In search of urban commons:
Disputed solid waste management in emerging countries

Jérémie Cavé

Résumé

Introduction

1. Conflicts over waste flows in Vitória
   1. Several solid waste management mechanisms
   2. Appropriation conflicts in Vitória

2. A political economy of urban solid waste management
   1. Considering solid waste as a common good
   2. The Urban Solid Waste Deposit as Common Pool Resources
      Appropriation conflicts are a symptom of resource overuse
      Waste as stock and flows

3. CPR governance through usage rights attribution
   1. A groundbreaking regulation process in Vitória
   2. Assignment of usage rights as a way to regulate CPR

Conclusion
   A semi-decentralised service through the assignment of usage rights?
   The stock exchange price fluctuations or the global factor upsurge

References
Résumé

Nous proposons ici de nous intéresser à la question des déchets urbains dans les pays du Sud, sur la base de recherches empiriques menées à Vitória (Brésil). Dans cette agglomération, plusieurs types d’acteurs gèrent ou récupèrent les détritus : le service municipal, des prestataires privés, les récupérateurs et marchands du secteur informel, etc. Si leurs divers dispositifs coexistaient jusque-là, la situation tend à devenir conflictuelle. Du fait de l’introduction d’un programme de collecte sélective, la récupération des matériaux « valorisables » contenus dans le gisement d’ordures urbaines donne lieu à des conflits d’appropriation.

Afin de sortir des oppositions binaires stériles, qui renvoient in fine à une opposition entre bien privé (le déchet-ressource) et ‘mal’ public (le déchet-ordure), il se révèle fécond de raisonner en termes de bien public impur et, plus précisément, de bassin commun de ressources, composé à la fois de stock et de flux.

La notion de communs pourrait ainsi permettre de réhabiliter le « droit à la ville » en nous amenant à ré-imaginer les politiques urbaines au-delà de la dichotomie Etat/Marché qui se révèle, dans de nombreux pays aujourd’hui, un axe structurel de dynamiques d’expropriation. La mobilisation de droits d’usage pourrait contribuer à orchestrer la nécessaire transition d’une économie linéaire vers une économie circulaire.
Introduction

We propose to address here the issue of urban solid waste management (SWM) in emerging countries under the ‘commons’ lens. Municipal trash is barely associated to common goods as it is an urban phenomena and it is furthermore usually perceived as a harmful substance.

Emerging countries, however, provide interesting contexts in which to study issues of solid waste management and to explore the implications of the “bipolar” nature of waste (O’Brien, 1999, p.271), sometimes “garbage”, sometimes “resource” (Bertolini 1992). Indeed this dual nature is particularly true in highly unequal societies, where what the rich throw away as garbage may have value for the poor.

In addition, in many urban contexts in emerging countries today, solid waste management policies are being reformulated: dumping sites are banned, sanitary landfills are imposed, separate collections (i.e. door-to-door collection of recyclable waste) and recycling schemes are starting to be implemented by public authorities in order to avoid simply burying all urban residues. This “modernisation” process has raised the issue of the banning of informal solid waste recovery. The various kinds of eviction processes or threats aimed at informal wastepickers in Southern countries in general have been extensively documented (cf. among others: Coing & Montaño 1985; Furedy 1992; Medina 1999; Nas & Jaffe 2004; Medina 2005; Scheinberg & Anschütz 2006; Wilson, Velis & Cheeseman 2006; Chaturvedi 2007; Durand 2010; Fernández, 2010; Scheinberg, Wilson & Rodic 2010; Scheinberg, Simpson, Gupt et al. 2010).

However, wastepickers are only one part of a larger picture of non-governmental recovery agents and systems at work today in cities in emerging countries, where a diversity of informal and formal private recovery approaches now treat urban solid waste as a valuable resource. As a result, the so-called “modernisation” process brings clashes between the actors: some experts invoke “contested” waste (Fahmi & Sutton, 2010), others talk of “competition” (Scheinberg, Simpson, Gupt et al., 2010, p. 8) and others refer to “appropriation conflicts” (Cavé 2014). Such conflicts over MSW arise, pitting a variety of actors against each other: municipal authorities, private operators, wastepickers, residents’ associations, industrial companies, etc. Indeed, SWM is not any longer only concerned with neutralizing a nuisance, but also, increasingly, with recovering a valuable resource. To put it into economic terms, the municipal SWM service is no longer engaged only with dealing with a public good (or ‘public evil’: garbage), but with managing private goods (resources) as well.

