Pre-proof, Accepted version

Chapter title: Global Entanglements of Recycling Policy and Practice

Authors: Catherine Alexander, Joshua O. Reno

Oxford Research Encyclopedia of Anthropology.

Editor-in-Chief, Mark Aldenderfer

https://oxfordre.com/anthropology/page/about/

(on-line, peer-reviewed, open access)

Global Entanglements of Recycling Policy and Practice

Catherine Alexander and Joshua Reno

Summary

In line with rising public and policy concern about wastes, there has been a distinct rise in scholarly analyses of these and other developments associated with economies of recycling, focusing especially on people's material and moral encounters with reuse. These range from nuanced investigations into how lives and materials can both be re-crafted by recovering value from discards; following an object through its many social lives; or focusing on a material such as plastic or e-waste and tracking how waste is co-produced at each stage of creation and (re)use. Examining contested property rights in wastes, together with the infrastructures and ethics of engagements with wastes and their recovery or otherwise, reveal how global economies intersect with a rapidly shifting policy environment and systems of waste management. The global entanglement of policies and practices not only shapes what becomes of waste but also how it is variously imagined as pollutant or resource.

Keywords

Waste, Recycling, Value, Policy, Global, Basel Agreement, Anthropocene

Economies of Recycling in the 21st Century

When it comes to myth and ritual, anthropologists have long recognised the generativity of remaking for human imagination and social organisation. As Levi-Strauss wrote, quoting Franz Boas, "it would seem that mythological worlds have been built up, only to be shattered again, and that new worlds were built from the fragments" (1955: 428). And yet, the social sciences have been relatively slow off the mark (with the notable exceptions of Thompson, 1979, Derksen and Gartrell, 1993, Strasser, 1999 and Medina,

2007) to recognise the significance of material waste work and recycling practices in household, national and global economies alike. It is not only myth-making and ritual activity that involve creatively repurposing fragments. The sheer size of waste and recycling trades indicate their global importance: 90 billion USD in 2016 (OECD, 2018: 9)—and that is an estimate based on available, visible figures. Actual material flows are likely to vastly exceed this, especially given the sizeable informal and illegal activities around waste management, within and across borders. Notwithstanding the enduring value of Mary Douglas' (1966) remarkable insight—that ideas of waste, or rather, impurity, are found everywhere and yet differ in accordance with culturally-specific systems of symbolic classification—this has tended to overshadow other engagements with the complex lives of materials in the contemporary world. Waste has a long tradition of being analysed as an epiphenomenon of religious and moral symbolism. Yet, to return to Levi-Strauss, the kind of generativity that recycling speaks to, echoes his idea of bricolage: that creating and re-creating from scraps and fragments is a universal material and symbolic way of being in the world.

Recycling, reuse and recovery involve an important subset of wastes in toto. The English distinction between discarding and recycling is not universal, of course, but there are corollaries in other languages and societies—for instance, in the Tibetan distinction between *jhyanghe* ("freeing, wiping out, taking away, subtracting…" Desjarlais 2016: 131) and *solba* ("to mend, repair; to restore, rebuild, re-establish what has been destroyed; to refresh, recreate…" Desjarlais 2016: 116). Similarly, recycling studies typically emphasise acts of recuperation, transformation and locating value. The broader field of discard studies is often more concerned with the rejection of unwanted material, their disposal and potential toxicity, and the systems and conditions that enable this (see Liboiron, 2018). Recycling is often linked with waste classifications and systems of discard but not necessarily. Reusing a child's worn and outgrown T-shirt as a duster does not mean the garment has been first classified as 'waste'. However, for objects and materials fished out from landfills, other garbage or collection sites, whether by

individuals, co-operatives or corporations, we can see a classificatory trajectory whereby things may move in and out of being ‘waste’ and ‘value’. (Thompson, 1979; Lepawsky and Mather, 2011; Alexander and Sanchez, 2019). Therefore, classifications of what counts as waste, and policies that determine what should be done with it, profoundly affect what is available for recycling and what it means when different people engage in it.

If recycling has always been a socially-differentiated activity, depending on where it happens, with what materials, at what scale, with what labour, it is only in the twenty-first century that social studies of recycling have similarly multiplied. Anthropologists, geographers and sociologists have contributed ethnographic accounts of micro-practices of recycling, previously concealed by the dominant emphasis on linear material trajectories from extraction to disposal, and show how these articulate with longer-term and macro-scale policies, networks and flows, In this way, the emergent literature on recycling complements, complicates and sometimes challenges quantifications of wastes arising and diverted via energy, C02, mass balance and other indicators. One result has been to upturn earlier understandings of global economies where poorer countries contributed resources to wealthier regions and then bought back finished goods. Seen through the lens of secondary materials, an entirely different picture emerges of wealthier regions providing resources such as metal to the boom economies of the global South, which both transform and use them. Again, recycling allows the category of ‘consumption’ to be unpacked, revealing complex engagements with materials from simply hoarding them in anticipation of imagined futures (Alexander et al., 2009) to reuse and recycling. A focus on recycling further brings to light the work of recovering value at every stage of an object’s life by locating ever finer intervals in the value chain. Finally, recycling also highlights the creative actions of people who work to recover value from waste, who may be too readily classified as destitute and abject, or ‘human waste’ (Bauman, 2003; Yates, 2011). As such, recycling may create wealth though not always social standing (Chalfin, 2016; Nguyen, 2018) and may simultaneously index precarity and oppression (Stamatopoulou-Robbins, 2011, in press; Gidwani and Reddy, 2011; Millar, 2018).

Economies of recycling are thus a highly productive lens through which to understand the contemporary world, demanding we pay attention to the complex entanglements and sometimes inimical impulses of environmental goods, economic and political processes at different levels, scales, practices and ethics. The next sections first outline the global policy and regulatory landscape before moving to consider precisely how rapid changes in this area profoundly affect key questions of scale, property, labour, infrastructure and ethics through which the social sciences have typically addressed recycling and waste work within and between different political economies and the recycling strategies that emerge at these junctures.

