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From Primitive Accumulation to Modernized Poverty: Examining Flush toilets through the Four Invaluation Processes

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Abstract This paper examines the normalized power and social effects of flush-toilets. Beginning by laying a theoretical foundation with the concepts of structural violence, primitive accumulation, and modernized poverty, the section continues by outlining William Dugger's four invaluation processes as a framework of approach. Then, a brief history of flush-toilets is sketched before applying the four invaluation processes: *contamination*, *subordination*, *emulation*, and *mystification*. Flush-toilets are a complex infrasystem that appear to have a surreptitious organizational, social, and ecological effect that is compounded by some of the formulations and practices within the development industry. Notably with the United Nation "sanitation ladder," Gary White and Matt Damon's NGO Water.org and Damon's subsequent "toilet strike." Providing a reassessment of the social power inherent in flush-toilets, this paper contends that the flush-toilet infrasystem is an accomplice in infrastructural violence and can also be seen as aiding a strategy of primitive accumulation.

Keywords: flush-toilets, primitive accumulation, modernized poverty, four invaluation processes, infrastructural violence

JEL Codes: F0, I3, L3, O2, N4

INTRODUCTION

Flush-toilets have become a normalized emblem of modernity, which development industries promote and spread across the “developing” world. Infrastructural systems, or infrasystems, such as flush-toilets contribute to the creation of a technological *regime* that establishes a material arrangement, designating social practices, while also evoking a variety meanings and emotions (Parcy, 1999). Viewed as a highly progressive infrastructure that improves peoples’ lives by providing sanitary convenience in both urban and suburban areas, flush-toilets are a practical technology and a utilitarian infrastructure that has become a fundamental component of urban development worldwide that continues to rapidly proliferate without any restraints. People seldom consider, however, the long-term and deep-seated effects and impacts of using and interacting with the flush-toilet infrasystem.

This global proliferation and demand for sanitation, of which 2.6 billion people lack, with flush-toilets occupying the upper echelon of the sanitation hierarchy or as the United Nations calls it the “sanitation ladder” (UN, 2006, p. 2, 113). The necessity still remains to examine the underlying relationship established by flush-toilets since they are highly integrated into the lives, as well as hopes, of billions of people around the world—where the glimmering white porcelain toilet and its continuous flow of water has become a powerful symbol of modernity and progress. Despite the undeniable benefits of flush-toilets, there is also a surreptitious aspect constructed into these instillations and piping infrastructures. This paper argues, despite the real material benefits administered by flush-toilets, that it nevertheless contributes to infrastructural and structural violence through the industrialized degradation of the natural environment, while maintaining and accelerating the existing relationship of the industrial economy along with the establishment of human dependency and bodily atrophy. These negative outcomes associated with flush-toilets stem principally from their function and composition within the globalized industrial economy. The intention is to examine the neglected relationships of these infrastructural systems as a way to understand their complexity, costs, and disabling effects on people as they are consistent with strategies of primitive accumulation that promote dependency. The intention is to decenter the power and enchantment implicit with flush-toilets along with modern sanitation systems in general—in both the context of developed and developing countries—as they also contain immediate short-to-long-term costs on both people and the natural environment.

Organized into three sections, the first section establishes the theoretical framework and position of this paper. Joining Illich’s (1970/2002, 1973, 1978) concept of modernized poverty and radical monopoly to Marx’s (1887/2010) notion of primitive accumulation to discuss the paralyzing patterns of consumption and market creation through dispossession that renders people dependent on state sanctioned market-based mechanisms and “solutions.” Next Dugger’s (1989, 1988, 1980) four invaluation processes or power processes are applied to the operations of

flush-toilets. This approach is unique in applying a cumulative and causal assessment of a socially accepted infrasystem while peering into the deep-seated social relationships that are endowed and created by the proliferation and implementation of flush-toilets. While the development literature on flush-toilets is primarily concerned with new modes of implementing sanitation infrasystems as they relate to new markets and health outcomes (Leach, 2008; Lüthi, Panesar, Schütze, et al., 2011; Movik & Mehta, 2010; Nitti & Sarkar, 2003; Quitzau, 2007; Stenström, Seidu, Ekane, et al., 2011; SWA, 2013). This study not only takes into account much of the preexisting literature, but also applies an institutional framework of analysis to understand the social influence and power inherent in flush-toilets as an accepted technology metabolized into structures and consciousness of “modern” and “developing” societies. By briefly examining the history of flush-toilets before applying the four invaluation processes, the paper reveals infrastructural violence and modernized poverty imbued into the bathrooms of modern homes.

THE STRUCTURAL VIOLENCE OF MODERNIZED POVERTY

Prior to examining flush-toilets, it is necessary to clarify the concepts underlying this inquiry and the approach utilized. Besides flush-toilets relatively unquestioned social integration, it is their complexity as an infrasystem that is comprised of a series of social and physical components that are regulated by public, private, and possibly informal institutions as a means to create, maintain, and improve a sanitation infrastructural service (Frantzeskaki & Loorbach, 2010). Flush-toilets are one component or interface within a sanitation system necessitating to some degree a series of sewer mains, feeder pipes, pumps, different pressure systems, and drainage along with a series of different water and waste treatment systems.