As a matter of fact, in the experts’ literature about SWM, the type of economic service that municipal solid waste management (MSWM) constitutes is not clear: Is it a public service? Or is it a market economy activity? Solid waste management would both be « a demand-driven business, a policy-driven activity and a public good » (UN-HABITAT 2010, 164). The problem is that SWM is composed of many different tasks, which can be unbundled. Street sweeping may be considered as a public good (Cointreau-Levine 1994). Secondary collection for evacuation may be perceived as a public good as well (Batley 1996) as it contributes to general urban cleanliness as well. However, the door-to-door collection’s status is not as obvious: it still can

---

1 Wastepickers are destitute people who live from picking over rubbish. The things they find are used either for personal consumption (food, clothes, furniture) or for resale (materials).
be assimilated to a public good, yet it is one of the services « most easily converted to a private good, being divisible among consumers for services and payments » (Baud et Post 2003) and is actually most often seen as a toll-good (not rival but exclusive).

**Figure 1: Public Vs Private Goods in Solid Waste Management**

![Diagram showing public vs private goods in solid waste management](image)

The figure above is taken from a 1994 World Bank report which aimed at targeting the potential private sector participation areas in the field of SWM in developing countries. As figure 1 shows, classifying the economic nature of solid waste management is not an easy task, as it can be decomposed into several activities which have different characteristics. Most of them are not rival (i.e. characterized by joint consumption) and only the sale of recyclables can be considered as a pure private good.

The question gets even thornier with the separate collections service (i.e. door-to-door collection of recyclables), as it is not justified by a strict urban cleanliness imperative. Indeed, compared to refuse collection and disposal, separate collection appears as a kind of bonus.
Nonetheless, it is implemented most of the time in a systematic way, like undifferentiated waste collection. The introduction of separate collections schemes hence reinforces the blurred economic nature of the SWM municipal service.

In order to try and see clear into the issue of urban solid waste management in emerging countries, we argue that common pool resources may be a useful analytical tool. Based on an in-depth empirical study conducted in Brazil, in the context of the author’s PhD research (Cavé 2015), we will first present the situation in Vitória and describe the appropriation conflicts. Empirical material was mainly gathered from over 70 qualitative semi-structured interviews. All groups of actors dealing with solid waste, not only municipal service agents, were sampled. We will then mobilize the flow/stock dialectic embedded in the CPR concept in order to reveal the internal dynamics of an urban solid waste deposit. Finally, we will rely on Vitória’s regulation experience to suggest the relevance of a usage right attribution process as a way of governing urban common pool resources.

1. Conflicts over Waste Flows in Vitória

Vitória is situated on the South-Eastern coast of Brazil, in the state of Espírito Santo. The city lies at the heart of a large urban conurbation (1.3 million dwellers) composed of three other cities. It is Latin America’s biggest natural harbour and the main gateway for the worldwide export of ores from Minas Gerais.

1. Several solid waste management mechanisms

In Vitória, various devices unfold around the garbage heap:

1. The Municipal government has delegated the MSWM to a Brazilian private company, Vital. Vital collects the garbage throughout the city and transports it up to a private sanitary landfill, operated by another private firm, named Marca. The private operator is paid by the Municipality according to the collected weight. This municipal service is partially financed through a tax, paid by households.

2. The *catadores* (wastepickers) pick up dry items freely from domestic garbage and sell them to local merchants. These merchants also get items directly from inhabitants who come and sell them. The merchants then sell their stock to a few traders for eventual industrial recycling, nationwide.

3. Some catadores have formed associations. The Vitória municipal authorities recognize these entities and give them the dry waste they have collected selectively throughout the city for free. They then sell the dry waste to specialized traders, at a better price than what independent catadores get from small merchants.

The whole systemic picture of SW flows in Vitória is summed up below (fig.1).

Figure 2: Vitória’s Solid Waste Flows Systemic Diagram
The above figure shows the three main solid wastes’ flows areas in Vitória. The municipal service (blue) includes collection and landfilling. The informal recovery sector (green) includes catadores, both independent and collectively organized. The recovery and recycling business area (yellow) comprises local merchants, regional traders and national industries. Some of them have collectively joined a network called Ecociência.

Thus, three areas of MSWM appear: one is driven by a tax (the municipal service); another is a proper business sector, where materials are bought and sold; in the middle, lies a free access to waste area, occupied by catadores. These three fields coexist throughout the agglomeration and maintain mutual exchanges; none is completely autonomous from the others. The most coveted waste items correspond to the dry materials: metals, papers, cardboards and plastics.

2. Appropriation conflicts in Vitória

In Vitória, the introduction of separate collection within the municipal service reveals the existence of different kinds of interactions around the solid waste heap and, ultimately, the absence of shared rules. Consequently, a “disputed management” (Dorier-Appril & Meynet 2005) takes place and appropriation conflicts appear.

