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# Waste, Social Order, and Physical Disorder in Small-Town India

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**ABSTRACT** *India's waste is growing fast; so is its research, and so is the informal economy in which it is embedded. Here research on a small-town waste economy (WE) is situated in the literature on urban informal waste, making three contributions. First, an analytical grid is placed over this small-town formal-informal waste economy in terms of its circuits of capital in the generation of waste. These comprise factory production, physical and economic distribution, consumption, the production of labour and the reproduction of society. Second, field evidence for this waste economy is used to interrogate the three prevailing approaches to theorising informality, revealing how social and economic segmentation can simultaneously drive all three theorised relationships in a complementary fashion. Third, the municipal government's fragmented architecture and informal bureaucratic behaviour reveal not only severely compromised management capacities but also the local state's paradoxical dependence on, and distance from, the informal waste economy.*

## 1. Introduction: urban informality and waste

India has the largest informal economy in the world, providing the main driver of growth and jobs, and contributing about two thirds of GDP and over 90 per cent of all employment and livelihoods (National Commission on Enterprises in the Unorganised Sector [NCEUS], 2007; Sinha & Adams, 2007).<sup>1</sup> In India, while technically termed ‘unorganised’, it is far from disorganised.<sup>2</sup> Theorised variously in ways critically reviewed by Banks, Lombard, and Mitlin (2019), and surviving criticism of the crudity of the formal-informal binary (Meagher, 2010; Raj & Sen, 2016; Roy, 2009; Sundaresan, 2013), the concept of informality is widely understood and used in India for two principal reasons. First ‘informality’ draws attention to the roles of social authority in creating, legitimating, and maintaining order in a capitalist economy where both before and soon after Independence it was established that State regulative laws were to be enforced in a highly exclusive and discretionary manner (Basile, 2010; Das Gupta, 2016; Dietrich Wielenga, 2019). Second, the concept of informality draws attention to the regulative limits of the formal state bureaucracy. Recognised as ‘blurred’ by the anthropologist Akhil Gupta (1995) and as ‘porous’ by the architect-planner Champaka Rajagopal (2015), the formal-informal frontier between state and economy has been reconceived by Roy (2009) as a class-specific feature of the structure of state power and by Prakash (2015) as a political space. The informal politics of rent-giving and seeking that pervades this ‘hybrid state’ (Prakash, 2017), that traverses this space and polices its boundaries, needs research. It is here that this paper is sited: using a small town of India to broaden our understanding of urban informality.

Our case material is waste. Waste is the material by-product of human activity for which an economic use has not yet been found. It has zero or negative use-value (Cave, 2013). The dissipative process of ‘wasting’ (Gidwani, 2013; O’Brien, 1999) is a moment of variable duration in the natural cycles of matter and energy, of which the commodity form is a relatively brief manifestation. Some waste gains economic value through sale for re-use or recycling – what Marx (1971) evoked as the

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‘reconversion of the excretions of production’. Other waste is dumped but provides livelihoods publicly funded from local tax revenue. For these reasons we term the processes of waste, a waste economy (WE). Society cannot reproduce and develop without managing this public record of its material, metabolic habits (Guibrunet & Broto, 2016; Thompson, 1979/2017). So waste is also central to the reproduction of the social order and to its dynamic expression in urban space (Gill, 2009; Whitson, 2011).

Waste is also one of the fastest growing physical parts of the Indian economy. India generates about 2.6m tonnes of solid waste a day, roughly a third each from agriculture, industry, and consumption (Centre for Environmental Education [CEE], 2014). India’s ‘peak waste’, the future point beyond which resource efficiency will drive a decline in absolute waste generation, is predicted to take a century to reach (Hoorweg, Bhada-Tata, & Kennedy, 2013). Meanwhile the contribution of waste to the material, metabolic balances of the economy will do nothing but rise (Zhu, Asnani, Zurbrugg, Anapolsky, & Mani, 2007).<sup>3</sup>

Alongside the unprecedented physical proliferation of waste, heterogeneous sub-fields in the study of waste are rapidly expanding, drawn from the disciplines of geography and planning, engineering and management, sociology and political ecology, gender studies and research-activism. Elsewhere we evaluate and illustrate over 80 research outputs on waste for their insights into the wider urban informal economy and the informalisation of policy processes (Harriss-White, 2018).

Seven key themes stand out from this review. First, informality presents a paradox: the widely accepted formal-informal binary is useful because of the scale and growth of non-state-regulated activity as a significant ‘share of the existing and future urban fabric’ (Guibrunet & Broto, 2016); but it is inadequate to do justice to the manifold sets of unequal and coercive relations in informal waste. It follows that formal and informal activities have to be characterised in their local specificity. Second, case studies are essential to compensate for absent or crudely estimated and classified official data. Even though they may not permit quantitative extrapolation to higher scales, they do permit critical statements about relations and processes (Flyvbjerg, 2006). Third, existing literature on informal waste is fragmented. It focusses distinctively on case studies in big cities, and on particular spaces within cities (streets, bazaars, slums, neighbourhoods, and value chains). Much research selects a subset of the types of waste (e-waste, plastic, types of scrap, faeces) and analyses it through varied kinds of firm, household, technologies, and social organisation; and further by type of worker – notably the waste-picker, disaggregated by gender. It is rarely able to look at the waste economy as a whole. Fourth, existing research reveals the significance of the informal WE for recycling – first, as part of the enabling environmental conditions for social reproduction and second, providing cheap raw materials for re-processing. Fifth, the ubiquity and contradictory roles of self-employment – as disguised wage labour and as micro-capital – require specific analyses (and thus case-studies) to distinguish them. Sixth, the harsh coalescence in the informal WE of the stigma associated with waste with caste and gender subordination is experienced as a structure of violence by those of lowest ascribed status. And seventh, the physical materiality of the political economy, in which matter and energy flow between rural-urban, urban-urban, and urban-rural sites, and are stocked and dissipated in urban areas, is always mediated through social relations. Those of the informal WE are found essential to the evaluation of urban (un)sustainability.

