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Social Reproduction, Ecological Dispossession and Dependency: Life Beside the Río Santiago in Mexico

Joshua C. Greene and Solène Morvant-Roux

ABSTRACT

This article uses an integrated social reproduction theory (SRT) framework to highlight the interrelation between all non-wage forms of survival, such as debt, community and the environment. The analysis demonstrates how Mexico's unregulated industrialization and social housing policies have created new forms of poverty and market dependency. The article relies on a comprehensive literature review and extensive fieldwork carried out in El Salto, one of Mexico's industrial peripheries, and shows how vulnerable populations become trapped, in this case on the banks of the Río Santiago, one of Mexico's most contaminated rivers. Parallel developments of industrial and housing policies contextualize the conditions unfolding throughout Mexico where populations are relocated to areas without adequate water and where drinking water is supplied by bottled water companies. This contribution highlights why an expanded SRT framework is valuable for understanding the relationship between ecological dispossession and the forced reliance on markets and debt.

INTRODUCTION

The contamination of Mexico's rivers has been well documented. Less discussed in the literature is how this contamination, and its impact on the everyday lives of Mexicans, are the by-products of development projects and how this has resulted in new forms of poverty marked by a diminished quality of life and an increased reliance on debt and markets. These grounded household experiences are obscured by an abstract discourse about jobs, financial inclusion and accessible housing. This study seeks to remedy this

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through fieldwork conducted in 2017–19 along the Río Santiago in El Salto, located just outside Guadalajara, in the western state of Jalisco, Mexico.

Río Santiago is one of Mexico's most contaminated rivers (Álvarez, 2019; Conant, 2009; Enciso, 2015; Fisher and Malkin, 2019; Huerta, 2020; McCulligh, 2017; Rubiano, 2017; Tucker, 2016). It wraps around Guadalajara's peri-urban corridor before heading hundreds of kilometres to the sea. The river is referred to by activists and journalists as 'the river of death' (*El País*, 2017) and as 'a silent assassin' (*Ecoticias*, 2016). The 'ecocide' (Rios, 2018) of this river has eradicated the region's former lush biodiversity, romantically remembered for its fish-filled waterfalls leading to a canyon lined with mango and citrus groves. Living conditions have become increasingly difficult for the 185,000 people who live on the El Salto side of the river, and for the many more who live on the opposite side, as well as along other stretches of the river (*La Cascada*, 2017).¹ There have been several highly publicized deaths which have been directly attributed to the river's waters, and activists attribute a further 1,430 less-publicized deaths to the contamination (*El Informador*, 2020b).

While the river has attracted the attention of activists and researchers trying to understand who is responsible and what can be done, little analysis has been given to the fact that the contamination of this river and the location of large-scale new housing developments within its reach are the direct result of government projects to help the poor. The contamination of the river dispossesses the region's residents of key resources (such as the fish and game that previously thrived in and around the river, or residents' ability to use the water for bathing, recreation, laundry and drinking), leaving people reliant on commodified versions of these same resources for their survival and more vulnerable to capitalist relationships. This is a key finding of the research conducted by David Mosse in India, which demonstrates that while economic growth is a feature of capitalist development, so is poverty (Mosse, 2010). Furthermore, this echoes Wood's basic premise in which, tracing capitalism's origins to dispossession, she argues that compulsion, not free choice, undergirds markets (Wood, 2002). The population in this region once enjoyed all that this river's ecosystem could provide: fish and freshwater crustaceans, migratory fowl, banks lined with fruit trees, natural medicines and clean water.² All of this is gone. Carrying Guadalajara's untreated wastewater and discharges from the region's industrial corridor, the massive waterfall in El Salto's city centre spews toxic waters, generating thick foam that becomes airborne on the wind. The accelerating contamination which destroyed this delicate ecosystem is becoming a common feature throughout the global industrial landscape (UNEP, 2016a: 15).

1. Interview, resident and Un Salto de Vida (environmental conservation organization) member Enrique Enciso, El Salto, 15 March 2017.

2. Interview, Graciela González and Enrique Enciso, El Salto, 7 July 2018.

Figure 1. Factors of Social Reproduction

The further incursion into the social reproduction of the household that this contamination represents is part of the ongoing financialization of the lives of the poor. Housing loans for those on low incomes lured vulnerable populations to commit to living here, simultaneously recreating them as surplus labour for industry while generating the necessary ingredients for the securitization of Mexico's mortgage market. Arriving with the dream of owning their first home, people are soon burdened with debt repayments and forced to cope with theft, vandalism and inadequate public services. The location of housing far from Guadalajara's city centre without a commensurate increase in public services (e.g. hospitals, schools, security, transportation and water) and the simultaneous relocation of families individually has left residents with a dearth of public services and community networks, which are key social reproduction factors (see Figure 1). Already strapped for cash, residents are forced into commodity chains to purchase everyday necessities such as drinking water.³

The central argument of this article is that the industrial-capitalist development of this region, while creating large surpluses on the national accounting ledgers, has contributed to new forms of poverty through relational processes (Mosse, 2010) as well as dispossession (Harvey, 2014) and exposure to hazardous materials (Martinez-Alier, 2002). This has further created a dependence on market relationships for survival. Using surveys and

3. Our 2018 survey (see Appendix 1) shows that 65 per cent of households live under the income threshold established for poverty; 26 per cent live in extreme poverty and just 6 per cent have savings in a formal institution. The survey also shows that 100 per cent of residents buy bottled water for drinking.

ethnographic fieldwork inquiring into the nature of access to water in this region (conducted from 2017 to 2019), this article demonstrates how residents have come to depend on privately provided commodified water. The local water scarcity has grown along with the contamination of the river, while demand for fresh water has surged. This is due primarily to the lack of control and treatment of the region's residential and industrial wastewaters and the nation's social housing policies which have relocated masses of Mexicans to the peripheries of cities. Increasing contamination of fresh water is one of the primary factors contributing to the dire predictions that 40 per cent of the world's population will soon be without enough water (UNEP, 2016b: 2).

The decision by the United Nations (UN) and the World Health Organization (WHO) to include bottled water as a measure of whether national populations have achieved the Sustainable Development Goal (SDG) Target 6.1, universal access to safe drinking water, recognizes bottled water as a growing form of access to safe water (WHO/UNICEF, 2017: 14). WHO leadership clarifies that this is not an endorsement of this form of access, but an attempt to measure the current trend as it increasingly replaces other forms of access.⁴

The article begins by providing a brief overview of the methodology and theoretical framework engaged for this research. The next section discusses the historical context under which impoverishment through development has occurred. This history involves the intertwining 'lines of flight' of distinct projects, illustrating Deleuze and Guattari's (1987: 9) concept of non-linear, rhizomatic histories, bringing together the lineage of the industrialization project, the housing project and the bottled water project as separate projects entwined in the present.⁵ The article provides some background to the everyday living conditions in the region of study, with sections covering the history of the national and regional industrial developments and the nation's federal housing programme, the Instituto del Fondo Nacional de la Vivienda para los Trabajadores (or INFONAVIT, to use the Spanish acronym), established in 1972 to provide worker housing credit in Mexico, and the expansion of housing projects in this region. The article is informed by two cases from the field, followed by an examination of the bottled water industry.