Changing policy and legal landscapes for global recycling

General policies related to waste and recycling are crucial to any analysis because they help depict connections at wider, global scales, vitally necessary in the era of the Anthropocene, so called because it signifies the irreversible effects of human actions upon the planet at a geological scale. For Patricia Yaeger 'the apotheosis of trash' is found in 'the death of nature' (2009); similarly, Gabrielle Hecht describes the Anthropocene as the 'apotheosis of waste' (2018: 1). Both authors see the sheer velocity, variety and amount of global waste generation as the root cause of profound changes to the earth. To trace out the causes and effects, it is essential to think about planetary connections.

Policies make these connections thinkable, even if they sometimes just make legible what happens or continues to happen, such as dumping in the Global South or work done by precarious labor. In anthropological terms, policies are both models of and models for the world, meaning they give shape to it even as they attempt to make sense of it. Put differently, policies involve imaginaries and practices of *worlding*, a useful term coined by Josh Lepawsky (2018) to evoke precisely the social construction of global relationships as an object of control and knowledge. For example, some worlding practices aim to have an impact on global trade routes for recyclates connected by nodes

of collection, sorting, stripping and resale. The importance of highlighting the idea of world-construction in the case of recycling is that recent policies not only concern international relations, but increasingly ideas about reshaping the world-environment as a whole in the age of the Anthropocene.

When it comes to policies related to global recycling flows, the 1991 Bamako and 1992 Basel Conventions to control transboundary hazardous waste flows are the most obvious point of departure. The latter has received considerable scholarly attention, with regard to what could be called the re-worlding of global flows of recyclables and toxics. In Lepawsky's (2015) words, the Basel Convention is at once a waste regime (Gille, 2007)—a given cultural and political system for determining what counts as waste and what is done with it—and a worlding in that it endeavours to create an emergent geographical reality by governing transboundary waste shipments. Since Basel is meant to prevent 'industrialised' countries from exporting their hazardous waste to 'developing' countries lacking the capacity to manage it properly, several further amendments and decisions were required at the international level to define what are otherwise material and geopolitical abstractions, namely the oppositions 'waste' versus 'value' and 'developing' versus 'industrial'. Both oppositions were imperfectly delimited and inexactly characterized to allow for slippage, for example, making possible a market in e-waste 'recyclables'. Policies therefore both presuppose and perform, or enact, how world and matter are categorised and made legible to policy and scientific analysis.

Policies can also determine material flows, whether that means driving some things underground, which can end up in black market exchanges and the illegal dumping of toxic waste, or sending things to cheaper places to be dismantled. 'Cheapness' often simply translates to a working environment that lacks health and safety and labour regulations. Any consideration of material flows must therefore be attentive to questions of scale. Policies are typically grounded on statistical representations of material flows that emphasise different units of measurements: mass balance, CO2, energy etc. Analyses of such flows can elucidate important problems about global environmental transformation and political responsibility, identifying which countries, industries or

segments of a population are worsening or ameliorating the greenhouse effect. But borders, and the distinct and bounded political realities they give rise to, themselves affect how such numbers can be gathered as some countries simply do not have good data. More precisely, they cannot create data that is up to the standards of the, usually more powerful countries, who both export most of the worlds recyclates *and* set policy goals. This has the additional consequence of making policies a generative source of knowledge flows, with clear political implications: if powerful countries no longer export waste as they once did pre-Basel, they continue to export acceptable means of measuring and valuing waste. These problems bedeviled the Clean Development Mechanism (CDM) in it's early years of operation after the 1997 Kyoto Protocol, which lacked sufficiently standardized monitoring, reporting and verification (MRV) standards for many of its funded, emissions reduction projects (see Reno 2018: 53-55). Consequently, in addition to setting policy to control the flow of waste into 'developing' countries, global policy in the age of the Anthropocene also consists of building capacity in those countries to generate globally 'acceptable' data about their own waste activities, and especially recycling projects that elude ordinary forms of assessment and evaluation. For instance, since 2010 the World Bank has experimented with new simplified methodologies for emissions reduction assessment for the CEAMSE plastic recycling operation in Buenos Aires, Argentina. This consists of exporting life cycle assessment practices that are sensitive to the carbon emissions reduction value of using recycled materials rather than virgin materials (UN-HABITAT, 2010).

The distinction between waste and value, always an open-ended one (Thompson, 1979), has required economic geographers to "jettison beginnings and endings in value chains and global production networks. Instead of beginnings and endings [they] advocate for studies of circulation and exchange that search for boundaries and edges" (Lepawsky and Mather 2011: 243). Whether the focus is e-waste (Lepwasky and Mather, 2011), shipbreaking (Crang et al., 2012), clothing (Norris, 2012), spent nuclear fuel (Garcier, 2012), or plastic (Gabrys et al., 2013), markets in discards do not obey any one regime of value, where different kinds of value are combined and put at odds (see Appadurai, 1986; Kopytoff, 1986), but routinely trouble categories of pollution and impurity as they travel

to the edge of policies and regulations—and just beyond. Futures prices for different waste streams, especially metals, are a significant component of recycling regimes of value, playing an important role in boosting or discouraging recycling.

Signatories to Basel agreed upon an artificial distinction between 'industrial' and 'developing' to qualify countries, creating agreed upon spaces of exception for opportunity and risk. In the resulting, contested framework of the Basel Convention, the world was "bifurcated into two undifferentiated and monolithic blocs of countries" (Lepawaky 2015: 10). In the decades that followed, the growth of e-waste grew exponentially as did its transboundary shipment, yet this deviated from patterns expected in a pre-Basel world. For instance, much of China's e-waste was coming from similarly 'developing' countries in Africa, while much of India's e-waste was destined for Belgium (Lepawsky 2015: 12). As Adam Minter (2013) argues, China's indeterminate transition from developing nation to industrial powerhouse, an OECD 'key partner', not only complicates policy designs from the 1990s, but also undermines simple assumptions about the value of waste, recycling/recyclates and their role in development. China's coastal cities became a dumping ground for all manner of discards nominally bound for reuse and remaking. Like the world's forging operation, China became a sink for discards intended to be broken down and remade anew, to be shipped out again as 'green' commodities made of recyclable material (Tong and Wang, 2012; Kirby and Lora-Wainwright, 2015; Lora-Wainwright, 2015; Zuev, 2018).