This paper uses empirical evidence on waste to explore three dimensions of urban informality. First, the analytical site and scale at which the urban waste economy is researched is not (part of) a city but one of India’s 7500 towns. These are under-studied, no-where more so than with respect to waste (Harriss-White, 2015; Denis, Mukhopadhyay, & Zerah, 2012). Instead of taking a subset of metro-waste, we can map waste in its entirety in both the formal and the informal economy, by organising it conceptually through the circuits of capital and integrating the production of waste with production from waste (Suryaprakash, 2014).<sup>4</sup> Laying an analytical boundary around the built environment of the town, sub-circuits of capital are scoped in which waste is generated in industrial production, distribution, consumption, in the production of labour and the reproduction of society. Second, segmentation is argued to enable the complementary co-existence in time and space of three

kinds of economic informality usually theorised as contextually embedded and mutually exclusive (Banks et al., 2019; Chen, 2012). Third, the bureaucratic architecture and governance practices through which public-sector waste management is itself informalised are analysed with concern for their consequences for the informal waste economy (IWE) and the state.

The paper is structured accordingly. The town, its circuits of waste production, and our approach to researching its formal and informal waste businesses, workers and regulators are introduced in [Section 2](#). Thereafter, using the method of analytical narrative, we interrogate evidence from this research to comment on the way urban economic informality has been theorised ([Section 3](#)). [Section 4](#) scopes informalised practices in the local state. In the concluding section, we suggest ways this study of small-town waste contributes to knowledge of the urban informal economy and the informalisation of the local state.

## 2. Researching a small South Indian town and its circuits of waste production

Our field-research probed the physical processes and social relations of waste in a South Indian town whose 2011 population was officially 70,000.<sup>5</sup> It generates about 35 tonnes of waste per day (Municipal Data 2014–2015). Sited close to new transport arteries, it is rapidly expanding outwards and upwards from an early twentieth century core of wholesale and retail markets, administration, public and private education, health and newer services for entertainment. Socially cosmopolitan, packed with local and long-distance in-migrants from professional and labouring classes and residentially differentiated, its congested central area spreads to a periphery of houses and apartment blocks in compounds, interspersed with lines of small single storey terraces for poorer workers where new build is engulfing local villages and residential colonies for *Dalits* – ex-untouchables and other backward and very low castes.<sup>6</sup> Whatever its tenure, all spare land everywhere is littered with waste.

For analytical and practical purposes in an exploratory field project, a conceptual template has to be imposed on waste matter and waste-work whose regulative ordering was unknown beforehand. [Table 1](#) maps the process of ordering the waste economy through circuits of capital, case studies, businesses, and formal and informal labour relations.

The sub-circuit of production generates waste in clothing accessories, rice mill, and industrial alcohol industries; that of distribution involves waste in transport (the case of Indian Railways) and in the marketplace (the case of wholesale vegetables). Consumption waste occupies not only the municipal sanitation workforce but also the informal labour of a private subcontracted cleaning company, plus a hierarchy of partially regulated private waste recyclers and informal workers. Waste in the production of labour is focussed on those disposing of human (and animal) wastes (Human Rights Watch, 2014). Waste in the sphere of social reproduction was scoped through the provision of public and private health services (essential to social renewal) and the delivery of alcohol (without which the waste workforce would not work). We surveyed livelihoods, enterprises, and social and political agency provoked by waste – including responses to social discrimination (Harriss-White & Rodrigo, 2016; Harriss-White, 2017a, 2017b).

Interviews with more than 80 waste workers (mostly individually, while a few spoke in small groups) took place in January–February 2015. While the sectors of the Indian economy are commonly spatially concentrated (Stanley, 2015), the waste economy (WE) is not a site. The waste-generating sub-circuits of capital form a set of dispersed spaces, concentrated nodes, physical flows, and networks pervading the town and transgressing its built, political-administrative, and social boundaries. Since much of the WE is unregistered and its totality is unknown to any single individual, qualitative exploratory fieldwork ventured outwards from the formal municipal labour force into the informal economy of waste using a snowball sampling method, early-morning traverses of the town and observation. For each of the many livelihood niches discovered, where they were not local monopolies (for example the apex scrapper; the gunny and cement bag repair depot) our research resources halted the snowball with sufficient cases to provide corroboration of evidence and experience. Waste-workers are among the poorest and most stigmatised in India. So 10 agents of change – lawyers, activists in movements and NGOs, caste and business association



Table 1. (*Continued*)

Small Town Waste Economy: Circuits of Production of Waste					
3. Waste Produced in Physical Circulation			5. Waste Produced in the Reproduction of Urban Society		
Attributes	1. The production of labour: human and animal waste excretions	2. Waste Produced in Commodity Production	In Transport: Labour and Freight (raw materials & commodities)		
			In Commodity Marketplaces	4. Waste Produced from Consumption	Hospitals: Public & private
Labour process	MSW (pub); subcontracted F pvt company I labour force (pvt); septic tanks and tankers I labour (pvt); I barbers (SE)	Organising factory waste for disposal: Some family, permanent (F/I) labour but mostly casual labour (I)	Pvt but I labour, I SE; collection, disposal (sorting & resale)	Gathering, sorting, selling and dumping 1. Irular SE in town, urban periphery, dump-yard; 2. I migrant rough-sleepers; 3. Gathering (collecting/bulking) MSW; 4. Collecting and dumping Pvt F Contractor (collecting, bulking, sorting, sale) I Labour; 5. Trade: Re-cycling; Partially I Wholesaler hierarchy; 6. Re-processors; (barter/sale) ISE; 7. I Second-hand dealers	Human waste as for Labour (1); general/food waste as for Consumption waste (4); hazardous medical waste collected for incineration (F. pvt contractors) or segregating and dumping (ISE)
			Direct recycling rather than cattle, collected for animal feed (child and I adult labour; dumping for pub/pvt I labour/ISE to collect	Dumping in street, taken as fodder for domestic livestock production (NB pigs produce meat, bristles, fat and animal therapies) rather than I domestic servants or I casual labour	Meals Hotels; Wedding Halls; Canteens Liquor Shops

*(continued)*



presidents, and panchayat politicians – were also interviewed in 2015. Fifteen town-level officials and politicians met us individually in 2015 and January 2016 – over 100 respondents in all. We had further conversations about waste with householders and businessmen. It is the evidence from this approach to the WE that provides the basis for our discussion.

### 3. The waste economy and its informal ordering

Banks et al.'s (2019) comprehensive review introduces three aspects of informal order that are relevant to this small-town's WE: first the development of the concept of informality through three distinctive dimensions (dualist, legalist, and structuralist); second, the expression of informal order across different classes and scales of operation; and third, the problems of disorder generated by informality. Here we explore these constructions in this case of small-town WE, reflecting on how social and economic segmentation in the WE can drive all three theorised relationships simultaneously.

#### 3.1. Three approaches to informality

*3.1.1. Dualist informality.* The earliest conception of informality, the dualist theory of the 1970s, sought to locate informal activity in forms of production (easy entry, small scale, labour intensive-ness), in economic marginalisation, and in a developmental role in transition to, but residualised by, the formal sector (International Labour Office [ILO], 1972).

