from neighboring countries – particularly Bolivia, Peru, Uruguay, and Paraguay - 'darkening' the country's ethnic make-up with more indigenous peoples. Rather than being welcomed as European immigrants were, immigrants from Argentina's interior and neighboring countries are viewed as intruders and met with considerably more racist attitudes (Feller, 2005; Joseph, 2000; Keeling, 1996; Sutton, 2008). Indigenous peoples have historically been located in the country's lower classes, a pattern that continues today (Sutton, 2008). The majority of immigrants from neighboring countries have settled in the city's villas and poorest areas. As of 2005, only 59% of villa dwellers were born in Argentina (Feller, 2005).

Many interviewees made statements that implied that an innate sense of hygiene and cleanliness was a part of an Argentine identity, and something fundamentally different from the identity of immigrants from neighboring Latin American countries. As a white outsider, I was included in many interviewees' assumptions of being clean, or understanding their hygienic sensibilities, whereas it was assumed that outsiders were ignorant of these. One interviewee, speaking of Peruvian practices, remarked,

> E: Porque nosotros tenemos otra costumbre, los argentinos. La
> basura… vos, ponele, vos pelás una mandarina y la tenés en la
> mano, no la tirás en el piso.

> M: No.

> E: Por eso, vos no la tirás en la calle, así, a la mandarina. Yo pelo
> una mandarina, me la pongo en el bolsillo y cuando llego a mi casa
> la pongo en el tacho de la basura.

M: Sí, claro.

E: Ellos no [risas].

E: We have other habits, we Argentineans. Trash…you know, you peel a mandarin and you have it in your hand, you don't throw it on the floor.

M: No.

E: That's what I mean, you don't throw it in the street. When I peel a mandarine, I put it in my pocket and when I get home I put it into the trash.

M: Yes, of course.

E: They don't [laughs].
(Interviewee #18)

Immigration and La Salada

Immigration to Greater Buenos Aires in general has slowed considerably in recent decades, with an annual population growth rate of 1% (Feller, 2005; Junior Worldmark Encyclopedia of World Cities, 2000), and less than 6% of the entire population born outside the country (Instituto Nacional de Estadística y Censos, 2010). However, immigration to Villa Lamadrid remains considerably higher. Argentina's 2010 Census estimated that over 9% of the population in Lomas de Zamora was born outside of Argentina (Instituto Nacional de Estadística y Censos, 2010). This high immigration rate was something interviewees referred to often, perhaps eager to point out that native Argentineans, like themselves, were becoming rare in the neighborhood,

E: Sí. Pasa que acá en este barrio hay mucha gente de afuera, no es que somos todos de acá de Argentina o de otras provincias… Acá mayormente, en La Salada, son todos peruanos y bolivianos. Nosotros, los argentinos, casi no hay ninguno.

E: In this neighborhood there are many people from outside, it is not that we are all from Argentina or other provinces... The majority here, en La Salada [the clothing feria], they are all Peruvians and Bolivians. We, the Argentinians, there are barely any of us.

(Interviewee #11)

Villa Lamadrid's high immigration rate is largely a result of the clothing *feria* (or fair) in the neighborhood called La Salada. The feria provides job opportunities for documented and undocumented workers. Many, if not most workers are undocumented and work in *trabajo negro* (black market jobs) making clothes in either large sweatshops, located along the border of Villa Lamadrid and the Matanza-Riachuelo River, or doing piece work in their homes. Other immigrants come for the economic opportunities La Salada affords and start their own restaurants, bars, or other businesses.

Ferias are common throughout Latin America, and in many parts of the developing world. They are large markets, often relying on cheap, informal labor to produce clothing and other goods at significantly reduced prices. In addition to coordinated product production and sales, ferias also often offer stalls for individual sellers to rent and sell their own goods.

La Salada, began in 1991 and boasts of being the biggest feria in all of Latin America ("Feria Salada," 2012; Sassen, 2011). It is located along the banks of the Matanza-Riachuelo, covering 20 hectares, and is comprised of two sections. In one part of the feria there are hundreds of stalls which can be rented by individual sellers. Adjoining this is a larger market area with products produced in the adjacent sweat shops. The fair attracts 20,000 buyers each Tuesday and Sunday, including several tour busses from other parts of Argentina and neighboring countries. Estimated numbers on feria sales are shockingly high. A 2009 report conducted by INDEC (Argentina's national census and statistics institute) estimated that La Salada brought in $15

billion pesos (~$3.25 billion USD) in 2009 alone, significantly more than the $8.5 billion pesos made in regular shopping centers that year (Mojonnier, 2010).

La Salada was a topic of significant frustration in interviews, and frequently blended with frustration towards workers associated with La Salada, who were all labeled as foreigners. In particular, interviewees who had ownership of their homes and worked in formal jobs expressed frustration towards immigrants who were perceived to be evading taxes and draining services (including water and electricity) without paying for them. Speaking about this frustration in relation to the feria and undocumented workers, one interviewee commented,

> E: No hay impuestos. Toda la ganancia es ganancia; todo lo que
> venden es ganancia, sin pagar el impuesto. Cada uno hace lo que
> puede.
>
> *E: There are no taxes. All of their earnings are profit; everything*
> *they sell is profit, without paying taxes. Every one is doing what*
> *they can for themselves.*
> (Interviewee #18)

One major frustration about the feria frequently expressed was that it reduced mobility into and out of the neighborhood. On days La Salada is open (Tuesdays and Saturdays) it blocks a major entry way into the neighborhood, diverting bus routes and even blocking ambulances from access to Villa Lamadrid.

> E: Y sí, la feria ocupa la calle también. Y, bueno, y la calle tiene
> que estar libre para que vos puedas pasar. Ellos ocupan la calle,
> ponen los puestos en el medio de la calle y vos no podés pasar y no
> podés salir para allá… Si uno se corta o tiene que ir a ver un
> doctor, no puede salir de acá… Se meten en el medio de la calle.
> La municipalidad tiene la culpa.

E: And the feria takes up the street too. Of course, the street needs
to be clear so that you can go through. They take up the street, put
their stalls in the middle of the street, and you can't get through
and you can't get out that way... If someone cuts themselves or has
to go to the doctor, they can't get out of here… They [the feria
sellers] are in the middle of the street. Its the municipality's fault.
(Interviewee# 17)

This interviewee blamed the municipality for allowing the feria to block the street as it was widely held that members of the local government were complicit in the market's illegal practices because they get a cut of the proceeds.

Renters

Renting in Villa Lamadrid has increased significantly over recent decades. Within the older barrio popular section of the neighborhood, many immigrants to the community rented houses or rooms. In one interview I learned that several big buyers were coming into the neighborhood buying up open lots and houses and forming rental companies specifically to rent to immigrants. Interviewees frequently referenced the rise in renting as a result of the immigration to the neighborhood and the advent of the feria,

E: después que se empezó a hacer la feria, se hizo todo el lugar de
alquiler para la gente que viene de afuera,

E: after the feria began, the whole place was made for renting for
people who come from outside
(Interviewee #11)

I did interview one couple who were recent immigrants to the neighborhood from Peru. They were renting one of approximately five small concrete rooms constructed in the backyard of a larger home in the barrio popular sector of Villa Lamadrid. These rooms did not have piped running water, though residents had access to a shared potable water source in the yard. Toilets

were on a shared septic tank system and had pour-flush tanks. This couple pointed out a large plastic-covered tent also in the backyard of the adjoining home. They told me that in this tent were a number of sewing machines where "illegal work" was going on – undocumented immigrants worked in this area sewing for the feria. These workers, they told me, lived within the larger home, though it was unclear how many were living there.

I asked this couple about how their septic tank system worked, and whether it was maintained by their landlord. They had not experienced flooding or septic tank overflow in the yard yet, though they had moved in relatively recently and had not yet experienced the wetter summer months there. However, one of them had previously rented a room in another house rented out to immigrants. He had experienced severe flooding in this house as well as a number of other problems from insufficient property upkeep. Other studies have similarly commented on the negative consequences of landlords who are not present in the community, specifically in relation to wastewater management issues. As Katukiza et al (2010) report on a study in an informal settlement, Bwaise III, in Kampala,

> "Operation and maintenance of the shared toilets in Bwaise III is done by landlords, who reside in the affluent areas in Kampala and often outside the country and mainly aim at maximizing profit from rent while the few privately owned are maintained by the owners... There is a problem of lack of willingness by the tenants to contribute to the maintenance of the shared facility. It is attributed to lack of ownership and the population dynamics: the population settlement versus occasional flooding and movement to look for better employment opportunities. The slum inhabitants whose income improves either become landlords in Bwaise III or in another place, or shift and rent in a better place (Kulabako et al., 2010). Consequently, the demographic dynamics in urban slums are a challenge for sanitation improvement" (Katukiza et al., 2010: 60)

The Zanja System in Villa Lamadrid

The word 'zanja' translates from Spanish as ditch, trench, or irrigation channel. The term is the common name used in many Latin American countries to indicate channels used for wastewater transport in informal or peri-urban settlements. The zanja system in Villa Lamadrid is a system of ditches dug into the ground, approximately 1-1.5' deep, and of a similar width, running between homes or businesses and the street, parallel to the space in which a sidewalk may appear. It runs along every street in the neighborhood. Typically they are dirt ditches, dug directly into the earth, though some are lined with concrete. On some of the main artery streets in the neighborhood the system is piped and covered by a sidewalk. On all residential blocks it remains an open-air ditch system unless residents make their own improvements to the stretch of zanja running in front of their own home.

The system was set up as a conduit for greywater from households and business in Villa Lamadrid. Each neighborhood block (called a *manzana*) has its own system of zanjas; each home has indoor pipes leading from kitchen and washing areas (including washing machines and showers) to the zanja. Depending on where the block is situated in the neighborhood topography the zanjas connect to one of three outlets: 1) to a neighboring manzana's zanja; 2) to the storm water drains, located only on main streets within Villa Lamadrid; or 3) if the manzana borders any of the open water bodies in and around Villa Lamadrid (Arroyo del Rey, Arroyo Mujica or the Matanza-Riachuelo), the zanja feeds directly into these. All storm water drains in the neighborhood also eventually feed into one of these water bodies. The zanja system runs in front of all houses on residential blocks, forming a visible connection between houses and neighbors. Waste from one house is carried past all other households on the same side of the street, following topographic lines (as the water in the zanjas moves passively via gravity, even a small change in topography in the neighborhood will determine the direction of flow). Stemming from their ubiquitous presence, the zanjas form a part of daily life in the neighborhood – children's games revolve around hopping over the open ditches, young adults congregate in some of the taller grasses lining the ditches, households build makeshift 'bridges' of plywood or other scraps as pathways over the space, and residents cross and re-cross the zanjas continually throughout the day.

Photo 1: Zanja in Villa Lamadrid
(photo credit: Victor Hugo Frites, Foro Hídrico; used with permission)

A Formal and Informal System

In addition to its formal function as greywater transport, the zanjas serve two informal functions – as disposal sites for solid waste, and as a disposal and conduit system for blackwater[19] waste from business and households in the neighborhood. In this way, the zanja system becomes a nexus for three waste streams: greywater, blackwater, and solid waste. While practices of dumping solid waste and sewage into the zanjas are 'informal,' meaning they are not legal in the neighborhood (despite the fact that the frequency of this dumping was rampant, and enforcement of any laws appeared to be essentially non-existent), what gives them particular impact on social relationships in the neighborhood is their associated stigma.

Informal blackwater disposal into zanjas

Studies in the area have consistently shown high rates of *E. coli* or *Salmonella* present in samples of water from the zanjas, indicating presence of fecal matter (e.g. Nuñez, et al. 2010). In

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[19] The term 'blackwater' is used to describe any wastewater containing fecal matter.

addition, Foro's health census reported that 65% of toilet drains flow into the zanja (Medicos del Mundo & Foro Hidrico, 2011), and interviewees estimated that upwards of 80% of neighborhood residents discharged blackwater into zanjas. Sewage waste enters the system in a variety of ways. During storm events, septic tanks fill quickly; the overflow is often diverted to the zanja system to avoid spillage into personal property such as one's yard or patio. Many interviewees mentioned that neighbors often use electric pumps to pump out their septic tanks into the zanja system to avoid overflow, and the costs of septic tank pumping. Additionally, observation and interviews suggested that some households fed their sewage waste directly into the zanja system on a consistent basis, regardless of storm events.

Though it was rare for interviewees to admit to that they themselves channeled septic tank water into the zanjas, one interviewee did so. She explained that because of topography between herself and her neighbor (her father), without consistently channeling her septic tank into the zanja, it would run downhill to her father's house during a storm,

> E: Yo, por ejemplo, tuve que hacer… poner un desagüe directo a la zanja. Está mal, pero…necesito hacerlo porque en la casa de mi papá que es más bajo que en mi casa, el agua de mi pozo se filtraba para allá, o sea que el agua es re fértil dicen [risas].

> E: Myself, for example, I had to do it… to put a drain directly to the zanja. It is bad, but… I had to do it because my father's house is lower than my house, so the water from my septic tank would leak over there, they say the water is very ripe [small laugh].
> (Interviewee #32)

The laugh following this statement is indicative of the embarrassment and vulnerability she may have felt admitting to her situation. Such emotions associated with having to interact with fecal matter, especially one's own, are not uncommon and support claims by many authors that sewage waste carries strong social and cultural connotations (e.g. Douglas, 1966; Hawkins, 2006; Jewitt, 2011; Sundberg, 2008).

Photo 2: Zanja with Solid Waste & Blackwater
 (photo credit: Margaret Morales)

Photo 3: Close up of Zanja with Solid Waste & Blackwater
 (photo credit: Margaret Morales)

As a result of this discomfort with the topic, there was often a double speak present in my interviews on the subject of blackwater disposal into zanjas. I typically asked participants about their neighbor's septic tank management practices to avoid a feeling of accusation in interviews, or creating unneeded discomfort or blame. Despite the high estimates of sewage waste diverted

into zanjas, between 65 and 80%, only the participant cited above openly admitted to discharging her own septic tank into the zanja.

Some participants were quick to tell me that anyone who does discharge fecal matter into zanjas was fined by the government. Discussing whether neighbors empty septic tanks into the zanja system, one interviewee responded,

> E: Acá no. Al menos nosotros, que sepamos, no. Quizás hay, a
> veces la gente, para que no se llene el pozo, más… anteriormente,
> ¿vio cómo es esto?, que un vecino por ahí ha hecho algún caño de
> contrabando porque sino te multa la municipalidad.

> E: Here no. At least, we don't know about it, no. Perhaps there are
> some, sometimes people, in order that their septic tank doesn't fill
> any higher… before, Do you see how this is? If a neighbor over
> there made an illegal pipe he would be fined by the municipality.

> E: Claro, te cobra una multa, no se puede hacer eso. Mandar un
> caño del pozo ciego, han dicho, al desagüe. Pero no… no, a mí
> nunca me constató, yo nunca lo he visto.

> E: Of course, they charge you a fine, you cannot do this. To put a
> pipe from the septic tank, to the drain [stormwater drain connected
> to some zanjas]. But no… I have never seen this.
> (Interviewee #8)

During my time in the neighborhood I neither saw anyone fined for sewage discharge into zanjas, nor heard of or met anyone who had been fined for this. Given the fact that interviewees were typically open about the lack of law enforcement in the neighborhood, and many discussed the lack of government attention to Villa Lamadrid in regards to other subjects, the frequency with which this fine for zanja contamination was referenced in interviews may underscore the

taboo nature of shit and sewage discharge in this community, and the desire to separate one's self from its connotations (Jewitt, 2011).

Informal solid waste disposal

The solid waste[20] that is introduced into the zanja system is largely from plastic bags and 'telas' (fabric strips) that are produced by and for the feria. According to interviews, this waste is not picked up by usual collection services because it is in excess of volume allotment for solid waste disposal per household. As a result, those who work for the feria need to find alternative means of disposal and do so by either burning the waste or dumping it in the zanjas.

Though not within the scope of this chapter, solid waste disposal is also a highly racialized and divisive process. Similar to the conversations about sewage disposal, the problem of solid waste disposal has a laundry list of associated negative stigmas. It is strongly linked with the feria, not only for the telas, but also the plastic shopping bags, and other trash the weekly tour busses bring with them. As the feria is already associated with the relatively recent influx of immigrants to the community, this trash reinforces stigmas related to the 'dirty immigrant.' This present situation is compounded by the imagined history of the community, in which the feria is blamed for loss of a more pure past.

Informal maintenance and modification of the zanja system

The zanja system is maintained and modified by residents. Maintenance of the zanja section in front of one's home is frequently performed by both men and women and includes clearing out of weeds and solid waste so that the water does not stagnate and is able to flow, as well as dredging zanjas by removing accumulated mud and muck.