4. Interview, WHO Joint Monitoring Programme Director Rick Johnston, Geneva, 2 April 2019.

5. These developments are all heterogeneous practices evolving through distinct times and locations. Not all industries in the time period of this historical retelling were bad actors; not all housing situations can be represented by the national housing policies financializing housing for the poor; there is even variation in the practices of the bottled water companies. The use of the term 'projects' seeks to generalize about some of the dominant forces at play, representing 'lines of flight' which come together in a larger hegemonic trend within a chaotic modernity, characterized by heterogeneous households that share the same polluted river (which also varies depending on the rain, the season, and the toxins dumped at distinct moments of the day).

After providing these intertwined histories, we analyse the situation utilizing the framework of social reproduction theory (SRT) and show how debt has trapped families in this region. Residents here clearly reflect a working knowledge of their dispossession, debt relations, the contamination, and the commodification of their life-providing resources, clearly articulating what Harriss-White (2006) identifies as the pathways through which capitalism creates poverty. This exemplifies Mosse's idea that 'poverty of certain categories of people is not just unimproved by growth or integration into (global) markets, but deepened by it' (Mosse, 2010: 1161). This study area clearly illustrates how powerful actors capitalize on the vulnerabilities of others. The visible shifts in the socially negotiable costs of production and social reproduction in this area indirectly represent an increase in the surplus value extracted from the workers and families, which translates directly into financial distress, harsh living conditions and deprivation (Bhattacharya, 2017: 71).

METHODOLOGY AND THEORETICAL FRAMEWORK

This article is based on extensive fieldwork carried out in this region in 2017–19: see Appendix 1 for more details. Key informant interviews were conducted with leading development officials, housing experts and water authorities. The article draws from an archival literature review of journalistic and academic sources that provide an overview of the region's development. The article also relies on interviews with community members, activists and academics who have documented the region's changes.

In 2017, 78 small bottled-water businesses in the region were located and surveyed utilizing an exhaustive sample, seeking out all the businesses dedicated to producing and selling low-cost drinking water within the region. This was complemented by a pilot household economic and water-use study of 15 household cases. In 2018, a household economic survey was conducted that looked at access to water, income and patterns of financial inclusion. The sample was randomly selected to be representative throughout El Salto and within neighbourhoods. In 2019 we returned to the households surveyed to confirm our findings.

Theoretical Underpinnings

SRT in its simplest form is about the non-wage labour and services necessary for the (re)production of the labour supply (Bhattacharya, 2017; Ferguson, 2017; Fraser, 2017; Vogel, 2013). Wood (2002) prefers the term self-production. Marx's surplus value theory says that the labourer receives a part of the production as wages and the other part is profit (1876/1963: 195). Workers then use the wages for survival, complementing the

unpaid labour carried out within the household. As Marx and subsequent researchers make clear (Bhattacharya, 2017; McGregor, 2018), this balance is socially constructed. Wealthier families can pay for more services and protections while poorer families rely to a greater extent on social networks, government services, social protections, social networks, debt and ecological services. SRT results from a feminist critique of capitalism, stating that while work can be paid or unpaid, it is often women's work that goes unpaid. This same unpaid labour, in caring for the sick, the young, or the elderly is central to both systemic and household survival. It provides the 'social reproduction' of society, and importantly, the labour force. Numerous writers have explored this theory's limits, illuminating historical developments in capitalism, such as the disciplining of women in the Middle Ages (Federici, 2004) or the subordination of women under 19th century industrialism (Fraser, 2017). Bhattacharya (2017) suggests a more inclusive definition that potentially reveals opportunities beyond gender recognition or parity emphasized by a reductionist definition. An extensive definition of social reproduction as offered by Katz (2004: x) shows the 'broad range of practices and social relations that maintain and reproduce particular relations of production along with the material social grounds in which they take place'. This article identifies seven factors of SRT: 1) public services; 2) social protections; 3) community and family; 4) rights; 5) ecological services; and, on the other side, 6) wages; 7) debt. Examining these factors in a real context shows how the retrenchment of rights, public services, social protections and the destruction of the environment has left workers ever more dependent on stagnant wages and debt.

BACKGROUND

On the south-eastern perimeter of the Guadalajara Metropolitan Area (ZMG), El Salto is a peri-urban region displaying vestiges of an agricultural history superimposed upon by heavy industry and high-density housing. Cows cross the highway here, silhouetted against central-western Mexico's biggest industrial production facilities. Plagued by poverty, gangs and desperation, the region is most famous for its pollution (*El Informador*, 2017; Lopez, 2018). The contamination of the Río Santiago and pollution produced by nearby industrial facilities has caused a series of well-documented deaths, in addition to people suffering from elevated levels of skin, eye and gastro-intestinal infections, kidney failures, cancers and other health concerns (Chávez, 2013; Greenpeace, 2016). Residents complain of pungent rank odours that constantly emanate from the region's industrial facilities, concentrated in chemical, plastic, metal, electronic and food production and processing (McCulligh, 2017). Adding complexity to the problem, El Salto hosts ZMG's garbage dump, which has long operated beyond its capacity,

leaching, just beyond El Salto, into the area's ground and surface waters (Chávez, 2013; Vargas, 2017). 'At times the smells are so strong that they wake us in the middle of the night', one resident reported.⁶ The contamination goes back as far as the mid-1970s (McCulligh, 2006) and the problem has only intensified over time.⁷

Despite the difficult living conditions, the population here has exploded, growing from a sleepy area of 9,014 residents in 1960 to one of 185,000 today (INEGI, 2017; McCulligh, 2017). Chaos and deprivation have become common throughout Mexico, where in the last 20 years developers have built millions of homes in peripheral areas, far from urban services (Marosi, 2017). In El Salto, thousands of low-cost, tiny housing units were built in isolated areas, even on the banks of this contaminated river, exposing large concentrations of low-income populations to new risks. Municipal services, built for smaller populations, have been overwhelmed. Residents complain about inadequate water and transportation services, absent emergency and medical facilities, and isolation from educational institutions, markets and recreation spaces. Even though residential areas are frequently without water service for weeks and months (in one neighbourhood, behind IBM's campus, residents have been without water services for 10 years), thousands of new homes are under construction.⁸ Housing developers oversee the provision of water and waste treatment services until all units are sold, at which point the responsibility falls on the overstretched city services (Libertun de Duren, 2018: 416).

