

The Other Side of Society. Reflections on Waste and its Place

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Abstract

This paper presents us with waste; buried, burnt, flushed away, it nevertheless lies at the very heart of our (all too?) material culture, its presence a malodorous affront to what we call “society”. In reading in its decomposing forms the “spirit” of a people that once inhabited and enlivened it (Pels 1998, p.91), my argument is that theories of material culture prevent anthropology taking waste seriously enough. Through the work of Mary Douglas and Daniel Miller, I explore how waste draws our attention how the “animism” implicit within their theories of the social remains complicit in the problematic separation of a lively world of human sociality – even one enlarged to include all our “stuff” (Miller 2010) – from the non-social, pre-given world of “brute” materials (Tilley 2007) from which it is constructed. Yet waste itself teems with other, much more than human, kinds of life that gesture beyond this limiting anthropocentrism, towards the *metabolic* approach elaborated in the second half of this paper, that draws on the work of Tim Ingold and Joshua Reno. On the far side of theories fashioned in the image of society, waste becomes a means for thinking *sociality* otherwise (Reno 2014).

Keywords: Waste, Material Culture, Materials, Animism, Metabolism

Introduction

This paper deals in waste: buried, burnt, flushed away, this stuff nevertheless lies at the very heart of our (all too?) material culture, its presence a malodorous challenge to what we call “society”. In reading in its now decomposing forms the “spirit” of a people that once inhabited and enlivened it (Pels 1998, p.91), my argument is that theories of material culture fail to take waste seriously enough. The first half of this paper fleshes out this *animism* implicit in the work of Mary Douglas and Daniel Miller. As “matter out of place” (Douglas 1984), Douglas approaches dirt as a remainder, and reminder, of the “positive effort to organise the environment” (ibid, p.2) that

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define particular ways of life of a people. As the “uncategorizable”, waste becomes a plural, cross-cultural category, always constructed in the negative of the society producing it.

Daniel Miller’s approach to material culture (2005, 2010) presents one of the most sustained attempts to incorporate the material into social theory, widening the prevailing emphases on social function and meaning to include practices of everyday life that take shape with the “stuff” we surround ourselves with. Despite the empirical richness and theoretical purchase of this material-cultural approach, I argue that waste, in particular, makes visible the ways in which it remains complicit in the problematic, *animist* separation of lively worlds of human sociality – even enlarged to include all our “stuff” (Miller 2010) – from a non-social, pre-given world of “brute” materials (Tilley 2007). Yet waste also teems with other, much more than human, kinds of life that gesture beyond this limiting anthropocentrism, towards the *metabolic* approach elaborated in the second half of this paper, in conversation with the work of Tim Ingold (2007, 2010) and Joshua Reno (2014).



Photo 1. Three bags, one week’s worth, of things thrown in the bin.

I was taken aback by how odd it felt to be opening these bags and seeing, smelling and touching all this stuff again: thin plastic packaging of food

long digested, the socks whose familiar holes finally condemned them, eviscerated fruit, brassicas of various descriptions left too long in the bottom of the fridge, a razor with some of my chin hairs in its blades, pieces of broken glass gingerly picked out, a can of rose water jelly that had accompanied us, unopened, for the last three years, a disintegrating shopping list and countless receipts for things purchased, used and, more than likely, thrown away. I kept looking round, half expecting the puzzled frown of my neighbour or the puzzled nose of his dog.



Photo 2. From left to right in rough categories: organic material, paper and card, things with metal in them, glass, glass, plastics and textiles.

What had been hidden was out in the open again, the pull of its familiarity making it all the more unsettling. Drawing on fieldwork in 2011-12 in Northeast Scotland on waste and its everyday management, this paper is a reflection and elaboration on that unease, following its trail an exercise in questioning what exactly this waste, my waste, *is*.

Animated waste: matter out of place

The bags of rubbish I was busy sorting through in my backyard contained the residue of a week's everyday "actions and inaction" (Bennett 2004, p.350); the "used-up, the rotten, the broken, or the unwanted" things (Reno 2009, p.29) thrown from my family and I's (just) past lives; some beginning to smell sharp and merge in a slimy mess, others showing little sign of decay. As William Rathje and Cullen Murphy tell us, rubbish is the richest seam an archaeologist can hope to strike on a dig:

To an archaeologist, ancient garbage pits or garbage mounds, which can usually be located within a short distance from any ruin, are always among the happiest of finds, for they contain in concentrated form the artifacts and comestibles and remnants of behavior of the people who used them (Rathje and Murphy 2001, p.11).