Examples of modifications to the zanja system include piping and covering the zanja so that it is no longer an open system. Residents with cars often do this to allow for driveways onto their property (interviewee #36).

> E: Claro, en vez de hacer una zanja, puso un caño y puso una
> veredita arriba para que quede lindo… Claro, para que la vereda
> quede linda.

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[20] Here I refer to solid waste as any non-human waste; what is typically referred to as garbage.

E: Of course, instead of making a ditch, he [a neighbor] put a pipe and a little path covering it so that it looks nice… So that the sidewalk looks nice.

 (Interviewee #12)

The work of piping and covering zanjas is particularly interesting in that it mimics the appearance of a community with centralized urban wastewater infrastructure. Many authors have noted that an important aspect of centralized sewerage infrastructure is that it is out of sight, hidden from daily life, and another means through which waste management infrastructure permits a belief that users are separated from their waste (Hawkins 2006; Gandy 2004).

A Physical System Impacting and Formed by Social Relationships

Some authors have written about the ways in which public infrastructure in urban areas serves as a means of connection between diverse communities, linking the areas through which it runs (Bakker, 2010; Gandy, 2004; Obrist, Dongo, & Granado, 2006; Swyngedouw, 2004). Often continuous infrastructure may span slums, industrial areas, peri-urban areas, and upper-class neighborhoods. As Obrist et al. (2006) state, "In public waste management, the interdependence of different parts of a city as well as of different levels of an urban society becomes clearly visible" (Obrist, Dongo, & Granado, 2006, 326). In their study in Abidjan, Ivory Coast, Obrist et al. (2006) found that diverse communities which had the same drainage ditch running through them shared similar environmental health issues; shared health risks is one indicator that slum and peri-urban communities are closely linked with more affluent urban communities through shared infrastructure. Others, such as Bakker (2010), Swyngedouw (2004), and Gandy (2004; 2011), have examined ways in which differentiated infrastructure access influences and reveals power relationships between communities and classes in an urban area. While these authors provide insights into the physical and social connective natures of wastewater infrastructure on a municipal scale, few have discussed the social connections this infrastructure creates and impacts on a neighborhood or street level.

Because the zanja system forms a visible and physical link between neighbors, one resident's household liquid waste management decisions have discernable impacts on their neighbors living 'downstream' and 'upstream' (respectively, at lower or higher topographic positions) on their block, or in neighboring blocks. Choices about system use impact relationships among neighbors. Most often I found interviewees expressed frustration and distrust of neighbors when discussing zanja use. Following in my conversation with interviewee #12 (cited above), regarding his neighbor's decision to pipe and cover the zanja in front of his home, the participant continued,

> E: Puso un caño…puso un caño, ¿pero qué pasa?, el de este lado no tiene: tira bolsas, mugre, y a veces cuando corre el agua, como el caño es así, se tapa… Claro, por eso yo siempre tengo que limpiar, sacar… Claro, y èl de este lado es èl que va toda la caca a la calle, y cuando se mete ahí se tapa todo con caca, pañales.

> E: He installed a pipe, but what happens? The neighbor on the other side doesn't have one [a pipe]: he throws plastic bags, scraps, and sometimes when the water runs, since the pipe is like this [shows with hands small diameter circle], it clogs… This is why I always have to clean it, take things out… The man on this side is the one who sends all his shit out to the street, and when it gets there [to the neighbor's pipe] it clogs everything with shit, diapers.
> (Interviewee #12)

Though this covering of the zanja may be more aesthetically pleasing, many neighbors complained that the pipes were more easily clogged by solid waste, leading to back up of the entire system and more frequent impact on neighbors. In the quote above, the participant expressed significant frustration with his neighbors on both sides, both 'upstream' and 'downstream' of him. On the one side, the neighbor who had installed the pipe and covered the zanja, receives the benefit of an improved appearance of his home. Though this neighbor appears

to be 'downstream' of my interviewee, his piping of the shared zanja has impact on the zanja stretch in front of the participant's house in increased clogging and overflow onto the participant's property. On the other hand, the neighbor who my participant blames for a considerable amount of liquid and solid waste dumping into the zanja, appears to be 'upstream' (at a higher topographic position) from the interviewee. His actions too have an impact on the interviewee, not only through the aesthetic disturbance his dumping produces, but also by increasing clogging and overflow when the water reaches the piped neighbor's property line.

In the following sections I will discuss how wastewater negotiation and the zanja system impacts social relationships in the neighborhood. I focus on how social stigmas associated with contact with liquid waste were acknowledged in interviews, as well as narratives interviewees used to distance themselves from this waste, thereby replacing the function of their missing sewerage infrastructure.

Discourses of Distancing

The zanja system serves a means of producing citizenship in Villa Lamadrid, indicating who is a good neighbor or resident and who is not. This is based on practices regarding the zanja system, and how these create proximity or distance to the fecal contamination in these ditches. Practices of citizens, or those practices that created distance from fecal waste, were constructed by interviewees as including a strong work ethic, community cooperation, an intrinsic sense of hygiene, and an understanding of clean practices. There were a number of ways during interviews in which participants said to me, either explicitly or implicitly, that they were not responsible for the fecal contamination in the zanjas, and thus distanced themselves both from this shit itself, and from the dirty practices that got it there. In the sections below I explore three of these methods of creating distance. The first was minimizing the problem; interviewees often explained that the lack of sewers was a temporary situation, that it was worse elsewhere, or even that the problem did not exist for them at all, but for more distant, often poorer sections of the neighborhood. The second method used was implying that they understood and sympathized with me (or what they perceived to be my concerns judging by the subject of my interview), knowing that shit is an object of disgust and that other neighbors do not seem to understand this like they do. This was done either by discussing personal cleaning efforts, or discussing their neighborhood's history. In the latter case, participants placed themselves in a cleaner, more

Argentine past, disassociating themselves from the current contamination, which they narrated as a result of the coming of the feria and new immigrants. Finally, a third means of discursive separation from the shit was by blaming others, particularly immigrant groups, for the zanja problem, and racializing behaviors that result in shit in the zanjas. This third method of discursive separation will form the bulk of my analysis and discussion below, not only because it was by far the strategy that occurred most frequently in interviews, but also because it became an interesting issue to me in the field, intersecting with a number of simultaneous community dynamics and processes.

Minimizing the Situation

We don't have a problem, others do

Many interviewees told me that they did not have problems with flooding or with overflowing septic tanks, but that this was an issue for other parts of the neighborhood. Speaking with one husband and wife couple they told me,

> E1: En cambio acá, por suerte, como no nos inundamos, bueno…
> ojo que tenemos las aguas de napas muy cerca, las napas de agua,
> pero es manejable acá. No es antihigiénico, en cambio para allá
> cuando se inunda sí porque, bueno, ahí ya… los pozos ciegos, al
> rebalsarse, ya sale la materia fecal o los heces todo para afuera, y
> ahí, bueno…

> M: Cuando dices "para allá", ¿cuántas cuadras serían?

> E1: Serían 2 cuadras.

> M: ¿2 cuadras de diferencia?

> E1: 2 cuadras, y de ahí empieza para allá.

E1: Here, luckily, we don't get flooded, well… look, the ground
water table is very high, but it is manageable here. It is not
unhygienic, whereas over there when it floods it is because, well,…
the septic tanks overflow and the fecal matter goes out, and
everything runs out

M: When you say 'over there,' how many blocks away would it be?

E1: Two blocks.

M: Two blocks difference?

E1: Two blocks, and from there it continues all the way [to the
river].
 (Interviewees #8&9)

This two block difference would likely make little difference in terms of health risks from fecal contamination. However, it was enough to demonstrate that the problem of flooding or fecal matter contamination did not exist for this interviewee or her household. Not only did this imply that their own management practices did not result in zanja contamination, but it also suggested that they were sufficiently distant from the contamination that they were not in contact with it, and even implied that they felt it was a foreign phenomenon to them.

Temporary situation

Interviewees often referenced AySA's promises of sewerage services to their community, indicating that their lack of sewerage was only a temporary, transitional period. After asking one interviewee how her septic tank worked, and whether she had difficulties with it as a result of the groundwater table, she responded that though she had problems, they hardly mattered as piped sewerage would soon take care of it,

E: Dijeron que el año que viene iban a hacer cloacas, dijeron, no
sé.

*E: They say next year they are going to put in the sewers, they say
so, I don't know.*
(Interviewee #19)

Promises for sewerage service provision were referenced by many interviewees despite the fact that such promises have been made to the community for decades without fulfillment. The most recent plan AySA has put forward for sewerage service in the larger Cuartel IX area promises the construction of a wastewater treatment plant in Fiorito, a neighboring area in Lomas, with piped connection to all households in Cuartel IX (AySA, 2011b). The plant was supposed to come online in January 2011, but at the time of this writing (September 2012), construction is still in very preliminary stages due to financial obstacles (personal communication, Victor Hugo Frites, member of Foro Hídrico Lomas de Zamora). Community members were much more cynical about government promises for improvement regarding many other topics, such as street paving, or water pressure. It seemed that with sewerage management in particular, neighborhood residents had greater investment in the government's promises to provide service. I began to wonder why it was only about sewerage infrastructure that interviewees referenced government promises of service. I believe this happened, at least in part, not necessarily because interviewees believed promises of sewerage provision any more than other promises made by the government to them, but instead referenced these plans for my sake, perhaps so that they would not feel so powerless in front of me, or embarrassed by their living conditions. As discussed above, the stigmas associated with shit make discussions of its management particularly charged (Black & Fawcett, 2008).

Conversations in which interviewees report a more positive sewage management situation than they actually experience are confirmed in the literature. As an example, Katukiza et al. (2010) undertook a community questionnaire regarding the existing sanitation situation in an urban slum community in Kampala, Uganda. They report, "The findings showed that almost all respondents claimed to have access to a sanitation facility irrespective of the type of system" (Katukiza et al., 2010). However, they continue, "During the field visits, the user-load of the pit

latrines was found higher than expected… with almost all latrine facilities shared by more than two households. The user to stance ratio was found to range from 1:30 to 1:70 which is higher than the recommended value of 1:20 by the Uganda Ministry of Health" (Katukiza et al., 2010). This high user ration indicated that many residents rarely had access to the existing latrines, and that latrines were often over-full and not serviceable. The difference between resident reports on the questionnaire and the extremely high user loads the researchers found may suggest a couple of things: 1) residents may have understood 'access' differently than the researchers did, and 2) residents may have felt a stigma in reporting lack of access to infrastructure for managing their shit, and therefore avoid embarrassment by reporting the best possible scenario in their daily lives. It's not hard to imagine why reporting lack of access, particularly to affluent outsiders, might be embarrassing.

It's Not My Community

Many interviewees worked to separate themselves from zanja sewage issues by placing themselves apart from the larger community. This was done either by highlighting that they personally undertook cleaning actions to prevent the problem which other neighbors did not, or by placing themselves in an imagined, more pure past of the neighborhood, one that was said to have existed before the neighborhood was overrun by the feria and immigrants.

Performance of cleaning

Many interviewees described their own work to clean out and maintain the zanja flow, either by picking out trash other neighbors had dumped, by pulling up grasses and weeds that grew in the zanjas, or by covering or piping the zanja in front of their homes. These practices were frequently referred to alongside an explanation that they were the only one's doing these chores. This spoken performance of cleaning can be understood as a demonstration of citizenship (Pine, 2010). By doing this, interviewees indicated that they not only understood my concerns, but that they were different and removed from the neighborhood conditions I observed. I will discuss this discourse more fully in the racialization section below, as often interviewees made comparisons between their own, Argentine, cleaning efforts and the lack of immigrant cleaning efforts, which was often seen as a result of immigrant laziness.

Neighborhood deterioration and an imagined past

Many interviewees referred to a cleaner past when the zanjas were not contaminated as they are now.

> E: Antes cuando yo era chica había zanjas pero el agua era transparente, no había… más que barro no había; ahora hay toda la podredumbre del baño, de todo y es una cosa de olor a podrido infernal. A veces los olores, los gases que larga… ahí en la calle no se soporta el olor. Y antes no, antes jugábamos en la zanja, caminábamos descalzos porque no había ningún vidrio ni nada.

> *E: When I was a kid we had the zanjas, but the water in them was transparent, not like this… they didn't have this mud; now there is all the dumping from the bathroom, everything and it has a horrible stench. Sometimes the smells, the gasses that come from there… here in the street, I cannot stand the stench. No one can stand the smell in the streets. It didn't used to be like this, we used to play in the zanja, walking barefoot because there wasn't any glass in them or anything.*
> (Interviewee #19)

By associating themselves with this past, interviewees worked to distance themselves from the current contamination and implied dumping practices.

The historical hydrology of Villa Lamadrid plays an important role in how interviewees narrated and presented the neighborhood's past and current deterioration. The groundwater table under Villa Lamadrid is naturally saline, and as a result, the area was a popular tourist destination for the spa-like pools created from groundwater sources. Older residents often spoke of the 'old tourist days', before the corruption and neighborhood deterioration began, which they frequently perceived as connected to the feria and accompanying immigration patterns.

> E1: Era turístico.

E: Claro, era un lugar turístico. Pero después que se empezó a hacer la feria, se hizo todo el lugar de alquiler para la gente que viene de afuera, porque vienen todos acá: vos viste que les va mal allá, acá vienen a parar, a La Salada. Y acá vas a ver que todas las casas son todas casas de alquiler.

E1: It was a tourist area.

E: Yes, it was a tourist area. But after the feria began, the whole area became rented for the people that came from outside, because everyone comes here: you saw that they aren't doing well over there; they come here to stay for La Salada. And here you will see that all of the houses are houses to be rented.
(Interviewee #11)

Racialization

The most frequent response interviewees gave to explain and distance themselves from the fecal matter in the zanja system was blaming immigrant groups for it. This repeated linking of immigrant groups with fecal contamination of the zanjas relied on and became evidence of a number of racialized stereotypes commonly assigned to immigrants, further naturalizing these stereotypes. In this section I will explore how interviewees worked to (re)create narratives of both the immigrant body, and immigrant actions as dirty, lazy, and dishonest. By assigning these attributes to immigrants, they became an easy scapegoat for explaining the presence of shit in the streets, allowing mostly Argentine interviewees to separate themselves from responsibility for the contamination and from the connotations attached with closeness and contact with shit. At the same time, the zanjas also serve as a platform for playing out broader social/community relations related to the feria and the changes in the neighborhood that have come with it.

I use the term racialization to draw on a conception of race, as articulated by a number of authors (e.g. Barot & Bird, 2010; Inwood & Yarbrough, 2009), as a social construction and process produced through everyday actions; "ideas about race are historically created and

contemporarily recreated, enforced and manifest through everyday actions" (Inwood & Yarbrough, 2009: 299; citing Marable, 2002). My exploration here is into the process by which bodies are racialized specifically through wastewater management, how ideas about 'outsiderness' are embedded in the everyday speak of residents of Villa Lamadrid, and how these processes are used as a replacement for wastewater infrastructure. Racialization of immigrant groups as 'dirty,' or other negative attributes explored below may have been particularly pronounced in conversations with me as a researcher and outsider to the community. Despite my efforts to make conversations comfortable and not produce an atmosphere of accusation or judgment, the topic of shit disposal is a charged one (Jewitt, 2011; Black and Fawcett, 2008).

The dirty immigrant body

The most common attribute assigned to immigrants throughout my interviews was an intrinsic dirtiness. This was also the only negative attribute given to immigrants that was explicitly named. The fact that a 'natural' dirtiness was the only explicitly articulated negative label associated with immigrants may be unsurprising. As described earlier, the relationship between conceptions of 'dirt,' 'dirtiness,' and 'outsider,' as explored by Douglas (1966) and others (e.g. Sundberg, 2008), may suggest how conceptions of immigrants as inherently dirty develop and are naturalized.

> E: Y el boliviano es sucio, el peruano también es sucio.

> *E: Bolivians are dirty, Peruvians also are dirty.*
> (Interviewee #12)

Assigning 'dirtiness' as an innate or natural characteristic of various immigrant groups created an insider/outsider discourse that served two purposes. First, labeling immigrant groups as 'dirty' linked them with the social connotations associated with human waste. Simultaneously, interviewees separated themselves from the stigmas of dirtiness by associating immigrant groups with zanja contamination and thus differentiating immigrant actions from the 'insider's,' or Argentinean's, practices, which have an important relationship with cleanliness and purity as described previously (Joseph, 2000; Sutton, 2008).