When discussing infrasystems or any systems in general, there is the issue of their order—the mandate of their function. The articulation and maintenance of a particular infrasystem or a society as a whole, creates a regime that dictates the working function and social relationships that allows humans and machines to work and interact more effectively. Any system requires the consideration of two indispensable terms: structural and infrastructural violence. In the tradition of Galtung’s (1969) “negative peace,” Bourgois (2001, p. 7) defines structural violence as “the political-economic organization of society that imposes conditions of physical and emotional distress, from high morbidity and mortality rates to poverty and abusive working conditions,” expressing themselves “in exploitative labor markets, marketing arrangements and the monopolization of services.” While infrastructural violence grants agency to infrastructures and infrasystems as they can reflect and enforce those same socioeconomic structures, acting as agents, maintaining and sometimes extending harmful social relations (Rodgers and O’Neill, 2012). With

these issues in mind, the general concern and question of this inquiry is what type of relationship do flush-toilets facilitate? There are three interrelated concepts that underline this approach that will assist in examining the infrastructural regimes of flush-toilets.

Illich (1978, p. 11; 1970/2002, p. 3) defined modernized poverty as an “addiction to paralyzing affluence” that “combines the *lack of power over circumstances* with a loss of personal potency” (emphasis added). Illich (1970/2002), p. 3) noting the root of modernized poverty as “[w]elfare bureaucracies claim [over] a professional, political, and financial monopoly over the social imagination, setting standards of what is valuable and what is feasible.” Modernized poverty appears is related to Marx’s (1887/2010, p. 501, 516) notion of primitive accumulation that “is nothing else than the historical process of divorcing the producer from the means of production” in order “to keep the labourer himself in the normal degree of dependence.” Marx’s “producer” refers to people and their “means of production” or subsistence, which is linked to the reconfiguration of social relationships to accommodate the integration of market valuation and mechanisms into peoples’ lives. Primitive accumulation creates a situation of dependency on markets, requiring the dispossession of skills: agricultural, traditional crafts, medicine, self-defense, and civic engagement (to name just a few) consisting of different facets of subsistence. For example, Perelman’s (2007, p. 53) demonstrates how Game Laws from the seventeenth–nineteenth century were a crucial mechanism of primitive accumulation as they prevented people from hunting and acquiring food for themselves, as these laws “accounted for 30 to 40 percent of all male convictions” in rural areas in the 1840s. Game Laws were one mechanism operating next to land enclosures, the enclosure of women (see Federici, 2004/2009), agricultural laws, and the “police of grain” that fostered dependence on the market, landlords, and industrial workplace (Foucault, 2004/2007, p. 341), and a relationship that appears to continue through environmental conservation practices today (Dunlap & Fairhead, 2014). Modernized poverty in many respects is the outcome of primitive accumulation, cementing the continuum of dependence as individual self-determination is captivated by industrially manufactured choices and systems that undeniably have their attractions.

Modernized poverty makes people dependent on compulsory consumption to meet basic and extravagant needs. “Radical monopolies” are then established by private and public institutions and other professional groups imposing a mediated form of social organization that reconfigures individual agency and separates people from their creations, relations, actions, and even responsibilities. Illich (1978, p. 39) defines radical monopoly as “the substitution of an industrial product or a professional service for a useful activity in which people engage or would like to engage. A radical monopoly paralyzes autonomous action in favor of professional deliver[ies].” Radical monopolies can be summarized as a reconfiguration of relationships from a context of individual–communal self-sufficiency and autonomy

to a producer–consumer paradigm that is dependent on the use of infrastructures, professional services, and authorities in order to survive. Illich (1973, p. 58) clarifies this point stating: “Any industrial product that comes in per capita quanta beyond a given intensity exercises a radical monopoly over the satisfaction of a need.” Modernized poverty and radical monopoly are a continuation of primitive accumulation and “accumulation by dispossession” (Harvey, 2005, pp. 178–179), as they establish an individual–communal *path of dependency* that leads to the familiar large-scale path dependency or lock-in effect of technological development (David, 2000; Hall, Iacac, & Gunther, 2012).

This requires examining the daily interactions between people and infrasystem interfaces as individuals acquiesce (conduct) and resist (counter-conduct) different interfaces, which takes on a multiplicity of actions to appropriate and abstain from participating and using in both technological and political infrastructural systems (Foucault, 2007, p. 201). For this reason, while acknowledging the reflexive capabilities of people and the ability of technological interfaces to “script” human behavior (Latour, 1992, p. 162), the work of institutional economists on ceremonial encapsulation¹ is insightful (Bush, 1987; Hall et al., 2012; Waller, 1987). The work of Dugger’s (1989, 1988, 1980) four invaluation processes has developed from this tradition and will be applied to flush-toilets. This framework engages the interrelated processes and functions that will delve into the regimes and scripting behaviors facilitated by flush-toilet infrasystems.