Industrialization

Historically, agricultural interests and rural development politics dominated Mexico until the 1950s. During the 'Golden Era' (1940–70), farmers mechanized and intensified production with the use of tractors and chemical fertilizers (Gallardo et al., 2006). Simultaneously, the nation shifted toward industrial development: 'The task of agriculture became to support the industrialization of the country by generating foreign exchange, both through the provision of cheap basic grains and the production of export crops' (Wester et al., 2009: 400). The centralized national government focused on self-dependence, import substitution and protecting nationalized industries. The financial crisis of the 1980s left Mexico under the dictates of global financial institutions, compelling the sale of state-owned industries and the shift to a neoliberal model of governance (McCaughan, 1993: 16). The command economy 'with the state as a businessman, now got out of the way for the

6. Focus group held with women from La Azucena, El Salto, 10 May 2017.

7. Focus group held with community members from El Salto, 15 June 2018.

8. Interviews, residents in Colonia Mineral, El Salto, 18 December 2019.

businessmen'.⁹ This allowed for 'the transformation of a highly regulated and protected economy toward an open and market-oriented one' (Fleck and Sorrentino, 1994: 4). Coinciding with a global slowdown, an era of high inflation in Mexico meant a decline in real wages and living standards from 1980 through 1992 (*ibid.*: 15; McCaughan, 1993: 17). Labour participation rates dropped from 74.6 per cent for men in 1973, to 68.6 per cent in 1983, taking the country more than a decade to recover (Fleck and Sorrentino, 1994: 11). Almost 70 per cent of all urban workers earned less than half the wage needed to afford the basic basket of goods (*ibid.*: 15). Manufacturing paid 90 per cent of this same basket, justifying the need for policy makers to bring industry to Mexico. From 1950 through 1979, 'industry's share of employment rose ... mainly at the expense of the agricultural sector' (Fleck and Sorrentino, 1994: 16). Rural to urban migration flows peaked in the 1950s during the Green Revolution (Roberts, 2003: 32). Strong population growth and high unemployment¹⁰ translated into surplus labour, key to attracting industrial investment (Palacios, 2008). Mexico's competitive advantage was a lax regulatory environment. According to a World Bank policy report, 'pollution intensive sectors' outpaced other sectors, in phases, with agrochemicals in the 1950s, petrochemicals in the 1960s, and synthetic fibres and resins in the 1970s (Kate, 1993: 32). The same report characterized Mexico's subsidization of energy costs as a 'petroleum led growth' strategy (*ibid.*). The nation's air and water quality deteriorated (*ibid.*: 18). 'The increase in pollution intensity during the seventies and eighties is almost exclusively attributable to increases in the relative contribution of only two sectors: petrochemicals and fertilizers' (*ibid.*: 12).

Industrial development in El Salto followed this general pattern. Using the European model of locating heavy industry outside of the city centres, Guadalajara's first Industrial Park opened in El Salto in 1967 (Rodríguez Bautista and Cota Yañez, 2006: 90). Development accelerated when President Echeverría (1970–76) established an industrial rail corridor between Jalisco and Mexico City in 1972, and IBM launched Mexico's Silicon Valley in El Salto (McCulligh, 2017: 13). Today, about 700 firms have installed their operations along this El Salto–Ocotlán industrial corridor (*ibid.*: 18). Offering jobs and relatively high incomes, the region has attracted residents at rates faster than those in Mexico's large cities. In the 1980s El Salto's population grew 9 per cent per year while Guadalajara and Mexico City grew at

9. Interview, Former Jalisco Secretary for Development and the Environment Director of Planning Pedro Gaeta, 23 July 2018.

10. While the Mexican state used a generous definition showing very low unemployment in this time, when Fleck and Sorrentino adjust the measure to include people in the informal sector earning insufficient wages, the rate reaches as high as 30 per cent in the 1980s. 'Concepts applicable to developed countries are inadequate for explaining the conditions in a labor market with a sustained oversupply of labor, with limited public employment services and no safety net of unemployment insurance, and with a conventional labor market only in the formal sector' (Fleck and Sorrentino, 1994: 16).

2.5 per cent per year through this time (Roberts, 2003: 32). Simultaneously, the industrial development of El Salto assured the lowest quality of life in the region (Rodríguez Bautista and Cota Yañez, 2006: 91).

Residents noted a change in the river's colour in the 1960s when 'ecosystem services began to fade, reducing the river's value not only economically, but socially and culturally' (Sherrard, 2016: 32). In the 1970s, the number of people with asthma, respiratory and skin infections, conditions common to the area today (*El Informador*, 2020a),¹¹ began to be associated with the river's airborne emissions (McCulligh et al., 2007).

Environmental protection laws enacted in 1988 were an example of too little too late. First, the laws cover so few parameters that businesses in compliance can still discharge toxic waste directly into the river (McCulligh, 2017: 69; Tortajada, 2003). Secondly, the regulations lack enforcement: less than 20 per cent of wastewater generated by industries in this region is treated, and less than half of that complies with even the lax norms; recent reports show total treatment in this region decreased 31 per cent from 2014 through 2019 (*El Informador*, 2020a, 2020c). In 2018, the state water commission had only two inspectors for 9,282 businesses, at least half of which discharge harmful residuals into the river (*El Informador*, 2018). Demonstrating that this is a national problem, McCulligh (2017: 194) calculates federal inspectors would need 61 years to visit all the companies in the country that have permission to discharge waste into waterways.

World Bank researchers attributed the severe water contamination to the country's industrial growth, but despite the cost to human health, it was hailed a success story (Kate, 1993). Mexico is one of the most unequal countries in the Organization for Economic Cooperation and Development (OECD, 2017: 45) and the distribution of costs is hidden by averages. People, on average, were materially better off, even though tainted water and air were making people sick. The World Bank's analysis blamed the problem on too much government, in the form of subsidies (Kate, 1993), and argued that this could be improved through decentralization. Instead, contamination increased as small local governments with limited resources became the ultimate authority in local land use policy. Instead of negotiating directly with Mexico's highly qualified development and regulatory officials, many of the world's largest corporations were negotiating directly, behind closed doors, with cash-strapped city officials.

Instead of focusing on the risks to human health, which it documents, the World Bank's concerns centred on the risks that contamination represented to capital. Environmental problems were becoming 'a heavy strain on future economic growth' (Kate, 1993: 32). This reveals a dogmatic assertion about economic growth raising living standards despite unfolding circumstances offering evidence to the contrary. Revealing the pernicious shadow

11. Focus group held with community members from El Salto, 15 June 2018.

behind the rational utilitarian ethic, the increase in economic activity was claimed as a victory, even if it produced a new class of losers, conveniently hidden by aggregate calculations (Rawls, 1991: 23). In the socio-political reality in Mexico, the most corrupt of the OECD countries (OECD, 2017: 45), instead of acknowledging and addressing the increased costs borne by the population, those who pay with their health and well-being are simply ignored and even repressed.¹² Notably, the state has attempted to hide the most dramatic evidence of the unfolding harm. One 2012 study conducted by Mexico's Institute of Water Technology (IMTA) showed more than 1,000 substances in the river, and another, conducted in 2010 by the State Water Commission (CEA) showed that the direct costs are borne by the region's children (Corvarrubias, 2012). Showing how power becomes 'manifest in the non-issues, the non-decision' (Mosse, 2010: 1165), when civic groups, assisted by Greenpeace, asked for the water quality study to be made public, the government argued that the study should be kept secret because of industrial privacy concerns (IFAI, 2012). Even more emblematic, a study showing the severe impacts to the health of children in the area was embargoed for nearly 10 years by the CEA, only to be released at the end of 2019 to an outraged public (2020). This study showed that children throughout this region, but especially in El Salto, had high levels of metals and organic compounds in their blood, causing learning difficulties and impacting their health in ways including haematological diseases associated with corporal contamination (Dominguez Cortinas, 2019). When Dominguez Cortinas completed her analysis in 2011, she concluded that it was necessary to begin monitoring the situation (*ibid.*). Instead, the government, more worried about protecting business interests, embargoed the study from release.

Social Housing

Industrial development attracted the workforce and housing policies invited the nation's aspiring workers to take on debt and move in. Analogously to industrialization policies, Mexico's housing policies and reforms were undertaken in the name of helping the poor. The federal housing agency, Instituto del Fondo Nacional de la Vivienda para los Trabajadores (INFONAVIT) — Institute for the National Housing Fund for Workers — was founded in 1972, at a time when 'no large scale-housing developers existed in the country' (Lopez-Silva et al., 2011: 17). INFONAVIT was charged with calculating need, buying land, obtaining local authorizations, setting standards, contracting and supervising construction, and issuing mortgages to workers.