The immigrant body was labeled as unclean and therefore less than human. I spoke several times with a woman who owned a shop in the neighborhood. She told me how on rainy days she does not open her shop in order to avoid contact with the unclean Bolivian body,

> E: Sí, sí, pero prefiero perder el dinero del día y no… Yo me mojo los pies con la lluvia a veces, y no sé si es pis de boliviano o caca. Por eso directamente no… yo los días de lluvia trato de no salir de mi casa.

> *E: Yes, but I prefer to lose money from a day's work and not… My feet get wet with the rain sometimes, and I don't know if it is Bolivian piss or shit. That's why, on rainy days, I try not to leave my house.*
> (Interviewee# 12)

In the case of storm water which may be contaminated with fecal matter, the mixing of water sources is ubiquitous and there is no way to tell whose septic tanks in particular are sources of contamination. The interviewee feels powerless to control or address the storm water flooding situation. As a result, she invokes race as one way of explaining the wastewater contamination and simultaneously separating herself from it, both physically, by highlighting that she does not come into contact with shit, and morally, by indicating that she is not responsible for the contamination. The specific reference to Bolivian shit signifies not just a claim that Bolivians engage in dirty or polluting actions, but that the Bolivian body itself is unclean. This move works to link and blame immigrants with the contamination of the neighborhood.

A particular sign of the separation from sewerage, one prioritized by water-borne sewerage, is the absence of smell. Associating the immigrant or indigenous body with stench is another mechanism of naturalizing a link between immigrants and sewage, and associated taboos (Sundberg & Kaserman, 2007; Swyngedouw, 2004). As Sundberg and Kaserman (2007) describe, the immigrant body is constructed as disrupting "the pleasantly privileged separation

from sewage – as experienced through the sense of smell" (738) and threatens our sense of self as we construct it through this separation (Sundberg & Kaserman, 2007).

Dirty immigrant practices

Following from a characterization of the immigrant body as inherently dirty, immigrant actions were also described as dirty. These actions were not simply a result of a 'natural' dirtiness, but also served as proof of immigrant dirtiness, reinforcing and justifying their outsider status, and naturalizing this form of racialization. These discourses served to explain zanja contamination as a result of the contamination of intruders to the neighborhood.

> E: Y, porque el boliviano tiene el puesto de comida ahí, un puesto de comida, y no puede ir a la casa a cambiar al bebé, lo cambia ahí y al pañal hace tac y lo tira, ¿dónde lo tira?, en la zanja.

> *E: And, because the Bolivian has a food stand there, and he can't return to his house to change the baby, he changes the baby right there, and the diaper is sullied, so he throws it away, and where does he throw it? Into the zanja.*
> (Interviewee #11)

Following from the dirtiness of immigrant actions, other attributes were assigned to immigrants that reinforced and supported their outsider status. These attributes, including laziness, a lack of work ethic and community mindedness, and sly or devious behavior, were construed as 'unArgentinean,' and thus not characteristic of true citizens, and by extension, not truly part of the community.

Immigrant laziness and lack of work ethic were articulated and demonstrated in a variety of ways during interviews. The first was through the sale of drugs, which was associated with immigrants (e.g. Interviewee #12). This work was said to result in 'easy' money with little effort required. The second construction of laziness was through the implication that immigrants performed shabby septic tank construction and maintenance. Several interviewees suggested that when other neighbors' septic tanks overflowed this was a result of poor workmanship,

E: Claro, y eso [el atmosférico] lo necesitás una vez al año. O dos veces, tres. Una vez cada 6 años, según. Si está bien hecho, te dura 25 o 30 años; si no está bien hecho, una vez al año lo tenés que vaciar.

E: Yes, and you need it [the atmosférico] once per year. Or twice, three times. Once every six years, depending. If it [the septic tank] is well made, it can last you 25 or 30 years; if it is not well made, you will have to empty it once a year.
(Interviewee #16)

This interviewee went on to describe how she had learned to construct a septic tank from her family, further underscoring her insider knowledge of how to construct a well-functioning system, and differentiating herself from those whose septic tanks needed more frequent pumping as a result of poor construction.

Interestingly, this particular interviewee lived in one of the highest topographic regions in Villa Lamadrid, meaning that her property was highest from the groundwater table, resulting in a relatively lesser amount of seepage from groundwater into her septic tank. It was often residents who lived on higher topographical terrain within Villa Lamadrid who made comments regarding septic tank function, though no interviewee acknowledged the terrain as an important influencing factor in tank overflow. There is a definite class division by topography within the neighborhood as those living in the lowest areas are typically squatters, meaning that they do not have formal right to the land where they have built their home, and also making 'proper' septic tank usage nearly impossible.

Another narrative by which a strong work ethic was constructed as an Argentinean attribute, and laziness as an immigrant characteristic, developed through comments about community efforts to keep zanjas clean. During interviews residents commonly commented on the lack of help from other neighbors in zanja maintenance, both on a regular basis and especially during storm events, when cleared zanjas were crucial to avert overflow. There was

considerable conversation during interviews regarding which neighbors on particular blocks helped in zanja cleaning and which did not,

> E: Esta cuadra, nosotros que somos argentinos, un hombre con su hija, y después ya son todos extranjeros. Entonces cuando llueve y la calle se inunda, ellos nunca salen por más inundados que estén adentro, vos no los vas a ver. Mi papá, en cambio, sale con otro vecino a la calle y van limpiando el pozo como para que el agua corra de la lluvia.

> *E: On this block, it is ourselves who are Argentinean, and one man and his daughter, and besides that the rest are immigrants. So when it rains and the street floods, they never leave their homes because they are flooded in, you won't see them. My father, on the other hand, goes out to the street with another neighbor and they clean the ditches so that the rainwater can move.*
> (Interviewee #6)

This perceived lack of cooperation in property maintenance does not acknowledge the fact that many immigrants rented their rooms, rather than owning property in the neighborhood, as most Argentinean residents did. Immigrants who may have been renting rooms in houses owned and managed by Argentinean landowners were often victims of absent or inattentive landlords who may have been taking advantage of marginalized immigrant groups. The conditions described previously of the Peruvian couple's rented room, and renting experiences, may be evidence of this trend. Other authors have reported similar connections between absentee landlords and inadequate sanitation system maintenance (Katukiza et al., 2010)

Immigrants were also stereotyped as lacking community mindedness and being very closed neighbors, unwilling to assist in community efforts towards improvement,

> E2: La gran mayoría de los extranjeros que vienen son muy cerrados.

M: ¿Cerrados? No hablan mucho.

E2: Así no hay… si vos vas a una casa, capaz que de acá al lado, el vecino, capaz que no te tratan así como nosotros. Vos vas y te atienden de la puerta: "hola, chau" y están dos segundos y… ¿entendés? Eso es una gran parte, y aparte viven esclavos de su trabajo… Ellos prefieren, en vez de ir a reclamar algo con todos los vecinos, pierden horas de trabajo cosiendo para la feria. Ellos prefieren una y mil veces quedarse en la casa trabajando…

E: Most of the immigrants that come here are very closed.

M: Closed? They don't speak much?

E: Yes, you go to their house, they don't treat you [hospitably] like we do. You go and they answer the door, "Hello, goodbye," it's two seconds... do you understand? That's a big part of it, and besides that, they live like slaves to their work... They prefer, instead of going out to do something with their neighbors, they waste hours working, sewing for the feria. They prefer a thousand and one times to stay at home working...

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E2: la gran mayoría éramos de acá, argentinos. Y la gran mayoría del barrio, hoy en día, son todos extranjeros, y el extranjero no te da ni bola. Porque te das cuenta las diferencias que hay: ellos se cierran mucho en ellos y no les importa lo de afuera o los demás. Es así, hay muchas diferencias. Y hoy en día el barrio cambió

mucho. Antes éramos más vecinos de acá, y los vecinos se fueron casi todos.

E2: The majority of those [in the Foro Hídrico meeting] were Argentineans. And the majority of the neighborhood today are immigrants, and the immigrants ignore you. You will see the differences: they are so closed in within themselves and they don't care about anything that goes on around them or other people. That it how it is, there are many differences [between us]. The neighborhood has changed a lot. Before most of the neighbors were from here [Argentina], and almost everyone left. (Interviewee #26)

Again, a lack of community mindedness was described as an immigrant attribute, casting them as unfriendly. However, issues related to work habits and hours may be linked to precarious working conditions and fears that many immigrants working for the feria may have labored under, rather than to an inherent unfriendliness or closed nature. Yet explanations of immigrant behavior as reflective of an inherent difference were frequently invoked in interviews to cast newer community members as not true 'citizens' and explain neighborhood contamination.

Immigrant groups were also often associated with dishonest, sly, or devious behavior, including through narratives that directly linked to zanja contamination. The following interview excerpt occurred while speaking with two women in a hair salon regarding the frequency with which their neighbors emptied septic tanks into the zanjas:

E: ¿Qué es lo que hacen? Trabita, que varios bolivianos saben hacerlo, que ponen un caño entre el pozo ciego y la calle, va directamente; y cuando es día de tormenta abren una tramita y sale toda el agua sucia y se va a la boca de tormenta, ¿entendés? Y los días de lluvia, abren las compuertas y se va. Y vos lo vas a ver: el olor a podrido que hay es de ellos. Los días de lluvia aprovechan y los vacían.

E1: No los días de lluvia, todos los días.

E: What is it that they [Bolivian neighbors] do? They make a little connection, many Bolivians know how to do this, they put a small pipe between the septic tank and the street, so it [sewage from the septic tank] goes out directly; and when there is a storm they open the connection and out goes all of the dirty water to the storm drain, do you understand? On rainy days they open the hatch and out it goes. You will see: the rotten smell out there is from them. They take advantage of the rainy days and empty it.

E1: Not just on rainy days, every day.
(Interviewee #16)

In this excerpt immigrants are referred to as a unified whole, rather than referring to a specific instance of discharge through the piped zanja connection. This may be of particular relevance in the case of liquid waste discharge as tracing blackwater presence in the zanjas to a particular source is nearly impossible. In addition, marking Bolivians as collectively possessing specialized and devious knowledge regarding how to make illegal connections to the zanja without getting caught worked to racialize them, their actions, and knowledge as dishonest and sly. The connection to the zanja was characterized as a way of avoiding payment for septic tank emptying by the atmosférico truck, or avoiding the work required to construct a better system, further associating immigrants with avarice and laziness, as well as apathy regarding hygiene. In this instance, as in many others throughout my interviews, there was little understanding extended to those who engaged in the discharge of septic tank water to zanjas as a result of topography and groundwater infiltration. Also interesting in the above excerpt is that the dishonesty is only implied. Dishonesty was a behavior assigned to immigrant groups that was never mentioned outright, but was laced through conversation as a way of explaining or justifying the assignment of other attributes (particularly dirtiness and laziness, as discussed above) to them.

Immigrants were also frequently labeled as greedy, and cunning in the pursuit of their greed, by emptying their septic tanks into zanjas as a means of avoiding costs of the atmosférico truck,

> E: Y cada tanto viene, en algunos lugares, el camión atmosférico.
> Un camión atmosférico y sacan el agua. Y algunos [baja el tono]
> bolivianos, sacan el agua derecho a la calle: para no llamar al
> camión atmosférico, tiran todo el desperdicio a la calle.

> E: *And every once in a while, in some areas, the atmosférico truck*
> *comes and empties out the water. Some [lower tone of voice]*
> *Bolivians, empty the water directly into the street: in order to not*
> *have to call for the atmosférico truck, they throw all the waste in*
> *the street.*
> (Interviewee #19)

Conclusion

Shit carries a host of social and cultural stereotypes and stigmas. No one wants to be associated with it yet everyone has to deal with it. In the case of Villa Lamadrid the zanja system is constantly influencing, forming, and reinforcing social relationships. Interviewees employed narratives that separated themselves from the contamination of the zanjas while simultaneously explaining the widespread presence of fecal matter in the neighborhood. These narratives replace a key function of the lacking wastewater management infrastructure – that of separating citizens from their own shit. By producing a discursive separation from the shit in their neighborhood, residents of Villa Lamadrid attempt to demonstrate their own citizenship. The zanjas also function as part of social narratives, and a platform in which larger community dynamics surrounding immigration and recent community changes are played out, serving as concrete signs of neighborhood contamination that have come with the feria. Blaming immigrants for zanja contamination came out of broader racial discourses that juxtapose the hygienic Argentine against the dirty intruder, and also legitimized and served as proof for these stereotypes. By

labeling the polluting other as outsider, interviewees used these discourses to reaffirm themselves, implicitly or explicitly, as legitimate citizens.

Overall the narratives interviewees employed in our conversations explained zanja contamination as the result of dirty intruders and neighborhood deterioration. Broader biophysical and political conditions of the neighborhood which influenced septic tank overflow, including topography, groundwater saturation, and lacking infrastructure, and absentee landlords, were rarely mentioned as explanations for fecal contamination. Interviewees did frequently blame an absent state for not providing waste management infrastructure (this is discussed further in Chapter 3). However, state blame appeared to be used to describe the overall sanitation problem more theoretically, whereas blaming neighbors, particularly immigrants, for irresponsible action was used to explain the present and visible contamination. Perhaps in some way, though the state could be blamed for the overall problem of lacking sewerage infrastructure, interviewees still felt a need for separation from the existing and immediately obvious zanja shit. Similarly, immigrants were represented in ways which did not take into account the broader conditions under which many immigrants lived, including precarious working conditions, fear attendant with being an undocumented immigrant, possible manipulation from landlords, and financial instability. Instead, interviewees represented immigrants and their behavior as inherently dirty, reticent, lacking in community solidarity, greedy, and devious. The zanja system worked as a platform through which broader community dynamics between older residents and newer immigrant groups were referred to, played out, and explained.

In some ways these 'discourses of distance' can be understood as a means by which interviewees washed their hands of their neighborhood, and indicated that the existing Lamadrid that I experienced was not really their own. In large part, interviewees did this by placing themselves in a cleaner past, and constructing the current neighborhood conditions as contaminated by immigrant intruders who had changed and deteriorated the neighborhood to a point that it was no longer recognizable. However, these ways of separating from the neighborhood also left interviewees in a 'no man's land' – neither relating to the existing neighborhood, nor moving towards another one. Though the activist efforts of Foro Hídrico provide an important counter example to this, the majority of interviewees seemed resigned to their current living conditions, but not hopeful about future change.

This study suggests that sewage and its management has significant influence on social relationships. There may be ways in which this influence could be directed towards more powerful, effective means of managing sewage beyond the mental and social escape of self separation. Are there ways in which sewage management can be used to create a culture of solidarity between immigrants and older residents in the neighborhood, ways in which the zanja system can forge relationships not of suspicion and blame, but of cooperation and understanding? In their article on drainage canals in Abidjan Obrist et al. (2006) write about the power of waste management to show interdependence throughout many levels of an urban society, far beyond the boundaries of a slum or neighborhood. The authors concluded that, "A focus on interconnectedness rather than differentiation is needed for a better understanding of 'slums' as a structural phenomenon of urbanization" (Obrist et al 2006, 332). Though their study focused on municipal wide waste management, we may be well served by looking at how such connections happen on the more micro, neighborhood scale.

Approaches to sanitation often remain focused on technical aspects of wastewater management (O'Reilly, 2010). Considerably more work is done in determining technical parameters of wastewater management systems than on the social and cultural implications of wastewater within a community context. Many examples exist globally of wastewater management interventions that were technically advanced, with considerable political and economic support, but ultimately unsuccessful because they were not consistently used or accepted by the people they were built for (for examples see: Hasan, 2006; Nations & Satterthwaite, 2006). Research and well-intentioned interventions that ignore the charged and stigmatized nature of shit management may ultimately prove to yield less sustainable solutions than work that explicitly incorporates this as a part of the research design or management thinking. By acknowledging the real work we ask of shit management infrastructure – particularly the need for disassociation from dirt and fecal matter, and attendant negative social connotations – we may begin to uncover more fundamental requirements of waste management systems, and open up thinking to a broader range of sustainable solutions.

CHAPTER 3: "Flush the Toilet and It's Gone"[21] - Urban Citizenship and the Right to Sewage Ignorance

Introduction

Urban life means your shit is not your problem. Connection to centralized and water-borne sewerage infrastructure affords the luxury of 'flushing and forgetting,' not having to know about or have contact with shit after the toilet is flushed. Though most residents of Villa Lamadrid's barrio popular have flushing toilets, the sewage remains in the neighborhood, seeping into yards and streets. Negotiation of this shit is a daily task.

