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Waste Management and Recycling Practices

In recent years, the issue of waste (garbage, trash, etc.) has gained traction in the realms of policy, geography, environmental debate, and cultural politics (Ackerman, 1997; Davies, 2008; Gandy, 1994; MacBride, 2011O'Brien, 2007; Strasser, 2000). Many studies in these fields have addressed the governance of waste—the processes of rulemaking and decision making about waste (Davies, 2008)—as a product of global discourse, policies, and the ways in which they are translated and negotiated at the local level across individuals, communities, governments, and business organisations (Zapata and Hall 2013). Even more recently, new municipal waste prevention and recycling programs have brought the investigation of the waste-society relationship to the forefront. Rapidly evolving recycling schemes demand an increased individual engagement with waste (Corvellec and Hultman 2012), while additional bins for recyclables in private and public spaces exhort waste producers to sort, clean, and classify it before disposing of it (Zapata and Hall 2013). Where recycling programs have been implemented, waste has become the object of additional efforts and attention by waste producers and collectors alike (Gregson 2009; Gregson and Crang 2010; Gregson, Metcalfe, and Crewe 2009).

As a consequence, studies have flourished which integrate assemblage thinking and the Actor-Network Theory (ANT) in order to investigate the role of technology and other non-human actors in the process of social-organization. Gregson and Crang (2010) describe waste has as an actant—a source of action—or a hybrid in the Latourian sense, which "operates its influence through networking with human and non-human others" (Moore, 2012, p. 791). Gille (2010), Henriksson et al. (2010), and Minervini (2013) provide examples of applying ANT in waste governance scholarship, while Gregson (2009) and Acuto (2014) have drawn upon assemblage thinking to discuss municipal recycling and navigating the multi-scalar governance of domestic waste management.

These authors examine the politics of urban waste and recycling across governance scales and practices (e.g., the privatization of the waste public service, the externalization

through public-private partnership, the hybridization with the social economy and informal sector, etc.). However, they focus largely on household and municipal waste (e.g., Cirelli and Florin, 2015; Zapata and Hall, 2013). Little attention is paid in this scholarship to private enterprises' choices regarding the implementation of waste recycling schemes, which such importance play in current neoliberal environmental governance practices (e.g., green consumption, circular economy, etc.) (Brand 2007; Desvaux 2017; Krzywoszynska 2012). Consequently, more research is needed to unfold the multifarious and emerging assemblages of "private" waste management and recycling and their impacts on society.

Thus, this article offers empirical analysis of a case of waste prevention and recycling implemented by a private company in the Anderlecht marketplace in Brussels, Belgium. The case is of interest because it concerns the largest city marketplace and one of the few privately-managed markets in Brussels. Its concentration of retail and catering activities generate a considerable amount of waste products (e.g., plastic packages, carrier bags, cardboard boxes, wooden pallets, etc.), which businesses discard; these materials also temporarily accumulate on-site. Therefore, waste is highly visible in the market and is a major concern for the overall site's management. This article is structured as follows: section 2 describes the theoretical approach and method; section 3 introduces the research context and presents the main questions at stake in the study area; section 4 exposes the empirical analysis of the case study; section 5 presents the findings from a series of interviews; and section 6, finally, concludes calling for more research on the assemblages of "private" waste management and recycling.

Assemblages and the Politics of Waste Recycling

As mentioned in the introduction, scholarship on waste and sustainable consumption has widely referenced ANT and assemblage thinking to examine the co-constitutive relationships among policies, consumers, waste, and technology (e.g., Ekström, 2014). ANT is a useful lens through which view the heterogeneous entities of waste management (actors, norms, regulations, technologies, etc.), turning them from a "matter of fact" into a "matter of concern" (Latour, 2005). Similarly, assemblage thinking acts to tackle multiple projections, to navigate data, and merge dynamic perspectives. As Kamalipour and Peimani (2015) note, assemblage thinking is comparable to a heuristic method, in that it offers a bottom-up ontology that works with

analytical techniques rather than logical reasoning. Hereafter, I refer exclusively to assemblage thinking (rather than ANT), building on Müller (2015) and the assumption the two postures are, at present, perfectly interchangeable (Ekström, 2014).