For those that can (and want to) read it, rubbish is alive with stories, a mess of trails leading back to the ways of life of a people. Its animating, pulse can still be heard if one knows how to listen. Mary Douglas's formulation, in *Purity and Danger* (1984), of dirt as *matter out of place*, set the agenda for anthropological theories of waste. Written in opposition to the prevailing "hygienist" discourse of the times, Douglas showed that dirt, and the ambivalent feelings it generates, exists in the eye of its beholder. Rather than of being a natural category, dirt is, first and foremost, an offense against the good *order* of a given society (Scanlan 2005). Cast within an over-arching Structuralist frame, she showed that no matter how complex or differentiated the symbolic-social system of a society, some phenomena always elude categorization and, as such, unsettle and threaten its very integrity. The production of waste – and its power within the social – becomes understandable "not as a negative movement" but as a remainder, and reminder, of the "positive effort to organise the environment" (Douglas 1984, p.2). Despite refrigerators and darning needles, cabbages go mouldy, socks wear out, and razors become blunt. The practical ease with which I can bag up this stuff, place it in the bin outside the flat and forget about it, belies a deeper unease with decay. As John Scanlan describes in his book 'On Garbage' (2005), decay and entropy serve as the perennial antagonist to the Sisyphean effort of ordering everyday life. Both time and energy are expended keeping it out of sight, out of nose, out of mind and home. Adrift in this pile, these discarded things begin their slow return to the undifferentiated, uncategorizable state of *dirt* outside of human life. As an epithet for the relativism, and finitude, of human ways of making sense of the world, rubbish has been good to think with.

While I would hesitate to describe the everyday existence of my family in our flat as a "*systematic* ordering and classification of matter" (Douglas 1984, p.35), especially given Douglas's emphasis on the symbolic as the currency of this system, this stuff is rubbish precisely because it no longer had a place, because it was getting in the way. Douglas presents waste as an (epi)phenomenon of a human sociality refracted through the lens of the symbolic, reiterating the prioritisation of cultural form and organisation within anthropology during its Functionalist, Structural-Functionalist and Structuralist turns, in which material artefacts (and the waste they generate) appear as "text" from which an *animating* culture can be read (Miller 2010). This cognitive bias to understanding waste continues, albeit significantly

transformed, within the mainstream of academic and government research that emphasises the role of awareness, knowledge and attitudes in shaping consumption and the production of waste (Bulkeley and Gregson 2009).

Complicating this narrow focus on the meaning of waste is a growing body of research using more practice-orientated approaches that foreground the role that habit, convenience and networks of social relations (and their lack) play in governing individuals' and households' relationship to waste (for example Shove 2003, Shove and Hand 2007, Gregson 2007, Warde 2005, Bulkeley and Gregson 2009). Within this perspective, my three bags of rubbish start to emerge in a more concrete way, the remainder of the rhythms and rituals of our everyday consumption as a family that have taken shape living in Aberdeen; in exchanges with friends, strangers, shops and municipal services: in our habits of buying, cooking and eating food; in buying, using and caring for clothes, furniture, technology. I turn now to Daniel Miller (2010, 2007, 2005) and his dialectical understanding of the social, a descendant of Hegel through Marx and Simmel, whose work presents one of the most thorough re-workings of social theory to include all the complexity of its practical imbrications in the material.

Animated waste: the materiality of waste

“Don't, just don't, ask for or expect a clear definition of 'stuff'” (Miller 2010, p.1). The first line of Daniel Miller's book on *Stuff* spells out his generous approach to material culture: any specific criteria for what counts as “stuff” would inevitably exclude some things as too natural, transient or immaterial. Where would we place an email or a shopping list thrown away? Miller's basic premise is that all culture is an inextricably material process – “things make us as much as people make things” (2010, p.42) – that cuts against the grain of the social sciences. Drawing on Bourdieu's notion of the *habitus*, Miller approaches material culture as an “exterior environment that habituates and prompts us” (2005, p.5), educating us into our place and identity in society. In effect, this reverses the priority of subject and object within the process of *ordering* that Douglas took to be the social. Our stuff becomes central to the reproduction of social order by framing our behaviour unconsciously, shaping both the diversity and homogeneity of the routines, habits, tastes and interests that constitute everyday lives. Material culture occupies an ambiguous position: the object-ness of stuff foregrounds its externality and separability from those who make, exchange, use and throw it away, while casting into the background the fact that this same stuff is always an extension or “objectification” of ourselves. Miller's approach to material culture makes this double life of objectification available for analysis and critique, grounding the social and political in the full-

ness of its material manifestations. As such, there is “no fundamental separation between humanity and materiality – that everything that we are and do arises out of....the process by which we create [objective] form and are created by this same process” (2005, p.8).



