



More inclusive and cleaner cities with waste management co-production: Insights from participatory epistemologies and methods

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ABSTRACT

With over half of the world's population living in cities, and with rising consumption, the generation of solid waste has become a ubiquitous and serious problem in urban agglomerations. City administrations are facing social, cultural, environmental, and economic challenges when planning solid waste solutions. The paper discusses the participatory epistemology and methodology experience resulting from inclusive solid waste management in Brazil. In the global South countless informal and organized solid waste collectors are engaged in resource recovery, classification of discarded waste, and redirection of recyclables towards the recycling sector. Their work is mostly unrecognized and the service is not remunerated. Governmental support to include recycling cooperatives in selective waste collection varies significantly in scope and quality. In theory, the Brazilian solid waste management legislation supports recycling cooperatives and promotes avoidance, reuse, and recycling as a primary solution tackling waste. In praxis, however, many challenges towards inclusive resource recovery and awareness building about waste avoidance and diversion are yet to be overcome. Action-oriented, participatory qualitative research, conducted with recycling cooperatives and local governments in the metropolitan region of São Paulo, has revealed some of the environmental and social contributions, as well as challenges arising in planning, policy design, and implementation of waste management. The research applies a feminist and post-colonial theoretical lens and demonstrates a wealth of knowledge co-generation on waste management. The participatory method underlines important social aspects to consider in planning and policy design for inclusive waste management. The final conclusion of this paper is that selective household waste collection with recycling cooperatives creates unique opportunities to build more inclusive and cleaner cities.

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Introduction: cities and waste

In the UN-HABITAT's report, *Solid Waste Management in the World's Cities*, Bharati Chaturvedi refers to waste as one of the biggest challenges of the urban world (UN-HABITAT, 2010). As human populations continue to grow and become urbanized, in tandem with high rates of consumption, there has been a civic and political failure in appropriately managing the massive amount of waste that has been generated as a result of these developments. Although local governments have little power to regulate the quantity, heterogeneity, and material composition of the products consumed and discarded by the citizens, they mostly decide on

which waste management technologies and strategies to implement. The current global waste dilemma also evidences an industry failure, with manufacturers primarily determining the material composition of their products and packaging; therefore making them complicit with the waste problem. The situation in the global South evidences parallels with the main characteristics of the current 'chemical waste regime', outlined by Gille (2007: 207) for Eastern European countries. Wastes are increasingly privatized and there is a lack of a coordinated state effort to regulate waste generation. The dominant politics of waste pursue a hidden agenda to remove the state's intervention in the economy; protecting private property and, in the context of solid waste, promoting the idea of incineration technology as being the ultimate solution. However, most citizens are also failing to minimize their waste generation, to reorient their consumption habits and lifestyles, and to initiate/participate in public discussions on waste and the social, economic, and ecological implications of it.

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This paper analyses and discusses qualitative data collected through participant observation and active participation in regular meetings and workshops conducted between 2005 and 2012. As a result, I discuss the methodological, epistemological, and practical implications of this experience with selective solid waste collection and recycling by organized cooperatives and networks. In Brazil, as in many other countries in the global South, a small proportion of the informal recyclers are organized in associations, cooperatives, and sometimes in larger networks to perform the activity of collecting, separating, and selling recyclables, with or without governmental support. The current literature mainly describes informal waste recycling and little has been documented on organized cooperative recycling with co-management experiences tackling solid waste. Thus, the present research is unique in providing insights about the praxis of inclusive waste management.

The concept of co-management goes beyond co-production, which is “*the joint production of public services between citizen and state, with any one or more elements of the production process being shared*” (Mitlin, 2008: 340). Co-management literature provides insights on how to incorporate a multi-stakeholder approach in resource management and underlines that the collective approach to the process is as important as the expected service outcomes (Carlsson & Berkes, 2005). Solid waste is a resource with multiple stakeholder interests; therefore, the concept of co-management is useful to understand ways in which to integrate recycling cooperatives in selective waste collection and separation. Both approaches are considered a form to improve the delivery of public services.

In the past two centuries, the proportion of urban dwellers worldwide has increased from 5 to 50% as people migrated from the countryside to urban centres (McMichael, 2000). Worldwide, over the past decades, many countries have experienced a dramatic shift from rural to urban livelihoods with the rise of extremely dense and often un- or underserved urban settlements (UN-DESA, 2012). Unprecedented rapid change towards consumption-oriented lifestyles and increasingly widespread planned obsolescence and programmed throwaway from the producers' side has resulted in an unparalleled rise in solid waste generation everywhere. In most cities in the global South, the increase of garbage generation exceeds population growth by 1 or 2% per year. Not implementing adequate solutions to reduce the generation of waste and to recover the materials has created a crisis situation in many cities, particularly visible in poor communities.