While ANT draws from Science and Technology Studies, the notion of "assemblages" builds upon the "rhizomatic" reasoning by philosophers Deleuze and Guattari. Building on the latter, and through her "vital materialism," Bennett (2010) describes "assemblages" as "ad hoc groupings of diverse elements" not governed by any central head but rather endowed with a distributed agency (such as the electrical power grid). Most importantly, assemblages indicate unstable processes and emerging phenomena: "thinking with assemblages" (McFarlane and Anderson, 2011) assumes therefore a processual and ontological value. As McFarlane (2011) notes, assemblages can be used either as an idea or as a descriptive lens of orientation. When studying a complex system formation, such as a city or part of it (the waste management), assemblage thinking offers three main advantages (McFarlane 2011a). First, it engages with thick description and, as such, it attunes researchers to the challenge of materiality (or the distribute agency across social and material entities). Second, it highlights the "relations between travelling policies and their localized substantiations" (McFarlane 2011a, p. 207). Third, it helps to tackle objects in-becoming, under transformation and uncertainty (McFarlane 2011a, 2011b; Simone 2011).

According to Müller:

> More than just introducing greater complexity into phenomena to avoid facile generalisations, assemblage-inspired and ANT-inspired research also has a political edge: it questions the naturalisation of hegemonic assemblages and renders them open to political challenge by exposing their contingency (2015, p. 32).

As waste recycling becomes increasingly political and politicized (Gregson, 2009; Gregson et al., 2016; MacBride, 2011), the notion of "assemblage" illustrates the governance of waste as constantly under negotiation, unstable, partially regulated and partially unregulated, coproduced by multiple actors, often with opposite visions, skills, interests, and, most importantly, endowed with uneven decision-making power.

This study questions the assemblages through which waste prevention and collection schemes have been implemented in a single case. Specifically, it retraces the way a private company constructed these schemes by reviewing through which discourses, regulations, actors, artefacts, and impact on everyday waste handling practices. Moreover, it questions the impact of these assemblages on the market users, and the market vendors in particular, to whom the schemes are addressed. Data were collected from primary and secondary sources, including extensive fieldwork carried out over more than a year in the marketplace, accompanied by the person responsible for the company's cleaning and waste management service. Additional data were gathered via official reports and documents and through additional eight semi-structured interviews with market vendors concerned by the waste management on site.

The Research Context

The marketplace of the "Abattoirs d'Anderlecht" is known as the largest and most popular marketplace in Brussels, Belgium (IEB 2012). Located in a dense and multicultural urban neighbourhood (Van Criekingen and Rosenfeld, 2015), it is open from Friday to Sunday, attracts up to 100,000 weekly costumers, and is attended by up to 500 daily stall holders (Wayens and Lambert, 2017). This vibrant market features a variety of stands and trucks, which sell goods including fresh produce, groceries, clothing, and housewares, both new and used. Costumers and merchants come from all around the Brussels metropolitan region, but largely from the poorer inner-city neighbourhoods (Vandermotten, 2014). Most market vendors have migrant backgrounds—largely from North Africa (Morocco)—but also come from East European (Romania) and Sub-Saharan countries. The market takes place underneath and around a monumental 19th century cast iron shed structure, which belongs to the nearby slaughterhouse. The company (Abattoir SA), which holds a long-lease contract for the site and its structures from the local municipality (Anderlecht) manages this 11-ha industrial site.