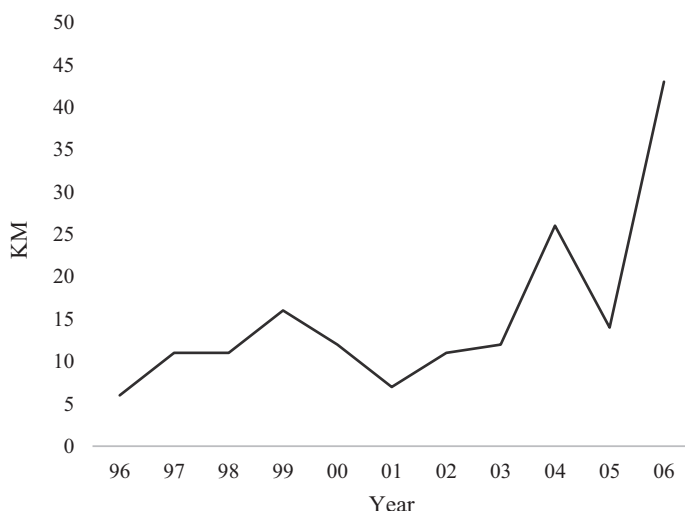
12. Interview, Director of the Consortium for Research and Dialogue on Local Governance (CIDIGLO), Gerardo Bernache Pérez, Guadalajara, 23 August 2018; focus group held with members of Un Salto de Vida, El Salto, 12 July 2018.

Warnings from the Mexican Ministry of Social Development in the late 1990s suggested that, if left unaddressed, 40 million Mexicans would live in informal housing by 2000 (Siembieda and López Moreno, 1997: 651). In 1996, the housing deficit was estimated at 3 million units and growing by 200,000 per year, with 80 per cent of the population too poor to ‘participate in the national mortgage finance system’ (ibid.: 652). The existing community land tenure system impeded urban expansion with a prohibition on selling land surrounding the cities. Legislation in 1992 opened this land to the market. Despite land reforms, the economic crisis of the 1990s meant that ‘commercial banks withdrew from the mortgage market’ (Lopez-Silva et al., 2011: 21). Throughout the nation’s history, most of the housing built was self-constructed without financing. ‘The vast majority are informal, self-built homes ... that families spend on average, up to 10 years constructing’ (Soederberg, 2014: 220). President Vicente Fox’s administration (2000–06) introduced a new federal housing policy package to make INFONAVIT the government backer of construction and finance (Lopez-Silva et al., 2011: 18), ‘increasing its lending to lower-income Mexicans’ (Soederberg, 2014: 230). Fox directed INFONAVIT ‘to ramp up its mortgage lending dramatically’ (Marosi, 2017), providing a ‘resolution between the high cost of housing supply, on the one hand, and the limited purchasing capacity of the near majority of the population, on the other’ (Soederberg, 2014: 219). The number of mortgages issued by INFONAVIT grew from 70,000 a year in the 1980s to 200,000 a year by 2000; they averaged 500,000 per year from 2008 to 2011 at their peak (Reyes Ruiz del Cueto, 2018: 78).

INFONAVIT collects 5 per cent of wages from all workers in the formal sector, and with this fund, subsidizes the unregulated construction of housing for these same workers. This pooled money completely removes the risk for developers and financial institutions, who are thus free to build for a guaranteed market (Reyes Ruiz del Cueto, 2018). From 2000 through 2012, 20 million Mexicans, one sixth of the total population, relocated into variations of these homes (Marosi, 2017), a million of which were 325 ft² (just over 30m²) and ‘often occupied by large families’ (Reyes Ruiz del Cueto, 2018: 115). Optimizing three variables — the number of units they could build on each site, the price of the land, and the bureaucratic ease of the approval process (Libertun de Duren, 2018: 416) — developers continually pushed further and further from city centres, ‘exacerbating social segregation by displacing the poor to ever more peripheral locations’ (Janoschka and Arreortua, 2017: 44). Explaining why peripheral municipalities welcomed these developments, Reyes Ruiz del Cueto (2018: 94) writes that construction permits ‘constituted the bulk of municipal revenues’. Meanwhile the average distance from housing developments to city centres now exceeds 40 km, as shown in Figure 2 (Libertun de Duren, 2018: 414).

While the increase in INFONAVIT mortgages was quantitatively impressive, ‘the qualitative side of the story shows troublesome issues’ (Lopez-Silva et al., 2011: 1). Some 7 million units have been built since 2000

Figure 2. Average Distance between New Housing Developments and City Centres in Mexico



Source: López-Silva et al. (2011)

(Reyes Ruiz del Cueto, 2018: 78), but these quickly became ‘a new symbol of poverty’ (Marosi, 2017). Instead of addressing the needs of low-income residents, ‘this growth has been one way of channelling excess capital into global financial markets’ (Valenzuela Aguilera, 2017: 38). In their search for profits, developers found flood plains, industrially polluted lands and geographically isolated areas to be ideally priced locations for large-scale developments. After visiting 50 of these housing developments across the country, Marosi (2017) reports that dire conditions are the norm. Common throughout are poor and unfinished construction, sinking streets, electricity outages and widespread water issues including burst pipes, sewage in the streets and a lack of tap water (ibid.). ‘The program has devolved into a slow-motion social and financial catastrophe, inflicting hardships and hazards on millions in troubled developments across the country. ... [The] factory workers, small business-owners, retirees and civil servants who bought the homes got stuck with complex loans featuring mortgage payments that rose even as neighbourhoods deteriorated into slums’ (ibid.). In 2019, the government recognized 650,000 abandoned houses, of which 474,500 were built in areas too risky and isolated to rehabilitate (Xantomila, 2019).

Examining similar financial inclusion discourses in Spain, Palomera (2015) argues that ‘home ownership appeared as a way of tying the better-off fractions of the working class to the dominant social order: giving them a stake in society while maintaining the property and class privileges of the powerful’. Furthermore, beyond this Foucauldian argument of

governmentality through debt, the state's role in minimizing risk for both developers and financial institutions facilitates the continued financialization of social reproduction, widely recognized as a dominant feature of 21st century capitalism (Lavinás, 2018; Sassen, 2014; Soederberg, 2014).

Securitization involves the relocation of a building, good, or debt, into a financial circuit where it becomes mobile and can be bought and sold over and over in markets near and far. ... Once an input is securitized, financial engineering can keep on building long chains of increasingly speculative instruments that all rest on the alleged stability of that first step. (Sassen, 2014: 118)

The guarantee that these payments will be deducted directly from workers' pay-checks are thus 'serving as an investment instrument in the secondary finance system', where the real value is not the material asset of the home but the ability to leverage the aggregated payments on 30-year loans, guaranteed by the state (Valenzuela Aguilera, 2017). By 2010, Mexico's mortgage securitization market was the largest such market in Latin America, its bulk composed of government-managed and guaranteed mortgages (Soederberg, 2014: 217). The shift to the market was complete: the government as an instrument of finance capital minimizes risks for investors without offering even basic protections for Mexico's citizens as consumers.