As described in Chapter 2, one means of negotiation residents employ to distance themselves from shit are narratives about the neighborhood's history and other residents. In this chapter I look at how interviewees responded to two 'hardware', or infrastructure-based, solutions. These solutions are household-level, low resource use, low cost, and ecologically sustainable. Such solutions are often prescribed by development organizations as sanitation interventions for poor urban and rural communities (Rose, 1999; Tilley et al., 2008). I began conversations with interviewees regarding two household level sanitation systems that could be appropriate for the biophysical context of Villa Lamadrid, one a dry UDDT (urine diversion dry toilet), and the other a pour-flush toilet with a biogas reactor. Both of these systems were taken from EAWAG's "Compendium of Sanitation Systems and Technologies" (Tilley et al., 2008), which outlines sanitation technologies for poor urban and peri-urban areas. Through conversations about these technologies I listened to how interviewees reacted to decentralized solutions, with an interest in what aspects were particularly troublesome and stood in opposition to sanitation imaginaries

I found that many features of the presented solutions clashed with interviewees' perceptions of what urban life should be like. In particular, sanitation is framed as a state responsibility, not a private one. Solutions that intimately involved users in management, or required embodied engagement with the waste itself, were perceived to exclude users not only from the public services, but importantly also from a lack of engagement in sewage management,

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[21] "Apretás el botón y no hay más recipiente de nada", Interviewee #19

something other legitimate urban citizens often have the luxury to take for granted. In addition, interviewees reacted particularly strongly against the dry sanitation system (the UDDT). This system felt unhygienic to interviewees, indicating that the feeling of cleanliness and separation from feces is importantly produced through the action of flushing and the presence of water. A third key finding is that dry and manual flushing systems have strong connotations for many residents of rural life. The same low resource consumption aspects of the sanitation solutions, seen as sustainable from a technical perspective, are fundamentally incongruent with residents' urban life imaginaries and clash with migration histories, creating a sense of moving backwards towards a rural past rather than towards goals of new urban life.

A number of authors have explored how connection to centralized water and wastewater infrastructure is a marker of citizenship, state recognition, and inclusion in urban civic life (for notable examples see: Bakker, 2010; Chatterjee, 2004; Gandy, 2004, 2011; Holston & Appadurai, 1998). Centralized sewerage infrastructure is a literal and tangible connection between the state and the household, or citizen (Hawkins, 2006). For residents of Villa Lamadrid connection to the city's sewerage network is framed as a movement towards, and symbolic of, urban citizenship and greater equality with other legitimate, rights-claiming residents of Buenos Aires. Importantly, centralized sewerage connection means participation in a vision of urban sanitation that is distant from the individual and not their responsibility, allowing for the ability to 'flush and forget.' In contrast, household level management solutions are perceived as reinstating power inequalities and neighborhood invisibility in the context of state services, symbolizing an acceptance of being ignored by the state, in addition to undermining claims to urban citizenship by requiring embodied, intentional participation in sewage management.

This research raises important questions regarding the future of urban sanitation, particularly in a rapidly urbanizing world where centralized infrastructure capacity is already hard-pressed to keep up with ever growing demand. Many proposed technically sustainable sewage management solutions for marginalized urban areas rely on local, household-level, management strategies, making user participation central to successful function. Imaginaries of urban life significantly influence how these sanitation solutions are perceived in many poor urban communities. These local perceptions and symbolic meanings surrounding sanitation may be particularly important in informing a successful approach to the growing urban sanitation crisis.

Centralized Sewerage and Urban Citizenship

As discussed in Chapter 1, late 19th century Europe saw a wave of centralized, water-borne sewerage and water network construction in response to disease outbreaks in urban spaces of the Industrial Revolution. These centralized networks became symbolic of the emerging ideal of a fully connected and unified metropolis (Gandy, 2004; Swyngedouw, 2004). Hygiene practices reliant on this infrastructure, including daily washing and flushing toilets, became a part of the modern urban citizen's lifestyle, and central to the production of the modern urban citizen (Bakker, 2010; Benidickson, 2007). Stemming from their importance in protecting public health, these (then) new hygiene practices took on moral weight. Bakker (2010) describes how hygiene became a moral virtue in 19th century Europe, and participation in these hygiene practices became a "material emblem(s) of citizenship" (52). Here I discuss how the advent of the underground, water-borne, and centralized sewerage system influences what it means to be a rights-claiming urban citizen through the modern sanitation imaginary.

Many authors have written about connections to piped water as a key emblem of citizenship and marker of state recognition, as well as means of participation in civic life (Bakker, 2010; Chatterjee, 2004; Gandy, 2008, 2011; Grove, 2009; Harris, 2008b; Swyngedouw, 2004). Sewer lines similarly form a tangible link between individuals, households, and the municipality. As Gay Hawkins discusses in her book *The Ethics of Waste* (2006), "Sewers link us to the state without any sense of direct intervention. They are where citizenship and subjectivity intermingle" (Hawkins, 2006: 49). Sewerage services may even suggest more about citizenship and belonging than water provision because of the central role of the flushing toilet in hygiene practices and related notions of purity and modernity (as discussed in Chapter 2).

Just as connection to centralized infrastructure can symbolize state recognition and belonging, lack of connection can equally symbolize exclusion and invisibility (Bakker, 2010; Gandy, 2004; Swyngedouw, 2004). Gandy (2004) expresses this paradox eloquently,

> "Water implies a series of connectivities between the body and the
> city, between social and bio-physical systems, between the
> evolution of water networks and capital flows, and between the
> visible and invisible dimensions to urban space. But water is at the
> same time a brutal delineator of social power which has at various

times worked to either foster greater urban cohesion or generate

new forms of political conflict" (Gandy 2004: 373)

Swyngedouw (2004) calls differential access to infrastructure a mechanism of domination and subordination because of its power to make power relationships visible. Typically it is poor and marginalized communities who are excluded from infrastructure connection that other urban dwellers take as a right (Swyngedouw, 2004). Gandy (2011) writes, "the poorest of the poor must inhabit an 'infrastructure free' zone where their vulnerability is derided, exploited and highly visible" (133). Even the need to request and lobby for infrastructure connection serves to further entrench and make visible power inequalities.

Not only is centralized sewerage connection necessary and productive of an urban citizenship, its advent also changed and influenced the urban citizen's relationship to human excrement. Sewerage pipes run underground and within walls, making sanitation a hidden process. Gandy (2004; 2011) suggests that this design paralleled a social change in 19th century Europe in how defecation and feces were treated. The bathroom became a private space, promoting a culture of concealment, even shame, towards the body and its processes, and an increasing aversion to human excrement. The ability to defecate in private even became a sign of social status, a sign of more fully embracing virtuous hygiene practices (Swyngedouw, 2004; Vigarello, 1988). Benidickson (2007) describes this expectation of ignorance and separation from sewerage management in modern European and North American cities today,

"The practicalities of household plumbing, water supply, and
sewage management are ordinarily relegated to the trade school
and engineering curriculums or to municipal planning offices... for
in the absence of crisis, urban infrastructure is hardly a matter of
dinnertime conversation" (5).

In the context of Buenos Aires, in which the porteño imaginary places particular emphasis on hygiene as a marker of civic life (see Chapter 2 for a discussion of this), the performance of distance from sewage management takes on particular symbolism for residents of Villa Lamadrid as a marker of their citizenship. Connection to centralized sewerage is never just

sewage management for the sake of public health. It is the text of who counts and who is recognized and included by the state, at least enough to have their shit taken away.

Addressing the Lag in Sewerage Connections

Centralized sewerage infrastructure capacity has been unable to keep up with growing urban populations and demand (see Introduction: *The Growing Urban Sanitation Crisis* for a further discussion of this). In response to this steadily increasing deficiency, and the resulting sanitation and public health impacts, many authors concur that centralized, water-borne sewer systems are not sustainable for resource poor communities (Jewitt, 2011; Mohit & Ludwig, 2000; Nhapi, 2004; Niemczynowiez, 1993; Paterson et al., 2007). These systems incur a huge amount of potable water waste (Esrey, et al., 1998; Nhapi, 2004)[22] as well as high construction, operation, and maintenance costs (Paterson et al., 2007; Rose, 1999) and ecological impacts (Esrey, et al., 1998; Esrey et al., 2001; Nhapi, 2004)

To replace the linear, centralized, water-borne sewerage paradigm, new types of sewage management systems for urban areas have been developed that are more cyclical, or closed loop systems, based on a recycling of nutrients and resources rather than end of pipe dumping. These systems circumvent many of the technical and financial obstacles of centralized systems and promote ecological sustainability (Esrey et al., 2001; McIntyre, 2006; Tilley et al., 2008). Many require no water to function, have minimal operation and maintenance requirements, are easily adaptable to population and structural changes, or even produce a by-product from the waste which can serve as a new stream of revenue for the community. Hardoy and Satterthwait (1997) estimate that the construction costs for a twin pit pour-flush latrine per household ranges from $75-150, while cost per household for the construction of a conventional system ranges from $600-1,200 (1990 prices - US$, as cited in Rose, 1999). Owing to their reduced costs and infrastructure requirements, as well as increased flexibility, dry, low impact, and locally

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[22] An average flush toilet discharges 50 liters of feces, 400-500 liters of urine, and 15,000 liters of pure water annually per user. Additionally one person will send 15,000-50,000 liters of grey water annually into the sewerage system. The result is that the water borne sewage system facilitates the contamination of a huge amount of potable and grey water with a comparatively tiny amount of feces (Esrey, et al., 1998). Feces comprise far less than 1% of matter flushed into the sewerage system.

managed sanitation options are among the most frequently encouraged for poor urban communities.

Among the most prominent of these solutions are fully dry systems, variations on the latrine in which feces and urine drop into storage areas located below the toilet. Often the storage area also promotes biotic or abiotic treatment processes for the feces before removal, reducing pathogen load. Other low-water use solutions, such as pour-flush toilets, require the user to manually pour approximately 2L of water into the toilet bowl per flush, reducing water usage of the system drastically over more traditional flushing toilet systems. Sometimes these hybrid solutions, such as condominial sewers, connect to decentralized treatment and disposal systems – plants with capacity to serve multiple neighborhoods in an area. However, neither dry nor low-water use systems provide transport of sewage to large centralized treatment plants, with capacity to serve large urban populations. Thus these semi-decentralized plants still require local management, which may include manual emptying of storage pits and vaults, and waste disposal.

Despite their ecological, financial, and technical benefits, decentralized sanitation systems have a high failure rate (Bliss & Bowe, 2011; Carter et al., 1999; Harvey & Reed, 2006; Hoque et al., 1996; McConville & Mihelcic, 2007; Rojas & Chatterley, 2011; Taylor, 2008; Thode, 2011). Still, these sanitation solutions remain frequently prescribed and implemented for both rural and urban communities without sewerage connection. I turn to two such sanitation solutions here with the goal of understanding residents' preferences and perceptions of these.

Methodology

A Morphing Research Focus

I began my fieldwork looking to explore varying daily experiences and obstacles in the lives of Villa Lamadrid residents resulting from existing wastewater systems. Dry and decentralized sanitation solutions dominate the literature on urban sanitation solutions for poor and marginalized communities. These studies highlight the importance of selecting appropriate technologies that are context-specific to biophysical, economic, and cultural criteria in order to ensure project uptake and long-term success (Balkema, 2002; Carvalho, Carden, & Armitage, 2009; Katukiza et al., 2010; Tilley et al., 2008). Community participation is meant to aide in the selection of appropriate solutions from the dry and decentralized solution set by providing more

accurate and detailed information about community context. Drawing on a literature review regarding community participation in natural resource management, and participatory exclusions of marginalized persons within communities (B. Agarwal, 2001; Benett, Davila-Poblete, & Rico, 2005; Harris, 2005; Nightingale, 2011; Sultana, 2009), my attention was particularly towards gender considerations that have been underemphasized in the design of many sanitation systems (O'Reilly, 2010).

As my relationships with community members grew and I continued in observations and interviews, my questions also began to morph. Conversations, both within the semi-structured interview context and outside it, revealed that residents framed sanitation very differently than the literature's approach of identifying context appropriate technical solutions. When I brought up sanitation residents didn't talk to me about the obstacles they experienced, at least not initially. This came only with my prompting, and seemed disconnected from their interests. Instead, interviewees often directed our conversations towards discussions about their anger (and now fatigue) towards their neighborhood's sanitation situation, focusing particularly on the government who was ignoring their rights. This was done alongside the narratives of distancing discussed in Chapter 2, but while these distancing discourses were about the immediate and open presence of shit in neighborhood streets, interviewees' discussions about frustration with the state referred to the neighborhood's general sanitation situation. This seemed to reveal that the way sanitation was framed by residents represented an interesting departure from how I had framed my research questions based on reading about sanitation interventions globally.

At first this reticence to discuss sanitation according to the way I had framed it in my interview questions – as a lack of infrastructure that could be solved with appropriate technology selection, informed by attention to community members' daily lives – seemed an obstacle. Interviewees did not seem to be responding to my interview questions in ways I had anticipated. To address this I developed a new interview segment which I thought might encourage and stimulate feedback more directly regarding what alternative, on-site sanitation technologies might be appropriate for Villa Lamadrid. However, this new round of conversations took a similar turn as my original interviews had, allowing for further conversation on how residents framed the existing sanitation situation not technically, but socially and culturally. As conversations continued, I began to approach this difference in how interviewees framed sanitation and how I had been framing it, based on the literature, as centrally interesting, rather

than a distraction from my intended purpose. Eventually I allowed this difference in problem framing to become the focus of my research. Below I describe the protocol I developed for this additional interview segment and then explore how responses to this segment became a useful substrate for exploring how residents of Villa Lamadrid frame and approach local sanitation and urban life. The results and discussion in this chapter draw from all interviews I conducted during fieldwork as far as they pertain to the concerns of this chapter, however any comments relating specifically to the two ecologically sustainable sanitation options come solely from the latter half of my interviews which included this additional segment.

Additional Interview Segment

My interview focus changed to respond to and explore this emerging understanding of a different framing of the sanitation problem. I built onto the semi-structured interview methodology outlined in the Introduction of this thesis and introduced a new section of the interview. I first introduced this segment with my 16th interviewee (of the total 36 semi-structured interviews I conducted), and exactly ½ way through the three months I spent in the field. I continued to present this new segment to the remaining 21 interviewees I spoke with, and the altered focus of my own questioning impacted our conversations in general.

This new interview segment centered on asking interviewees for their opinions and perspectives regarding two decentralized wastewater management systems designed for poor urban and peri-urban contexts. These systems are outlined in EAWAG's "Compendium of Sanitation Systems and Technologies" (Tilley et al., 2008). The stated purpose of this document is to "pull the main information together in one volume" (Tilley et al., 2008 3) regarding sanitation technologies for poor urban and peri-urban areas. None of the proposed technologies in the compendium include major centralized infrastructure construction; instead all rely on decentralized collection, transport, treatment, and disposal methods. Though most solutions outlined are managed at the household level, the compendium also offers a few decentralized biotic and abiotic treatment options with capacity to serve a small community. The compendium, and similar resources and intervention studies, had formed a large part of my pre-fieldwork reading, with the aim of understanding how the urban sanitation crisis is understood in the literature and how the literature describes it might be effectively addressed.

The compendium outlines eight unique system configurations for wastewater management, each suited to varied economic, environmental, and social contexts. Each system presents unique hardware for each phase of wastewater management, including user interface, collection, storage, and treatment, transport, and finally product disposal. Following the criteria and guidelines given, I selected two systems for inclusion in interviews based on general attributes that responded to some of the biophysical conditions of Villa Lamadrid. "System 4: Waterless System with Urine Diversion," was the only system recommended for flood prone areas. "System 3: Pour Flush System with Twin Pits," was not explicitly recommended for flood-prone areas, though it did require significantly reduced water input than a traditional toilet, and produced natural gas, a product that could have been appealing to users for heating, electricity, and other household purposes. In-depth descriptions of these systems follow in the subsections below.

During the interviews I presented images of these systems and explained how they functioned and what procedures were necessary for correct usage. For each system I presented two pages of images, one showing the user interface side and the second including diagrams of the collection and storage/treatment aspects of the system. Some of the images presented during interviews can be found in Appendix B. Following my brief explanation of system function I solicited feedback from interviewees on their reactions including what reservations they had, what implementation obstacles they foresaw, what modifications they might make, whether they would be comfortable using such a system, or in what ways they might feel uncomfortable, and whether they could see their neighbors using such a system. I also asked for preferences between the two systems.

Initially I presented the systems as a way to solicit user feedback and, building on my original problem framing, listen to how local preferences and priorities could inform an appropriate technology selection to serve this diverse community. However, the conversations that emerged from the presentation of these systems were rich in revealing residents' expectations of sanitation in general, how existing sanitation problems were framed, and what this meant in terms of expectations of urban life and citizenship. Rather than revealing which system was 'better suited' to the community, ensuing conversations revealed how interviewees received the notion of dry, locally managed sewerage solutions, and the symbolism these aspects of the technology held for them.