Our field research provides evidence of dualism. A significant proportion of livelihoods in the informal WE are those self-employed under conditions of such precarity that some workers are even un-creditworthy. Gathering waste from railway lines and verges on foot and in long twilight stints, the self-employed informal worker toils with a re-sized cement-bag able to contain about 20–30 kgs. This shapes their paupers' returns (typically at Rs 5–6,000 per month,<sup>7</sup> a third less than the average for unskilled workers and the national minimum wage, and very far from being a family wage). As activity undergoing a non-spatial type of 'consolidation' (Banks et al., 2019) the informal WE is the labour-absorber of last resort. People who have lost the entitlement to be dependent upon others through crime, addiction, elopement, household failure, disability, or disease and whose citizenship rights are exiguous find livelihoods here. Many workers present themselves as transient but some of their daily-demolished and daily-reconstructed camps on verges and public land are years-old. Relatively easy to enter at the lowest level of remuneration due to the rapidly growing volumes of waste, informal WE work is extremely difficult to exit, if only for lack of seasonal economic alternatives. Places like the dump-yard,<sup>8</sup> routes without shade, sites of dangerous medical waste, of maggoty meat offal, or intense microbial activity, of foraging in competition with animals, and burning surfaces all provide resources for *Irulars*, a particularly stigmatised tribe.<sup>9</sup>

Many of the conditions of dualism are fulfilled, although not always for the reasons originally theorised. Impoverished but central to the work of waste, and not marginal to the town's WE, the marginality of informal self-employed workers is social. Gathering is bound by social rules: *Irular* workers for instance are expelled from the town-centre by low caste waste-workers while they decide their routes and adjudicate disputes collectively with their kin. Work in the informal WE shows no signs of being transitory. Instead the work-force is constantly replenished as a result of practices of social discrimination, exclusion, and expulsion (sometimes from elsewhere) and of the growth of waste. Though un-transitory and hard to leave, the informal WE is not socio-politically static. It is rather that expressions of aspiration and attempts to exit are met with social or state oppression. We met no informal waste worker who wanted their children to follow them, but plenty of desperate families whose arbitrary lack of state certification<sup>10</sup> was hampering their children's prospects of college education. Individual exceptions occur. In an unusual case of upward mobility, a verge-side *Dalit* melon-seller had used funds provided by her children to give up informal waste-work after over two decades. Her children, removed from her in their infancy and educated by a charity, were training and working in nursing, ophthalmology, and dentistry.



*3.1.2. Legalist informality.* For theorists of the legalist school, the informal sector is composed of micro-entrepreneurs choosing to operate informally in order to avoid the costs associated with registered activity but dis-incentivised by insecure property rights. The adverse cost-benefit relations attributed to inefficient regulatory interventions by the state incentivise pre-emptive development (Bacchetta, Ekkehard, & Bustamante, 2009; De Soto, 1989).

Legalist theory finds validation in this small-town WE. The many firms in the WE which actively avoid regulation are not confined to pauperised self-employment. Unregistered firms include wholesalers and segregators of consumption waste whose purchases re-value the waste gathered by marginalised workers. Such firms use family labour, up to two wage labourers plus a small network of suppliers, some of the latter tied by advances or by the kind-loan of bikes, carts, and vans. Meanwhile, more or less autonomous unregistered self-employed agents work for reprocessing companies sited elsewhere, as in vehicle scrap and glass bottle recycling. Others operate unregistered using barter, for example exchanging domestic waste cloth for plastic kitchenware; or domestic metal waste for salt, dates, turmeric, onion, and/or tomatoes.

But more complex than mere lack of registration to avoid scrutiny, the WE involves the savvy and pre-emptive flouting of those regulative laws that would, if respected, add to costs. So a firm may be registered, but contracts are selectively recorded, tax is evaded, environmental and building regulations are ignored, and labour laws flouted.

The case of waste from private health-care illustrates how this works. Private hospitals are registered but reported to be so rarely inspected that standards of health-care are self-policed. As legally required, in public hospitals biomedical waste tends to be disposed of separately. But *Irulars* testified to finding in the dump-yard the hazardous biomedical waste from some of the town's private hospitals/small clinics (sharps, soiled materials, body parts). The formal disposal system is evaded, reducing direct costs and increasing dangers to informal workers. Private hospital waste is handled by workers hired under a great range of contractual forms and work benefits, revealing how the loyalty of labour and the discretion and patronage of employers parody the state entitlements and regulation that they evade. A largely illiterate, female, *Dalit* housekeeping labour force cleans wards (and lavatories) and sorts waste but may also be asked to perform nursing and other paramedical tasks, theatre assistance, and portering. Tasks socially associated with extremes of social status and medical skill are combined in a day's unregistered, low-paid waste-work. Of the disbursement of medicines, for example, a job for trained nurses or doctors, an illiterate, female waste-worker explained that her duties included dispensing medicines: 'people have described the labels to me and now I know their shapes and contents.'

Hospital waste workers' contracts are toward the informal end of a formal-informal continuum. A typical wage is Rs 6,500 per month. Verbal contracts can last for 20 years. Equipment is usually supplied but sanitation for sanitation workers is conspicuously absent. 'If no-one watches – we can sneak in to the labour ward staff toilets' (Cleaner). In this contractual continuum, the more dirty and dangerous the work, and the more physically taxing the work conditions, the lower the pay and the more unregulated the conditions.

It is rare that pre-emptive informality completely escapes the state, as theorised by legalists, but selective enforcement reinforces the pre-emptive development of private firms.

In other parts of the WE, informal pre-emptive accommodations with the very bodies mandated to regulate enterprises will add to costs – though not sufficiently to incentivise formal compliance. For example, septic tankers void untreated human waste into local river beds and lakes. Despite the town's lack of public sewage infrastructure, the disposal of faecal sludge by tankers is regulated not through the sanitation department of the local Municipal government but instead by police fines and the coerced and unremunerated emptying of the large septic tanks of public buildings.