At present, the rent collected through the marketplace makes up one-third of Abattoir's revenues, with another third coming from the slaughterhouse and meat wholesaler" concessions, and the remaining part from the organisation of events and fairs. Yet, with the steady decline of the slaughterhouse and related wholesale activities, the marketplace has increasingly gained importance within the whole company business. In 2008, the livestock market (formerly

organized under the ancient market hall) closed. Since then, new and partially publicly-funded investments have brought the realization of a new covered market building in 2015, which comprises 17 new butcheries, 25 grocery stores, and 4.000 m^2 of rooftop greenhouses. More recently, additional funds were received to support the general reorganization of the site, including the relocation of existing slaughterhouses into a new mixed-use building, capable of accommodating other food-oriented small and medium enterprises (SMEs) (ORG and Abattoir SA, 2013). Connecting to regional development plans and programs, such as the European Regional Development Funds programme, the Abattoir company leverages "sustainable" and "circular economy" discourses to promote its renovation program.

Nevertheless, and as local neighbourhood associations claim, the renovation process carries some degree of uncertainty regarding future activities held on-site and their direct and indirect impacts on local employment and social structures (Bortolotti et al., 2017). The marketplace is a resource for part of the most socioeconomically precarious population of Brussels, as it supplies inexpensive consumer goods, provides employment for non-skilled workers, and offers a way for immigrants and newcomers to enter the labour market. With activity diversification and the arrival of new economic players, the Abattoir company aims to create new synergies in terms of "energy consumption, waste management, and material exchange" (Kinnaer A. and Sénéchal C., 2015) through a rather techno-managerial approach. Waste prevention and recycling schemes implemented over the last decade on the site provide concrete examples of how the enterprise engages with the "sustainability" discourse. The following section presents a detailed analysis of the assemblages of discourses, actors, and artefacts that underpin the company's waste management system.

From Discourses to Practices

Since 2008, the Abattoir Company has implemented multiple waste-related initiatives. For example, it introduced a *bonus-malus* scheme for the marketplace cleaning service that comprises the separate collection of recyclables (plastic, cardboard, and organic waste). Abattoir created an eight-person waste communication, control, and prevention team and now engages a social economy enterprise for the cleaning service of the public street's sidewalks surrounding the market. The company also supports a non-profit association for the recovery and

redistribution of unsold food products to the social aid sector. Finally, it introduced the interdiction of the distribution of lightweight, single-use, plastic carrier bags. If these many efforts are explained by the aim to prevent litter and control the costs of cleaning services in the area, they also relate to the long-standing complaints about the dirt of the neighbourhood and the nuisances engendered by the slaughterhouse and market activities (such as odours, traffic, etc.) in particular. They also fully belong to the larger company strategy of improving the image of the marketplace, vis-à-vis a different (wealthier) client base, attracting new public and private investments.

Given these facts, it is interesting to investigate how the company cleaning and waste collection schemes translate to everyday waste handling practices (e.g., collection, separation, and recovery), and in what way these practices are held in place and made stable. The following sections present data collected during the fieldworks and interviews with the person in charge of the cleanliness on the market. First, the company engages the market vendors via a "charter for the respect of the environment and cleanliness on the market" (*Charte pour le respect de l'environnement et de la propreté sur le marchés*)[1], associated with a bonus-malus scheme (*Bonus écologique*). The scheme rewards with a reduction on the monthly invoice every three months those merchants who keep their spaces orderly and clean during market hours, and do not leave any refusals on the ground at the end of it. On the contrary, it punishes those who fail to do so with extra costs. The scheme encourages vendors to sort and pile refusals gradually during the market's hours within the space of their stall, limiting the extent of the cleaning operations. Visiting the marketplace, there is the evidence that the measure has generally worked, although it requires an additional effort of surveillance by the company's operators (see figure. 1).

Second, given the availability of space in the backyard of the slaughterhouse, the company established a "recycling point" for the separate collection of recyclable materials (cardboard, plastic, and organic waste). The spot has a weigh station, machine compressor, and three large freight containers—one for organic materials and two for cardboard and plastic fractions, which are accessible to all market vendors. At the end of the market hours, vendors

[1] http://www.abattoir.be/fr/propret

can bring their recyclable materials both by hand and truck (see figure. 1). A single service operator from the company supervises the proper execution of waste sorting and disposal. Two different waste recycling contractors then remove containers on a weekly basis.