El Salto's housing developments are among the nation's worst. In 2004, in Galaxia Bonito, El Salto, 5,000 houses were built, wedged on a flood prone field between two heavily contaminated water bodies: one side bound by the Río Santiago, the other by Guadalajara's wastewater drainage canal. With an annual rainy season from July to October, developers ignored their own studies that showed the location would flood with as little as 40 minutes of rain (*El Informador*, 2008). In 2008, after unusually heavy rains, a quarter of the community was under 70 cm of the most dangerous water imaginable (*ibid.*). This has become a yearly occurrence.¹³ Overrun with sewage water, gangs and worsening social conditions, many owners have abandoned their homes. By 2016, 34 per cent of the homes were officially abandoned.¹⁴ Resident Alfredo Olid estimates that number to be twice as many.¹⁵

Case 1: The Water Man

With his wife and three children, Olid moved away from Guadalajara's city centre to the case study neighbourhood in 2007. While working for a bottled water company he received a letter from the housing developer stating that he qualified for housing in this particular housing complex. At first he was content. Then the problems began. The development is isolated from city

13. Focus group held with community members from El Salto, 15 June 2018.

14. Interview, Laura Gonzalez Rosades, Coordinator of Control and Management for INFON-AVIT Jalisco, 17 July 2018.

15. Interview, Alfredo Olid, bottled water shop owner, El Salto, 27 July 2018.

services, hospitals, police, schools and universities, recreational areas and even shopping markets. Bus lines are inadequate. When owners began abandoning their homes gangs overran these vacated spaces and they became a place to dump bodies.¹⁶ Soon the buses stopped entering the community and it became dangerous to walk the neighbourhood streets to get to the nearby highway in the early dawn — part of Olid's journey to his work in the city centre. Olid worried about his family during the day. In 2010 he quit his job.

Water quickly became the number one issue. First, the flooding was a concern. Secondly, the developer installed inadequate drainage throughout the development. When it rains, Olid explained, these inadequate pipes overflow, creating fountains of sewage throughout the neighbourhood. On several occasions high pressure reverse sewage flows have spewed forth from his toilet. Finally, there is often no water supply to households, while one of Mexico's biggest rivers, the Santiago, flows only 350m away.

Having worked in the booming bottled water industry, Olid borrowed money from his brother and opened a business from his home, purifying and selling water to his neighbours.¹⁷ His neighbourhood's tap water service is too infrequent (only 31 per cent of residents in this neighbourhood report having access more than two days per week, slightly higher than the city's average of 25 per cent: the most common experience is to receive water for 2 days per week for less than 4 hours at a time), and when the water comes, the quality is too low for his simple filtration system. Twice a week he buys 10,000 litres of pre-treated water which is delivered by private vendors from a neighbouring municipality. He sells 240 19-litre *garrafons* (water jugs) per day at a price of 6 to 10 pesos.¹⁸ Olid's is the oldest water business in the area. There are now five, competing for a dwindling customer base. In 2017, five household case studies carried out in the study area revealed extreme practices, with families relying on as many as 20–30 *garrafons* per week, which are used for household chores, cooking and drinking. In a focus group held in 2017 with 40 residents from the area, almost all confirmed that during the dry season, when water is scarce, they had to use *garrafons* for bathing. Our survey showed this is true for 18 per cent of residents here.

16. Nationally, an estimated 25 per cent of new houses are abandoned (Soederberg, 2014: 221; Valenzuela Aguilera, 2017: 44).

17. Montero (2017) calls these small shops the 'water of the poor' and her estimates show that they account for about 50 per cent of the bottled water market in Mexico. The fact that these shops proliferate in regions characterized by concentrations of extreme poverty, selling water produced by purification plants installed in homes and garages, means they frequently operate below the radar of the local, state and federal governments (*ibid.*). Despite this, the evidence that exists shows a recent increase in the number of these small businesses. A survey conducted in 2017 by the University of Geneva found that in El Salto (pop. 135,000), 60 per cent of the region's 78 small water purifying shops were less than three years old (Greene, 2018).

18. Typically, the price varies depending on whether the water is delivered or purchased at the storefront, with a discount for larger quantities.

Olid was disqualified from returning the house to INFONAVIT after he built additional rooms. Thus, if he walks away from the house now, he is still responsible for the debt. 'I'm trapped', he says. Constantly behind on his house repayments, he says, 'Let me just tell you, it's very rare the person that pays off their debt. Every year the payments go up. Up. These are houses for the poor. ... It's a joke'.¹⁹ After 12 years of faithfully paying, he says his debt has grown from MXN 165,000 to a current value of MXN 180,000.

Case 2: Deep into Debt

Pedro and Lupe live in El Castillo, a neighbourhood in El Salto situated next to the industrial highway, in a complex built before President Fox's administration, in an era when INFONAVIT still regulated the location of housing developments. They live together, in their tiny 45 m² two-bedroom home, with their three grown children and four grandchildren; nine residents in total, 'girls upstairs, boys downstairs', as Pedro explained.²⁰ For several hours most afternoons, they have tap water provided by the municipality, an inconvenience for the daughters who want to bathe before their early factory shift, but their roads are paved and they live close enough to urban services, markets and bus lines. However, they endure the consequences of industrial waste illegally dumped in their neighbourhood that has left Pedro's hands and arms damaged from an accident years ago. In 1997, Pedro, then 26 with a new-born at home, set out on foot, looking for work. He crossed the field near his home in front of a firm that produces metal castings (tools, fixtures, utensils), when he encountered what he says was metallic foundry waste, dumped on the side of the highway. He remembers a burning sensation, and then he slipped. The caustic tailings quickly burned through his shoes and clothes, and then his legs and hands. He ran home, burning flesh 'hanging from his bones', and then fell into a coma for a month. The company denied responsibility and claimed Pedro was trespassing. In the end, they agreed only to pay his emergency medical care, about US\$ 1,500.

In 1996, Lupe, the primary breadwinner in the family, qualified through her work in a factory for a loan of MXN 135,000 (about US\$ 18,000)²¹ from INFONAVIT, which they used to buy their house. At the time she earned about MXN 800 per week (US\$ 100). For almost eight years, MXN 250 was deducted from her weekly pay. After she changed jobs to the informal sector (still working for a large company but indirectly through a contractor), her boss arranged for her, and others, to continue making INFONAVIT payments. After a year she quit and returned to the formal sector earning slightly more, only to find that she was one year behind on her INFONAVIT

19. Interview, El Salto water shop owner Alfred Olid, 27 July 2018.

20. Interview, El Salto residents Pedro and Lupe, 11 July 2018.

21. At 1997 exchange rates of 8 pesos to US\$ 1.

payments. She had been robbed. To catch up, INFONAVIT began deducting MXN 560 from her MXN 850 weekly pay. To help, Pedro spent his days gathering metal to sell to the scrap businesses that line the highway. 'It was difficult, [we ate] hard tortillas, hard, hard, hard'.²²

In 2014, Lupe says her grandson became very sick and she could not attend to him and keep her job. So, she quit. Significantly, she also stopped paying for her house. Lupe says the family lives in fear that INFONAVIT will repossess their house at any moment. After making 103 payments on an original debt of MXN 135,000, in September 2019, their housing debt had surged to MXN 784,000.²³ The debt was spiralling out of control, increasing by MXN 62,000 in just the past year. Recently they had to find MXN 1,500 after the electricity was cut off. Additionally, they have fallen MXN 30,000 (US\$ 1,500)²⁴ behind on their water bill. When they were interviewed in 2017, they even owed the local merchant who sold them the bottled water they drink. Lupita's two daughters (aged 21 and 19 in 2018) now support the family by working in factories by day and studying at night in technical schools, hoping to break the family's desperate cycle of poverty.