At the same time, this robust market in plastic material (arguably like the fossil fuel production that makes it possible) is at risk of exceeding whatever controls were imposed, not only by adherents to Basel, but by those taking advantage of the worlding it gave rise to. From the start of 2000 there has been increasing global awareness of a 'plastic crisis' similar to the hazardous waste crisis of the 70s and 80s that led to the Basel Agreement. The global circulation and material character or vitality (Bennett, 2009) of certain discards, from nuclear waste (Custers, 2007) to plastic (Hawkins, 2015), means that depollution and remediation strategies are often insufficient (Gray-Cosgrove, Liboiron and Lepawsky, 2015). As plastic has ended up in oceans, on beaches and in

marine life, there has been growing concern around the world of the risks of continued plastic consumption.

If activists or policymakers focus exclusively on global circuits of materials and objects intended for recycling and reinsertion into the value chain, they fail to address the underlying problem of escalating consumption (McBride, 2011). Further, these global networks help amplify situations where waste pickers exist in a precarious state of 'vital liminality' (Millar 2018: 63-4), engaging in dangerous labour for wages that fluctuate depending on global markets in virgin and recovered materials, fluctuations that are partly driven by national and international waste and recycling policies. The post-Basel world gave power to China, and southeastern Asian countries in general, to dictate waste regimes elsewhere. Since the early 1990s, around half of US recyclables have been bound for China, both a symptom of global exchange between the two powers and a key element of it.

The Basel Convention has often overshadowed the Bamako Convention, organised by twelve African nations who were hazardous-waste importers. But who controls global policy and influences global markets continues to change, along with the fluctuating relationship between centre and periphery. In 2017, the Chinese government announced its National Sword program, to limit plastic imports and radically reshape the global market in recycling. It was, to use Lepawksy and Gille's terms, nothing short of a re-worlding of the global waste regime. The effects were immediate. The US began sending its plastic waste to other countries in Southeast Asia, including Thailand, Malaysia and Vietnam. According to a study by Greenpeace, the burden of plastic waste coming to these three countries from the US increased from approximately 5,000, 40,000 and 50,000 metric tonnes, respectively, to over 90,000, 150,000 and 80,000 metric tonnes; within a few months these countries began enacting their own policies, modelled on those of China, to prevent these imports from overwhelming their capacities to manage them (McVeigh, 2018). While Trump is often blamed for beginning a trade war with the US rival, China's new policy on plastic imports preceded most discussion of official trade conflicts and set the stage for what came later. Thus in 2016, China accounted for 8

million tonnes or 60% of global plastic imports of which 50% were G7 countries' exports. By February 2018 China was importing less than 10,000 tonnes of plastic waste. The effects in OECD countries were to stockpile, dispose via landfill or incineration, or seek alternative export markets, again in Asia while domestic capacity for recycling is slowly being enhanced. There were consequences in China as well with feedstock shortfalls for the recycling industry, which had a negative effect on the textiles sector; 100,000 tonnes of smuggled black market plastic waste was reportedly seized by Chinese authorities in the first quarter of 2018. In response prices, including futures prices, for plastics in China have increased, and decreased sharply elsewhere (OECD, 2018: 9-12).

Policy stories draw us in because they seem to magically shift materials from the category of potential value to that of pollutant, or vice versa, redrawing the global conduits through which recyclates travel. But gaps in these policy stories are revealed through more in-depth studies of everyday remaking of ordinary materials. The next section outlines how such global and national considerations intersect with, drive but also eclipse quite different remaking practices at different scales.

Questions of Scale, Ethics, Infrastructure, Labour and Property

From the previous section it is clear that household, urban or other local recycling interventions cannot be meaningfully considered_without a broader sense of how they interlock with factors such as futures prices, national and international policies. If close examination of global trades in recyclates explodes the notion of a simple linear trajectory of materials to the end point of disposal, so too do analyses of household and local practices challenge the category of 'consumption' as a simple staging post en route to disposal. As Stephen Gudeman has shown, creatively (re)using materials is integral to thrifty household management (2016). Recycling and reuse suggest a range of practices of productive consumption, that may in turn be shaped by broader material contexts such as shortage economies (Kornai, 1980), but also the phenomenon of built-in obsolescence (identified by Vance Packard in 1960), a form of corporate malfeasance which hampers or prevents domestic attempts to repair, reuse or reassemble commodities. To these more

structural factors we might add the efflorescence of packaging, some of which can be recycled (e.g. plant pots from plastic bottles) but most of which swells the volume of households' discards whether 'recyclable' or 'waste'. The point being that certain objects or materials cannot be recycled within the household, despite the best of intentions. At the same time, when recycling becomes integrated into corporate strategies and state policy directives, they may enlist consumers' good intentions to perform 'consumption work' within the household (Wheeler and Glucksmann 2013), thus effectively outsourcing the labour of sorting and separating discarded material into waste streams to households, while corporates benefit from monetary return from sale of recyclates.

Household reuse studies (and indeed those of landfill workers e.g. Reno, 2016) also remind us that recycling practices are not necessarily solely driven by either economic or environmental logics. The sheer pleasure in making new-from-old objects or anticipating future uses of salvaged scraps should not be underestimated (Alexander et al., 2009), nor how such actions can become part of broader social and ethical concerns about living the right way (Isenhour, 2010). Moreover, the restoration of a Ming vase may resemble patching and reusing but be freighted with a radically different meaning (Spelman, 2003; Gerasimova and Chuikina, 2009). Although anthropologists (e.g. Butt, 2018; O'Hare, 2017; Calafete-Faria, 2016; Hylland Eriksen and Schober 2017, Alexander, 2009a, 2009b) have typically focused on household discards and their onwards paths via municipal waste management schemes, this attention echoes a neoliberal emphasis, often found in national waste strategies, on the waste management practices of the individual and household as the central target to reduce planetary degradation. The wastes generated by industry, retail, agriculture, biomedicine and so on hugely exceed household waste in terms of volume and toxicity, but have received relatively little ethnographic attention with respect to what can and cannot be recycled (pace Halvorson, 2017; Liboiron, 2013; Hodges, 2008; Gordillo, 2014 and Blanchette, 2019). What *has* garnered considerable attention is the informal, sometimes co-operatively organized labour of waste pickers on disposal sites (e.g. Colombijin and Morbidini, 2017; Millar, 2018; O'Hare, 2017; Demaria and Schindler, 2016; Chalfin, 2017; Gill, 2009; Butt, 2018; Perelman and Boy, 2010; Perelman, 2016) and to a lesser extent, waste workers at sites of imported

recyclates (Crang et al., 2012; Gabrys et al, 2013). These emphases on waste workers might be seen as part of the tradition of anthropological work that focuses on marginal and excluded people both to rethink these terms from the perspective of those people and to re-examine dominant political and economic narratives from a different perspective.