Figure 1. Waste recycling related practices in the marketplace (photos by the author)

Cardboard and plastic fractions (which amounted to 754 tons in 2016) are collected for free, since their collection has a net positive income for the Abattoir company who can subsequently sell it (at 50 €/t) to another private enterprise, which (at the time of the study) transported them to Antwerp and then shipped them to China for reprocessing. Organic waste (382 tons in 2016) is collected at a price to the weight (0,09 €/kg) by the Abattoir company, which contracts with a third company for the removal and treatment of this fraction at an anaerobic digestion plant located in South Belgium at a cost of 70 €/t. The selective collection of recyclables allows savings in the treatment cost of residual waste (632 tons in 2016), which is collected by the company's own personnel via sweeping machines and trucks, and then transported by the same operators to the regional incinerator, with the highest price (100€/t of gate fee only).

Being at the front-end of the food distribution chain, food loss and food-related waste account for an important fraction of the overall waste generation at the marketplace (nearly 20%). The selective collection of organic waste highlighted the presence of disadvantaged people who used the marketplace to collect food products thrown away by vendors. To regulate this informal

practice while ensuring that still-edible products reach this population, a food recovery project (CollectMet) began and is currently managed by a non-profit association (AlimentAB). The association organizes groups of volunteers to circulate throughout the market with hand carts, pick up boxes of unsold but still-edible food offered by market vendors, and bring the food back to a storage (and refrigerated) room located within the Abattoir warehouses provided for free by the company (See Figure 2).

Currently, the management of waste in the marketplace relies on a hybrid model of hard and soft infrastructure. On the one hand, the physical infrastructure proper of productive areas (the logistic and storage spaces) and, on the other, the social infrastructure product of multiple and overlapping networks of actors and practices. The recycling point pins down a stable connection between on-site sorting practices and global material industrial reprocessing chains, while the storage room enables volunteers and market vendors to assemble around waste prevention through food recovery and exchange. In turn, the non-profit association triggers "people as infrastructure" (Simone, 2004) creating the networks and opening the conduits for the transfer of goods from a condition of surplus to one of scarcity.

Figure 2. Food waste recovery practices in the marketplace (photos by the author and Facebook)

User Perspectives

To understand the impacts of the assemblages of waste prevention and collection for the people who attend the market, eight vendors participated in interviews during market hours. Interview questions concerned the vendors' general impressions about the evolution of the cleaning service, the impact of the waste collection scheme on their activities, and their participation (or lack thereof) in the food recovery program. All vendors were middle-aged males; seven had Moroccan origins and one was Flemish. Six sold vegetables and two sold clothing products. Seven had worked at the marketplace for several years and were there prior to the introduction of the *bonus-malus* scheme. All vendors rented multiple stalls (up to six).

Findings from the interviews reveal that the separate collection scheme was considered to be "logical" and "positive." Only two vendors mentioned the fact the new waste collection scheme entailed more costs and labour. Yet, all of the vendors generally recognized the scheme as being more "advanced" with respect to other weekly markets they used to attend. In general, vendors dissatisfied with the scarce profits, given the excessive competition among same vendors and the presence of a market clientele interested exclusively in buying the cheapest option possible. Two vendors (again one selling food and the other clothing) suggested that the waste management costs had not increased over the years, as lower sales implied lower waste generation. Surprisingly, for being a low-budget market, it also emerged that rental prices for market stalls were the highest in Brussels (something explained, once again, by the fact the other city markets are held in public city squares).

Six of the eight vendors used the recycling point. One used it only for cardboard and plastic, since he used to feed his animals with the market surplus; another used to return refusal to the Brussels wholesale centre, which offers a similar takeback service for refusals (they are collected separately among main recyclables fractions). With respect to the functioning of the recycling point, only one complained about the long waiting times to accede it on Sunday afternoon, at the market closing time. Another vendor highlighted the fact the recycling point facilitated avoiding charging the truck with refusals at the end of the market—a benefit in terms of hygiene and saving in trucks' load space. One merchant expressed concern about the ban of the use of single-use light plastic bags in the market. The alternative, offering heavier and more resistant plastic bags at a price (0,10 €) clashed with clientele interested in saving as much as

possible. Nevertheless, another merchant acknowledged the fact that less plastic trash was visible on the ground.