Firstly, as municipal operators are paid according to the quantity of SW collected, they start considering garbage as a resource and consequently try to minimize any diversion. Such a
behavior brings them in contradiction with the catadores, who try to catch flows of garbage in order to recover it through recycling.

Secondly, the catadores now disturb the municipal separate collection service. As long as no recovery was integrated into the municipal service, the informal recovery assured by catadores was ignored, (i.e. implicitly tolerated insofar as it actually lightened the municipality’s burden). However, as the public authorities implement a costly separate collection scheme, the catadores’ prior “creaming-off” of the SW flow becomes problematic.

Thirdly, the traders are becoming catadores organizations’ rivals. Indeed, many commercial establishments used to give their dry waste to catadores associations in name of charity. However, since 2006, any commercial entity must have a SW management plan, which often implies paying an operator for appropriate disposal. In order to compensate this new cost, commercial establishments tend to quit giving their recyclable waste for free and start selling it to private traders.

As these examples show, the sector’s evolution generates several appropriation conflicts between mechanisms which work upon different principles: tax, gift or payment. We argue that such appropriation conflicts arise because of the dual character of a waste product:

i) first, the particular status of waste: by definition something thrown away, waste is an object that no longer belongs to anyone. Waste is what has been abandoned, i.e. res derelicta, things over which their former owners have renounced their property rights. This is why appropriation conflicts happen: it is a situation of resource overuse in a sector where property rights are not clearly defined;

ii) second, however, the nature of waste is by no means intrinsic. As S. Lupton puts it: “the status of solid waste fluctuates: a commodity becomes waste if it is abandoned, and becomes a private commodity again if it is re-appropriated” (Lupton, 2011). Legally, an object always has a status, yet that status is constantly requalified, as it largely depends on existing recovery mechanisms. A specific plastic package may be seen as a useless residue until there is a shortage, at which point it is re-qualified as a commodity. As M. O’Brien puts it: “this is why what is waste today will not be waste tomorrow and why what was, common-sensically, waste yesterday is now incorporated as an economic ‘sector’” (O’Brien 1999, 278).

Municipal authorities have the “responsibility” of dealing with waste; they do not own the waste.
2. A Political Economy of Urban Solid Waste Management

Precisely because of this fluctuating status, we suggest it is time to stop treating waste as an object and SWM issues in terms of the garbage/resource dichotomy, which ultimately implies a public/private good dialectic, and instead start considering urban solid waste holistically as a “deposit” (analogous to a natural gas or coal deposit).

What, then, would be the (economic) characteristics of the urban solid waste deposit?

1. Considering solid waste as a common good
Our empirical analysis of spatial and economic dynamics (see Cavé 2014) demonstrates that urban solid waste has the characteristics of a common good:

- **From an economic point of view**, the diversion of recoverable solid waste constitutes a coveted objective for several actors. As an extensive comparative study has clearly shown (Scheinberg, Simpson & Gupt 2010), the potential economic revenues from the trading of solid waste items are substantial. To this extent, waste is a rival good.

- **From a spatial perspective**, the most lucrative items are gradually extracted (‘creamed-off’) from the SW deposit through several stages of upstream interception. The fact that this urban service is provided on the streets (and not through an underground network, like wastewater for instance) makes it possible and relatively easy for non-governmental actors to capture part of the flow. In other words, it is in practice impossible to exclude anyone from its appropriation.

Being both rival and non-excludable, the urban solid waste deposit in Vitória de facto appears as a common good.

2. The Urban Solid Waste Deposit as Common Pool Resources
Our further contention is that Vitória’s deposit of urban solid waste should be regarded more precisely as common pool resources.

**Appropriation conflicts are a symptom of resource overuse**

The concept of common pool resources (CPR) (Ostrom 1990) is particularly useful in the analysis of the problems of resource overuse. Its main analytical input lies in the distinction between the resource as stock and the resource as flow. According to E. Ostrom, any resource system is composed of these two interdependent elements, flows and stocks; the resource flow corresponds to the unit withdrawal from the resource stock.

Such a distinction converges with our characterisation of the SW deposit: we have observed both eviction effects (informal agents are banned by the “modernisation” process) and resource overuse problems (of which appropriation conflicts are the symptom). We may therefore be able to use the CPR approach to tackle waste appropriation conflicts.