Sanitation System 4: description

The first system I presented during interviews from the EAWAG Compendium was System 4: Waterless System with Urine Diversion (outlined on page 23 of the compendium). The system consists of a urine diversion dry toilet bowl at the user end. This bowl (pictured in Appendix B), has two compartments, a smaller hole near the front for urine, and a larger hole near the back for feces. There is no flushing involved. All urine produced flows directly into a storage container below the toilet bowl, typically a plastic or fiberglass jug. The container has the capacity to collect at least one month of urine from the household, though can be larger depending on emptying frequency. Collected urine must be stored for at least one month to ensure sanitation. After this period, the urine can then be diluted with water (three parts water to one part urine) and applied to cropland as a fertilizer rich in nitrogen, phosphorous, and potassium (Tilley et al., 2008).

The feces, which goes through the larger hole in the toilet bowl, falls directly into a drying vault also positioned beneath the throne. This vault must be entirely sealed, allowing no moisture to creep in from the surrounding groundwater table. The vault should have the capacity to store at least 100L of feces per person in the household, which is the amount of feces a person produces on average over six months. After defecation a small amount of drying material should be thrown into the vault to facilitate drying and reduce odor. This drying material can be ash, sawdust, soil, or lime. After six months of use the toilet bowl has to be moved to a second dehydration vault, while the first is allowed to sit undisturbed for an additional six months. During this time the feces will reduce in volume by 75% as it dehydrates. After the time required for adequate sterilization of pathogens, drying vaults are emptied using a shovel, gloves, and face mask. The produced product will be a white powder, rich in carbon and nutrients, and can be applied to soils in agriculture or for other uses as a soil amendment (Tilley et al., 2008).

The images I presented during interviews included a variety of models of urine diversion toilet bowls. I also presented some images depicting the feces drying vault system, with the urine being diverted into a storage tank.

This is the only system which the compendium stated could be used in a flood prone area with a high groundwater table (Tilley et al., 2008) and I selected it on this basis, as the high groundwater table is a key factor contributing to wastewater management difficulties in Villa Lamadrid, both according to interviews conducted, and outside academic reports (see:

Merlinsky, 2009b). Other literature also confirms this choice as a viable option for peri-urban communities. In a study regarding user and expert preference for dry sanitation options in urban slums in Kampala, Uganda, Katukiza et al. (2010) report, "The UDDT[23] system ranked highest because of its attributes that include: construction and repair with locally available materials and small land requirements, no constant water requirement for use, prolonged service life since it can be emptied for reuse, suitability for flood prone areas due to nonmixing of waste streams and odour control that is achieved through proper usage" (60). The authors go on to list some challenges with implementation including user acceptance, the presence of a market for the end products, which include fertilizer and soil supplement, an available and cost effective source of dry material such as ash or sawdust necessary for odour reduction and drying of fecal matter, and finally, the high filling and emptying rate, depending on user density (Katukiza et al., 2010).

Sanitation System 3: description

The second system presented was EAWAG's Sanitation System 3: Pour Flush System with Twin Pits (outlined on page 20 of the report). A pour flush toilet is similar to a regular flushing toilet except that instead of flushing the toilet from the attached cistern, users pour water into the toilet bowl manually. The compendium estimates that between two and three liters of water is typically sufficient to move feces and urine up and over the S-shaped water seal in the attached pipes, depending on the size of the seal. The purpose of the manual flush is to significantly reduce water required by the toilet.

The blackwater (including feces and urine) can then be directed to a biogas reactor, typically a plastic container with capacity to store at least six months of feces, depending on household size. The reactor provides similar treatment level as a septic tank, with similar emptying frequencies depending on system design. In addition, the reactor produces biogas (a mixture of methane, carbon dioxide, and other trace gases) which can be converted to electricity, heat, and light in the household. The tank requires weekly manual stirring.

Unlike the UDDT System above, EAWAG's description of this configuration was explicit that "this system should only be installed where there is a low groundwater table" (Tilley et al., 2008: 21), making it an unlikely choice by technical standards for the neighborhood context. Instead, I chose to present this system for comparison with the dry UDDT option for

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[23] UDDT is an acronym for urine diversion dry toilet, the toilet bowl used in this system

three particular reasons. Primary among these was that the system included a pour flush toilet user interface. This set-up allows for a modified version of flushing. Though this flushing is done manually, it still gives the user a feel of water-borne sanitation. The purpose of this was to explore how important the feeling of flushing was to participants. My second purpose in choosing System 3 was that it included a biogas reactor as part of the Collection and Storage/Treatment phase. The function and description of a biogas reactor connotes a high-technology, modern device. I was curious to listen to how the feeling of modern technology might influence or feel to participants. Thirdly, I chose the pour flush system to explore how much of a burden emptying frequency was to participants. After presenting images for this system and outlining general function including the pour flush model and biogas production, I pointed to some key differences between the systems, particularly that System 4 required higher emptying frequency. This was an interesting difference between the two systems as cost of hiring the atmosférico[24] had been listed as a major obstacle to the septic tank system by many interviewees. In addition the higher emptying frequency could result in greater or more frequent bodily contact with waste.

Participant Responses

Below I separate interviewees' reactions into two broad categories. The first include interviewees' comments regarding our conversation about these technologies. Interviewees reiterated, explicitly and implicitly in a variety of ways during this section of the interview, that wastewater management was not a problem that could or should be solved locally in the neighborhood. Further, it was not a problem that they knew about, beyond knowing how to manage their current septic tank systems, nor should have to know about. The second category of responses was about discomforts interviewees identified and expected to have with the proposed systems. These discomforts related largely to bodily contact with fecal matter and urine, the newness of the system, and incongruities with residents' imaginaries of urban life.

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[24] As described in the Introduction, the atmosférico is the truck Villa Lamadrid residents sometimes hire to pump out full septic tanks.

Neither a Local Problem, nor a Local Solution

One of the most common themes interviewees returned to in our conversations was to reiterate explicitly, and through a variety of more subtle means, that wastewater management was not a local problem, and therefore the solution was not a local one, or one that they should be personally involved in. This meant that the decentralized, household level solutions I was presenting did not fit within their sanitation expectations. Interviewees did this in a variety of ways, ranging from explaining this to me straight out, to being extremely hesitant to comment on the decentralized systems I presented, demonstrating that they were not experts and were uncomfortable discussing private practices. In the subsections below I explore four key ways through which I heard interviewees express to me that the local wastewater situation was not their personal responsibility.

'This has to be the state'

Before discussing either system option to participants I began the interview asking participants what possible solutions they thought would work for addressing wastewater concerns in their neighborhood. Nearly unanimously, and without hesitation, interviewees responded that an off-site, water-borne, centralized sewer system, managed by the state, was necessary. After some discussion about the local sanitation solutions I was presenting, I had the following exchange with one interviewee,

> M: ¿Piensa que la gente aquí tiene preocupaciones sobre la calidad de la napa freática?

> E: Y sí, preocupaciones hay, pero no las podés solucionar vos. Eso tiene que ser el Estado únicamente: hacer cloacas, eso es una obra grande.

> *M: Do you think that people here are worried about the groundwater?*

E: Yes, there are worries, but you[25] aren't going to be able to solve
this. This has to be the state only: to make a sewer system, this is a
big project.
(Interviewee #18)

This participants' response represented a feeling that the sanitation situation in the neighborhood is entirely beyond local efforts, and that local solutions do not make sense.

As a result of the framing of sewage management as a state responsibility, rather than a local one, queries regarding implementing decentralized wastewater collection and treatment systems locally were met with confusion in both informal conversations with Foro Hídrico[26] members and in semi-structured interview context with neighborhood residents. These conversations reflected a feeling that the situation was entirely beyond local efforts. Other studies examining local perspectives on wastewater management solutions in non-sewered urban areas confirm this finding. Carden et al. (2007) conducted a study in South Africa examining residents' perspectives on dry wastewater management solutions and greywater disposal and reuse options. Their participants included residents of formal settlements in peri-urban areas. A key finding they report reads,

"Most of the affected residents appear to believe that the solution to their water supply and wastewater management problems rests with municipal authorities alone. This appears to be based on a sense of entitlement resulting from the Government's stated policy regarding the delivery of water-borne sanitation in fully-serviced homes to as many citizens as possible. Most residents therefore consider alternative water provision and wastewater management techniques as temporary measures only. Another issue revolves around the concept of water reuse and Government policies in this regard – people are suspicious that they

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[25] In the context, the interviewee seems to refer to me personally as unable to address groundwater concerns, though this also revealed a reluctance to place faith in local relief efforts.

[26] As mentioned in the Introduction, Foro Hídrico is a community group in Lomas de Zamora, concerned with health impacts of lack of wastewater management, and advocating for centralized sewerage access for all.

will be getting an 'inferior' product if wastewater recycling is introduced"
(Carden et al., 2007: 434).

Although there are important differences with the South Africa case, particularly with respect to senses of entitlement or actual rights legislation, AySA has made similar promises of service to the neighborhood. In particular, AySA has promised to serve 80% of residents in their concession area with sewerage connections by 2011, a goal which they fell short of by over 20% and removed in their 2011 Strategic Plan update (AySA, 2006, 2011a)). Even more specifically AySA has proposed (and postponed) numerous plans to provide sewerage for Villa Lamadrid, most recently with the Fiorito plant which was supposed to have come online in 2011 (AySA, 2011b), and has yet to materialize.

Acutely ignored

Interviewees understood current sewage management problems in the neighborhood as a result of the state's callous exclusion of them from services to which they were entitled. A narrative of being ignored and excluded from a range of municipal responsibilities and services, including paved streets, consistent water supply, and connection to sewerage infrastructure, was central to how residents understood themselves and their neighborhood,

> E: El intendente que corresponde a nuestro barrio no se preocupa.
> Ninguno de los que estuvieron hicieron nada por nuestro barrio...
> Vos fijate, en Budge estan todas las calles asfaltados, iluminación,
> tienen cordones en las veredas y tienen zanjas. Ellos tienen todo...
> Y nuestro barrio es como se quedo… El intendente en esta zona
> del barrio no hace nada, nada. Subieron y no hicieron nada.. Budge
> esta limpita, con los arboles pintados, las placitas. Nosotros
> tenemos placitas (supestamente!), y vos fijate que no es asi.

> *E: The governor of our neighborhood doesn't care about us. None*
> *of them that we have had have done anything for our*

neighborhood. Look, in Budge[27] all the streets are clean, with
lights, railings on the sidewalk, they have everything. Our
neighborhood hasn't changed. The governor of this neighborhood
doesn't do anything at all. They came into office and did nothing.
Budge is clean, with trees, plazas. We have plazas (supposedly!),
but if you look around that isn't true"
(Interviewee #6)

A further, and perhaps more telling, example of this narrative of being ignored was illustrated during my experience collaborating with residents of Villa Lamadrid on a video project. At the request of Foro Hídrico I filmed and edited a short educational video for the community group's use. The video detailed their work and public health concerns in the neighborhood. Foro members guided me through their neighborhood, pointing out and narrating some of their key concerns. These extended much more broadly than wastewater management, including solid waste burning and high-tension cables. Each issue highlighted focused on lacking public infrastructure, or infrastructure that had received inadequate maintenance; the resulting health impacts were narrated as the result of state negligence. During one neighborhood walk my 'escort' approached a long-term resident who was cleaning mud out of the zanja in front of his home. We did a short interview with this man, asking him about his concerns. He was particularly proud of the improvements he had made to the zanja in front of his home, and emphasized that, after his requests to the local government for pipes for his zanja had been ignored, he had undertaken the improvements himself. His tone indicated that the lack of response from the government, even in light of his efforts towards improving the zanja infrastructure, was not a surprise.

After creating a first cut of the video we screened it to Foro members and a wider community audience, soliciting feedback and advice. From these screenings came the title of the video: "Crónico de un estado ausente" - *"Chronicle of an Absent State."*

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[27] Though Villa Lamadrid is technically a neighborhood within the Ingeniero Budge area, Budge is also often used to refer to the neighboring sub-neighborhood in the area, bordering Villa Lamadrid to the east.

Returning now to responses from semi-structured interviews I conducted, some interviewees described feelings of anger and impotence at this felt exclusion,

> E: entonces se enfurece con los gobernantes de arriba; se enoja mucho, siente impotencia

> *E: One gets furious with the higher up government; it makes one very angry, one feels impotent*
> (Interviewee #7)

The feeling of repeated exclusions seemed to create a sense of helplessness that eventually led to bitterness and disillusionment with government. Nearly every interviewee at one point or another laughed and told me, 'things are different here,' meaning that 'normal' rules, or the way things work in 'regular' neighborhoods, did not apply to Villa Lamadrid. Many residents have little faith left that political action will be recognized or effective in bringing attention to their neighborhood. As an example, when I asked what residents did on days when water pressure was so low that their taps did not run, one interviewee responded, laughing a little cynically,

> E: "[risas] Esperar, protestar, protestar y nada. Entonces comienzan a aparecer los camiones"

> *E: "[laughing] wait, protest, protest and nothing happens. Then the water trucks come"*
> (Interviewee #6)

Though the water trucks may seem like an adequate short-term solution to the lack of water provision through the normal network, studies have shown how such systems result in residents having to pay higher prices for water, and dealing with time loss and emotional embarrassment (Sultana, 2011; Wutich, 2009).

A sense of resignation to this neglect pervaded a number of areas of resident's lives. Often on days of heavy rains streets in Lamadrid became impassible, precluding busses from entering the neighborhood. Though some interviewees expressed anger at this situation for their lost wages, the embarrassment of arriving places wet and muddy, or the expenditures necessary in hiring cars for alternative transportation, others described these days to me as their vacations,

> E: Yo cuando llueve me quedo en mi casa, miro películas.

> *E: When it rains I stay at home, I watch movies.*
> (Interviewee #12)

> E ¿Qué hacemos cuando llueve? Y, yo tomo mate[28], me como todo
> lo que hay [risas]

> *E: What do we do when it rains? I drink mate, and I eat everything*
> *around [laughs]*
> (Interviewee #11)

My questions and presence likely felt embarrassing to many interviewees on some level because of their further indication that this neighborhood was 'lacking,' and perhaps even the fact that such solutions proposed residents accept their invisibility to the state, and work around it. Interviewees' expressions of resignation to the situation may have worked to separate themselves from me by not having to engage fully in a topic filled with social stigma. By reiterating that 'things were different' in their neighborhood than in other 'normal' neighborhoods, interviewees may have been indicating that they felt I was unable to understand their reality, one in which rules and laws did not mean what they said, but were part of a larger double-speak continually present in their lives. Exclusion from state services that are taken for granted in other communities in Buenos Aires excludes Villa Lamadrid residents from participation in a rights claiming urban citizenship.

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[28] Maté is a traditional Argentine tea.

Hesitancy

After I presented the UDDT System images and provided a brief explanation of system function, interviewees were often hesitant to respond. Though they expressed understanding during the explanation, typically they would at first respond by saying that the system appeared to be 'good.' It would take some additional discussion of the systems to elicit further responses and opinions. This hesitancy may have resulted from a general politeness towards me as an outsider and young woman, not wanting to criticize a solution I appeared to be endorsing. Other studies confirm that there is a relative willingness among potential users to point out advantages of latrine systems to interviewers, while respondents are often reluctant to point out perceived disadvantages (e.g. Rodgers et al., 2007).

A second dynamic that may have influenced this initial hesitation may have come from an embarrassment to discuss personal shit and bathroom practices. The suggestion of implementing household level shit management solutions suggests that individuals should be personally responsible for their shit, or should be doing something about the situation themselves. This represents a framing of the problem as a local one, and in some ways may have felt accusatory to interviewees. In addition, suggesting that residents could or should participate in their sewage management served as yet another iteration of local exclusion from state services that are extended to other neighborhoods and citizens as a matter of course.

'For me...'

Nearly all interviewees framed their responses very clearly in terms of themselves, emphasizing their own opinion with respect to these matters and serving as another form of hesitancy and withdrawal from the conversation. This occurred in two key ways. The first was by expressing that they themselves would be happy to adopt a dry system, but were uncertain of their neighbor's willingness to accept one,

> E: Ojalá se pudiera implementar eso.

> M: ¿Piensa que la gente aquí va a aceptar un inodoro seco, sin agua?, ¿qué le parece?

E: No sé si la gente aceptaría. Yo sí.

E: Hopefully this will be implemented.