An approach inspired by Veblen’s (1899/2009) late nineteenth century observations of the power inherent in “pecuniary emulation” and “conspicuous consumption,” Dugger’s (1989, 1988, 1980) four invaluation processes establishes an institutional framework of analysis for examining institutional power shifts using the four mechanisms of *contamination*, *subordination*, *emulation*, and *mystification*. These processes focus on cultural values and the way they are constructed, maintained, and influenced by other value systems. The four invaluation processes focus on the surreptitious and subtle shifts that take place within an institutional and individual context—a set of tools that assist in understanding the sensitive and taken-for-granted social effects of technological systems.

Contamination is used to describe the way values and ideas can be contaminated—the way an individual’s or institutions value can be displaced or dominated by an external value system. Contamination often refers to the shift from an internal (anti-authoritarian) to an external (authoritarian) value system by means of coercion, reward, and necessity among a diversity of combinations. Dugger (1989, pp. 144–48) originally outlined the values of a corporate culture and documented how they contaminated the institution of the school, church, family, and the state. Next,

¹ Coined by Paul D. Bush, refers to the encapsulation of social and institutional practices. This could be thought as social path-dependency.

subordination is reminiscent of Foucault's (Foucault, 1997/2003, p. 181) *hierarchicalization* among the other three mechanism of disciplinary power (selection, normalization, and centralization) that subordinates knowledge and values to other values and constructions of knowledge. Assuming an individual's or institution's values cannot be contaminated, then the next step is to subordinate or fuse one set of values with another. Subordination is the hierarchicalization of values often occurring indirectly. Such as the arrival of a new factory or manufacturing facility that will not only pollute the environment (ecological value) but also new jobs and employment (value of work). The value of work subordinates and compromises the regional ecology by harvesting its natural resources and generating waste. The situation—imposed or welcomed—causes values to conflict and choices to be made that balance and challenge the individual's "rational" best interest (Dugger, 1989, pp. 153–57). Most importantly is *emulation*: the social reproduction of habits, ideas, and dispositions as they emanate notably from influential sources—public/private institutions, the numerous media and social networks, teachers, even the local bully and the "really cool" kid living down the street. Everyone brings some form of energy, disposition, and image into the social sphere that contributes to the social cross-pollination of people. Dugger (1989, pp. 136–43) focused on the corporation, analyzing the way emulation functioned within the corporate hierarchy, noting personal *ambition* as the primary catalysis for conforming to the demands of corporate work and climbing the corporate ladder. Finally, *mystification* is the semiotic equivalent of the latter three processes, which seeks to use symbols—cultural, material, and language—to bring about the acquiescence of people to a particular cause or value system. Mystification is the power of semiotic and linguistic construction and manipulation, at times emblematic of Orwellian "newspeak" (Dugger, 1989, pp. 156–58). Similarly, advertising and public relation firms are specialists in the art of manipulating language and symbols for a desired identity, emotional feeling, or response—the manufacturing of consumer demand (Edwards & Chomsky, 1989).

The four invaluation processes are a method for social analysis that will be applied to flush-toilets as a way to assess the effects of modernized poverty and primitive accumulation. The next sections will begin with a brief history of the development of the sanitation infrasystem, which will then apply Dugger's four invaluation processes: *contamination*, *subordination*, *emulation*, and *mystification* in order to understand the modernized poverty of flush-toilets.

FLUSH-TOILETS

Flush-toilets are a utility interface functioning as an accumulative infrasystem that allows people to deposit their feces into a centralized water sanitation grid. Despite the proliferation of flush-toilets as the dominant toilet in developed countries and

middle to high-income regions in developing countries (often without toilet seats), flush-toilets are still currently the global as well as historical minority (Lüthi et al., 2011; UN, 2013a).

Toilets in general have a rich and ancient history often associated with agricultural settlements and civilization. In the days of ancient civilization—rural and urban settings—sanitation practices consisted of a variety of toilet interfaces and methods of handling “waste.” While Illich (1992, p. 79) reminds us, in the tradition of Professor Ludolf Kunchenbuch, that bodily waste did not appear as a concept until around the 1830s. For the last 40 centuries, toilets and sanitation systems utilized feces as a useable resource; a concept now lost with the hygiene and flush-toilet infrasystems in use today. Common in China, Korea, and Japan were *aquaculture toilets* that placed latrines over fishponds in order to farm fresh water fish (tilapia) and plants (macrophyts) such as water spinach and mimosa as they thrived in feces-contaminated waters. The *pot-toilet* was an outhouse that collected stools in a pot which would later be composted for agricultural fertilizer. Similar was the *temple-toilet* that was a large temple with compost storage below, while the *pig-toilet* was an outhouse designed for pigs to consume feces, and finally, was the *vault-toilet*, which was a semi-urban toilet that separated urine and feces to be collected by farmers with donkey carts to transport the nutrient rich stool to regional farm lands. In addition, public toilets were constructed and supported by farmers as they were a means to harvest human excrement for agricultural purposes (Lüthi et al., 2011, pp. 36–39). These systems are notable for their ability to turn what was later considered a waste into a resource—appreciating, utilizing, and interacting (in a responsible manner) with what would later become a taboo and morally condemned feature of the body with the rise of industrial capitalism, cities, and hygiene.