According to E. Ostrom, “appropriators [of common pool resources] are faced with some problems that are similar to those of appropriating private goods [that is, rivalry] and other problems that are similar to those of providing public goods [that is, non-excludability]” (Ostrom 1990, 47). According to her, such problems are of two main kinds. The first is rent
dissipation. It refers, for instance, to the (economic) risk involved when separate door-to-door collection is implemented and the deposit is at the same time significantly creamed-off upstream. This problem can, in principle, be solved through the “way of attributing a fixed, time-independent quantity of resource units [to the various appropriators, so as] to reduce uncertainty and conflict over the assignment of rights” (Ostrom 1990b, 64). The second problem consists in the attribution of spatial or temporal access to the resource, as reflected in the interception dynamics observed in Vitória and Coimbatore. According to E. Ostrom, these problems arise “because spatial and temporal distributions of common resource units frequently are heterogeneous and uncertain” (Ostrom 1990, 65).

**Waste as stock and flows**

There have been attempts by a few scholars to conceptualize solid waste as commons (Bose and Blore 1993; Ruet 2002; Chaturvedi and Gidwani 2010; Lane 2011). Nevertheless, such analyses have focused exclusively on the “cream” of the deposit, the most sought-after component, that is: dry recyclable items.

We contend that it is analytically more fruitful to treat the entire deposit of urban solid waste as CPR. By doing so, a distinction can be made between waste flows and stocks. “Flows” refer to the resource units that circulate (because of their value), whereas “stock” refers to the units that are not extracted from the resource (because they are regarded as valueless).

One portion of the urban solid waste deposit is quickly recovered or purchased and never actually ends up in a landfill. This part that is sufficiently valuable not to be discarded can be equated with flows. The rest of the deposit is permanently discarded and abandoned, of interest only to the municipal authorities. That fraction of the deposit, of zero or negative value, corresponds to a stock. There is no spontaneous incentive for anyone to get involved in its circulation.

Mixed together, flows and stock constitute the solid waste deposit. This contiguity generates cross-contamination between the individual properties of the constitutive elements of the deposit, generating trash. For instance, a sheet of white paper brought into contact with a rotten tomato will soon become wet and stained, unusable for all intents and purposes. One could have been composted and the other recycled, but through mixing, the tomato and the paper become merely garbage. It is therefore primarily the act of mixing that turns materials that might have been valuable flow into valueless stock.

Recognising this flow-stock structure in the SW deposit enables us to penetrate further into the internal dynamics of this common good.

### 3. CPR Governance through Usage Rights Attribution

Conceiving the Southern urban solid waste deposit as a CPR implies an inversion in the internal system dynamics. In Ostrom’s CPRs, the stock is necessary to the flow’s regeneration. In the solid waste case, it is the contrary: the flow goes along with a stock that is potentially harmful. This stock therefore must not grow, yet no-one wants to appropriate it. In other word, danger does not lie in the stock’s exhaustion, but rather in its growth and uncontrolled dissemination. Hence, the risk that the non-governmental appropriators create is that, by
withdrawing the most profitable deposit’s fraction, they tip the municipal service over and, consequently, threaten any sanitary disposal.

1. A Groundbreaking Regulation Process in Vitória

In the agglomeration of Vitória, since 2005, all the organized solid waste management actors engaged in a sectorial governance process in order to overcome the disputed management situation and create a legal framework aimed at increasing solid waste valorization. Such an initiative is, to the day, unique in whole Brazil.

As appropriation conflicts locally surged, several actors gathered to create conditions for a multi-stakeholders solid waste management at the metropolitan scale. In 2006, three institutional entities were created. The COGERES is a legislative and regulatory arena, composed of 35 public institutions and 35 private bodies. The PCMR is a technical platform defined as both a public policy and business promotion initiative aimed at maximizing solid waste valorization. Last, INCUBALIX is a recycling companies’ incubator hosted on the landfill site.

Beside these three organizational creations, the process led other actors to organize. Several business and recycling firms joined a network called Ecociência in order to get a voice and claim ownership over the non-toxic commercial and industrial residues. In the meantime, the seven catadores organization of the agglomeration got together with the idea of creating a common resale unit.

A first achievement of this regulating process was the adoption, in 2009, of a solid waste management law. This legislative step was taken one year before the adoption of the federal legislation. The text, which remains quite general, manages to conciliate all views, qualifying garbage as “an economic good, generator of work and revenues”. In other word, it satisfies both Ecociência’s claim of a right to business and the catadores’ claim of socio-economic integration. Indeed, the major conflict that this platform is helping to address is the one that opposes these two groups on the issue of separate collection and recovery circuits.