WATER

The publicly managed water system is overstressed by continuous expansion of both industrial and residential needs. The city manages El Salto's water distribution through seven districts, each with three permanent workers dedicated to fixing leaks and controlling water distribution through the neighbourhoods. There are no municipal treatment plants for potable water and the water is pumped and distributed directly from deep wells. Management is left with insufficient funds to deal with the water problems that have spiralled out of control. Mexico already boasts of charging the lowest rates for water in the OECD (OECD, 2009); here residents are billed about US\$ 45 per year for unmetered water service. To make matters worse, the city reports that large numbers of residents are behind on their water payments. Our own survey shows that 12 per cent of residents do not pay at all, 40 per cent report that this bill is difficult for them to afford, and 52 per cent report that it is too expensive. Furthermore, the water department is not independent and the money that is collected for water services goes into the cash-strapped city's general fund, which is used at the discretion of the political leadership.²⁵

22. Interview, El Salto residents Pedro and Lupe, 11 July 2018.

23. Copy of the INFONAVIT bill to the family, dated 30 September 2019. Lupe points out the value of this debt is much greater than the cost of new houses in her area. Copies of bills provided to the researchers 13 November 2018 and 6 January 2020.

24. At the 2019 exchange rate of 20 pesos to US\$ 1.

25. Interview, Carlos Islas, Director of El Salto Water Department, 12 July 2018.

Unable to expand the system to meet the growing needs of the city, distribution in the residential areas is by rotation. The nature of the intermittent water service exacerbates contamination, as negative pressure in the system draws in contamination (Erickson et al., 2017; Vairavamoorthy, 2018). In the mornings, at peak water flow and discharge times, sewage overflows through the streets of new developments — and this sewage, now flowing above the water lines, further increases contaminant infiltration. Jimenez Cisneros and Torregrosa Armentia (2007: 159) observe that this is a common feature of water systems throughout Mexico.

Tap-water tests in three areas of the city show high levels of faecal coliforms (ranging in counts from 43 per 100 ml in Las Pintas to over 2,400 in the city centre) and levels of both cadmium and arsenic that consistently surpass national water standards limits.²⁶ Tap water tested at the elementary school in La Azucena contained 0.0046 mg/L of cadmium. Mexico's legal limit for drinking water is 0.003. Noting the role cadmium plays in kidney failure, the Environmental Working Group suggests a more cautionary limit of 0.00004 mg/L to protect human health (EWG, 2020). In addition to the school in La Azucena, one home near the school and one in the city centre exceeded the limit of 0.01 mg/L for arsenic (0.038, 0.018 and 0.033 respectively): the EWG reports that a limit 2,500 times stricter (0.000004 mg/L) is required to protect human health.

Only 25 per cent of the region's 185,000 residents receive tap water more than two days per week for at least 12 hours on those days.²⁷ The mean service interruption in the past year was between two weeks and one month (depending on the neighbourhood) without water. Several neighbourhoods experienced multiple months without water. One area reports entering its 10th year without water.²⁸ When the water does run, 40 per cent of residents report detectable contamination in the form of discoloration, odours and sediments (in comparison, 20 per cent of tanker truck customers report that source of water as contaminated).

Due to insufficient water from the network and concerns about its quality, residents in this area depend on the private sales of bottled and tanker truck water to carry out their daily routines. The city also provides tanker water service to compensate for extended service interruptions, but the waits are

26. The tests were carried out by the project *Recuperacion de los Rios*, financed by Rio Gonzalo Arronte Fundacion and carried out by researchers at CIESAS-Occidente, which contracted water sampling to the University of Guadalajara's centre for biological science (CUCBA) in 2017 and 2018. These water quality tests were carried out to monitor filter efficacy and results were delivered to the foundation as part of quarterly and final reports (CIESAS, 2018). Testing was limited due to the low level of funding and the high costs of tests in Mexico. The sites were selected out of concern for a school and two neighbourhoods where the foundation works. The authors of this article can share these results on request.

27. Household Water Access and Household Economics Survey (N:500), conducted by the authors in El Salto, from 5 July through 26 July 2018.

28. Interviews, residents in Colonia Mineral, El Salto, 18 December 2019.

long: 5 per cent of households report receiving this service while 35 per cent report buying water from private delivery drivers and 18 per cent of households do not have storage capacity. To cope with this situation, purchasing bottled water is the most common 'go-to' solution to the problem. Our 2018 survey indicated that 100 per cent of households buy bottled water for drinking; 11 per cent buy from the transnational companies, 88 per cent buy from local water shops and 6 per cent buy from both. Nationally, in 2017, 73 per cent of households consumed bottled water for drinking (WHO/UNICEF, 2017). Corresponding research in Chiapas showed that in areas where surface water is still accessible, about 10 per cent of the population continues to utilize river water.²⁹ In El Salto, due to the contamination, that would be impossible.

On the individual level, this turn to the market has been an act of agency, a coping mechanism. However, this market is not perfect. There is an assumption that markets function because consumers are informed (Weida, 2007). In Mexico, there is no information, public or private, regarding the quality of the water in the taps or the bottles (Montero, 2017). Our survey of water providers in El Salto showed that only two out of the 78 water businesses actively monitored their water quality.³⁰

In 2017, transnational water companies dominating the national market sold water for as much as 34 pesos per garrafon while the local shops sell the same quantity for an average price of 7.7 pesos. These small businesses operate at near zero margins, avoiding most of the operating, marketing, transportation and administrative costs incurred by the transnational corporations (TNCs) operating in this same market space. Our survey into the nature of these small businesses shows that they are truly capital-light, typically beginning with family savings, averaging an upfront capital investment of MXN 65,000 (US\$ 3,300),³¹ run from home as a family enterprise. They may distribute with bicycles, motorbikes or old trucks but they primarily rely on customers who live within walking distance. These small businesses average sales of 103 garrafons per day (equating to MXN 800 /US\$ 41 per day) with 45 per cent selling fewer than 50 per day (earning less than US\$ 20). With the exception of three businesses which operate their own wells, their primary operating cost is the water they buy from private trucks: depending on the quality of the water they purchase, they pay between MXN 380 (US\$ 20) and MXN 1,400 (US\$ 72) per 10,000 litres.

In our survey, 7 per cent of residents report buying both cheap local water as well as the more expensive TNC water and differentiate between the two

29. Survey conducted by the authors in San Cristobal de Las Casas, Chiapas, 28 July to 15 August 2018.

30. Small Water Provider Survey characterizing the supply side of the bottled water market in El Salto. This survey was carried out by the authors with all the small water shops within the geopolitical boundary of El Salto, from 1 February through 20 June 2017.