The water closet, first patented in 1775 and known as the flush-toilet, began to appear in the nineteenth century; however, water as a means to remove excrement has its roots in ancient Mesopotamia, Greece, and Rome. One of the notable differences was that the Greeks and Romans built recycling systems for gray water use in an agriculture as urine was also considered a valued household cleaning agent (Lüthi et al., 2011; Quitzau, 2007). Even with the rise of industrialism and urbanization, “night-soil men”—farmers and people employed to collect feces to compost for agricultural purposes—operated in most European cities until around the mid-1800s and were slowly phased out by the late 1800s as sewer systems for gray water began to appear. Depending on the country, the upgrade to the flush toilet started around the period of 1870–1901 (Lüthi et al., 2011; Quitzau, 2007). The implementation of the flush-toilet was a gradual process which was developed in England in the context of a general urban health crisis in the early 1800s as hygiene came to prominence around Miasma and Germ theory. This development initiated the regime of hygiene that led to a deep material and social transformation associated with urban density (Lüthi et al., 2011; Quitzau, 2007; Quitzau & Røpke, 2009).

Strikingly in the 1860s, Professor Justus von Liebig warned that “the introduction of water flush closets into most parts of England results in the annual loss of the materials capable of producing food for three and a half million people,” suggesting sewage should not be discharged into rivers, but integrated into an agricultural systems on the outskirts of cities (Lüthi et al., 2011, p. 45). This did not happen, as the demise of recycling excreta is attributed to four primary factors: (1) Growth of urban settlements and the distancing of agriculture from city settlements, (2) providing convenience, privacy, and reducing/eliminating smell as it integrated into industrial society, (3) production of synthetic fertilizers, and (4) political intervention that made reuse politically unacceptable—a trend continuing around the world today, most notably in Asia (Lüthi et al., 2011). The flush-toilet is an industrial technology developed as a response to the demands created by urbanization and industrialization, spawning a new sewage system and market, while destroying the old relationship to the night soil’s history and market.

Currently, global sanitation has been receiving increased attention as a detrimental problem, with 2.5 billion people—40% of the world’s population—lacking “basic sanitation,” resulting in an ongoing public health crisis across the world (UNICEF/WHO, 2012; UN-Water, 2013a). The severity of the sanitation crisis is found in recent statistics produced by the UNDP, 2011, p. 53) stating:

Diarrhoeal diseases account for some 2 million deaths of children under age 5 each year, and the most recent estimates indicate that improved sanitation and drinking water could save 2.2 million children a year, or a some 5,500 a day.

This contextualizes flush-toilets as they were a solution to the health crisis *resulting from urbanization in the nineteenth century* and appear as the answer again as both the Bretton Woods and United Nations institutions advocate for “improved sanitation,” the latter declaring 19 November as world toilet day (UN, 2013b). There has been a general push with “Big or Small – Sanitation for All!” to achieve the Millennium Development Goals around sanitation as well as a number of NGOs and celebrities that have been publicizing the issue such as Matt Damon’s toilet strike sponsored by Water.org (Savage, 2013; UN, 2006; UN-Water, 2013a). Applying the four invaluation processes, the following will examine the issues of the flush-toilet in its current context, assessing its implications in modernized poverty and whether the spread of flush-toilets is the most appropriate solution.

Contamination

Organizationally, flush-toilets are an “industrial technology” as opposed to a “convivial technology.” Making this distinction, Illich (1978, p. 40) described the former as establishing an organizational relationship where people are made almost entirely

dependent on standardized deliveries produced by machines and anonymous people in the name of profit and market-oriented institutions. Industrial technology destroys with impunity the conditions for convivial and manageable lifestyles, resulting in—willfully or coerced—the limiting of agency, spirit, and “aliveness” of people by convincing them that technological progress is necessary, inevitable, and consumer purchases are the only way to meet individual–communal needs (Illich, 1978, p. 40). Albert Borgmann (1984) further elaborates this perspective as being the difference between “technological devices” and “focal things,” comparing modern central heating and wood burning stoves, noting the former “provides warmth in a way that is convenient, pleasant, and on demand” concealing from the users the means by which heat is produced, providing little social engagement in the production of heat, and disables the agency and choice of the individual, family, or community (Borgmann, 1984; Dotsen, 2012, p. 331). Flush-toilets achieve a similar organizational effect, concealing the processes of sanitation, while facilitating a command and control infrasystem that separates the bodily product (waste or resource) from the producer. This simultaneously limits its users from engagements with the natural environment—life/death (composting) cycles which also facilitates a loss in social engagement and individual–communal agency. This might appear strange and undesirable in the context of flush-toilets, but there is a social relationship that is stripped with industrial technologies that existed for centuries with convivial arrangements. Flush-toilets contaminate values as they are coded with the organizational values of industrialism as they are centered on urbanization, the market and modern work that favor the social norms of hygiene, convenience and improved living to support a particular trajectory of progress inside and outside of cities.