M: Do you think people here will accept a dry toilet, without water? What do you think?

E: I don't know if others would accept it. I would.
(Interviewee #26)

This interviewee had grown up in a more rural area before moving to Villa Lamadrid, and described her own experience with a dry latrine in childhood. She explained her willingness to use the dry system as a result of her familiarity with one, but was dubious that other residents would be so open. Though this interviewee may have been earnestly expressing her openness to the system, many times I felt that interviewees expressed what they thought their neighbors or other residents might feel to avoid expressing their thoughts to me directly, and to soften their opinions.

Interviewees also showed hesitations in responding to the technologies by framing responses as simply their own, personal opinions. I often got the sense that they did not want to offend or cross me. In the following excerpt I had been speaking with a participant regarding the UDDT system, and she expressed her hesitancy about cleanliness of the system. However, she reiterated several times that this was just her own opinion, simultaneously undermining her own knowledge with regard to these technologies:

E: porque a mí me parece que sin agua es antihigiénico, qué sé yo… Claro, y qué sé yo. A mí no me… a mí, no sé

E: because to me it seems that without water it is unhygienic, but what do I know... of course I don't know anything... I don't know.
(Interviewee #19)

Both of these ways in which participants personalized their responses reveal power dynamics present in the interviews. Interviewees were either hesitant to voice their thoughts about the systems, or eager to please and encourage me. But in addition to this influence of power dynamics, the eagerness to make it known that they spoke only for themselves seemed to be a way that participants demonstrated their lack of expertise on local wastewater management, that these were not things they had had to think about or know about in the their daily lives. Lack of expertise on sewage management is a luxury of urban life and interviewees' demonstration of it to me reaffirmed that they were legitimate urban citizens accustomed to similar expectations as residents of more affluent parts of Buenos Aires.

'Do YOU use it?'

A common question I received when asking participants about these sanitation options was whether I myself used such technologies at home. There seemed to be a variety of reasons interviewees asked this question. Sometimes they seemed nearly incredulous that a white student from Canada would use what seemed like a primitive toilet. Other times participants seemed interested in the systems, and perhaps complimented them as a way of being courteous towards me. But what struck me most often in this question was that perhaps the suggestion that they might or should use such a system felt insulting, and interviewees wanted to question whether I would choose to use one as a way of pointing out that such a prescription was dehumanizing.

Discomfort and Context

A second conversation stream occurring during this section of the interview was about the drawbacks and discomforts the systems presented. In a number of instances these cited discomforts may not have been with the system itself, but rather with the perceived incongruity between this bodily practice required by the system and the imaginary of urban daily life. While I presented and explained the systems, a number of interviewees recalled stories of using a similar system during childhood, either in Villa Lamadrid before it had received water access and other state amenities as a formal neighborhood, or in rural areas from which interviewees had migrated. The discomforts noted were not entirely discomforts of an unfamiliar system, but arose in part from a feeling of moving backwards – towards a more rural or 'poor' technology that did not fit with narratives and goals of migration and neighborhood recognition.

Unhygienic

Many interviewees expressed concerns that the dry, non-flushing solutions were unhygienic. Women particularly asked about how such dry toilets could be cleaned, given that very little water could be introduced into the vaults below, and explained to me that already residents frequently used deodorants and perfumes in their toilet bowls to reduce odor. In nearly all interviews, participants expressed a preference for the pour-flush system over the UDDT. This preference seemed largely based on feelings of cleanliness. These frequent references to feelings of dirtiness related to a dry toilet system are ways of expressing belonging, not only to Argentine and local hygiene norms, but also a broader belonging to a perceived group of modern, educated citizens (see Chapter 2 for a more in-depth discussion of this).

Interestingly, while many papers detailing implementation studies of UDDT and other dry toilet systems discuss user's discomfort with odor, they rarely report on user's general discomfort with a dry system in relation to hygiene norms. This may be largely due to the fact that the majority of sanitation interventions focus on communities practicing open defecation, so the assumption is that a dry toilet will not feel hygienically inferior to existing practices. Naranjo et al.'s (2010) MobiSan study on urban sanitation in informal settlements of Cape Town, South Africa mentions that one of the main complaints regarding chemical and container toilet solutions was a feeling of being too close to the feces. However, the authors use this information to provide technical 'tweaks' to the MobiSan system, making "the interior of the toilet bowl as dark as possible to prevent users from being confronted with the feces tank underneath" (ibid: 3085), but do not engage in a larger discussion of how dry systems may have clashed with hygiene imaginaries. Though tweaking technical solutions to meet user needs is not essentially negative, in many wastewater management interventions it may be putting the cart before the horse, preemptively reinstating the problem as a technical one. The result is a trivializing of community participation and a reinforcement of unequal power dynamics already deeply entrenched through existing access inequalities.

Odor

Questions about odor from the UDDT System (EAWAG's #4) were particularly common when discussing interviewee's hesitations with the UDDT system[29]. This is not surprising as odor is frequently one of the main complaints users have of dry drop and store systems (Balkema, 2002; Katukiza et al., 2010). But the frequency of discussing the problem of odor in this context was interesting to me particularly as stench, from zanjas and septic tank overflows, was a common complaint of interviewees regarding their current sanitation system, prior to presenting the EAWAG solutions.

The tone in which these hesitations regarding odor were brought up shed some light onto the meaning of these hesitations. It is difficult to get a sound byte into a thesis, but many interviewees sounded incredulous at the very suggestion of such a system – a dry toilet with shit rotting under or near your house!?! – that would surely produce a horrible stench. Perhaps this incredulousness came from a sense or reaction to the fact that they would never consider such a seemingly primitive option. It may have even been insulting to suggest that they might, or should, as this could be taken as calling into question their personhood, and identity as an urban dweller. However, again, as many interviewees who were born in the countryside and had moved to the city had experience with such systems, the concerns over odor seemed to arise more from an incongruity with the city context, and the fact that in a city residents felt they had a right to public provision of services, than with the interviewee's hesitation of using the presented infrastructure. It is important to note though that in a rural context lower population density can allow for better aeration of dry latrine systems, and reduced odor, while in this urban context dry latrine odor would likely be more concentrated.

Tidiness

One interviewee expressed a concern that the UDDT system was not 'tidy.' The need to have a drying agent on hand to add to the fecal drying vault, she explained, would not only be troublesome and expensive, adding to the workload, but would also make the bathroom messy,

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[29] EAWAG's compendium assures that, when dried properly, fecal matter will not produce a stench (Tilley et al. 2008).

E1: hay que tener ya cal, hay que tener arena para hacer…ya es un
trabajo…. Y es todo desprolijo porque tenés que tener un montón
de cosas ahí, no me gusta. A mí me gusta el baño tenerlo prolijito.

E1: You have to have the cal [calcium carbonate], you have to
have the sand to do that… it is work! … All of this messiness
because you have to have so many things there, I don't like it. I like
to have a neat bathroom.
(Interviewee #18)

Though her concerns may have in part referred to an aesthetic or space concern in the bathroom, it also referred to a larger untidiness with bathroom protocol. The need to add drying agent to the fecal matter vault any time a user defecated was seen as troublesome by many interviewees. Perhaps this referred to the thought of having sawdust or sand in the bathroom – substances that seem coarse and earthy, and clash with attempts to make bathrooms feel hygienic and detached from bodily functions. It may have also had to do with resistance to changing or adding to 'normal' bathroom behavior which currently only necessitates flushing.

Bodily practice

In the previous chapter I examined some of the social and cultural meanings of shit and its management practices. Here I explore some ways in which bodily involvement in hygiene practices required by the alternative sanitation solutions were invoked as part of conversations regarding the two ecological, household level sanitation options. These comments not only extend understanding of how belonging is developed and invoked through participation in culturally accepted shit and hygiene practices, but also understandings regarding local imaginaries of urban life and urban citizenship as developed through hygiene.

Imaginary of flushing

Flushing waste away is an important bodily and social process for residents of Villa Lamadrid. Nearly every household I visited had a flush toilet. Many studies have discussed how flush toilets are symbols of success and modernity in many urban communities, particularly for migrants to urban areas from rural areas (Black & Fawcett, 2008; George, 2009; Jemsby, 2008).

This is in part due to their implications, not only of access to water resources, but also an ability to produce waste, part of a sign of affluence (Veblen, 1899). As a result, one of the key features of the UDDT system that participants felt hesitant about was the lack of any flushing procedure. This became particularly apparent as participants expressed almost unanimous preference for the pour-flush system over the UDDT specifically because the pour-flush allowed for flushing. Even though it was manual flushing, this still seemed to be better than no flushing at all. This was interesting in light of the fact that it was made clear during interviews that the pour-flush system would require more frequent emptying than the UDDT due to the extra liquid in the system from the modified flushing. The financial burden of paying for an emptying service had been one of the main obstacles participants had noted when discussing how the current waste management system impacted their daily lives. Thus it seemed that even financial burdens were a lesser priority than the practice of flushing.

Through our conversations three important aspects that contributed to the importance of a practice of flushing emerged, and may shed light on some ways that residents of Villa Lamadrid understand urban life and sanitation in an urban context.

First, flushing appeared to have major influence on whether a system felt hygienic. When asked why she preferred the pour-flush system, one interviewee responded,

> E: Primero porque me parece higiénico por el tema del agua, que
> tirás agua, vertís agua.

> *E: First because it seems hygienic because of the water, water you*
> *throw, you pour water.*
> (Interviewee #19)

In the current septic tank system tanks frequently overflow into yards, zanjas, and neighborhood streets and flushing toilets can provide little protection or separation from fecal matter, save from at the user end. In fact, flushing even exacerbates sanitation problems by introducing more water to an already saturated ground. Flushing seemed to be a practice whereby feces and urine were moved from the private space of the home into the public space of the street or zanja, where it was no longer associated with an individual. Thus it seemed that flushing served as a means of

transforming private waste into a public matter (Hawkins, 2006), and the feelings of cleanliness this evoked for interviewees, rather than any actual physical separation from fecal matter.

Secondly, flushing was associated with a feeling of ease and convenience. Many times participants highlighted ease as a reason they thought centralized sewerage was the best solution for their neighborhood's current wastewater management struggles,

> E: Lo más fácil es tener la cloaca: vos vas al baño, apretás el botón
> y no hay más recipiente de nada.

> E: *The easiest [solution] is to have a sewer; you go to the*
> *bathroom, push the button, and there is nothing else to do.*
> (Interviewee #19)

In addition to the physical or procedural ease associated with flush toilets, the ease of not needing to think about or be further involved with shit management, beyond the 'push of a button,' was also highly prized by participants. When I asked one interviewee why he thought his neighborhood needed a sewer system he responded in this way,

> E: No, bueno, porque es lo mejor que hay las cloacas.
>
> M: ¿Es mejor?
>
> E: Sí, toda la vida. Te olvidás.
>
> M: Ah, no necesita pensar.
>
> E: Claro, te olvidás; lo hacen y listo, ya está.
>
> E: *No, well, the best is to have sewers.*
>
> M: *it is the best?*
>
> E: *Yes, for life. You forget.*
>
> M: *Ah, you don't need to think.*
>
> E: *Of course, you forget; you do it and it's done, that's it.*

(Interviewee #21)

Manual emptying

Continual emptying of the toilet system is not a new concept for residents of Villa Lamadrid as they already frequently call the atmosférico to pump out septic tanks. However, the UDDT system produces products that must be manually removed and disposed of. It was important to include shovels in the images of the UDDT vaults (see Appendix B) to signal this need for manual emptying as this was a significant departure from the existing system. In the existing septic tank system sewage waste remains in liquid form, and emptying of septic tanks is done through pumping. The pumping, as opposed to shoveling, allows for some additional separation from feces and urine through the hose and mechanical removal process.

Questions about emptying were common, though interviewees were hesitant to engage in a detailed conversation regarding vault emptying. I highlighted the benefit of not having to pay for the service of the atmosférico, something many interviewees had cited as a difficulty and major expense required by the current septic tank system. However, the prospect of actually shoveling out one's own shit, even if dried, seemed troubling to interviewees. Perhaps the fact that dealing with shit was embarrassing, or even felt demeaning, made participants particularly hesitant to discuss this aspect of the UDDT system in depth,

> M: ¿Piensas que si tuvieras este sistema, ustedes lo vaciarían o
> llamarían a un servicio para hacerlo?
> …
> E: Sí, sí, entiendo. Sí, es medio… No sé, qué sé yo. No tengo idea,
> la verdad no te diría "lo hago yo y ya está", ¿viste?, pero la primer
> vuelta a lo mejor llamaría alguien para que me lo haga, la primera
> vuelta, para ver cómo es la situación…

> *M: Do you think that if you had this system, you would empty it*
> *yourselves or call a service to do it?*

E: Yes, I understand. It's a little… I don't know. I don't have any

idea, the truth is that I can't tell you, "I will do this and that's it"

Do you see? But I think for the first time it would be to call

someone to do it for me, for the first time, to see how it needs to be

done

(Interviewee #26)

Concerns about contact with the products of the UDDT system were interesting in light of the existing system in which overfull septic tanks are continuously leaking into the zanjas, a few meters from residents' homes. As described in Chapter 2, zanjas are crossed dozens of times a day, each time someone leaves their home to go into the street making the open presence of fecal matter in the neighborhood hard to ignore, and even commonplace. More than this, as the fecal matter mixes with storm water during storm events, contact with it is impossible to avoid. It seemed there was a significant difference for participants between these forms of contact with sewage in daily life, encounters that participants could try to physically avoid, and were described as a part of the sewerage problem, and contact with urine and fecal matter that was planned and a part of a sanitation 'solution.'

Some interviewees even thought the idea of emptying out their own shit and urine was ridiculous and had fun with my interview questions by making jokes. Listening in on a conversation I was having with a mother in her 50s, her son compared this emptying to a bedpan for invalids, (in this excerpt, 'E1' indicates the son of my interviewee, a man in his mid 20s),

E: Y cuando se llena esto, ¿cómo hacés para vaciarlo?, ¿en qué

sacás?

…

E1: Ah, como acá hacen. ¿Viste que te pasan a buscar a los

jubilados? A los jubilados les pasan a buscar el pis.

E: And when this is full, what do you do to empty it? How do you

take it out?

E1:Ah, how they do it here. Have you seen what happens to the old
people [retirees]? Their piss starts to be carted away.
(Interviewee #26)

Context incongruity

Indoors vs. outdoors

Having an indoor bathroom is seen as a sign of progress for many residents towards a
more prosperous or urban life. For some residents, important life events were even celebrated
with indoor plumbing,

M: ¿Cuándo cambia de afuera a adentro?

E: Y, hace 30 años más o menos. Cuando me casé ya pusimos…
teníamos el baño adentro, hicimos el baño adentro.

M: When did it change from outside to inside?

E: 30 years ago, more or less. When I married we put it... we built
the bathroom inside.
(Interviewee #19)

When discussing the obstacles in construction of the UDDT system it became apparent in
some interviews that constructing the UDDT apart from the home would be more cost effective,
rather than remodeling the existing bathroom in which digging below the home or constructing
stairs would be necessary for the drying vaults. However, many interviewees were very reluctant
to go from an inside to an outside toilet,

M: ¿Piensa que alguien que tiene un baño adentro puede cambiar a
usarlo…?

E: ¿Afuera? No, creo que no. Creo que es mucha comodidad tenerlo adentro. Porque nosotros tuvimos baño afuera. Yo cuando era chica teníamos el baño afuera, salíamos de la cocina y teníamos… y antes se usaba así, el baño afuera, que daba al patio… y hacía frío, salías al baño para bañarte, tenías ganas de ir al baño a la noche. Es incómodo, es incómodo.

M: Do you think that people who have an indoor bathroom would change and use...?

E: Outside? No, I do not think so. I think that it is much more comfortable to have it inside. We had a bathroom outside. When I was young we had an outdoor bathroom, outside the house through the kitchen... we used to use it like that, the bathroom outside the house, facing the courtyard... and it was cold if you had to use it at night. It was uncomfortable.
(Interviewee #19)

Here again, interviewees put the central importance of ease that indoor, flushing toilets bestow on daily life in contrast with the discomfort of outdoor toilets. For interviewees who had used outdoor or dry toilet systems in the past, this discomfort was particularly associated with a digression into a rural, poorer past and clashed for many interviewees with their immigration histories and goals in moving towards their urban life imaginaries.