31. Three outliers are excluded from this, representing upfront investments of MXN 500,000, 6,000,000 and 10,000,000.

in terms of usage. The cheaper water is designated for household chores, such as washing, cooking and bathing, while the other is exclusively used for drinking. In 2019, Lupe changed from the 10-peso water supplied by her local vendor to the 35-peso E-Pura brand sold by Pepsi, following a diagnosis from her doctor that she had kidney problems as a result of ingesting contaminated water. Buying as many as six of these per week absorbs most of her MXN 1,600 bi-monthly welfare check.³² The actual quality of both categories of waters is unknown. There are only price signals. Blurring the difference, small shops selling water lack their own containers and simply fill old bottles from the TNCs, and there are frequent reports that workers from the TNCs simply refill their own bottles in these shops as well.³³ While residents were ambiguous about whether there is a difference between high-priced and low-priced water (with half reporting *yes*, and 40 per cent reporting *no*), the region's medical director confirmed that sick residents are advised to only buy water sold by Coca-Cola or Danone, for safety reasons. Furthermore, there is evidence of self-rationing. The majority (61 per cent) of those buying the expensive water reported that they would buy more water if it was cheaper, while 47 per cent of the total population said they would buy more water if they had more money.³⁴

SOCIAL REPRODUCTION ANALYSIS

The turn to the market occurred in the same time frame for both water provision and low-income housing. In both cases, under alternative discourses, there could have been other options, such as safe drinking water provided by the state, or public housing for the poor (Soederberg, 2014: 218). Instead, in both cases, the role of the state has been to deregulate the space and allow private actors to extract from vulnerable residents in precarious periphery conditions. The region's industrial and housing developments have left the most vulnerable residents more vulnerable to, and dependent on, markets. These markets have not necessarily improved the lives of the poor. The Iron Law of Wages theory holds that wages should adjust to meet the minimum costs of survival.³⁵ However, it is also likely, as evidenced by the

32. This represents changing conditions encountered in December 2019. Lupe previously received 900 pesos every two months and spent an estimated 520 of this on water. In 2019, the Obrador administration changed the conditional cash transfer programme and she now receives 1,600 pesos while her drinking water purchases cost her between 1,200 and 1,800 pesos (i.e. 75–113 per cent of the government support).

33. Interview, El Salto water shop owner, July 2018.

34. Survey on household water access and household economics conducted by authors in El Salto from 5 July through 26 July 2018 (see Appendix 1).

35. Following Marx, Bhattacharya writes, 'the value of labor power is set by the "value of the necessities required to produce, develop, maintain, and perpetuate the laboring power"' (Bhattacharya, 2017: 77–78).

self-rationing of drinking water, that the individual adjusts 'her needs to what she receives in wages' (Bhattacharya, 2017: 78).

Literature on social reproduction shows how social programmes, community services, family networks and the unpaid labour of mostly women all subsidize households living with low wages. States guaranteeing a high baseline of services and safety nets make survival easier. According to an analysis by Lavinás (2013: 38), the countries that do best at reducing poverty and inequality are the ones that 'provide large, universal and de-commodified services'. Public services relieve individual households' reliance on debt and low wages, thereby increasing living standards and reducing inequalities. Instead, as others (e.g. Harvey, 2014; Soederberg, 2014) have pointed out, development policies and practices have used the poor for further accumulation. Harvey writes (2014: 436): 'Part of the neo-liberal political program and ethos in recent times has been to externalize as much as possible the costs of social reproduction on to the populace at large in order to raise the profit rate for capital by reducing its tax burden'.

In this expanded framing of social reproduction, the factors of wages and debt occupy the commodified side of the equation, while rights, social and public services, social protections, community and ecological services are on the other. Wages are generally thought to be the social terrain on which quality of life issues are fought between capital and labour, but in this formulation, debt becomes the key variable as wages stagnate and the other factors erode. Rights and the ability to seek justice when a person is harmed are important factors, as evidenced by the case of Pedro. The second non-wage factor, public services, includes a range of resources that are either inadequate or absent in El Salto, including hospitals, schools, parks, public security, transportation and water and wastewater services. As Marosi (2017) reports, situations such as that in El Salto have become common throughout Mexico as unregulated housing developments have taken large, vulnerable populations further and further from urban centres where these services are concentrated. Residents are forced either to rely on high-priced substitutes (such as utilizing taxis or car services, private security, private doctors and commodified water), paying dearly in money, time, or health consequences, or to do without.

Like public services, social protections are generally seen as a key tool in reducing vulnerability and poverty. National healthcare covers workers in the formal sector, and because of the industrial activity in this region, we find 66.4 per cent of households are covered; however, because the area lacks a medical centre, access is an issue.³⁶ Additionally, because of the area's industrial base, residents here have been overlooked by national campaigns

36. Household Water Access and Household Economics Survey (N:500), conducted by the authors in El Salto, from 5 July 2018 through 26 July 2018.

to reduce poverty (Government of Mexico, 2013).³⁷ Industrial workers have been targeted for INFONAVIT's social housing policies, but it is debatable as to whether these policies help families amass wealth or trap them in areas lacking services. 'Loans were made to people who could not afford them, wages remained stagnant, and housing values dropped or stayed flat' (Reyes Ruiz de Cueto, 2018: 114). The community provision of non-commodified services, from childcare and socialization to meal preparation, has historically allowed vulnerable populations throughout the world and specifically in Mexico to survive in lieu of wages. Smith and Max-Neef (2011: 41) describe the neoliberal mantra of competition, which glorifies predatory behaviour, as antithetical to community. In El Salto the community provision of services has been strained as housing policies sent strangers to live together under precarious conditions. Finally, ecological services in the area have been devastated. Instead of acting as the ultimate safety net (or even an asset) and a subsidy supplementing the living conditions of families, the environment is an extreme liability, bringing toxic winds and waters, illness, rashes, coughs and fear.

In the past, even the most inclusive definitions of SRT have considered the environment, and attacks on the environment, as a separate sphere (Fraser, 2013) but in this framing we argue for its incorporation as an essential component of SRT. Our study area provides a classic example of the life-giving factors offered by the environment becoming notable by their absence, becoming liabilities, or becoming commodified. The locals here used to eat directly from this river, the water from the river ran in neighbourhood fountains, and its banks and life were once sources of pleasure, pride and identity for the community.³⁸ Today, residents residing along the banks of the river live with constant water service interruptions which city leaders attribute to scarcity.³⁹ While 80 per cent of the water used by humans globally comes from rivers and lakes, here, the river is far too contaminated to be considered a solution, or even a resource.

This framing shows implicitly how the contamination of the river and the federal policies relocating vulnerable working families to the river's banks have trapped residents into marketized relationships. The results of our 2017 pilot study with 15 economic household case studies clearly show that the poorest residents here consistently pay over 10 per cent of their total income on water. Our 2018 survey confirms that all of those who pay the highest percentage of their income to access water are poor. The housing debt that ensnares these families, as well as the increasing percentage of income going towards purchasing water, leaves families with less disposable income.

37. Our survey shows that while 11.8 per cent of the sample households in El Salto was uninsured, only 13.4 per cent received conditional cash transfers.