The organizational layout of flush-toilet infrasystems achieves a social effect on an industrial scale, but also individualizes an alarming *social* hazard. Diverticulosis, a disease of Western societies, is the herniation of the small intestines and the colon that create points of weakness within the small intestines, commonly the sigmoid section of the colon (Sikirov, 1988). In the 1970s, colonic and intestinal diverticulosis, was originally thought to result from fiber deficiency in an individual’s diet as studies (Painter, 1971) have shown colonic diverticulosis to appear in “up to 45% in developed countries as compared with an exceptionally low prevalence among rural Africans” (Sikirov, 1988, p. 17). Fiber as a cause of colonic diverticulosis was misplaced as peoples acculturated into Western society with different ethnicities began to suffer from diverticulosis coli, resulting in herniation and colonic atrophy (Sikirov, 1988, 1989). The primary and “only realistic source” of colonic diverticulosis came from “excessive straining at defecation” (Sikirov, 1988, p. 18). It was found that “habitual bowel emptying in a sitting defecation posture requires five-six straining episodes, while bowel emptying upon urge in a squatting defecation position entailed only one and occasionally two straining episodes,” because sitting creates an angle in the colonic passage, where squatting defecation positions straightens

the colon for a smooth excretion of stool (Sikirov, 1988, p. 18). The sitting position structurally imposes a kink in the colonic path, resulting in straining linked to a series of critical health conditions. The sitting position and the straining associated with it has been related to a “Valsalva maneuver and when protracted and repeated may cause cardiac rhythm disturbances, reduction of coronary and cerebral blood flow explaining defecation syncope and death” (Sikirov, 1990, 2003, p. 1205). Elvis Presley—“the king of rock and roll”—is a notable victim, found on his bathroom floor after cardiac arrest attributed to poor diet, obesity, and drug dependency. Subsequently, doctors have attributed his death and bloating to an enlarged colon and constipation with a colon five to six inches in diameter (two–three inches is normal), placing flush-toilets as a contributing factor or “the straw that broke the horse’s back,” and making Elvis’s bathroom his place of death (McKay, 2010). Diet and lifestyle are undoubtedly contributing factors, however, dramatic increase of diverticular diseases began in England around 1910 and has been attributed to the introduction of roller milled wheat flour around the 1880s and the instillation of toilet seats in the second half of the 1800s with sewer system developments (Sikirov, 1988). Flush-toilets associated with industrial urbanization have spawned an industrial manufactured interface that has structurally negative effects on bodily health as they contribute to cardiovascular disorders, death, colonic muscular distortions, and atrophy within the human body.

The ecological effects of flush-toilets are substantial. Energy intensive, they require the industrial manufacturing and instillation of pipes, in a diverse range of large and small piping, drainage, treatment centers, electrical lines, and are dependent on electricity from hydroelectric, wind, coal, and nuclear power stations—all of which cause large-scale natural environmental damage. All of these processes are dependent on timber, oil, and mineral extraction and refinement, as all contribute to the construction and formation of a sanitation system. The sanitation infrasystem as it is constructed, establishes a system of resource usurpation with reuse appearing as marginal and secondary functions—a trend that is attempting to be changed (Davies-Colley & Smith, 2012; Lüthi et al., 2011; Mehta & Movik, 2010; Quitzau, 2007; Kar & Chambers, 2008). The UNESCO (2012) report notes that agriculture accounts for 70% of water use at the municipal and industrial level, while “the use of modern flush toilets, ranks among the major sources of water demand in urban areas.” It is estimated in both the US and the UK that flush-toilets are responsible for about 30 percent of indoor water use, using roughly 45 billion liters of fresh water every day, a percentage that fluctuates as older toilets use 13 liters compared to the new dual flush-toilets that use 6 liters (EPA, 2008; Waterwise, 2013). It should be noted that these statistics do not include water leakage. Sanitation infrasystems require systematic maintenance as in the case of the United States where “Civil Engineers forecast a funding gap of US\$108.6 billion over five years for drinking water and wastewater infrastructure system improvements and operations.” In

addition, findings in an earlier 2003 study of “urban water supply networks in 19 US cities revealed that ‘pollution and deteriorating, out-of-date plumbing are sometimes delivering drinking water that might pose health risks to some residents’” (UNESCO, 2012, p. 68). Not forgetting how governments confronted urban borne diseases of the nineteenth century, flush-toilets have a socially entrenched negative organizational, social, and natural environmental effect, which brings full circle the developmental concerns that is demonstrated with the hopeful UN Millennium Development Goals Report (2013a) that “[F]rom 1990 to 2011, 1.9 billion people gained access to a latrine, flush toilet or other improved sanitation facility....” Stopping disease is mandatory and a priority, it must be recognized that the sanitation infrasystem can improve organizationally as it embeds systemic health and ecology problems requiring redress to achieve improvements in health and sustainability.