Such studies are also crucial for understanding what lies beneath the notion of the 'circular economy' so popular with the EU's and China's policy-making circles. This term encapsulates the aspiration for all unwanted by-products from one process to become valuable resources for another. Extrapolating from small-scale natural ecologies (Zhang, in review), the idea is that if waste-producing locales and processes can only be correctly aligned, there would be no more waste. As Garcier (2012), Gregson et al (2015) and Schulz and Lora-Wainwright (2019) note, this idea can variously elide places where pollution settles and remains, the often hazardous, poorly-paid labour of recycling and finally, in China, the concentration of financial benefit in fewer and fewer hands.

Recycling beyond the household therefore raises several intersecting themes. First, property rights and obligations over waste are crucial to determining what happens to different kinds of discarded material and are often bitterly contested because of different varieties of latent value such material can contain. Second, waste infrastructures, of which formal and informal labour may be part, can again be sites of contestation over how to deal with wastes and can govern whether a given material or object is destined for disposal or recycling. Finally, the often hazardous and unprotected labour of disassembling objects to recover valuable elements presents a series of questions into the ethical, economic and environmental trade-offs, sometimes at different scales, of such practices.

The global disproportionate allocation of the entangled economic, environmental and social benefits and disbenefits of recycling is both complex and central to understanding how contemporary recycling operates. Where and how recycling and recovery happen, outside and sometimes within the household, are shaped by and help shape global and national policies. Even where these social practices and contexts of recycling occur at

legal peripheries or outside the control of official policies, they still relate dynamically to these policies as productive exceptions beyond their apparent reach.

Property

Questions of access, usage rights, and attendant obligations are central to many of the tensions within economies of recycling. To what extent are households and other 'waste producers' *obliged* to prepare their discards by carefully sorting them into distinct waste streams before the property in that material, and any attendant profits, are transferred to another party? Is extra-household waste an urban commons or the property of the municipality and its sub-contractors? When money is to be made from disposal, or the market for certain recyclates suddenly improves, the question of access to waste, or selected waste streams may be intensified. Municipal administrations, more or less obliged to comply with political visions of waste management in order to be perceived as 'modern' and attract investment, often favour private corporations over informal waste picking by individuals or groups, although diverse political projects crystallize around waste management in different parts of the world. This is a forced choice in some places in the Global South, where, historically, investment in waste infrastructure was less attractive for global capital than more profitable schemes, leaving over-strapped states to manage them alone (Lewis, 1982; Gidwani, 2013, 2015). In the wake of crises in national debt, and exacerbated by internationally mandated structural adjustment programs and the end of Cold War era funding (Piot, 2010; Bear, 2015), corporations and privatisation may appear to be the only option for handling basic needs. And this means that, whether discarded or recycled, waste is imagined primarily in relation to property: on the one hand, there is property *in* waste, as in waste pickers who seek to revalue what they sift through, on the other hand property is at odds with waste, which can appear merely valueless, as something to bury or export to others who may or may not revalue it.

There are rich pickings for industrial-scale waste management multinationals who are often simply paid by the weight or volume of waste disposed of. The three disposal methods are roughly: burning, burial or, less often, rotting. This emphasis on simple removal, as Jamie Furniss notes (2017), is also predicated on an urban vision of spotless

streets. What this occludes, however, is the alternative latent value in the same material if it can be sorted into different waste streams and sold on for recycling, a process that is typically labour-intensive and requires a multisensorial sensitivity to distinguishing fine (and therefore valuable) gradations of material difference (Butt 2018; Calafate-Faria, 2016). This is made clear in Kathleen's Millar's exemplary ethnography of Jardim Gramacho, literally 'the garden of Gramacho', the rather ironically-named largest landfill of Rio de Janiero, which was closed after 34 years in 2012. Rather than characterise property claims in and around Rio's landfill as informally economic, per se, Millar argues that they are better seen as a form of life with material and existential dimensions (2018). Indeed, making property claims to waste can be a powerful political gesture. The more familiar locus of recycling is landfills and indeed there are many instances, particularly across Latin America, where informally-organised waste pickers have similarly formed themselves into workers' co-operatives (Medina, 2007; Sorroche, 2015), often having to battle more formal organizations for the right to access waste. This phenomenon also appears across cities elsewhere in the world at the point of waste collections as Waqas Butt describes for Lahore (2018).

Infrastructure

Part of the 'infrastructural turn' in Anthropology (see Larkin, 2013) has embraced the politics and economics of the peculiarly urban problem of collecting and disposing of excessive waste (Harvey, 2017) The long history of public urban sanitation measures reveals different visions for the good life and futures. It also shows how infrastructures both determine, and are determined by, the changing composition of waste m1aterials historically and geographically, and how they constitute quite different assemblages, or 'urban metabolisms' of technology, policy, human and non-human labour depending on locality. Examining how waste and recycling infrastructures intersect at a global scale provides an insight into what happens when quite different assemblages connect or collide. For example, the political capital in keeping nuclear waste reprocessing out of France, a country heavily reliant on nuclear power, comes at the cost of reprocessing occurring in Russia under relatively lax regulatory regimes, with hazardous transportation

of spent and replenished fuel to and from France (Garcier 2012). One city's pristine streets may come at the cost of another's stock piling of imported waste.