38. Interview Graciela Gonzalez and Enrique Enciso, El Salto residents and members of Un Salto de Vida, 7 July 2018.

39. Interview, Carlos Islas, El Salto Water Department Director, 12 July 2018.

Tellingly, the first businesses to open on the edges of the housing developments in El Salto are micro-lending and consumer financing companies. In the same time period that Mexico turned to the market for answers, consumer debt grew exponentially throughout the country.⁴⁰

The replacement of subsidies that were previously provided by community networks or unpaid household labour by market-based transactions has 'revolutionized the processes of realization of values in the market' (Harvey, 2014: 123). As public or communal means provide less, the more the individual pays for their own reproduction, the more capital reproduces. This case is a direct example of what Mosse (2010) describes as capitalist development resulting in the deepening of capitalist relationships between the poor and the market. In Mexico, this trend shows no sign of coming to an end: the 2019 budget of the national water commission represents cuts of 38 per cent compared to the previous year, a total drop of 53 per cent since 2015.

CONCLUSION

Using the SRT framework, this article has mapped out the convergence and entwining of three developments in the urban periphery of Guadalajara, Mexico. These market-led developments have infringed on households by eliminating and commodifying the factors that complement a family's ability to survive on (low) wages alone. Applying the discursive justification of needing to increase national wealth and citizen well-being, Mexico industrialized, promising jobs and prosperity. Today the study region, El Salto, is home to over 700 firms, increasing gross production while destroying the area's air, soil and water. By externalizing their costs of production onto the backs (and lungs) of the workers, they have created a new kind of poverty: one defined by a reliance on low wages and debt, worsening living conditions, exposure to toxic elements, poor health, a vulnerability to sewage water floods, foul air, and a (self-)rationing of essential goods: 47 per cent of residents here report they would buy more water if they had more money. The government's unwillingness to control the pollution discharged into the river and residents' subsequent dispossession of ecosystem services, along with the simultaneous relocation of many people into the region, show the government's complicity in both the ecological destruction and the human exposure to that destruction (Jimenez Cisneros and Torre-grosa Armentia, 2007). This is a clear case showing 'that the government's discursive commitment to sustainability is not borne out in practice' (McCulligh and Tetreault, 2017: 353).

40. For more information on Mexico's historical consumer credit and trading economics, see: <https://tradingeconomics.com/mexico/consumer-credit> (accessed 3 December 2018).

This article has attempted to show how Mexico's housing policies, which created massive secondary financial markets, left vulnerable Mexican families even more vulnerable by moving millions to the periphery where services were lacking. This is a direct example of Mosse's (2010) idea of relational poverty. Rather than a lack of capabilities and opportunities that cause poverty, it is the very nature of a competitive system which seeks and creates vulnerabilities as sites for extraction. These housing developments, built within reach of Mexico's most contaminated river, were aggressively marketed to aspiring working poor families. Through deregulation the government guaranteed the developer's profits and through complicated loan agreements they guaranteed the financial sector, all the while leaving the vulnerable completely exposed (Libertun de Duren, 2018: 418).

Arguing for an expanded definition of social reproduction theory, this article has shown how factors that subsidize household reproduction, from social protections and public services to the care work provided by women and communities, should include the concept of ecological services. By doing so we can recognize the life-producing, and quality of life-enhancing, properties that ecosystems provide. The contamination of this river, due in part to the unregulated industrialization of the region, and one of the causes of the persistent water scarcity endured here, is a direct form of impoverishment, expressed by the extinction of local fish, amphibians and fresh water crustaceans, gone forever from this area. 'We used to fish here, daily. First the fish died. Then the trees died. Now the people are dying and they're dying a death not of their choosing. This is very grave — and it doesn't have a price. The cost is paid by the people and the benefits go to just a few'.⁴¹

It appears the system is constantly on the verge of collapse, echoing Lenin's prediction in *Imperialism* (1917/1975), over a century ago. Then it was the sheer scale of the monopolies that formed the threat, whereas today it is the Anthropocene (Kolbert, 2011), or as Moore (2016) insists, *the Capitalocene*. Yet, this eminent collapse is what the system thrives on. As Harvey argues with his darkest insight: the higher the risk, the higher the interest rate, the greater the profit. The system thrives on the sacrifice of some for the benefit of the few as the natural outcome of a Darwinian conception of progress legitimizing profits even from war, illness, or a lack of water. 'Environmental disasters create abundant opportunities for "disaster capitalism" to profit handsomely. ... And capital has never shrunk from destroying people in pursuit of profit' (Harvey, 2014: 249). A destroyed environment where people are tied to the land, trapped in long-term debt relationships, and dependent on marketized exchanges for their basic needs — that is where growth is possible in a finite world.

Berman reminds us that we must judge this developers' world 'not only ... by the immense new horizons it opens up for mankind — but also by

41. Interview, Enrique Enciso, El Salto resident and activist, 7 July 2018.

what it does not see: what human realities it refuses to look at' (Berman, 1981: 66). The case of El Salto demonstrates how power and inequality are reproduced on a local level with powerful developers taking advantage of public policies and vulnerable populations. Proponents of free-market solutions suggest that individuals and families, trapped by difficult living conditions, will vote with their feet and move to a new area. This was the freedom promulgated by the likes of Friedman (1962). Instead, we find that markets reflect power relationships and in cases encountered in the field, this freedom is reduced by complicated financial relationships, where residents must decide between dangerous living conditions and walking away. If they walk away, they lose. If they stay, they may lose more. As their payments and total debt have surged, many of them, like Lupe and Pedro, are too poor to take control of the situation. They simply await eviction. Will the state force them onto the street after years of sacrificing their meagre earnings at the altar of securitized mortgages?

When production costs are forced onto a group, because of inequalities of power and/or a lack of state protections for the vulnerable, economists minimize these examples as 'negative externalities', 'transaction costs' and 'market failures'. In general, from Polanyi to Coase, many economists recognize that 'some kind of government action ... [is] required to restrain those whose actions had harmful effects on others' (Coase, 1992: 8). In contrast, in the situation in Mexico it becomes evident that the removal of protections and the deregulation of the market space (for housing, industrial production and water) facilitates the externalization of production costs onto the backs of the working poor. Instead of being true failures, these 'market failures' are both highly functioning and profitable and, in fact, examples of how free markets function. As climate change and global environmental destruction accelerate, it is time to stop considering these cases as exceptions to the rule and understand them as natural outcomes of a system in which greed and power are their own reward.

APPENDIX 1

Summary of Research Activities and Periods

Category	Research Period	Number
Focus Groups		
Focus groups	2018	4
Focus groups	2017	3
Case Studies		
Case studies with residents, El Salto	2018	8
Case studies with residents, El Salto	2017	17
Case studies with residents, Chiapas	2018	6
Case studies with residents, Chiapas	2017	5

Category	Research Period	Number
Case studies with businesses, El Salto (2nd tier businesses)	2018	5
Case studies with businesses, El Salto	2017	6
Case studies with businesses, Chiapas	2018	1
Case studies with businesses, Chiapas	2017	4
Case studies with businesses, El Salto (2nd tier businesses)	2018	5
Key Informant Interviews		
Activists in Chiapas	2018	2
Activists in El Salto	2018	3
Authorities in national and state government	2018	8
Authorities in local governance positions	2018	6
Authorities in federal government and international banks	2017	5
Academics	2018	4
Academics	2017	6
Quantitative Household and Business Surveys		
Survey in El Salto, Jalisco	2018	N500
Survey in San Cristobal de las Casas	2018	N350
Survey in Amatenango	2018	N50
Survey in Zinacantan	2018	N50
Survey in Chanal	2018	N50
Survey of Water Businesses in El Salto	2017	78

Source: Fieldwork, surveys and interviews conducted by authors.

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