Photo 3. The shopping list found in and amongst decomposing fruit and vegetables.

The list I recovered from my rubbish can be read in this dialectical light. While it keeps the still recognisable forms of paper, inked lines and inscriptions, we can read through to my habit of writing lists, following the ways it shapes particular modes of thinking and remembering, planning and organising the flow of everyday life, and how these are woven into, and through, the (now) mundane technologies of paper and pen. I haven't the space to follow the endlessly branching loops of objectification that even this prosaic instance of material culture opens up onto; only enough to note how, within this approach, waste becomes lively material with which to follow the social, economic and political relations generated and made possible through the production, maintenance and disposal of stuff in daily life (see for example Shove 2003, Reno 2009 and Norris 2012), understood not just through symbolic systems of human meaning-making but all the urgency and inventiveness of making a living.

Yet what does the dialectic have to say about this shopping list or clothing or household bleach as it decomposes and loses any recognisable form? In

the mess of the rubbish bag, what had recently been a familiar, ordered (and ordering) part of social life is busily becoming strange, going its own way. As I'll follow in the next section, other kinds of life are taking hold and these once familiar, differentiated things are becoming something else: fruit-fly multiply, aspergillum, penicillium, fusarium and cladosporium moulds fight for their share of the riches, innumerable generations of bacteria thrive and die, next door's dog busily digesting any odd bits left, even the very slow decomposition of the plastics is underway. Waste brings us to the far end of the process of objectification that weaves the animating Geist (or geists) of humankind in and through the material world. As this economy of material-cultural form deforms and transforms as waste, it passes over to an undifferentiated and *uninteresting* (at least to anthropologists) world of "brute matter" (Tilley 2007). How did we get to this fork in the road, with one direction leading back to the light of the social, the other out into the darkness of Nature?

Animated waste: where culture and the material fall apart

I want to take a closer look at Miller's characterisation of the process of objectification, "by which we create form and are created by this same process" (2005, p.8). Studies of material culture tend to focus on practices of consumption for the simple reason that it is the most widespread and important form of sociality in which "the specific character of people emerges from their interaction with the material world through practice" (2007, p.26). As such, objectification is approached empirically through the prism of already-made objects, leaving somewhat vague the question of how these object-forms are created in the first place. In his critique of the concept of materiality employed within material cultural studies, Tim Ingold (2000, 2007) makes visible the idealism (as a particularly Western form of animism) he sees at play within the process of objectification.

A spider conducts operations that resemble those of a weaver, and a bee puts to shame many an architect in the construction of her cells. But what distinguishes the worst of architects from the best of bees is this, that the architect raises his structure in imagination before he erects it in reality. (Marx 1974, p.198)

Within this cosmology, form springs to life fully formed, pre-figured either in the imagination of Man or Nature's Laws. A cosmology divided between by two very different spheres of influence: intentional versus non-intentional, watchmaker versus "blind watchmaker". While gifted with the capacity to create idea-form ex nihilo in imagination, humans nevertheless have to pass through the material world to realise them. In this sense, objectification is the conversation we have with ourselves through matter. However, the focus on

consumption furnishes an array of already established forms that elide any direct friction with the material world. Miller can, in good faith, insist that his project is attentive to the material world, to the “physical attributes of the textiles used in the sari... the propensities of silk, cotton and polyester... issues of colour, form, embroidery... transparency and sheen” (Miller 2007, p.24), but this attention is restricted to qualities of materials that help define the specific social form and function of an object consumed; what he calls its *materiality*. Tilley (2007), making the link between Miller’s work and his own phenomenological approach, tells us that the concept of materiality makes visible the affordances that otherwise “brute” and mute materials present to human ways of life (p.17). A fault-line runs through the middle of material culture, with the natural world of matter on one side and an animating *geists* of humanity on the other, clothed in all the finery of materiality. Following waste to decomposition leads us to the point where these human worlds of socially meaningful form fall away (or back into) an undifferentiated material world.