*3.1.3. Structuralist informality.* Structuralist explanations of informality posit the inter-dependence of formal and informal activity, one that is exploitative rather than benign. 'Informality ceases to be a

transitory feature of a segment of the economy, to become instead a phenomenon that crosses sectoral borders and is a necessity for the capitalist system as a whole' (Basile, 2010, p. 459). In the WE this inter-dependence is deeply institutionalised at multiple levels. Registered private firms in waste disposal, working for the hospital, railways, or municipality at annual rates of return on capital estimated at up to 25 per cent, all recruit their labour forces through unregistered labour contractors who subject them to oppressive conditions. In one case of contractualisation, labour-pairs – each from a single household, all *Dalit* – are bonded for a period of three years. Brought from another State, they are unable to communicate with local people, paid at the local minimum wage (Rs 230 per day gross without the additional perquisites to which they are formally entitled but with 35% deducted by the contractor), and housed on common land in tent-like shacks of bamboo and plastic. A satellite dish is the contractor's sole concession to their primitive living conditions.

This rightless labour force supplements its exiguous income with informal, self-employed, 'side-work' and its residential patch is piled high with plastic cement bags full of segregated waste. Informal activity may increase monthly incomes to Rs 7–8,000. The sites of public-sector waste also generate informal multipliers of resources for pauperised self-employed workers to gather and sell. That the state relies complicitously on outsourcing to informal gatherers, unmediated by contractors, to cope with urban waste is indicated by Police restraint over workers' illegal verge-side camps which are forced to be demolished daily but are then allowed to be rebuilt at dusk.

So, to reduce costs, informal activity has been informally wired into public-sector business models. Extensive fiscal non-compliance starves the state of resources and, reinforced by ideas of new public management, has resulted in the shedding of direct services. Although as early as 1992, publicly owned Indian Railways management decided to privatise station maintenance, including waste disposal, it was not until 2010 that the practise reached the southern states. Waste workers employed by Indian Railways at Rs 15,000 per month with full rights, were laid-off and re-employed, on casual contracts yielding Rs 5,500 with no employment rights apart from Provident Funds. In 2011 the local government stopped its latrine-cleaning septic tank service, froze recruitment targeted specifically at its sanitation workers, and replaced permanent contracts with full work-rights and social security rights by temporary or ad hoc contracts without such rights before embarking in 2012 on part-privatisation.

Despite, or because of, the state's resource scarcity, informal activity is further incentivised when vigilance budgets are unrealistically low, a condition that is not necessarily accidental. If the Pollution Control Board (PCB) with responsibility for an entire district is deliberately staffed by a single official without transport, then environmental regulations will either be ignored or be compromised in relations of collusion between the PCB and local politicians (with transport). The latter collect bribes from the owners of polluting factories who evade tax. This exacerbates the impact of Municipal revenue scarcities and increases political rents and private profits.

Meanwhile, outside their work, informal self-employed waste workers are vulnerable to another kind of adverse incorporation, as incomplete citizens. Dependent on state certificates of Scheduled Caste or Tribal status for access to subsidised food, infrastructure, and education, it is those most in need who are least well enfranchised and forced to substitute cheap market-mediated informal provisioning for state-provided goods to which they ought to be entitled. So the informal WE is indispensable to the formal private and public WE.

While the three approaches to theorising informality are mutually exclusive and usually reviewed through the historical evolution of the concept of informality, the WE presents no obstacles to conceiving all three sets of relations as co-existing simultaneously. While the balance of forces will vary, such co-existence is only possible if the WE is segmented.

*3.1.4. Informal order and segmentation.* Segmentation is an established and pervasive characteristic of the Indian economy – in which the mobility of resources and labour is obstructed. Rural and urban sites, registered and regulative status – formality and informality – have long been theorised as sources of obstruction (reviewed in Srinivasan, 2015). When at the All-India level,

informal workers include the self-employed as a ‘*vestigial* form of business enterprise’ (Aronson (1991, p. 118; my italics) and a ‘numerically large and heterogeneous *residual* category’ (Bhalla, 2008, p. 4; my italics), their legal status might be thought to pose few barriers to mobility. But in a meticulous field-study of labour markets in Arni, a South Indian town, Srinivasan found that self-employment and wage labour were employment categories with little porosity and movement between them (Srinivasan, 2015).<sup>11</sup>

In addition to economic segmentation, the Indian urban economy is also socially segmented. Despite some erosion of caste-occupational exclusivity (Basile, 2013; Prasad, Shyam Babu, Kapur, & Pritchett, 2010) caste and ethnicity are still found at the All-India scale to structure the constraints on occupational choice, the more so the lower the caste or ethnic status (Seetahul, 2018).

In the informal WE researched here, capital assets across the sector are controlled by the upwardly mobile migrant *Nadar* caste. Labour is overwhelmingly *Dalit* and *Adivasi*. The WE is naturalised as work for *Dalits* either because *Dalits*, freed from ritually polluting work, are nonetheless devoid of choices to leave roles that are closely related to their original caste-related tasks,<sup>12</sup> or because public space involves the impure minglings of castes whose waste is left ‘to fester until someone of the right caste comes by to clean up’ (Doron & Raja, 2015, p. 195, discussing Rodrigues, 2009). It is the state rather than the market in which the social cosmopolitanisation of the waste work-force is most advanced.<sup>13</sup> As much as 30 per cent of the Municipal Sanitation Workers (MSWs) are now from Backward castes, including *Vanniyars*, whose low status is nonetheless higher than *Dalits*’ and *Adivasis*’. In the informal WE however, certain unskilled informal waste workers, equally endowed as others, notably *Irular Adivasis*,<sup>14</sup> are ‘completely ignored’ by other *Dalit* waste workers ‘though at dawn we let them collect material for recycling’ (both quotes from a Female MSW). *Irulars* also face ethnically embedded price discrimination – far lower prices for the collected waste they sell than got by other waste workers – and unequal returns (Harriss-White & Rodrigo, 2016).

‘Gender relations also persist as pervasive regulative institutions. Informal firms are prime sites for the oppressive control of female workers as well as for the exercise of hierarchical authority relations between men – patriarchy in its oldest sense.’ (Basile, 2010, p. 465). Women lack assets and property and are disproportionately concentrated in unskilled, unentitled work (Guerin, Venkatasubramanian, & Michiels, 2015). The informal WE is not an exception to these norms. Our fieldwork confirmed that women perform the most menial of tasks, suffer the most punitive and abusive work conditions, work the longest hours, may have to take children to work with them, get lower returns or wages, and lack organisation. They are least able to make citizenship rights become real for them. They are victims of poor health, at high risk of work-related accidents and of sexual and other kinds of harassment by the police, municipal officials, and local residents.

For the informal WE to be consistent with dualist, legalist, and structuralist theories, segmentation would need to fulfil a number of roles: first, to erect barriers to mobility; second, to frame pre-emptive development; and third, to structure exploitative interdependencies between formal and informal activity.