Subordination

Implicit with the flush-toilet and its sanitation infrasystem are industrial values of hygiene, convenience, and improved living. Hygiene, on top of Miasma and Germ theory, created medical and moral concerns “where people were becoming increasingly dependent on the services of others” (Quitau, 2007, p. 354; Quitau & Røpke, 2009). Flush-toilets indirectly subordinated people’s values to the moral and hygienic standards imposed during the nineteenth and twentieth centuries, causing euphemisms to emerge as a way to avoid speaking directly about sex, masturbation, and other “inappropriate” social acts, such as defecation (Quitau, 2007). Notably, hygiene called for the elimination of biological waste as opposed to the previous relationship of coexistence which became slowly marginalized with increasing urban density as the flush-toilet and modern bathroom emerged as “an overtly industrial ensemble of porcelain-enameled equipment, with white, washable surfaces that reflected contemporary theories of hygiene” (Quitau & Røpke, 2009, p. 224). Hygiene would reign over comfort in the bathroom.

As outlined by Quitau and Røpke (2009) in Copenhagen, the hegemony of hygiene in bathrooms began to change in the 1960s as hygiene became configured with comfort. In fact, the hygiene versus comfort debate, initiated by interior designers, would transform the bathroom into an industry of its own. Bathrooms, slowly were regarded as a “sanctuary” of relaxation, peace, and comfort in residences, which by the mid-1990s in Denmark and the UK led to an increase in home renovation (Quitau & Røpke, 2009). As a result, the impersonal image of hygiene has gradually merged with an image of stylishness and coziness, a vision Quitau and Røpke (2009) conclude “is driven by commercial interests, and the bathroom is increasingly [being] turned into a consumption area on a similar footing with other rooms in the house.” Considering the organizational, social, and ecological problems associated with flush-toilets, this peace and comfort associated with sitting

in the bathroom, seems to be implicated in structural violence or better a negative peace as people relax, sit on the toilet for long periods of time, losing circulation with fluctuations of mild (or intense) straining depending on individuals. Not only does, the damage of the sitting position and its associated strain cause a diversity of long-term health effects, but the market-oriented reconfiguration of the bathroom as a comfortable and peaceful place subordinates people's resources, pastimes, and conceptions of comfort to the modern industrial economy as the market melds into conceptions of relaxation and (negative) peace.

Emulation

The flush-toilet and sanitation infrasystem conditions user's behaviors while contributing to health problems, ecological depletion, and becomes a fetishized accessory for consumption raising concerns for its proliferation through development practices. In terms of its emulating potential, the United Nations (UN, 2006, p. 113) notion of "improved sanitation" as it relates to the "sanitation ladder" must be recognized. Improved sanitation is defined as provisions that "can be thought of as a sanitation "ladder" extending from the very basic pit latrines to improved pit latrines, pour-flush facilities using water and septic tanks, through to conventional sewers" (UN, 2006, p. 113). The catch phrase "improved sanitation" appears in most UN and NGO organizations as many enjoy and accept this idea of a toilet hierarchy. This sanitation ladder makes sense from the perspective that flush-toilets save millions of lives while facilitating industrial development and urbanization, but decontextualizes the technology as it assumes that this infrasystem is the best and righteous global standard to spread and be emulated by all the countries of the world, neglecting its environmental and social harms that become increasingly serious by the day with ecological, climate, and economic crisis (see Dunlap & Fairhead, 2014). This toilet hierarchy, with the flush-toilets' convenience, improved living, and material standards has the power to entice with emulating effects that often neglect the widespread ecological crises, predatory systems of finance, and the negative long-term health effects. However, due to its high cost, the Millennium Development Goals (MDG) are set to provide the basic pit latrine costing \$10 Billion as opposed to the additional cost of \$34 Billion the flush-toilet would incur (UN, 2006, p. 113).