Campo technology vs. modern technology

One reason I chose to present both the UDDT system and the biogas pour-flush system was to compare interviewees' responses based on the feelings each system evoked. The pour-flush biogas system was preferred over the dry UDDT system almost unanimously. I suspect this was due to a number of factors (see discussion above on flushing imaginaries), but important among these was that the biogas reactor had the appearance of a new, advanced technology. Even though most homes in Villa Lamadrid are connected to natural gas lines, and receive gas for very

low, subsidized prices, this was still an attraction of the biogas system. One interviewee explained her preference for this system, first mentioning its feeling of hygiene, and then continuing,

E: Y que es reciclable, que podés usarlo para la electricidad, y que no contamina las napas.

M: ¿Piensas que el uso de este gas para electricidad o calor puede ser una motivación, porque al usarlo no se necesitaría pagar por el gas?

E: Ah, está bueno, sí; también sería una motivación, sí.

M: ¿El gas aquí es muy caro?

E: No, eh… el gas de garrafa sí es más caro, pero ahora son pocos los lugares donde no hay gas natural; la mayoría tiene red, la mayoría, no todos, tienen red de gas.

E: And it is recyclable, you can use if for electricity, and it won't contaminate groundwater.

M: Do you think that the use of this gas for electricity or heat would be a motivation [to use it], because it would not be necessary to pay for gas?

E: Oh, it is good, yes; it would be a motivation, yes.

M: Is gas very expensive here?

E: No... gas in a container is more expensive, but now few places

don't have natural gas [connections]; most are connected to the
system, the majority, not all, have gas piped into the home.
(Interviewee #19)

Discussion

Interviewees' responses to the two environmentally and economically sustainable sanitation technologies presented revealed three important aspects of the urban life imaginary in the community – 1) a feeling that sanitation is a state responsibility, not a local one; 2) a feeling that hygiene is intimately connected with and reliant on water use, particularly expressed through a practice of flushing; and 3) following from the previous two, hygiene practices that represent convenience, particularly through indoor, water-borne plumbing, are understood as urban (and preferable), while dry and local sanitation solutions are connected with a rural lifestyle and past and had negative connotations.

Sanitation is Not a Local Responsibility – The Right to Not Know

Sanitation in Villa Lamadrid is understood as a state responsibility, not a local one. Present sanitation struggles (including fecal matter presence in zanjas, streets, and groundwater) are seen as signs of state negligence and failure. Residents were not surprised to be the targets, or victims, of this state negligence – this was intimately connected with the neighborhood's history as a marginalized settlement in which residents had to lobby for access to services that other communities were provided with as a matter of course. Despite the fact that Ingeniero Budge, the larger sector of Lomas de Zamora, of which Villa Lamadrid is one neighborhood, was declared an official district of the municipality in 1995 (Municipality of Lomas de Zamora, 2012), residents had an unspoken feeling that they were still not yet fully recognized as urban citizens, and given equal treatment as more affluent neighborhoods. This was likely perpetuated, and evidenced in part, by their continued exclusion from sewerage service. Thus connection to the municipal, centralized sewerage infrastructure is understood as a means of increasing state recognition, further legitimizing their neighborhood as a formal neighborhood, equal to more affluent neighborhoods of Buenos Aires. Perhaps more importantly than state recognition, sewerage connection was also seen as a sign of inclusion and equality with other legitimate urban citizens of Buenos Aires – those serviced with sewerage connections without question.

Important in the understanding of sanitation as a state responsibility is the right of the urban citizen not to know about sewage management beyond their toilet bowl. Ignorance as to sewage management and infrastructure is a means of performing separation from fecal waste, and participation in a hygienic modern urban citizenship. As described previously, separation from fecal waste as an important part of the modern urban citizen's hygiene was signified by the move towards hidden sewerage infrastructure and the privacy of the bathroom in 19th century Europe (Gandy 2004). Interviewees' hesitancies to comment on, or demonstrate knowledge regarding proposed systems, seemed to serve as means of performing this lack of expertise and separation. Those in more affluent parts of Buenos Aires, a few kilometers away, expect consistent sewerage service without question and without effort on their part, requiring no personal interaction with the provision of their sewerage service. Thus interviewees expected, or at least wanted to show that they expected, – thereby reiterating their claims to legitimate citizenship – this same level of service and ability to be ignorant.

The particular history of water and wastewater service in Buenos Aires may imbue reliance on the state for service provision with a particular symbolic weight. From 1993 to 2006, when the private enterprise Aguas Argentinas held the concession for water and sewerage service provision for most of Greater Buenos Aires, disparities in service access grew. Payment for the expansion of water and sewerage networks fell largely onto those who could least afford to pay – poorer communities who would be receiving new connections from the expanded networks (Loftus, 2001). In the midst of this growing disparity highlighted by increasing differences in access to urban services, Kirchner's 2002 presidential campaign promised reform by making these services once again the domain of the state, rather than of private companies. The campaign forwarded a vision of more equitable living conditions among Buenos Aires's residents. In this way, service provision from the state became a symbol of class equity. This may have influenced the great reluctance I encountered in interviewees in considering local and decentralized sewage management solutions.

Sanitation solutions that place responsibility for wastewater management on individuals, at a household level, are seen as undermining the neighborhood and residents as equal citizens. Interviewees found practices that intimately involved users in waste management, such as the need to scoop out fecal drying vaults, or apply fertilizer products locally, particularly distasteful and it seemed difficult for them to comment on these. The proposed on-site solutions seem to

reinstate the community's invisibility in the eyes of the state by freeing the state from the need to provide sewerage service in Villa Lamadrid, reinscribing unequal power relationships, and excluding them from the modern urban imaginary of the hygienic citizen, separated from processes of defecation and sanitation.

Hygiene and Water Consumption

A second key element in interviewees' responses to the technologies presented was the feeling that these technologies were unhygienic. This tied closely with the lack of water in the system and absence of flushing. In addition, comments about odor and the untidiness of the defecation process through additional steps, such as manually pouring flush water, or adding drying agent after each defecation, also indicated a feeling that these systems were unhygienic and clashed with the imaginary of the hygienic, pure, and civilized porteño.

As discussed above, the water-intensive hygiene practices that emerged in 19th century Europe became parts of the urban citizen's civic life. Not only did these symbolize connection to centralized water infrastructure, and thus state recognition, but hygiene itself became imbued with connotations of moral virtue (Bakker, 2010; Gandy, 2004). In the context of Buenos Aires in particular, adherence to and performance of hygiene took on particular importance as a means of performing a civilized, European lifestyle, and separation from the uncivilized other (Feller, 2005; Keeling, 1996; Meik, 2011). The practice of flushing in particular is a sign of separation from fecal waste, moving it from the private sphere into the public one, and a separation from its management. Water-borne hygiene practices serve to preserve and perpetuate the feeling of cleanliness as manifested through separation. In this way, the importance of the presence of water was paramount to interviewees' sense of hygiene and participation in urban citizenship.

Urban vs. Rural Life Imaginaries

Villas throughout Greater Buenos Aires have been the site of the majority of immigration to greater Buenos Aires over the last 20 years, both from the interior of Argentina and from neighboring countries. In 1991 76% of villa dwellers were native Argentineans; this number had dropped to 59% by 2005 (Feller, 2005). The move to Argentina's largest city is often undertaken for economic reasons, and hopes for improved lifestyle. In addition to this, the central role Buenos Aires plays throughout Argentina as a symbol of the country's civilized, European, and

urban center make migration to this city center a symbolic movement (Feller, 2005; Keeling, 1996). This augments the importance of taking part in an urban life imaginary in the expectations of migrants from other parts of Argentina. Interviewees who were born in the neighborhood, first generation residents of Villa Lamadrid, remain closely aware of their parents' move to urban life. For residents who have lived in Villa Lamadrid for a while, and have witnessed its progression towards greater legitimacy and recognition as a neighborhood, symbolized in attaining municipal services throughout the late 60s and 70s, participation in urban life imaginary of sanitation also takes on an important symbolism.

In this study several key aspects of the urban sanitation imaginary emerged. Important among these was a sense of comfort, predicated on indoor and water-borne plumbing, devoid of odor. Secondly, the separation from sewage, and particularly the right not to be involved in its management, was another aspect of urban sanitation touched upon by several interviewees. A number of components of the solutions presented clashed directly with these perceptions of urban sanitation and were reminiscent of rural lifestyles, including outdoor or non-flushing toilets, which required personal involvement in scooping of 'manure.' In addition, even the sense of needing fertilizer for crops, a key benefit highlighted by these ecological sanitation solutions, was likely associated with a rural lifestyle. Attainment of a particularly urban sanitation imaginary, clearly differentiated from a rural past, was a key part of how residents understood possible fulfillments of the goals that had brought them to leave their rural areas to undertake a new life in metro Buenos Aires.

Conclusion

Interventions aimed at improving sanitation in urban communities not connected to centralized sewerage systems generally approach wastewater management solely as a public health crisis resulting from inadequate infrastructure. Considerably less emphasis is placed on the social and citizenship aspects of connection to centralized infrastructure. The interventions place tremendous emphasis on selection of technologies most suitable to an area's biophysical conditions. Solutions offered to address this crisis have therefore focused on providing infrastructure as quickly and efficiently as possible. These solutions are often local and decentralized, putting responsibility for fecal waste management on individuals and neighborhoods. Such systems have significant financial, environmental, and health benefits and

can be constructed and begin working much faster than the large urban projects of centralized infrastructure – all seemingly suggesting their sustainability, and even modernity, in an era where new projects must increasingly demonstrate ecological awareness and sustainability from the outset.

Failures of these local sanitation interventions are often met with calls for increased local community participation to support project sustainability[30] (Bliss & Bowe, 2011; Harvey & Reed, 2006; Kar, 2003; Katukiza et al., 2010; Lafond, 1995; Mehta & Movik, 2011; O'Reilly, 2010; Rodgers et al., 2007; Rose, 1999; Sohail, Cavill, & Cotton, 2005; Taylor, 2008; Thode, 2011). As Katukiza et al. (2010) explain, "There has [*sic*] been a lot of sanitation interventions (for excreta disposal)… but most of them have failed due to lack of stakeholder participation at all stages of the project cycle." Similarly, Khouri et al. (1994) write, "A functional and sustainable wastewater management scheme begins at the household level and is largely dependent on the "software" or the human component," (Khouri, et al. (1994) as cited in Rose et al. 1999).

Far and away, local, household level sanitation solutions are prescribed for poor, marginalized communities. This is in stark contrast to the way wastewater management is approached in more affluent urban communities. Water-borne, centralized sewerage has become the dominant municipal sanitation model (Jewitt, 2011; Benidickson, 2007). These systems not only protect public health by removing sewage from populated areas, but they do so in a way that prioritizes a separation between individuals and their shit and its management – allowing users to flush and forget (Jewitt, 2011; Hawkins, 2006).

Gay Hawkins (2006) describes the POOO protests in Sydney in the 1980s as a useful example of the expectations of modern urban citizens with regards to their wastewater. In 1989 a newspaper reported extensive water pollution on Sydney's beaches due to raw sewage dumping. Outraged, Sydney residents protested – their target was the city's Water Board. Hawkins argues that the main motivator of these protests was "moral unease... driven by an affective horror or mass disgust" (64) at ocean dumping. Though the mobilization began to open conversations about responsibility for shit, ultimately Hawkins concludes, "the public authority was constituted

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[30] I include in the term 'community participation' those papers calling for 'community-based' programs, as these programs include community participation as a key implementation component.

as in need of reform and accountability, but private waste practices went unchallenged... intimate waste practices and their excessive use of resources were not regarded as a part of a reform strategy" (65). This example underscores the assumption in urban contexts that shit management is not a private responsibility, but the role of the state. Citizens have the right to not be involved. The importance of participation in this separation from sewage management as a symbol of urban life is underscored in the responses to the dry, household level sanitation solutions presented in this study.

In the introduction to this chapter I introduced Gandy's (2011) idea that the hidden nature of sewerage pipes – under streets and in walls – encouraged a similar shift in the modern urban citizen's relationship to excrement; it was also hidden, concealed as an object of disgust. The corollary is that when this process and infrastructure is made visible, 'open to the gaze,' by sewage management solutions that rely on physical, and visible household level involvement – for example, by scooping out dry fecal matter of the UDDT, or using biogas produced from the biogas reactor – the individual simultaneously is rendered invisible in the eyes of the state. Solutions to wastewater management problems are not simply solutions, to be weighed on the cost/benefit analysis scale of environmental and economic factors; they are a text which tell whose comfort is prioritized, whom can be expected to live in what manner, and how the problem is framed for different communities.

Some examples exist in which ecological sanitation solutions have been implemented by urban populations in higher socio-economic echelons, such as in ecovillages in Sweden (Hammarby Sjöstad, 2012). However, these populations have the choice to use these sanitation solutions. Their decision to do so is seen as an admirable participation in green, forward thinking, a sign of their modernity. In addition, these solutions aren't actually 'dry' and typically require little to no bodily engagement from users as management is undertaken by the state or those endorsing the project. For marginalized populations, prescribed dry, local sanitation solutions in place of, and even excusing, centralized municipal service access that is otherwise understood as a right to other urban residents, use of these systems takes on a vastly different symbolic meaning. They become markers of power inequalities, of exclusion from state service, and from participation in a modern urban citizenship of hygiene, purity, and civilization.

Development interventions and poverty alleviation efforts that prescribe dry, decentralized sewage management technologies as sanitation solutions in absence of centralized

sewerage provision have cast these solutions not only as the quickest, most effective step towards protecting public health, but also as the beginning of more forward, sustainable thinking in sanitation. However, using already marginalized communities, for whom feelings of equity and belonging are likely to be most acute, as the starting point for counter-cultural sanitation solutions serves to reinscribe power inequalities, and also cast these technologies as the technologies of the poor, perhaps subverting and slowing their uptake in more developed areas and countries.

These conversations can be likened to debates surrounding who should make the first moves on reducing energy consumption in response to global climate change – should it be developed countries, which are responsible for the lion's share of energy use today, and have more resources available to undertake such measures? Or should it be lesser developed countries, in which the potential for increased energy consumption, from continuing development efforts by their comparatively enormous populations, would quickly negate any efforts undertaken by developed country counterparts? Developed countries argue that their lesser-developed neighbors should nip the issue in the bud before their greater populations become used to a resource intensive lifestyle. Agarwal and Narain (1991) recognize such policies as environmental colonialism, designed to maintain and reinforce an unequal global North/South divide.

In these conversations regarding energy consumption we see that differing standards and expectations are not always simply questions of sustainability, but rather invoke deep and critical notions of inequality and expectations regarding who is asked to bear the brunt of achieving sustainability. There are clear parallels in the literature on wastewater. The extensive costs that would be incurred by retrofitting existing flush systems are essentially prohibitive, so the target populations for dry, more sustainable systems are those not yet connected to centralized networks – typically marginalized and poor communities. We cannot ignore the ways in which decentralized, low resource use solutions track against broader social and political notions of modernity, belonging, and urban citizenship. Is it fair to prescribe marginalized urban dwellers dry, decentralized sanitation solutions, asking them to participate in intimate engagement with bodily waste that many more affluent urban dwellers are not willing to undertake, for the sake of environmental sustainability? On the other hand, does it make sense to continue building centralized, water-borne sewerage infrastructure, which we know to be ultimately unsustainable owing to the heavy resource consumption it necessitates?

Beginning the attack on water waste of centralized sewerage by preaching to the unsewered is not sustainable and unlikely to produce a program or intervention that will be taken up. As in the case of Villa Lamadrid, regardless of the efficiency or actual hygiene of the dry or pour-flush systems presented, these systems do not address the problem experienced by residents of the neighborhood - one of belonging, citizenship, and rights as urban dwellers.

I forward that a cultural change in how we understand our sewage, and its management may be a more useful starting point of a sustainable global wastewater management plan. And perhaps this change should start with those who have never had to question or consider their right to a flushing toilet.

CHAPTER 4: Conclusion

So here we are at the end. Over the previous two chapters I have worked to illustrate how sewage impacts daily life for residents of Villa Lamadrid, not in terms of spatial, temporal, physical, or financial obstacles, but in terms of relationships – how it influences perceptions of self, neighbor, and community. I have argued that these impacts are indicative of an urban sanitation imaginary – a predominant vision of what sewage management should be for an urban citizen. This imaginary centers on a feeling of cleanliness, supported and protected by structures and practices that create the feeling of distance and disassociation from shit. The ability to 'flush and forget' is part of what it means to be an urban citizen in Buenos Aires. In a sense, both chapters are about means of creating this distance in the absence of centralized sewerage connection. Chapter 2 is about narratives residents of Villa Lamadrid employ to distance themselves from shit in its existing, observable form throughout the neighborhood, and from the practices that get it there. Chapter 3 is about 'hardware' solutions, sanitation systems frequently offered by development organizations as means of handling sewage on-site that only distance users from their feces so much as is necessary to protect their health. Residents felt that these solutions reinstated identities of 'dirtiness' by making sewage management a local process dependent on user participation.