Part of the unease and guilt I felt rummaging through my rubbish is that I knew next to nothing of where it was going next, of what it would become. The second half of this paper follows my rubbish to Stoneyhill landfill, north of Aberdeen; its aim to complicate this boundary of the anthropological drawn at the limit of the “processual significance [waste has] in relations to persons and socio-political relations” (Tilley 2007, p.17) with another, *metabolic* sense of the life waste holds.

The metabolic life of waste

I’d gotten lost on the small roads of rural Aberdeenshire. After an increasingly desperate time skirting bare ploughed fields, I spotted a truck that seemed too big for this landscape, and then another. I followed and soon arrived at the queue marking the entrance to the site.



Photo 4. Stoneyhill landfill site.

The “hill” Stoneyhill has grown over the years from the hollow of a former granite quarry; a patchwork of grass and gauze bushes, of bare earth and an open section on which a compactor worked to spread the waste arriving. There was a steady flow of lorries unloading throughout my visits; about 90 a day I was told, tipping between 700 to 1000 tonnes of municipal and industrial waste from all over North-East Scotland. I didn’t notice the seagulls at first, invisible amongst the garbage; it was only when a couple shots rang out and they wheeled away in their thousands that I realised how many found a living on this hill. Since 1999, when it opened, the site was managed by two different companies until SITA took it over in 2008, with its permit running to 2024 and up to maximum capacity of 6,500,000,000 m³. It is currently just under half full, the hill half its eventual size.

Stoneyhill was a fully “engineered” landfill site from the start – as opposed to the older “disperse and dilute” system - and is divided into six phases, with each phase having up to 5 self-enclosed *cells* within it. Each cell is lined with layers of clay, high-density polyethylene, “geotech” protective textile and aggregate, onto which the rubbish is tipped and compacted to around a tonne per m³. The cells’ lining acts as impermeable layers to water and, to a lesser extent, air. Once a cell is full, it is covered over with a layer of plastic and clay, and “restored” with soil and vegetation. Each cell contains a mix of four types of waste: non-hazardous medical and sanitary waste from nursing homes, schools, hospitals and so on; general municipal waste collected at the roadside, its composition roughly in proportion with my week’s rubbish¹; civic amenity – or “dump” – waste; and industrial waste (about 30%) brought in by waste management companies that have already removed any recyclable/re-usable materials as well as restricted hazardous materials².

To call these sealed units *cells* is apt: this waste is far from dead. As with my week-old rubbish, this stuff is busy disintegrating, decomposing, dissolving through the work of machine, rain, fungi, bacteria, seagulls, rats, insects. As the waste is compacted and sealed, anaerobic bacteria take the lead. I imagine a warm jungle of organic and inorganic compounds, continually forming, deforming, reforming as they cross from life to non-life and back again: a metabolic bacchanalia. SITA digs down wells to collect the large amounts of methane each cell produces.

1 Paper and card 23–25%, Kitchen and garden waste 35–38%, Plastics 8–10%, Glass 6–7%, Metals 3–5% (Burnley 2006)

2 Hazardous materials each have specific protocols and licensed sites as well as much higher charges.



Photo 5. Gas wells on the Hill of Tramaud landfill.

These wells power five generators, producing 5MW of electricity that is sold to the energy grid. The cells also give off much smaller but far more problematic amounts of hydrogen sulphide formed by the reaction of gypsum³ with organic compounds. It is broad-spectrum poison, lethal in even small amounts. Everyone working on the site carries small electronic detectors that signal any dangerous concentrations of the gas. It has an acrid rotten egg odour and is the biggest cause of complaints by people living and working nearby. Each cell also exhales small quantities of chlorides, silicates, ammonia, sulphur dioxide and nitrogen oxides.