There is political capital in demonstrating the ability to keep a city clean, and by the same token, failed waste infrastructures are an immediate sensory reminder of political and administrative failure, as Naples' 2009 waste crisis amply demonstrated (De Rosa, 2018). Human bodies, and indeed sometimes animals (Doherty, in press) and microbes (Reno, 2016), are part of this infrastructure and indeed there may be contested infrastructural configurations aimed at either collecting as much as possible and disposing of it—or more selectively collecting, sorting, separating and selling on materials. Such struggles hinge on the property to and potential values in discarded materials, and how they are assessed, to which we can add the political value of a pristine urban landscape. Formal and informal labour and private, municipal or co-operative organizations may variously be mutually dependent or rivalrous.

The emphasis in formal waste management contracts is usually on disposal, with waste streams being evaluated by weight: so many tones, so much income. What this obviates, however, is first, residual value in the material being disposed of and second how cost effective, in monetary or energy terms, it is to recover that value. Energy can be recovered, in the form of gas, but is reliant on high-calorific feedstock to generate good-quality energy. What these technocratic, large-scale disposal operations often prevent however, are the possibilities of recycling and extending the lives of materials, as well as providing a livelihood for thousands of waste pickers. These tussles may be seen as replaying struggles over rights to the city but in the context of its wastes; such conflicts are often sharpened when municipal visions, policies and technologies are imported from quite different places.

Thus, as waste volume increases in many of India's cities, incineration appears an attractive option for simultaneous capital accumulation, the apparent elimination of waste and the production of energy, though only if can be tailored to local circumstances (Doron and Jeffrey, 2018). Delhi's adoption of an incinerator to address its waste

management met with hostility in the 2000s from wastepickers deprived of access to recyclable materials and thus their livelihood but, in an unexpected turn, they formed an alliance with Delhi's middle-class, anxious about air pollution from the incinerators (Demaria and Schindler, 2015). Delhi's first incinerator was, notoriously, imported from Denmark, a country whose waste management policy is largely grounded on such technology. Such concerns, however, that incineration burns recyclable material, are also appearing in Denmark (Schick, 2018) and in Britain, alongside conflicts over other energy-to-waste technologies (Alexander, 2016; Levidow and Ramen, 2019). Quite apart from the economic devastation caused by inserting such technologies into waste infrastructures based on wastepicking, there is the additional problem that waste composition in the global south is typically wetter and thus less appropriate for incineration (Calafete-Faria, 2015).

Britt Halvorson (2017) and Lucy Norris (2012) provide further ethnographic examples of the collision of value regimes, in all senses, when recyclates cross continents. Thus the usable but discarded medical equipment that is carefully culled by American Lutherans to be sent as charitable donations to Madagascar, is transformed on arrival to commodities (Halvorson, 2017). Meanwhile clothing donations to European and Scandinavian charity shops are exported to Panipat in northern India, to be skillfully picked apart by poorly-paid, unprotected migrant labour, mainly women controlled by factory owners, The process is harmful to the health of the women and their children, and pollutes adjacent land and waterways. The women's stories that try to account for the influx of what appear to be perfectly good garments, suggest yet another clash of values (Norris, 2012).

There is also a subfield of waste infrastructure studies: how infrastructures are themselves recycled. Thus, nineteenth-century northern industrial cities generated vast amounts of ash that in turn was formed into bricks for more housing (Alexander and Reno, 2012). As Stoler (2013) has discussed, successive political regimes leave behind not only ruins in the conventional sense of a crumbling artefact clearly linked to the past, but ruination as continuing material and ideological processes in the present that have negative effects. Gastón Gordillo (2014) and Erik Harm (2016) have both considered the twenty-first-

century equivalent of urban destruction, but where ruins fail to be recycled into resources for other construction, combining material ruins with Stoler's sense of ruination. As Gordillo shows for the Argentine Andes, the multiple forms of rubble that remain, form a palimpsest of various kinds of violence wreaked on the area for centuries. Harm's ethnography of Ho Chi Minh explores the human cost of such urban infrastructural recycling: the poor who are evicted from housing are not those who benefit from the rebuilding.

Ethics

The ethics of recycling are far more complex than might at first appear. The public environmental good of resource recovery and minimizing planetary degradation begs the questions of at what scale this should occur, let alone whose responsibility it is to reduce resource use and for what public. Rivalrous goods can emerge as the health and safety of waste workers, or the production of energy or a pristine urban environment. These too can be further qualified or challenged: does the environmental cost of transport offset the apparent gain of disassembly and reassembly? Can hazardous work and polluted lands be counterbalanced by the monetary value of cheaper material inputs and employment when both are scarce and in demand? Many of these questions hinge on geographical or technological displacement and the asymmetrical allocation of goods and bads (Alexander, 2012). The inability to achieve adequate economies of scale in collecting a given material stream, even something as critical as rare earths to the electronics industry, can mean it is economically not worth recycling (Garcier and Verrax, 2017) whatever the environmental damage of continued extraction. Gay Hawkins links these global ethical questions to those of personal responsibility (2005) suggesting that the tendency in the global north for waste processing to be seen as belonging wholly in a technocratic realm means citizens are disengaged from the effects of their actions.

Ethnographies of recycling challenge simplistic categorisations of waste work as abject (Bauman, 2003) revealing the possibilities, albeit sometimes compromised, of hope and wealth amidst precarity and oppression (Chalfin, 2016; Nguyen, 2018). Above all, such

studies teach us to be attentive to how the work of wastepicking and recycling is experienced by those who do it. Well-meaning attempts to rehabilitate bodies and souls alongside materials (Alexander and Reno, 2012) may be mocked by workers in some cases (Alexander, 2009), but in others the transformative potential of waste work is embraced and sometimes realised (Nguyen, 2018).

One last observation highlights again the need for ethnographic particularity when analyzing the ethics of waste work. Broader ethico-religious frameworks may determine who does waste work and why. In India, such work is polluting and therefore symptomatic of humiliating caste relations (Korom, 1998; Gill, 2009), undertaken in Barbara Harriss-White's ethnography (2017) by Dalits and Scheduled Tribes who are bonded for three years to an informal labour contractor. Here the relationship between waste work and belief and ritual, with which we began, takes on a harmful form. In other cases, it may be that religious minorities are the ones who engage in scrapping and informal recycling, as was the case with Jewish migrants in the early urban settings of the United States (Zimring, 2005), or for Palestinians in the occupied West Bank today (Stamatopoulou-Robbins, 2011, 2019). Wherever religious categories have a role in who recycles and how, this requires heightened attention to the moral and political dimensions involved, whether these entail worsened forms of dehumanisation and abjection, or serve to support global religious aid initiatives (Halvorson, 2017).