This paper focuses on household waste only, recognizing the fact that industry, agriculture, and construction activities are the sectors that most generate discard (Gregson, Metcalfe, & Crewe, 2007a, 2007b; O'Brien, 2008). Waste is defined as being a nuisance, as belonging elsewhere, and as generally having no value. Waste can be extremely toxic and have long-term implications on people and the environment. When inadequately managed, it becomes an environmental problem and interferes with other elements of city infrastructure, generating costs. Uncollected garbage blocks drainages and contaminates rivers, lakes, and the oceans, sometimes producing irreversible impacts, besides affecting environmental health and community wellbeing. In 2009, an estimated 1.7–1.9 billion tonnes of household waste was generated worldwide, of which approximately half a billion tonnes was not collected (Chalmin & Gaillochet, 2009), highlighting the urgency for city administrations to handle waste issues with highest priority.

However, waste is also a resource that maintains livelihoods and it is a lucrative business for the waste management sector. Their logic stipulates more waste, greater profits, and no urgency for strategies to better meet reduction, reuse, and recycling (Bhuiyan, 2010; Davies, 2008; Gregson, 2009; Gutberlet, 2012). The global annual value of the waste industry is estimated at US\$433 billion (ISWA, 2012).

Informal (autonomous) and organized (associated into cooperatives) recyclers whose livelihoods depend on the recovery of these resources also see value in what most people discard. Historically, they collect for reuse and recycling and help reduce the burden of waste disposal of the city (Anand, 1999). The service that the informal sector provides is usually not accounted for and the social, economic, and environmental contributions remain mostly unrecognized by governments and communities, despite saving local authorities around 20% or more of what they would otherwise spend on the collection and final destination of these materials (Wilson, Velis, & Cheeseman, 2006). In a large metropolis, this represents many millions of dollars every year. Resource recovery helps prolong the lifetime of landfills, provides cheaper secondary raw materials for local markets, and creates jobs along the value chain, thus supporting livelihoods. There are upstream business opportunities for small to large-scale manufacturing in transforming recyclable materials. Often present in everyday life and not to disregard are “second hand” and “hand-me-down/around” divestment practices (Gregson, Metcalfe & Crewe, 2007a, 2007b).

The informal recyclers and those who work in cooperatives or associations reclaim different forms of household and business waste, ranging from many different sorts of plastics, papers, cardboard, and metals. While autonomous recyclers are sometimes specialised, the organized recyclers work with a large variety of materials. In some cases the cooperative also deals with wood, cooking oil and other oils, WEEE products, and other specific packaging materials. The hourly wage for the cooperative recyclers in the region is still extremely low, averaging between US\$0.84 and 1.70, and results in an average monthly income between US\$150 and 290 in the municipalities other than São Paulo, depending on the quality and quantity of the equipment, organization, and logistics of the group. In the city of São Paulo, the average monthly income can be slightly higher. There are critical occupational health and safety questions that need to be addressed at the cooperative level (Binion & Gutberlet, 2012; Gutberlet & Baeder, 2008; Gutberlet, Baeder, Pontuschka, Felipone, & dos Santos, 2013).

Decades ago, authors have already pointed out the reliance of the formal city on the informal urban inhabitants (Bromley, 1979; Bromley & Gerry, 1979; Mangin, 1976; Turner, 1982) and more recently, the crucial role of the informal sector in building global recycling rates has been demonstrated (Velis et al., 2012; Wilson, Araba, Chinwah, & Cheeseman, 2009; Wilson, Rodic, Scheinberg, Velis, & Alabaster, 2012; Wilson, Velis & Cheeseman, 2006). Thousands of informal and organized recyclers make a living from collecting and selling recyclable and reusable materials in the global South. Estimates suggest that there are up to 3.8 million people in informal recycling in Latin America and the Caribbean, most of them working independently (Terraza & Sturzenegger, 2010). In Brazil, the number of recyclers is estimated between 500,000 and 1 million (Gutberlet, Baeder, Pontuschka, Felipone & dos Santos, 2013), while in India alone, approximately 13 million people work in resource recovery (Chintan, 2006). Marginalization and stigmatization of these informal recyclers, along with their low income and unhealthy work conditions, perpetuate social and economic exclusion. Increasingly, NGOs, university partnerships, and international boards, recognize the contribution of this sector and are framing methods and strategies for inclusive waste management. According to the International Solid Waste Association, [t] here is a major opportunity for win–win solutions ... if the informal sector can be included more successfully within an integrated and sustainable waste management system (ISWA, 2012: 27).

Although worldwide landfilling is, on average, still the most widespread form of waste disposal, a growing number of cities are moving away from simply depositing waste. Some opt for resource recovery and others regress towards end-of-pipe incineration

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