2. Assignment of Usage Rights as a way to regulate CPR

Given that the problems faced in Vitória are due both to a degree of “uncertainty” and “heterogeneity” in the distribution of resource units, the double problem of rent dissipation and access to the resource may be addressed by mobilising usage rights. Usage rights have recently been theorised within the framework of Institutional Resource Regimes (IRR), which adds the understanding of public policies to Ostrom’s analysis of the regulation of property rights (Gerber, Knoepfel, Nahrath & Varone, 2009). In their effort to conceptualise institutional resource regimes, the authors provide a definition of usage rights as an analytical and operational tool. Usage rights are realised in the privileged access to a flow of resource units. Unlike property rights, usage rights determine “who might have what use of which quantity of the resource, in the form of which goods and services derived from it” (Gerber, Knoepfel, Nahrath & Varone, 2009, 7). Usage rights may derive from public policies that assign such rights to beneficiaries who are not formally owners. They thus refer to resource unit management and withdrawal rules that do not grant absolute freedom in the use of the resource.
Emanating from a combination of public and private law, usage rights seem an appropriate prism through which to tackle CPR. Taking into account the multi-segmented nature of the service and the economic value of part of the deposit, which make interceptions unavoidable, the assignment of targeted usage rights could offer an innovative way to solve solid waste appropriation conflicts. This assignment would be officially guaranteed: “a usage right is considered as such if some institutions protect its holder from other users potentially interested in the same flow of benefits” (Gerber, Knoepfel, Nahrath & Varone, 2009, 5).

The main difference between attributing usage rights rather than property rights is that it makes the appropriators accountable, towards a regulator, of the whole flow’s traceability. Indeed, given that exclusion from the benefit of this impure public good is impossible, it is useless to forbid any flow diversions. Nevertheless, it does matter to acknowledge and regulate these flows, in order to guarantee the control of the stock. As a matter of fact, the informal recovery circuits do generate various kinds of refuse (solid, liquid, gaseous) that are today disseminated in the environment out of any supervision. To that respect, considering the SW deposit as CPR has enabled us to reach a unificating principle: the scientific disposal of refuse. Mobilizing use rights we are not able to make such a principle operational. Non-governmental solid waste diversions could be accepted – and even stimulated – on the condition that every valorisation’s refuse should be strictly channelled towards the secured landfilling facilities.

Conclusion

A semi-decentralised service through the assignment of usage rights?

‘Waste’ in the strict sense of the term (garbage) is the core of public SWM service. However, this should not prompt the authorities to exclude other players from its use; rather it should entail the obligation on those players to process all refuse (gas, liquid and solid) appropriately.

The inclusion of both stock (for minimisation) and flows (for maximisation) within the analytical framework of CPR, suggests the idea of a semi-decentralised SWM system. In such a system, non-governmental recycling initiatives would not be eradicated in favour of a monopolistic and centralised service focused on landfill solutions. Recovery agents would be incorporated as local players able to efficiently capture at source as much waste as possible. However, they would be included provided that they would channel their own waste residues to the centralised treatment facilities in order to cope with environmental and sanitary externalities. Hence, stock management would be centralised, and flow management decentralised.

The notion of usage rights, applied spatially through the allocation of collection zones to the different actors, makes technical integration possible: waste collectors would be authorised to take part of the deposit, provided that the residues from their recycling processes are channelled to outlets approved by the municipal authorities. This would constitute genuine “integrated solid waste management”.

11 / 14
Given their responsibilities, urban public authorities could, instead of claiming a monopoly over the entire solid waste deposit, assign usage rights to different actors, public and private, formal and informal. This would give rise to a semi-decentralised service, that may be more adequate to face the today’s ecological and financial urban challenges.

**The Stock Exchange Price Fluctuations or the Global Factor Upsurge**

As for any common good, the urban solid waste deposit in Southern cities could be managed by the local appropriators in a Common Pool Resources scheme. However, the management of this peculiar resource is also determined by broader factors.

Appropriation conflicts arise, beyond simplistic dichotomies, because the recovery sector, while becoming strategic, is being invaded by industrial actors and forces. Certain components of urban SW do have an increasing economic value that is now getting obvious not only to poor citizens.

Indeed, far from being a local marginal phenomenon, solid waste recovery activities are each time more embedded in the globalized industrial economy. As raw materials are getting more expensive worldwide, urban waste is explicitly becoming a major ‘deposit’ of secondary raw materials. Various huge industrial groups are beginning to target domestic recyclable waste as an alternative for raw materials. Their SWM approach is not about delivering a service, but rather to organize “urban mining”. Therefore, the current trend that consists today in excluding informal recovery agents from the solid waste management field, in name of “modernisation” and human dignity, appears as a mere dispossession in the non-regulated shifting process from a linear economy to a (more) circular one.

**REFERENCES**