Multiple entanglements of recycling practices and policies

Ethnographies of recycling show that the pathways of different discarded materials are shaped by numerous, intersecting histories, policies, ethical frameworks and waste infrastructures at different scales. What appears are multiple stories of such entanglements.

The landscape of global economies of recycling rapidly changed over the early twenty-first century. The global policy environment that was ushered in by the 1992 Basel Agreement began to shift radically. In a post-Basel world, the geography of the global

south altered sharply in 2018, with China, followed swiftly by other southeast Asian nations, refusing to accept what had previously been categorized as recyclable plastic, and countries such as Norway pushing for revisions to Basel to accommodate concerns about oceans filling up with plastic debris. This led to reverberations from wealthy OECD countries struggling to meet their recycling and carbon accounting quotas and marginal and precarious "informal recyclers" the world over who can no longer collect rubbish for a guaranteed return. Indeed familiar categories of global north and south have ceased to have much descriptive or analytical use where China and most of the other BRIC countries hold so much power and leverage at the global geopolitical scale. Notably, perhaps, in 2019 the OECD simply terms China, Indonesia, Brazil, India and South Africa 'key partners'.

In line with rising public and policy concern about wastes, scholarly analyses increased of these and other developments associated with economies of recycling, focusing especially on people's material and moral encounters with reuse. These range from nuanced investigations into how lives and materials alike can be re-crafted by recovering value from discards; following an object through its social lives; or focusing on one material such as plastic or e-waste and tracking how waste is co-produced at each stage of creation and (re)use. Whether or not the notion of the Anthropocene, let alone its cause, is accepted, exploring how global economies intersect with national policies and local systems of waste management, reveals not only what becomes of waste but how it is variously imagined and treated as pollutant or resource, as apotheosis of the Anthropocene or deliverance from it.

Further Reading

Alexander, Catherine and Joshua Reno. Eds. 2012. *Economies of Recycling: The Global Transformation of materials, values and social relations*. London: Zed Books

Lepawsky, Josh. 2018. *Reassembling Rubbish: Worlding Electronic Waste*. Cambridge, Mass.: MIT Press.

Reno, Joshua. 2015. Waste and Waste Mangement. *Annual Review of Anthropology*, 44: 557-572.

Reno Joshua. 2016. *Waste Away: Working and Living with a North American Landfill.* Oakland: University of California *Press.*

References

Alexander Catherine and Andrew Sanchez. 2019. Values of Indeterminacy. In *Indeterminacy: waste, value and the Imagination*, eds. Catherine Alexander and Andrew Sanchez. Oxford and New York: Berghahn Books.

Alexander, Catherine. 2016. When Waste Disappears, or *More* Waste Please! *RCC Perspectives: Transformations in Environment and Society*, 1: 31-39.

Alexander, Catherine and Joshua Reno. 2012. Introduction. In *Economies of Recycling: The Global Transformation of materials, values and social relations*, eds. Catherine Alexander and Joshua Reno. London: Zed Books.

Alexander, Catherine. 2012. Economic Valuations and Environmental Policy. In *A Handbook of Economic Anthropology*. Ed. James Carrier. Edward Elgar Publishing.

Alexander, Catherine. 2009a. Illusions of Freedom: Polanyi and the Third Sector. In *Market and Society:* The Great Transformation *Today*, Chris Hann and Keith Hart (eds,). Cambridge: Cambridge University Press.

Alexander, Catherine, Chris Smaje, Rose Timlett and Ian Williams. 2009b. Improving social technologies for recycling. *Waste and Resource Management*, 162(1): 15-28.

Appadurai, Arjun. 1986. Introduction: Commodities and the Politics of Value. In Arjun Appadurai, ed. *The Social Life of Things: Commodities in Cultural Perspective.* Cambridge: University of Cambridge Press. Pp. 3-63.

Bauman, Zygmunt. 2003. *Wasted Lives: Modernity and its outcasts*. Cambridge: Polity Press.

Bear, Laura. 2015. *Navigating Austerity: Currents of Debt along a South Asian River.* Stanford University Press.

Blanchette, Alexander. 2019. "Living Waste and the Labor of Toxic Health on American Factory Farms." *Medical Anthropology Quarterly*. Vol 33(1).

Butt, Waqas. 2018. Life in the Wastelands : Work, Infrastructures, and Value in Urban Pakistan. PhD dissertation. University of California, San Diego.

Calafate-Faria, Francisco. 2016. Countercycling: An Ethnographic Study of Waste, Recycling, and Waste-Pickers in Curitiba, Brazil. PhD Dissertation. Goldsmiths. University of London.

Crang, Mike, Nicky Gregson, Farid Ahamed, Raihana and Nasreen Akhter. 2012. Death, the Phoenix and Pandora: Transforming Things and Values in Bangladesh. In *Economies of Recycling: The Global Transformation of materials, values and social relations*, eds. Catherine Alexander and Joshua Reno. London: Zed Books.

Brenda Chalfin. 2017. Wastelandia': Infrastructure and the Commonwealth of Waste in Urban Ghana. *Ethnos*, (82)4,: 648-671.

Colombjin, Freek and Martina Morbidini. 2017. Pros and cons of the formation of waste-pickers' cooperatives: a comparison between Brazil and Indonesia. *Decision*, 44(2): 91-101.

Demaria, Federico and Seth Schindler. 2016. Contesting Urban Metabolism: Struggles Over Waste-to-Energy in Delhi, India. *Antipode*, (48)2:,293-313.

De Rosa, Salvatore. 2018. A political geography of 'waste wars' in Campania (Italy): Competing territorialisations and socio-environmental conflicts. *Political Geography*, 67: 46-55.

Derksen, Linda and John Gartrell, 1992. The Social Context of Recycling. *American Sociological Review*, (58)3: 434-442

Desjarlais, Robert. 2016. *Subject to Death: Life and Loss in a Buddhist World.* Chicago and London: University of Chicago Press.