First, the local informal WE is found to be highly differentiated in economic terms, thereby creating insurmountable obstacles to mobility for those at the bottom. Table 2 outlines its economic elements.

At one extreme of the WE lie comparatively large formal economic units with workforces employed under widely ranging conditions: for example, a local government department with a workforce of 130, each netting Rs 15–25,000 per month with work and social security rights, and a private registered joint-family business with an informal labour force of up to 500 where women are paid about Rs 4,000 a month and men Rs 6,000. At the other extreme, informality engulfs the entire work-life existence of assetless waste-workers. Informal self-employed families with their uneducated child labour comb the burning dump-yard, live in shacks in constant fear of eviction, have no water supply and one unreliable light, lack food ration cards,<sup>15</sup> and earn between Rs 3,000 and 7,000 per month. They are bureaucratically invisible, and have severely compromised citizenship and physical security. When the balance between income and living-costs prevents

**Table 2.** Business models in the waste economy, 2015 (with indicative examples)

- 
1. Public sector labour force
    - i) Large labour force (130+), full rights at work, unionised (for example Municipal Sanitation Workers (MSW);
    - ii) small labour force (<5) – variable work rights – some permanently casualised (for example glass bottle recyclers in Government Liquor shops)
  2. Private business
    - i) Registered joint family with 10–500 wage workers – local and migrant (for example scrap yards; medical waste; gunny bag depot)
    - ii) Registered private companies subcontracted to state (30–300 wage-workers) – local and migrant labour, no union, no work rights, with informal side jobs (for example urban consumption waste and municipal rubbish; hospital cleaning and security; railway sanitation)
  3. Waste departments inside big companies  
 Unregistered specialised labour (3–40) to clean-up, segregate, pack – disproportionately *Dalit/Adivasi* (for example clothing accessories, industrial alcohol, paddy milling, wedding halls, private hospitals, big meals hotels)
  4. Own account enterprise  
 Unregistered family labour with 1–2 wage labourers and more or less tied suppliers (some with bikes/vans) (for example general waste wholesalers; second-hand goods; small scale septic tanker fleet owners)
  5. Self-employed agent  
 Unregistered (for example in reprocessing; vehicle/two-wheeler scrap; glass bottle recycling)
  6. Self-employed – barter  
 Unregistered with cart or scooter – (for example cloth exchanged for plastic kitchenware, iron waste exchanged for salt, dates, turmeric, onion and tomatoes)
  7. Self-employed individual  
 Unregistered, gathering on foot, with bike or cycle cart (for example hundreds in general waste ('scavenging' before and after the MSW), scores on dump-yard; scores in vegetable market; clearing up animal slaughter and meat and fish sales)
- 

Source: Author's field survey, 2015.

savings (or the repayment of debt) there can be no mobility between the extremes of property ownership. The most asseted firms have entered the town deploying capital amassed outside waste (from construction, transport, and so forth). Despite saturation with informal practices, the Municipal work-force is extremely hard to enter. No upward mobility was recorded between informal and formal segments of the workforce. Migrant labour works and rests dependent and un-free.

Second, the capacity to pre-empt is itself a source of segmentation. Only the largest firms are registered but add to costs by selectively and pre-emptively complying with state regulations. Wholesalers, agents, and black-marketers bribe officials to be wholly unregistered or to ignore regulative law. Owners of private scrap firms seek to avoid regulation by the Commercial Tax Department (transactions being but partially receipted) and are alleged to trade-off bribes against Police raids for stolen goods. The economic investments required to build expert and collusive private contacts for pre-emptive commercial and financial activity, the political investments enabling the evasion of disciplinary regulation, and facilitating informal private-public trade-offs in costs, are all severe barriers to the mobility of both capital and labour. So activity pre-empting state-regulation also segments the WE.

Third, structural informality in the WE is not confined to labour contracts but pervades the accumulation trajectories of the partially-regulated capitalist class. And while the concept of segmentation is rarely applied to that of social class, the diversity of waste enterprises in Table 2 also maps the formation of classes in ways which affect the segmentation of informal activity. In the WE, apart from the polar classes of capital (a small number of accumulating firms) and labour (one formal labour force and several small to large informal wage-labour forces) (models one to three in Table 2),

most firms are located in between as own-account enterprise and self-employment (SE) (models four to seven).

SE is variously theorised as in transition to the polar class of labour (Bernstein & Byres, 2001) or to micro-capital (NCEUS, 2007) or as already part of the wage-work force in disguised relations of dependence, which rob this labour of freedom (Adnan, 1985; Banaji, 1977). All these roles can be found in the informal WE.

Several fault-lines prevent economic mobility and block the formation of polar classes in the WE: first, between capitalist asset-owners who accumulate and SE firms which do not; second, between autonomous SE, SE tied as DWL, and those too poor even to borrow money and be dependent; third, between capital and wage labour; fourth, between on the one hand municipal labour that is formally entitled and unionised but actually threatened with insecurity and deteriorating entitlements, and on the other the bulk of wage-work which is casual, unentitled, un-unionised, and paid at poverty wages. This urban WE provides evidence that class formation is a process marked by social segmentation between classes, economic segmentation within classes, and further stratification by informality. It shows how practices of economic and social segmentation permit dualist, legalist, and structural informality to co-exist and persist in a complementary way.

#### **4. Waste management and informal disorder outside and inside the state**

While waste management is the formal responsibility of the local state, in 2015–2016 the town's waste was out of formal control and under the proliferating but unsystematic control of selectively registered firms and workers, in a segmented informal economy whose physical disorder blighted the built environment and threatened public health.

What of the state itself? Defining informality as activity outside state regulative capacity presents the residual state as a black-box. Informal relations of allocation and regulation inside the black-box have however generated a weighty literature on corruption, rent-seeking, markets for public office, and accountability (Khan, 2000; Wade, 1985). In their definitive review of theories, debates, measurement, and evidence for local-level corruption worldwide, Bardhan and Mookherjee (2007) invoke a list of factors that encourage the decentralisation of corruption and 'special interest capture' to small-town and village government. In so doing, they outline informal, unauthorised behaviour inside the local state. Their list includes the dispersal of niches for bribery, poorly disciplined sites of political influence and elite capture, and inadequate democratic and bureaucratic checks and balances. Acknowledging the ubiquity of informalised bureaucratic behaviour, the inconclusivity of theory and evidence, and the complexity, ambiguity, and specificity of outcomes, they call for more research (Bardhan and Mookherjee, 2007, p. 164–170). In her 2011 research on the micro-politics of policy processes, Fernandez draws attention to a multitude of institutions and informal technologies of bureaucratic power through which policy is implemented and behaviour far more diverse than mere 'corruption' is enacted. Developing Fernandez (2011), we outline the relations of the bureaucratic architecture of organisations governing small-town waste to informal bureaucratic practices affecting the informal WE.