Flush-toilets, despite their benefits, have serious draws backs in terms of health, environmental sustainability, and operation. This is seldom acknowledged in UN documents as an emulatory path of flush-toilets is assigned to "developing" nations, even if they cannot achieve the MDG by 2015, the standard is set by the sanitation ladder that sends the clear message that the flush-toilet is what one must achieve in order to reach the status of "developed." The subtle premise of the sanitation ladder neglects the serious drawbacks of the sanitation infrasystem attached to flush-toilets,

forfeiting discursively the context-specific alternatives that could bloom naturally in developing countries—possibly teaching the “developed” a thing or two about sanitation self-sufficiency and ecological sustainability. The sanitation ladder stultifies the opportunity cost of the flush-toilet. That said, many UN agency documents are mentioning the successes of Community-Led Total Sanitation (CLTS) (UNDP, 2011; UNICEF/WHO, 2012), which could provide a space for these alternatives to grow, but as mentioned by a number of people, the ecological concerns need to be emphasized as they are at the center of human issues (Leach, 2008; Movik & Mehta, 2010). In short, the flush-toilet is a status symbol that is being held as an exemplar for development while emerging as a status symbol that encourages irresponsible waste use to develop an industrial consumer society. Contextualized, the flush-toilet’s emulatory effects wrapped in the veneer of moral and hygienic health concerns, resonates with Veblen’s (1899/2009) observations in *Theory of the Leisure Class*, noting status as a driver of wasteful consumption which consequently disregards alternatives. Despite hygienic benefits, the flush-toilet infrasystem, in the end, is another system of conspicuous consumption that transforms resources into waste.

Mystification

A component to aid and prolong the development of industrial capitalism in its shaping of cities, the flush-toilet appears as a mechanism to prolong and improve the same market relationships in place today. The diseases from industrial development were blamed on poor sanitation, not the industrial mode of development that created those conditions, where today those conditions manifest themselves in many different crises—food, energy, climate, and biodiversity. The toilet’s industrial relationship enchants as a place for an easy access of fecal release within the regime of industrial life and work. Plumbing becomes a powerful mechanism of convenience that distances people from their stool and the natural environment in which the industrial economy and people subsist. The toilet mystifies its industrial and market values, as it is laced with the pleasures of releasing the bodily pressure, in the uncomfortable environment of industrial urbanization that continues to give life to financial capitalism.

Today, this mystifying effect is embedded in the political-economic arrangements that birthed the city and megacities, as it separates people from their products (waste or resource), divests people from their responsibilities, and discourages people from actively participating in choosing the direction of their social development. Separating people from their products, the technical from the political, and agriculture from composted fecal fertilizers assists in the collective industrial irresponsibility, where aquatic dead zones become a symbol of irresponsible resource management. Quitzau (2007) finds two notable problems to flush-toilet infrasystem transition. First, plumbing enables a convenience that makes all other alternatives

appear disadvantageous to the habits of modern living, work, and sanitation. Second, the distancing of waste from people's daily lives as it is taken from them and misappropriated or underused—a situation that is increasingly complicated with pharmaceutical intake as these are becoming staples in modern diets (Watkins, 2010). Quitzau (2007, p. 357) writes, “distancing plays an important role, as both cultural and mental dissociation of human beings and human waste increase due to the transfer of responsibility to large-scale systems.”

These issues are exacerbated in the context of development. Igoe, Neves, and Brockington (2010), in line with Debord (1967/1994) *Society of the Spectacle*, points out the relationship between capitalism, spectacle, and conservation demonstrating how celebrities, payment for ecosystem services (PES), and clean development mechanisms (CDMs) are turning conservation into a “win-win” charade for integrating biodiversity and carbon into financial markets (see also Büscher et al., 2012). Said simply, conservation is being used to expand capitalist market relations with the help of celebrities and claims of environmental sustainability—the term sustainability now referring to organizational or financial sustainability. This same phenomenon is happening in the realm of sanitation.

Most visible is Matt Damon's “strike with me” campaign (Damon, 2013), where he claims in a choreographed video on his website after citing the current UN statistics: “In protest of this global tragedy, until this issue is resolved, until everyone has access to clean water and sanitation, I will not go to the bathroom”—the acting crowd gasps and the comedy sketch proceeds as the crowd asks questions, fulfilling stereotypical roles and asking stereotypical questions in response to his statement (Damon, 2013). Damon, co-founder of Water.org with Gary White, bases their NGO on “WaterCredit,” stating on their website: “[W]ater credit is the first program of its kind that puts microfinance tools to work in the water and sanitation (Watson) sector” (Water.org, 2013). This should be alarming, as anyone familiar with microfinance institutions would know this is as much about profiteering as it is about sanitation, which should be no surprise as in Damon's choreographed video he stands surrounded by Water.org logos—NGO marketing.

Milford Bateman (2010, p. 74) systematically unravels the myth of microfinance institutions (MFI), making the argument that not only does microfinance not work, but it often makes poverty worse as it is a form of “poverty-pushed entrepreneurship.” Notably, even after incorporating “Randomized Control Trials” (RCTs), MFI “impact assessments” are not done by an independent monitoring group, but by like-minded people within the microfinance community, such as MFI practitioners, “academic researchers, policy advisers, boutique consultancy firms, and career staff working within international development agencies and key NGOs” (Bateman, 2010, p. 35) Water.org checks the boxes for the positive claims of microfinance: women empowerment (92% of loans are to women), poverty reduction, engaging civic organizations, and most importantly, “identifying and prioritizing new markets

and models for WaterCredit expansion, including new products and channels for deployment” (Water.org, 2013). Arguably, the two most damaging aspects of MFI are their opportunity cost: (1) preventing other alternatives of sanitation alleviation and community-led projects and (2) spreading neoliberal ideology to the furthest regions and poorest people of the world. Batman writes,

[C]oncerned individuals and institutions that proclaim they have a “burning passion” to help the poor, but just so long as the poor confine themselves to the world of individuals entrepreneurship and microfinance, are clearly (if unwittingly) of real service to those seeking to disempower the poor.