Regarding the food recovery program, four grocers participated occasionally in the initiative. One in particular stated that he had very little expenses from waste because the non-profit association took most of his unsold merchandise. Another grocer, however, was openly against the food recovery and redistribution program, believing the presence of a free delivery point in the same marketplace was detrimental to his business. Yet, the volunteers stated that they collect only up to one ton of unsold food on any Sunday, with five or six large vendors. The volunteers keep part of the salvaged food and redistribute the other part on the following day to some 50-80 people who can request it on site. What remains is used by the same association to organise initiatives (e.g., cooking workshops) or it is given to other associations for being transformed into free or low-price meals in other structures.

Conclusion

The article highlighted the politics of waste prevention and recycling schemes implemented by a private company and its impacts on participants and users. The underlying argument has been that, since private business agendas have fully embraced the shift towards waste prevention and recycling, there is a need to understand better the implications of these choices on society. To do so, this article builds upon assemblage thinking and the empirical analysis of the case in the Anderlecht marketplace, located in Brussels. The case is of interest for research, given the existence of waste prevention and recycling schemes—as well as the twofold condition of a publicly-attended but privately-managed urban site under transformation, which enables one to measure trade-offs among promoters and users of the waste management service. Here, as the private company fully embraces the “sustainable” transition for its renovation, similarly, it has already done since a decade for improvement of the cleaning and waste collection service. The latter, therefore, can provide a circumscribed, yet comprehensive, glimpse into how the company addresses the “sustainable” transition and its impact on the market’s users.

As discussed in the literature and as demonstrated by the present case, prevention and recycling schemes entail a more distribute management of waste in which waste producers,

collectors, and providers of the treatment service, align in shared interests and responsibilities. Nevertheless, while waste prevention and separate collection practices in the case study are promoted under the "good for the environment" discourse, their reproduction and stabilisation are mainly enacted trough financial and controlling strategies. Nonetheless, as shown through the interviews, the company's schemes are well accepted by participants, who acknowledge that they are doing their part for the environment, this term being taken to mean both the "local" marketplace and "global" environment.

Conversely, when retracing the assemblages that underpin the separate collection of recyclables on site, it emerges clearly how waste recycling contractors hold a privileged position within the waste management system. Confronted with the high costs associated with the treatment of residual waste, the Abattoir company contracts waste recycling companies and implements a separate waste collection scheme that must remain economically viable for both the company and its clients (the vendors). The company shows genuine inventiveness in setting the scheme, leveraging existing and low-cost technical and human resources (such as the logistic, storage spaces, and the use of the non-profit association). Yet, the market vendors—despite their individual contributions are essential to the successful functioning of the scheme—remain largely marginalised and hold a precarious position within the overall picture. In general, lacking both capacities and representative power, the case of implementing waste prevention and collection schemes shows how market users can only accept conditions set at a higher level (e.g., the company, waste policy, and market).

Further, price increases in the cleaning and waste-collection service area might accompany processes substituting present market vendors and clientele with others who are better equipped to answer ever-increasing environmental standards and economic logics. While the "good for the environment" discourse contributes slightly toward the prevention of wasting few tons of unsold food products which are handled by a non-profit organisation, it mostly works to sustain and build consensus (Swyngedouw, 2009) around the recycling practices for the largest fraction of waste, for which the profit goes to privatised waste collection and treatment firms. Only the interdiction of single-use lightweight plastic bags seems to redistribute more equally the burden of waste prevention among market vendors, costumers (who will have to

resort to alternative solutions). In conclusion, more research is necessary on the assemblages of private waste management and recycling in order to unravel orders of discourses and practices, enabling a better understanding of their impacts on society.

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Figure 1. Waste recycling related practices in the marketplace (photos by the author)

209x104mm (300 x 300 DPI)

Figure 2. Food waste recovery practices in the marketplace (photos by the author and Facebook)

209x104mm (300 x 300 DPI)