##### *4.1. Bureaucratic architecture and practice*

*4.1.1. Low status.* The constitutive context of small-town waste management is a population and built environment that increasingly exceeds its formal boundary, imposing demands on the town as a 'central place'. Tax evasion, authoritatively estimated at over 50 per cent, results in a meagre revenue base of Rs 4–5 crores a year. Officials recognising waste as a problem attributed the town's material disorder to lack of finance. To dis-incentivise overshooting, the wage-bill for waste is capped at, and fully absorbs, 49 per cent of the municipal budget (Abraham, 2013).<sup>16</sup> 'What's the point of planning for waste? We have no revenue.' (Municipal Official). The imbalance between inadequate public resources and the work of governing an expanding central place makes the town low in status for its

officials. Then bureaucratic understaffing is exacerbated by high turnover, by temporary secondments, or by the burdens of double official jobs.

*4.1.2. Practices of low status.* These conditions generate a culture of poor bureaucratic motivation (norms of short working hours, frequent absences, ‘final posting’ inertia) and a lack of embedded local knowledge. Bureaucratic ignorance of waste is widespread and, according to one official, ‘dangerous’. It extends from ways revenue is raised, through volumes and types of waste (their estimates varied between 25 and 60 tonnes a day), and the names and social character of the town’s streets, to practical knowledge about maintaining equipment. Public-private partnerships and contractualisation to private businesses with informal labour formally shift the risks of this ignorance to the private sector. ‘There is no cooperation between private contractors and the Municipality’, claimed a Municipal official referring to the management of the dump yard used dangerously by both. Unwillingness to cooperate may be exacerbated by the Municipality’s practise of late- and under-payment to private firms. The town’s business associations also report no awareness of waste as a collective action problem. ‘There is no cooperation either between businesses or between us and the municipality’ (Chamber of Commerce, President). The unacknowledged informal WE becomes essential to governance.

*4.1.3. Fragmented institutions of waste governance.* Dispersed across departments of the Municipality (engineering, revenue, public health, and town planning), field stations of the State government and overlapping rural government panchayats, formal responsibility for waste is unclear. Waste is a small unspecialised part of wide-ranging bureaucratic job-specifications. Key bureaucratic careers remain path-dependent from the era when local governments were suspended and ruled directly from the State capital, in which experience and political loyalty trumped – and still trump – education and expertise. Complex coordination and lines of reporting exacerbate ignorant decision-making and enable multiple informal pathways to initiating activity, blocking it, or shifting responsibility for inactivity. Bureaucratic silos also serve to keep knowledge of the problems of waste under control. ‘But the problems themselves get worse’ (Official Engineer).

*4.1.4. Practices due to fragmentation.* Formal incompetence results. The implications of technological innovations for the workforce are not pursued (an experiment with domestic waste segregation in 2012 lasted 48 hours because the decomposition of food waste was not formally integrated with daily collections and the need for varied periodicities of segregated waste collection was not explained to the labour force).

Within the municipality, lack of coordination is accentuated by officials’ maximising the social distance between themselves and waste-workers. The status gradient between office work and practical activities means officials are both physically removed from, and disinterested in, the realities of the WE’s functioning. Top-down orders about waste management are given through hierarchies of sanitation inspectors and supervisors, unwilling to consult the sanitation work-force even through their unions. Ignorant of formal workers’ knowledge and needs, officials cannot envisage the significance of informal labour or the impact on the urban livestock economy if either is displaced by the new composting or biogas technology seen on TV. MSWs experience the local state as ‘haughty’.

*4.1.5. Boundaries and jurisdictions.* Organogrammatical and territorial boundaries, with neither of which waste complies, intensify the neglect and discoordination of waste and raise the costs of managing it. Departments such as Public Works (water and engineering), which has both technology and manpower, have no remit to deal with what is clogging their installations. The Town and Country Planning field office has planned land-fill, composting sites, and sewage treatment plants to be safely distanced from the town. But officials acknowledge that new sites will raise the costs and time of waste transport and dumping in ways for which there are no resources. Spill-over to rural sites would



not only require the quashing of resistance and securing of political permission from rural residents but also coordination between Panchayat jurisdictions and the rural offices of State government departments (such as Rural Development and Environment and Forests).

The installation of networked infrastructure like drains requires coordination between Public Works Department, the local Revenue Department, and the District Collector to negotiate complex masses of small land titles.

*4.1.6. Informal practices due to lack of bureaucratic synchrony.* The costs and complexities of manoeuvring through these jurisdictions have a paralysing impact on bureaucratic action on waste. Meanwhile inside the town, residential and commercial construction encroaches with impunity from party political protection onto waste-land and drain-verges, and the use of water bodies for dumping waste.

*4.1.7. Administrative and party politics.* While political pressure from dirty industries enforces the strategic understaffing of the Pollution Control Board's field office, and while local land use planning is directed by the party in power, administrative authority is formally disempowered. 'We won't let the Municipality improve our drains because the glory and votes will go to them' (Ward Councillor from local opposition party). With three political parties at play, the town's open drains are a 'political football'. The construction of underground mains drains started in 2000 under one major Dravidian party but was halted when the second resumed power. The town then elected a Member of the State Legislative Assembly (MLA) from a third party challenging the dual hegemony of Tamil party politics, but unable to exert effective pressure to release finance for drains. Meanwhile, the Municipal Chair who signs off major projects is neither from this MLA's party nor from the one currently in power in the State. The State's Ministry of Urban Development has final decision-making responsibility. Thus political checks and balances effectively block this investment.

*4.1.8. Informal practices.* Conflicts and voids of interest between jurisdictions in the local state create gaps in operational coordination for which informal practices substitute. Plans (as for drain maintenance) may be approved but construction is not supervised. Specifications in plans are informally changed with impunity in construction and implementation.

'Waste is a low-rent sector' (Consultant Engineer). Despite inadequate public funds, theft ensures they fail to reach intended beneficiaries. First, the reportedly routine use of bribes to syphon public resources also reduces standards, specifications, and scales, and enables informal revisions to urban development plans including the neglect of waste infrastructure.