When Water.org writes, “[W]ith access to water and sanitation via WaterCredit, time (which was previously spent fetching water and/or in ill health) can be spent on productive activities such as income generation and education” (Water.org, 2013). These “productive activities” could also be read as figuring out how to payback their microcredit loans to Water.org or student loans to become adjusted entrepreneurs. There will likely be benefits from Damon’s program, but the question is at what short and long-term opportunity costs? In contrast, the UN’s “Big or Small – Sanitation for All” is declaring, “[A]ccess to basic sanitation and safe water is an entitlement, rather than a commodity,” while Matt Damon and company with Jeffery Sachs, Bono, Olivia Wilde and Richard Branson open new markets in sanitation (UN-Water, 2013a, 2013b)—how are these two visions compatible or both visions violently disingenuous? Through spectacle, the mystifying and colonizing effects of flush-toilets continue, meanwhile the question of their damaging health and ecological impacts go unquestioned.

DISCUSSION/CONCLUSION

Summarizing the importance of capturing values, Dugger (1988, p. 92) writes:

Social control through coercion is temporary. More permanent social control is based on the ability to alter the internal values of others to gain their willing acceptance of the control. Then the control becomes legitimate. It is deemed right and good by those over whom it is exercised. It no longer requires a whip.

The altering of values is mandatory as it strengthens the progress of primitive accumulation that sows the seeds for modernized poverty. Abject poverty and modernized poverty create two diverse extremes as they exist simultaneously in most countries around the world, most visibly when the globalized mall or gated community are within a mile of the favela or ghetto. Flush-toilets are a technology

of industrialism that contribute and entrench these relationships and standards of industrial capitalism and now neoliberalism which is an infrastructure that organizes environments around compulsory consumption.

Intentionally or not, the benefits and enchanting features of these technological infrasystems mask their inherent structural, social, and natural ecological harms. For example, Matt Damon self-righteously asks the rhetorical question in his speech: “Anybody have any idea what invention has saved more lives than any other in the history of humankind. . . . the toilet” (Damon, 2013). He is right, but then the question needs to be asked in response, what invention has killed more lives, causing the romanticism of a health damaging, wasteful, and resource intensive invention in the first place? Similar to Virilio’s (1983/2008, p. 46), “[t]he invention of the boat was the invention of shipwrecks,” raises the real, but seldom asked question of the disproportional short-to-long term effects, both positive and negative of technological and industrial progress—a neglected, but prerequisite of assessing any technological system.

This relationship of modernized poverty is rooted in enchantment. The enchantment of convenience, speed, improved living, and socially constructed comfort binds within them the spell of industrial living—“developed” or “developing.” Living in a ghetto of a sprawling megacity, who would not dream of clean water and a functioning toilet? These are legitimate and logical dreams in response to a situation of socially constructed degradation. These demands are socially prescribed demands sculpted by the everyday, structural, and infrastructural violence of modernity, its standards, and its linear trajectory of progress or stages of economic growth (Rostow, 1960). The enchanting features present the short-term benefits, while hiding the slow, subtle, and surreptitious violence of market dependency, poor health, natural environmental degradation, and the polarities of abject and modernized poverty. The issue centers on the cultural values or agenda designed into infrasystem technologies that disregard or do not take into account the long-term consequences of technological systems. These infrasystems appear to have the implicit result of introducing people into a habit and lifestyle that makes them complicit in their own bodily abuse, while also dependent on an ecologically damaging infrasystem and market driven practice of consumption.

The most damaging function of flush-toilets is that they materialize a set of values that diminish and hide alternative systems, structures, and interfaces. Appropriation of the flush-toilet is characteristically limited. People can squat over the toilet, disable their plumbing, and bypass their water bill, in addition to the timeless, porcelain toilet as flower pot. The point being is that appropriating flush-toilets to serve individual and communal needs is difficult to say the least, especially if you want to address the organizational, social, and ecological aspects of the interface and infrasystem. Flush-toilets are metabolized into society, as much as they are built into habits and values of people—often creating dependency, discomfort,

and fear when these services change or fail. This level of dependency has not only led to wide spread atrophy in the colon, but also in people's imaginations as the fear of stool and hygienic obsession diminishes their ability to act. The atrophy of imagination and stultifying the desire for social and ecological harmony in daily practices is arguably the most structurally violent effect of flush-toilets. Despite their positive effects, flush-toilets are complicit in these strategies, acting as unsuspecting contributors to the structural and infrastructural violence of the modern industrial economy, something that needs to be recognized if healthy futures and climate change are important to people.

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