Throughout this thesis I played with notions of visibility and invisibility in sewage management. In particular, I explored how centralized sewerage infrastructure is invisible, hidden underground and in walls (Gandy, 2004; Benidickson, 2007), and functions to make individuals anonymous and invisible by moving shit from the private sphere to the public sewer (Hawkins, 2006). I looked at how this invisibility of sewage management impacts and informs social taboos of association with shit and its management. For residents of Villa Lamadrid, association with the visible presence of shit in neighborhood zanjas is a source of embarrassment. Interviewees' objections to bodily engagement in management practices of dry sanitation options can be read as objections to making their engagement with shit and its management a visible and intentional process. In addition, I explored how centralized sewerage connection worked as a symbol of visibility in the state's eyes, and thus a marker of urban citizenship, influencing how residents' received and understood decentralized sanitation solutions.

Notions of social visibilities and invisibilities as manifest through sewage management practices may be fertile ground for continued study. Hawkins (2006) discusses the infamous Orangi Pilot Project, a landmark community-led sanitation initiative in Karachi, Pakistan. She argues that this community-led effort was a means by which the community gained state recognition, visibility, and citizenship by making their defecation processes invisible, and thus participating in modern citizenship imaginaries of privacy and hygiene. I question this reading of the situation, and wonder how condoning the state's negligence by taking local community action might not underscore and reinstate a community's separateness, outsider status, and entrenched unequal power dynamics?

Questions about how hygiene and sanitation infrastructure access impact residents in gender differentiated ways may also be particularly useful to explore for understanding more complex notions of citizenship in Villa Lamadrid and other similar peri-urban neighborhoods. Many reports regarding water and sanitation management have highlighted the importance of women's participation in successful project implementation [famously, Agenda 21(UN, 1992) and the Dublin Principles (1992)]. However, these have been critiqued for their lack of deep engagement with the assumed relationship between women and water management, and for their inattention to how targeting women specifically as change agents may impact empowerment (O'Reilly, 2010). Questions that may be particularly interesting for further research include, How does the rhetoric of hygiene impact women particularly, and how is it produced in gender-differentiated ways? In addition, research into the perspective of recent immigrants to the community could further conversations on how racializations and 'outsiderness' are produced through sewage management.

Most fundamentally, I hope that this research raises questions, and maybe opens some doors, about how we are to address the current and increasing urban sanitation crisis globally. The majority of sanitation interventions detailed in the literature frame the problem as a technical one (not enough latrines, toilets, water, pipes, treatment plants, etc) with a technical solution: building the most effective, least costly, most sustainable solutions to this problem (Giné & Pérez-foguet, 2008; Sahely, Kennedy, & Adams, 2005; Singhirunnusorn & Stenstrom, 2009). As stated in the introduction to this thesis, though worthy of restatement because I still find the numbers shocking, estimates suggest that between 30% and 70% of water and sanitation projects fail within a few years of implementation (Bliss & Bowe, 2011; Calderon, 2004; Carter et al.,

1999; Harvey & Reed, 2006; McConville & Mihelcic, 2007; Taylor, 2008; Thode, 2011), and sanitation projects are thought to be at the higher end of this spectrum (Hoque et al., 1996). It seems that a different approach is needed.

Unfortunately, even this high failure rate does not seem to be encouraging a reexamination of the rigid framing of sanitation as solely the result of lacking infrastructure. Instead, implementation challenges have largely been met with calls for increased community participation in sanitation projects (Kar, 2003; Katukiza et al., 2010; Lafond, 1995; Mehta & Movik, 2011; O'Reilly, 2010; Rodgers et al., 2007; Rose, 1999; Sohail et al., 2005; Taylor, 2008; Thode, 2011). [31] Participation is intended to support solutions, making technical parameters more targeted to particular communities, increasing implementation success and use. However, community participation typically enters sanitation interventions in the implementation stage, when a fixed set of solutions, based on how the problem is understood, have already been set. Rarely is the framing of sanitation questioned, allowing for input from local communities on what sanitation, and related bodily and social practices, mean for them. As discussed in Chapter 3, perhaps calls for participation in fact undermine users' notions of what it means to be accepted as full, rights-claiming citizens, and to be a part of hygienic sewage management.

I wonder what an intervention would look like that embraced, rather than skirted, the ways in which hygiene practices and centralized infrastructure symbolize citizenship, urban life, and influence notions of social success and identity? I find the still sparse cases of communities in developed urban contexts – such as Vancouver and Sweden – who take on sustainable sewage management options, such as composting toilets, a particularly interesting site of reflection. As discussed in Chapter 3, these communities importantly have the choice as to whether to use these technologies, unlike marginalized urban communities who are prescribed these interventions by development efforts. It is interesting that for the comparatively affluent communities who take on using these systems, their choice is honored as a 'green,' forward-thinking, and admirable effort. I wonder if perhaps the moral virtue associated with hygiene practices in 19th century Europe (as discussed by Bakker, 2010), is giving way to, or expanding to include, a moral virtue

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[31] I include in the term 'community participation' papers calling for 'community-based' programs, as these programs include community participation as a key implementation component.

of environmental conscience. If so, how might this impact the future of urban sanitation and how can it be used to support, rather than further marginalize, poor urban communities already marginalized by their lack of access to centralized, water-borne infrastructure?

In addition, what would a wastewater management intervention look like that embraced the ways in which sewage management impacts social relationships within a community? Though some interventions, such as the CLTS (community-led total sanitation) model, have done this to some effect (Kar, 2003; Mehta & Movik, 2011), I find their shame tactics (and I would go so far as to say, manipulation of emotional vulnerabilities and power dynamics) inadequate, and even unethical. As a brief description of this model, members of CLTS teams initiate walks through communities with participating residents, focusing on sites where open defecation occurs. As Kar (2003) reports, "members of the community felt very embarrassed to visit these dirty spots with the dignified outsiders. The initial embarrassment experienced by the community during the 'walk of shame' gave way to a strong desire to stop open defecation and to get rid of these areas" (Kar, 2003: 5). Thus 'participating' with willing community members in a walk through their village is used as a means to humiliate participants into accepting pre-determined sanitation solutions, usually pit or bucket latrines and other on-site dry wastewater management infrastructure. CLTS teams then left community members to construct such solutions with the materials available to them, as a means of making projects community-led, motivated by local demand, and locally sustainable.

I believe there may be even more profoundly effective ways in which the power of sewage to influence social relationships may be capitalized upon, not as a means of dividing neighbors through shame, but uniting them through cooperation. One possible avenue I see may be the ways that sewage makes one notice neighbors. In Chapter 2 I discussed how interviewees rarely mentioned larger social factors influencing their neighbors' sewage management behaviors. What if this notice of neighbor was one that led to support, rather than stereotypes? I do not know how this may work, or the way out of the woods, but I feel this may be a useful starting point for coming up with new approaches to sanitation struggles.

On a broader scale, I wonder what a new mode of thinking about sanitation could mean for how we understand urban spaces, and the urban imaginary, in general. In the Introduction of this thesis I cited a few scholars who have suggested that the urban slum is not merely the temporary transitional stage in urbanization that it was at first thought to be. Instead, it may be

the new urban neighborhood norm as the percentage of urban dwellers who live in slum conditions continues to grow (Auyero & Swistun, 2009; Davis, 2004; Gandy, 2004). If this is the case, what does that mean for how we think about growing urban centers, and sanitation provision in these areas? Particularly, what does it mean for how decentralized sewage management technologies are understood, and how we can consciously form urban sanitation imaginaries of the future?

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APPENDICES

## Appendix A: Improved vs. Unimproved Sanitation Definitions

Improved	- Flush or pour-flush toilet connected to: - Piped sewer network - Septic tank - Pit latrine - VIP (Ventilated Improved pit) latrine - Pit latrine with slab - Composting toilet
Unimproved	- Flush or pour-flush toilet with access to one of three systems listed above - Pit latrine without slab, or open pit - Bucket - Hanging toilet or hanging latrine - Shared or public facilities of any type - Open defecation

Source: Adapted from JMP 2012 report

Appendix B: Visual Aids in Interviews

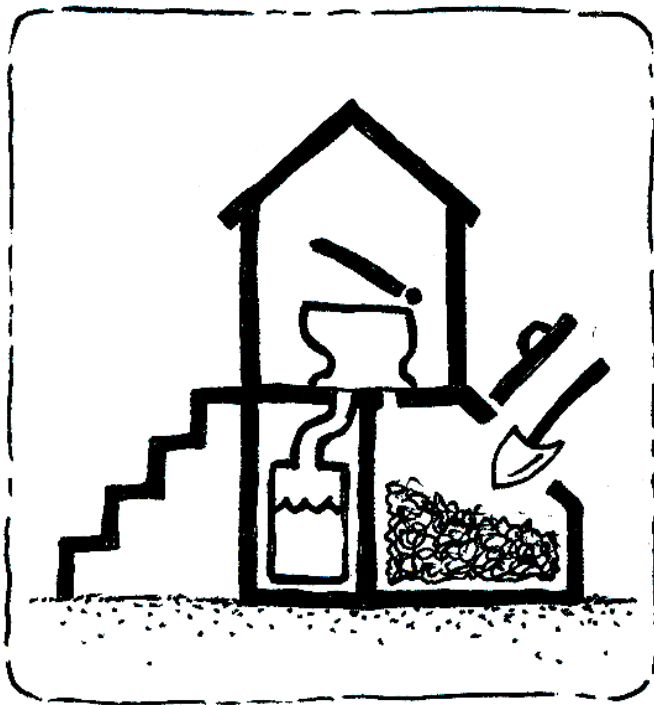## Separación de Orina Seco
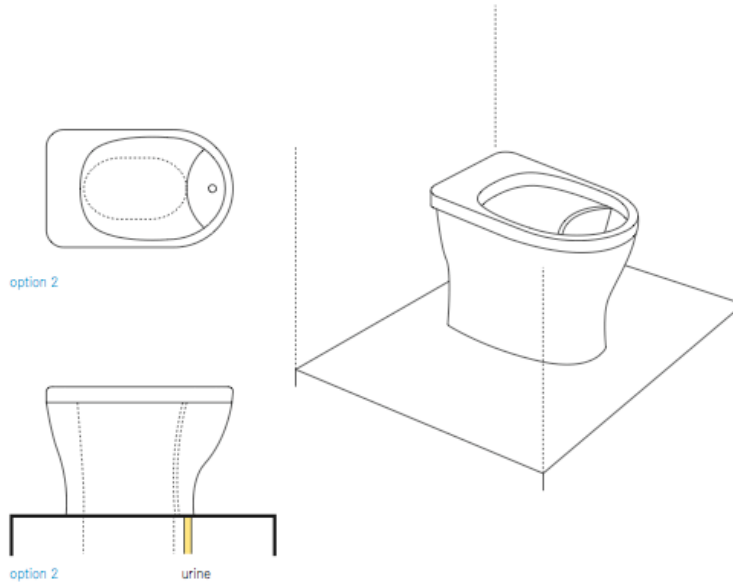
32

33

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[32] (Tilley et al., 2008) *Image used with permission as open source resource*

[33] Image: (WASTE, 2007), *Image used with permission under Creative Commons Attribution-ShareAlike License*
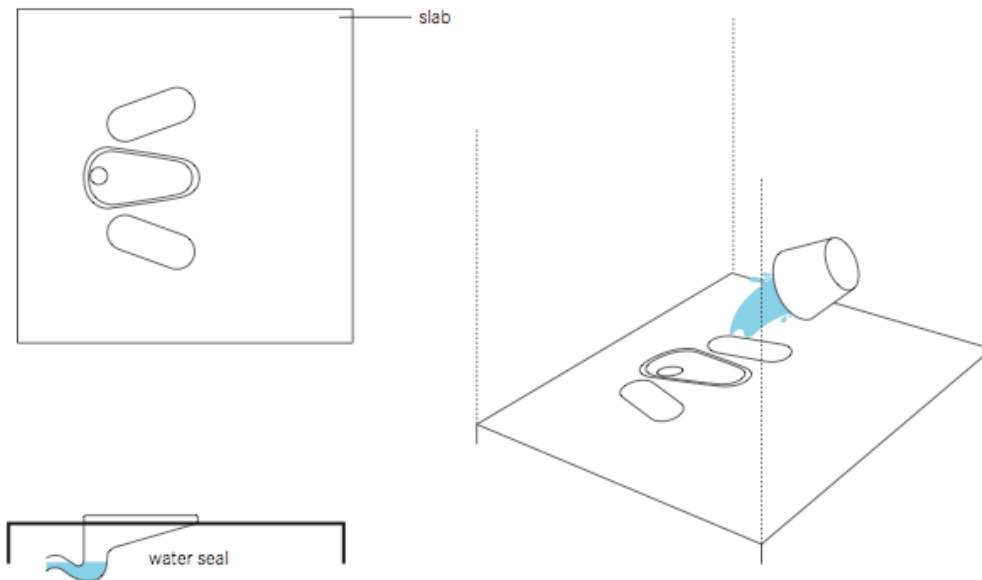
Bóveda de la Deshidratación

---
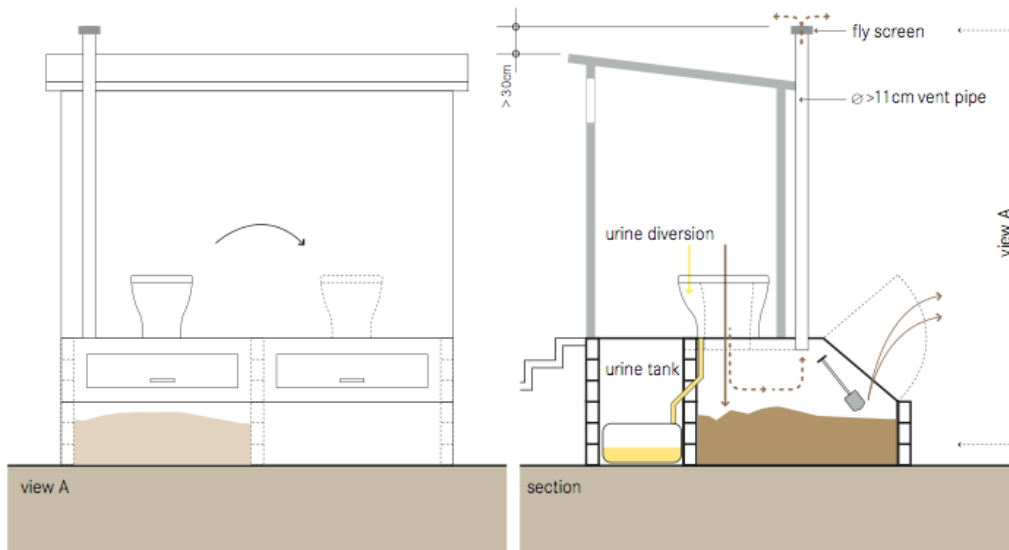
[34] (Tilley et al., 2008), *Image used with permission as open source resource*

[35] ("Icon_dehydration_vault," 2009), *Image used with permission under Creative Commons Attribution-ShareAlike License*
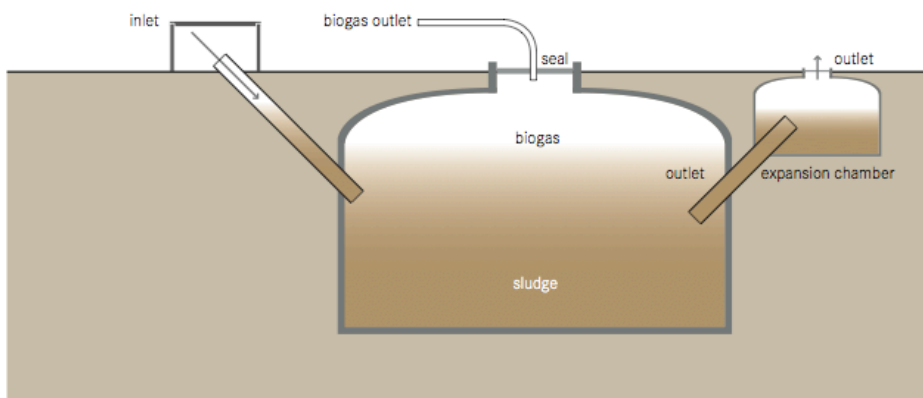
Vierta Inodoro

slab

water seal

36

37

Producción de Biogas

38

39

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[38] ("Icon_anaerobic_biogas_reactor," 2009), *Image used with permission under Creative Commons Attribution-ShareAlike License*

[39] (Tilley et al., 2008), *Image used with permission as open source resource*