Second, fraud depletes resources for managing waste. Capital transfers for waste work from the state government to the municipality (and thence to private subcontracted companies) are regularly appropriated and shared between officials, politicians, and businessmen. Not only do such practices result in informal workers being paid at least a third less than formally accounted but also sub-standard equipment or machine-components are purchased at below-budgeted estimates. Poor quality garbage lorries are then found operating at 20 per cent of capacity. Poor quality septic tanks installed with the remains of divertable subsidies are not proof against the Monsoon. Poor quality cement drain covers are ripped up by storm water during heavy rain.

Fear ensures complicity. The checks of whistle-blowing and of interventions unspecified by one's job are heavily penalised, leaving informal and criminal practices largely undisciplined. One official explained, 'I can report violations or I can be fatalistic. If I report violations, politicians threaten my transfer. So I fear for my living'.

*4.1.9. Summing-up.* Waste policy in practise occupies a political space between the informal practices of the state and this WE. It is populated not just by all the factors invoked for corrupt decentralised governance by Bardhan and Mookherjee (2007) but also by dense feedback relations

which any future policy for waste would have to negotiate as a precondition. We can tease their micro-political implications into four strands.

First, the consequences of the informal WE for formal state waste-management include displacing the latter's political authority and physical responsibility, mitigating its jurisdictional fragmentation, reducing its costs, and thus failing to disincentivise fiscal indiscipline, compensating for the shedding of its public-sector-workforce, enabling the formal and informal privatisation of its services, perpetuating the low policy status/invisibility of waste management and waste workers, enabling the former to persist in ignorance and incompetence and the latter to be deplored or ignored by policy.<sup>17</sup>

Second, the impact of the informal WE on informal bureaucratic practices includes opportunities for discretionary decisions and irregular regulation by extortion; reduction of the damage to the urban environment from the plunder of state resources for private purposes; and disincentivising resistance to the culture of tax-evasion.

Third, the consequences of the informalised state for the informal WE are differentiating. Unregistered accumulative opportunities are expanded and politicised by fragmented and arbitrary regulation, by fraud and bribery, and by checks, balances, and mechanisms of accountability embedded in political parties and social authority; poverty wages and breaches of labour laws and rights reduce costs and increase profits to employers; access to the state for social protection, reservations, and for benefits mediated by citizenship is compromised; but more low quality livelihoods are tolerated than could be funded by the state.

Fourth, informalised bureaucratic practices affect the public-sector formal waste economy – ad hoc contracts, delayed wage-payments, benefits and pensions, neglect of equipment and uniforms, poor quality machinery, lack of latrines and changing facilities add to work burdens; private compensations for such deficiencies reduce workers' net earnings; the practise of social distancing breeds bureaucratic ignorance of oppressive public-sector work conditions; party political competition blocks formal technological improvements.

Far from being blurred, the boundary between informal and formal is a seething mass of contradictory power relations outside and inside the state through which the interests of accumulation are negotiated and informal livelihoods proliferate.

## **5. Discussion and conclusions**

While the Indian state is responsible for waste disposal, India's waste is expanding rapidly and out of state control. Physically disordered, it is ordered through informal social relations, without which urban society could not reproduce itself from day to day. The concept of informality embodies a paradox: it is useful and flawed. Informality is both widely used and useful because it flags the growing proportion of economic activity that is not state-regulated. But the formal-informal binary is an unhelpful simplification of the unequal and coercive relations revealed here not only in the waste economy but also in the local state.

This case study of small-town waste confirms some of the themes in urban informality reviewed at the outset and contributes to others. While this informal WE and its micro-politics are confirmed as essential to urban metabolism and social reproduction, waste is invisible in urban plans. This fast-growing sector is confirmed as an absorber of stigmatised workers, many self-employed, a sector easy to enter but hard to exit. It finds social relations crucial not just to mediate waste flows but to segment forms of informality. The case study method reveals specifics but assessing their significance requires further comparative research: on both small-town informality and non-metropolitan waste disposal systems unconstrained by administrative boundaries or those of the built environment.

We finish by assessing the three themes focussing this research on urban informality: the small-town waste economy; the co-existence of types of urban informality, and the implications for the informal WE of bureaucratic informality.



### *5.1. Small-town waste and urban informality*

The case of a small-town makes visible the territorial, economic, social, political, and administrative ordering of physically disordered waste in a distinct demographic-cum-spatial unit. While waste research may never reach analytical consensus and is subject to many different approaches to classification, urban waste is analysed holistically here through its circuits of production (in the production of human labour, of commodities, in distribution, consumption, and the reproduction of urban society [Table 1]) and further by types of business and labour process (Tables 1 and 2). This reveals the limited extent of meshing – and the distinctive social and institutional identities – of the circuits through which a range of forms of waste are generated and formally-informally managed. First state-owned entities play important roles in all circuits except for waste generated from factory production. But their regulative roles are weak, selective, and pervaded by practices of bureaucratic informality. They are both informalising their own labour and finance and contractualising waste-work out to formal companies with informal labour forces. Second, while all circuits provide livelihoods for informal labour, informal self-employed workers do not work in human waste or in our cases of factory waste. Third, some circuits have distinctive relations of informality. Bonded migrant wage labour is found clearing human waste alongside municipal labour. Factory waste has specialised casual labour. Registered public-sector and private businesses generating distribution waste, consumption, and medical waste all deploy waste-labour on imperfectly formalised contracts. A range of more or less informal firms and labour relations including self-employment crowd the circuit of consumption waste. This small-town case also reveals differentiated relations of accumulation from waste as raw material. Unable to check pervasive fiscal non-compliance, starved of revenue, it is nevertheless the revenue unit responsible for public action and the site of the fractured and informalised bureaucratic behaviour which renders formally invisible a phenomenon only too visible on all empty urban land – whatever its tenurial status. While the preliminary results may justify the approach taken here, comparative research needs developing.

### *5.2. Waste, segmentation, and informality theories*

The negative value of waste (its private and social costs as a public ‘bad’) is contained by a huge informal labour sponge in which an uneducated, un- or hardly-assetted, socially-stigmatised, poorly-organised, economically-exploited, and politically-marginalised workforce finds livelihoods, with returns some of which approach starvation levels, especially for women and for *Irular* tribal people. At the same time, waste as potential raw material for re-processing feeds a differentiated field of capitalist accumulation crowded by informal self-employment and casual, unregistered wage workers. And waste that is dumped is an activity (under)funded and partly managed by a local government under permanent threat of privatisation and casualisation.