Doherty, Jacob (in press) Filthy Flourishing: Para-Sites, Animal Infrastructure and the Waste Frontier in Kampala. *Current Anthropology*.

Doron, Assa and Robin Jeffrey. 2018. *Waste of a Nation: Garbage and Growth in India.* Cambridge, MA: Harvard University Press.

Furniss, Jamie. 2017. What type of Problem is Waste in Egypt. *Social Anthropology/Anthropologie Sociale.* 25(3): 301-3017

Gabrys, Jennifer, Gay Hawkins and Mike Michael (eds). 2013. *Accumulation: The Material Politics of Plastic*. London: Routledge.

Gerasimova, Ekaterina and Sof'ia Chuikina. 2009.The Repair Society, *Russian Studies in History*, (48)1: 58-74.

Garcier, Romain. 2012. One Cycle to Bind Them All? Geographies of Nuclearity in the uranium fuel cycle. In *Economies of Recyling: The Global Transformation of materials, values and social relations*, eds. Catherine Alexander and Joshua Reno. London: Zed Books.

Garcier, Romain and Fanny Verraux. 2017. Critiques mais non recyclées : expliquer les limites au recyclage des terres rares en Europe. *Flux* 108(2): 51-63

Gidwani, Vinay and Rajyashree Reddy. 2011. The Afterlives of "Waste": Notes from India for a Minor History of Capitalist Surplus. *Antipode* 43(5): 1625-1658.

Gidwani, Vinay. 2013. Six theses on waste, value, and commons, *Social & Cultural Geography*, 14(7): 773-783.

Gidwani, Vinay. 2015.The work of waste: inside India's infra-economy. *Transactions of the Institute of British Geographers*, 40(4): 575-595.

Gill, Kaveri. 2009. *Of Poverty and Plastic: Scavenging and Scrap Trading Entrepreneurs in India's Urban Informal Economy*. Oxford University Press, New Delhi.

Gille, Zsuzsa. 2007. *From the Cult of Waste to the Trash Heap of History. The politics of waste in socialist and postsocialist Hungary.* Bloomington, IN: Indiana University Press.

Gray-Cosgrove, Carmella, Max Liboiron and Josh Lepawsky. 2015, The Challenges of Temporality to Depollution & Remediation. ***S.A.P.I.EN.*S** (8)1**.** http://journals.openedition.org/sapiens/1740

Gordillo, Gastón. 2014. *Rubble: The Afterlife of Destruction*. Duke University Press.

Gregson, Nicky, Mike Crang, Sara Fuller and Helen Holmes. 2015. Interrogating the circular economy: the moral economy of resource recovery in the EU. Economy and Society, *Economy and Society*, 44(2): 218-24.

Gudeman, Stephen. 2016. *Anthropology and Economy*. Cambridge: Cambridge University Press.

Harms, Erik. 2016. *Luxury and Rubble: Civility and Dispossession in the New Saigon*. University of California Press.

Harriss-White, Barbara. 2017. Formality and informality in an Indian urban waste economy. *International Journal of Sociology and Social Policy*, 37(7/8).

Harvey, Penny. 2017. Waste Futures: Infrastructures and Political Experimentation in Southern Peru, *Ethnos*, 82:4, 672-689

Hawkins, Gay, *The Ethics of Waste: How We Relate to Rubbish*. Rowman and Littlefield.

Hawkins, Gay. 2017, 'Ethical blindness: plastics, disposability and the art of not caring', in V Kinnunen and A Valtonen (eds), *Living ethics in a more-than-human world*, University of Lapland, Finland, pp. 15–28.

Hecht, Gabrielle. 2018. Interscalar vehicles for an African Anthropocene: On waste, temporality, and violence. *Cultural Anthropology*, *33*(1): 109-141.

Hodges, Sarah. 2008. Chennai's Biotrash Chronicles: Chasing the Neo-Liberal Syringe. *University of Warwick*: GARNET Working Paper No: 44/08

Isenhour, Cynthia. 2010. On Conflicted Swedish Consumers, the Effort to Stop Shopping and Neoliberal Environmental Governance. *Journal of Consumer Behaviour* 9: 454-469.

Kirby, Peter and Anna Lora-Wainwright. (2015) Exporting harm, scavenging value: transnational circuits of e-waste between Japan, China and beyond. *Area*, 47(1): 40-47.

Kopytoff, Igor. 1986. The Cultural Biography of Things: Commoditization as Process. In Arjun Appadurai, ed. *The Social Life of Things: Commodities in Cultural Perspective.* Cambridge: University of Cambridge Press. Pp. 64-91.

Kornai, Janos. 1980. *The Economics of Shortage*. Amsterdam ; New York : North-Holland Pub. Co.

Korom, Frank. 1998. On the Ethics and Aesthetics of Recycling in India. In *Purifying the earthly Body of God: Religion and Ecology in Hindu India*, (ed) L. Nelson. SUNY Press.

Larkin, Brian. 2013. The Poetics and Politics of Infrastructure. *Annual Review of Anthropology* 42 :327-343.

Lepawsky, Josh. 2018. *Reassembling Rubbish: Worlding Electronic Waste*. Cambridge, Mass.: MIT Press.

Lepawsky, Josh. 2015. Are we living in a post-Basel world? *Area* 47(1): 7-15.

Lepawsky, Josh and Mather, Charles, 2011. From beginnings and endings to boundaries and edges: rethinking circulation and exchange through electronic waste. *Area 43*(3): 242-249.

Levidow, Les and Sujatha Raman. 2019. Metamorphosing waste as a resource: scaling waste management by ecomodernist means, *Geoforum* 98: 108–122.

Levi-Strauss, Levi. 1955. The Structural Study of Myth. *Journal of American Folklore*, LXVII: 428-444

Liboiron, Max. 2013. Modern waste as strategy. *Lo Squaderno: Explortions in Space and Society* 29: 9-12.

Liboiron, Max. 2018. The What and Why of Discard Studies. *Discard Studies*. Available at https://discardstudies.com/2018/09/01/the-what-and-the-why-of-discard-studies/ Accessed: 1st March 2019.