This informal WE combines forms of livelihood consistent with the three major theories of informality reviewed in this special issue (Banks et al., 2019): dualist marginalisation, legalist pre-emptive development, and structuralist exploitation. But these forms of informality do not always reflect the processes theorised. Permanently economically marginalised firms are central to the WE, not residual. Legalist informality results from a selective and politicised engagement with regulative law, to reduce obligations not just costs. Structuralist exploitation is deliberately institutionalised by the state as well as the market in ways dangerous to workers so as to cheapen raw material for re-processing.

That these forms co-exist is due to deep segmentation of the WE. We find throughout the WE that both formal and informal activity is segmented economically. In formally registered companies and the state, labour is segmented by contractual status. Registered companies engaging pre-emptively with state regulation in ways denied to small informal enterprises are more socially exclusive and masculinised than those in the informal WE. There is little mobility between three forms of self-

employment: autonomous, dependent, and destitute; or between self-employment, wage work, and migrant contractualised labour. In addition, caste, ethnicity, and gender segment the informal WE socially and the state's waste work-force appears most caste-cosmopolitan. Last, whereas the boundary between the state and the informal WE is complexifying (through casual labour contracts and bureaucratic practices), the state nonetheless displaces further costs to the informal WE and depends on its segmented structure.

### *5.3. Informal practices within the local state*

In this case-study of urban waste in a State regarded as relatively well governed, the state's management of waste is also informalised. The formal architecture of waste governance is fractured, partitioned between incongruent territories and networks in a revenue-poor local government with a high turnover of unmotivated, inexperienced, and ignorant officials. Party political priorities frame and govern waste-management and planning. Implementation lacks bureaucratic coordination. Unplanned construction and dumping encroach with impunity on waste infrastructure. Undisciplined, widespread, and corrupt rent-sharing informalises municipal equipment, ensuring its poor quality and inefficient use. Contractualisation shifts costs, risks, and competence to formal businesses, but their labour contracts require informal supplements to generate survival incomes.

Above all, the informal politics depresses waste – especially dirty waste and the disordered spaces of dirty waste – below the social radar as the lowest status urban sector. Officials maximise their social distance from the workforce on which their town depends.

In India, waste is becoming a major development problem but future policy for waste would have to negotiate not just with the segmented informal WE but also with this urban political space and its fragmented and informalised bureaucratic practices.

Extrapolating from this research, the productive economy depends on the waste economy which in turn depends on the informal economy of waste. This double dependence is underpinned by economic and social segmentation, social discrimination, bureaucratic dysfunction, and public management in retreat from public provision. The state relies on the informal WE and, unlike cases reported in cities,<sup>18</sup> does not seek to destroy it. Quite the reverse.

'I love the Irulas', said a business association official, 'For Rs 100 a day each [£1; \$1.6] they clean our town'! But this paper has shown why neither they nor the Municipality nor the registered private sector can clean this town.

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## Notes

1. About half of this informal economy is black (Kumar, 2013).
2. In 2005 the National Commission for Enterprises in the Unorganised Sector in India (NCEUS) defined the informal/unorganised economy as 'all unincorporated private enterprises owned by individuals or households engaged in the sale and production of goods and services operated on a proprietary or partnership basis and with less than 10 total workers' (National Commission on Enterprises in the Unorganised Sector [NCEUS], 2005, p. 3).
3. World Bank research acknowledges the lack of comprehensive data for waste generation in India but while urban population growth from 2001 to 2011 is estimated by the Census at a factor of 1.1 (Government of India, 2011), for the decade 1995 and 2005 the components of urban physical waste grew by factors estimated at 15 (plastic and rubber), 2.3 (paper), 1.8 (glass), and 1.1 (biodegradables) (Zhu et al., 2007).
4. Resource constraints prevented us from following the metabolic circuits of waste and production from waste outside the formal territorial boundary of the town. Important activity like the social relations of disposal of small-town construction/demolition waste, e-waste, re-processing industries, and the waste from waste await further exploratory research.
5. The town is anonymous. Though each urban waste economy has its idiosyncrasies, it is unlikely that the conditions described here are exceptional.
6. After seven decades post-Independence, for those at its foot, Indian society persists in being stratified by caste and ethnicity. Historically disadvantaged castes were recognised in the Indian constitution (where over 1000 Scheduled Castes are listed) ex untouchables, 16.6 per cent of the population. Scheduled castes and many other backward castes recognise themselves through the term *Dalit* (oppressed people). See Prakash (2015, p. 22–54) for details.
7. In 2015–16 Rs 100 = £1.
8. The peripheral multi-acre public dump-yard and multi-acre private scrap yard are the places approximating what Gidwani and Mariganti (2016) term the 'nodes' and spaces of 'social loathing'. Otherwise waste is remarkably dispersed through the urban settlement.
9. 8.2 per cent of the Indian population is classified as belonging to 744 tribes listed and 'scheduled' under Article 366 (25) of the Indian Constitution.
10. Successful certification of an individual's scheduled tribal (or caste) status entitles the holder to affirmative action quotas in education and state employment; also for subsidised loans, certain development or welfare schemes, business incentives, and political office. See the fraught experience of *narikuravars* here: <http://www.thenewsminute.com/article/st-status-now-reality-long-road-ahead-narikuravars-and-kuruvikarans-44178>.
11. See Harriss-White et al., (2013) for a similar result in a Chennai slum.
12. As when former manual scavengers (cleaning dry latrines) are trapped in sewer or carcass work. See Human Rights Watch (2014) and the work of Safai Karmachari Andolan <http://safaikarmachariandolan.org/>.
13. While the town has allowed backward caste Nadars upwards economic mobility, our research design netted but anecdotal evidence of the urban site facilitating upward mobility *out of waste* for SCs and STs (Prasad et al., 2010; Harriss-White & Rodrigo, 2016).
14. *Irulars* are tribal people, about 100,000 among Tamil Nadu's 70m population, originally – and still – semi-nomadic, ethno-medically skilled forest dwellers and snake-catchers, whose language has no script. Here, after multiple evictions, encroachments, and pauperisation they work in rice mills (with paddy still protected by its husk) in brick kilns, often as bonded labour – and in waste.
15. Ration Cards in parts of India perform some of the roles of identity cards. They also entitle households to food quotas at subsidised prices from the Public Distribution System (see Dreze & Khera, 2013).
16. While in the Indian Constitution's Seventy-fourth Amendment Act, 1992, Municipalities were formally recognised as the third tier of governance, their practical autonomy is restrained not only by paucity of funds but also by management guidelines and norms emanating from New Delhi (Abraham, 2013).
17. Luthra (2017).
18. See Luthra (2017) for example.

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