Lora-Wainwright, Anna. 2015. The Trouble of Connection: E-waste in China bewteen State regulation, Development Regimes and Global Capitalism. In *The Anthropology of Postindustrialism: Ethnographies of Disconnection*. Eds. Ismael Vaccaro, Krista Harper, Seth Murray. Routledge.

MacBride, Samantha. 2011. *Recycling Reconsidered*: *The Present Failure and Future Promise of Environmental Action in the United States*. MIT Press.

McVeigh, Karen. 2018. Huge rise in US plastic waste shipments to poor countries following China ban. *The Guardian*, 5th October 2018.
Available at: https://www.theguardian.com/global-development/2018/oct/05/huge-rise-us-plastic-waste-shipments-to-poor-countries-china-ban-thailand-malaysia-vietnam
Accessed: 1st March 2019.

Medina, Martin. 2007. *The World's Scavengers: Salvaging for Sustainable Consumption and Production*. AltMira Press.

Millar, Kathleen. 2018. *Reclaiming the Discarded: Life and Labor on Rio's Garbage Dump*. Duke University Press.

Nguyen, Minh. 2019. *Waste and Wealth***:** *An Ethnography of Labor, Value, and Morality in a Vietnamese Recycling Economy.* New York and Oxford: Oxford University Press.

Norris, Lucy. 2012. Shoddy Rags and Relief Blankets: Perceptions of Textile. In *Economies of Recycling: The Global Transformation of materials, values and social relations*, eds. Catherine Alexander and Joshua Reno. London: Zed Books. Pp. 35-58.

O'Hare, Patrick. 2017. 'Recovering Requeche and Classifying Clasificadores: An Ethnography of Hygienic Enclosure and Montevideo's Waste Commons'. PhD Dissertation. Cambridge University.

OECD. 2018. International Trade and the Transition to a Circular Economy. Available at: http://www.oecd.org/environment/waste/policy-highlights-international-trade-and-the-transition-to-a-circular-economy.pdf

OECD. 2018. Improving Plastics Mangement: Trends, Policy Responses and the Role of International Co-operation and Trade. Available at: https://www.oecd.org/environment/waste/policy-highlights-improving-plastics-management.pdf

Packard, Vance. 1960. *The Waste Makers*. David McKay Publishers.

Perelman, Mariano and Martin Boy. 2010. Cartoneros en Buenos Aires: nuevas modalidades de encuentro. *Revista Mexicana de Sociología* 72(3)

Perelman, Mariano. 2016. Contesting Unemployment: The Case of the Cirujas in Buenos Aires. In *Anthropologies of Unemployment: New Perspectives on Work and Its Absence*. Eds. Jong Bum Kwon, Carrie M. Lane. Cornell University Press. Pp97-117.

Piot, Charles. 2010. *Nostalgia for the Future: West Africa after the Cold War.* Chicago and London: University of Chicago Press.

Reno, Joshua. 2009. Your Trash is Someone's Treasure. *Journal of Material Culture*, 14(1):29-46.

Reno, Joshua. 2015. Waste and Waste Mangement. *Annual Review of Anthropology*, 44: 557-572.

Reno Joshua. 2016. *Waste Away: Working and Living with a North American Landfill.* Oakland: University of California *Press.*

Reno, Joshua. 2018. Scaling Up the Self, Scaling Down the World: Self-Objectification and the Politics of Carbon Offsets and Personalised Genomics. *Science as Culture* 27(1): 44-73.

Schick, Lea, Rebecca Ford, and Nandita Badami. 2017. "Our Electric Transitions." Theorizing the Contemporary, *Fieldsights*, December 19. https://culanth.org/fieldsights/our-electric-transitions.

Schulz, Yvan and Lora-Wainwright, Anna, 2019. In the Name of Circularity: Environmental Improvement and Business Slowdown in a Chinese Recycling Hub. *Worldwide Waste: Journal of Interdisciplinary Studies*, 2(1): 9.

Sorroche, Santiago. 2015. Líderes, residuos y lugares: Reflexiones sobre la gubernamentalidad global del reciclaje desde la experiencia de una cooperativa de cartoneros de La Matanza. In *Recuperadores, residuos y mediaciones. Análisis desde los interiores de la cotidianeidad, la gestiÓn y la estructuraciÓn social*. Ed. Gabriela Vergara. Argentina: Estudios SociolÓgicos Editora.
pp. 51-78

Spelman, Elizabeth. 2003. *Repair: The Impulse to Restore in a Fragile World*. New York: Beacon Press.

Stamatopoulou-Robbins, Sophia. 2011. In Colonial Shoes: Notes on the Material Afterlife in Post-Oslo Palestine. *Journal of Palestine Studies*.

Stamatopoulou-Robbins, Sophia. 2019. *Waste Siege: The Life of Infrastructure in Palestine.* Stanford: Stanford University Press.

Stoler, Ann. 2013. *Imperial Debris: Ruins and Ruination*. Durham: Duke University Press.

Thompson, Michael. 1979. *Rubbish Theory*. Cambridge: Cambridge Univesity Press.

Tong, Xin and Jici Wang. 2012. The Shadow of the Global Network: E-waste flows to China. In *Economies of Recycling: The Global Transformation of Materials, Values and Social Relations*. Eds. Catherine Alexander and Joshua Reno. Zed Books.

UN-HABITAT. 2010. *Solid Waste Management in the World's Cities*. Earthscan: London and Washington, D.C.

Wheeler, Kathryn and Miriam Glucksmann. 2013. Economies of Recycling, 'Consumption Work' and Divisions of Labour in Sweden and England. *Sociological Research Online* 18(1):1-14.

Yaeger, Patricia. 2008. The Death of Nature and the Apotheosis of Trash; Or, Rubbish Ecology. *PMLA*, 123(2): 321-339

Yates, Michelle. 2011. The Human-As-Waste, the Labor Theory of Value and Disposability in Contemporary Capitalism. *Antipode* 43(5): 1679-1695.

Zhang, Amy. In review. Reconfiguring the Black Soldier Fly for urban waste management in Guangzhou. *Cultural Anthropology.*

Zimring, Carl. 2005. *Cash for Your Trash: Scrap Recycling in America*. New Brunswick, New Jersey and London: Rutgers University Press.