Water permeates each cell, dissolving materials, leaching compounds and catalysing reactions. This *leachate* is a potent mix; aromatic hydrocarbons, humic and fulvic organic compounds, phenols, chlorinated aliphatics, pesticides, plastizers, calcium, magnesium, sodium, potassium, ammonium, iron, manganese, chlorides, sulphates, silicates, hydrogen carbonate, heavy metals such as cadmium, chromium, copper, lead, nickel and zinc (Kjeldsen et al 2002). While essential to the breakdown of waste (and the generation of gas, electricity and money), leachate is also extremely toxic if lost to surrounding groundwater and river-systems. Unlike any other, these *cells* are engineered to live apart; the metabolic life within them is a threat to metabolic life without. Modern engineered landfills act as a temporary – if we compare the effective life of the plastic and clay membrane to the metabolic “actancy” of the compounds within – quarantine for these strange newcomers to the metabolic life of this planet. Stoneyhill landfill is my rubbish writ large, the object and toxic remainder from the life of our societies of mass production and mass waste.

³ Found in all products with concrete. The biggest offender is plasterboard, which, in theory at least, is not permitted to land-fill.

The practices of mass waste

Joshua Reno (2014) argues that theories of waste are intimately connected to the socio-historical emergence of “mass waste” in the West:

Human settlement has, for millennia, involved systems of waste management, including sewers, waste collectors and dumps. Just because waste is amassed does not mean it is mass waste, however. What defines mass waste is that it no longer refers back – like animal scat – to the body that left it behind. Mixed in with the wastes of other people, discards lose their indexical connection to the being that generated them, they become anonymous and acquire an abstract, general character. We speak of ‘garbage’ and ‘rubbish’ as mass nouns, as a type of substance, but this is only because there are systems in place to assemble them in this way. (Reno 2014, p.17)

This professionalization of managing waste – channelling, collecting, sorting, dispersing, containing – are the practices that have made it possible to speak of waste as a mass noun: stuff rendered anonymous through its agglomeration. However estranged from the social life from which it came, waste cannot cross back to being simple brute, natural matter. Not just a waste of energy and resources, landfill is wasteland in the old sense of the term: a place unfit for habitation, a threat to life, including our own (Scanlan 2005). In this way, massed waste comes back to haunt us: toxic and contaminating, it becomes the object of growing political and economic interest, an urgent issue for government and the citizen-consumer. Scotland’s Zero Waste initiative has given itself the ambitious target of recycling 70% of all waste by 2025, with only 5% of remaining waste ending up in landfill, through policies focused on the 3Rs: *reduce* the amount you consume, *re-use* when you can and *recycle* where possible. It is here that the attention paid to everyday practices of consumption I outlined earlier is indispensable for trying to get grip on, and facilitate, the profound behavioural changes these policies are trying to achieve (Bulkeley and Gregson 2009, Shove 2003).

Reno’s aim is not to deny the problem of waste in our society, nor to downplay the scale of the social and environmental degradation it presents. Instead, he’s interested in understanding how theories of waste have been indelibly marked by this Western common (and practical) sense of “mass waste”. As - in *essence* - toxic and contaminating, waste must be reduced and what remains “must be contained forever, encased in a landfill, because it is thought threatening to everything it comes into contact with and yet it cannot die, cannot be finally destroyed” (Reno 2014, p.19). The solution to the problem is necessarily constrained by a logic of quantity, to reducing this “footprint” that reflects back to us, “in concentrated form”, the toxicity of Modern, Western ways of life. Slavoj Žižek, in the film *Examined life* (2008), denounces in exuberant fashion the dualist thinking at the heart of this spectre of an animated and

undead waste-matter, seeing in the urge to reduce and restrain of a nostalgia for a harmonious and authentic Man who generates no rubbish, no waste; another iteration of the Fall brought about by the unnatural mixing of Geist with “brute” matter. In its stead, Žižek argues for a need to learn to live with and alongside our waste. And here I turn to Reno’s call for a new theory waste based not on the metaphor of *dirt*, of matter out of place, but of *excrement* that works against the agglomeration, anonymity and irresponsibility of “mass waste”.

Waste as a form of more-than-human sociality

Contrary to human practices of hiding and dissimulating faeces, animals lay theirs in the open. As a form of waste, “scat” is a necessary “expenditure” in the on-going movement of life – all animals defecate because they have to – that serves as a “moment of exchange between living beings” (Reno 2014, p.22). He proposes a semiotic understanding in which:

scat is not merely an index but also an icon of the creature. That is, scat is not just a sign of their having been there, their previous location and possible proximity, it also suggests their having been at all. The scat stands as a sign of their continued existence, because they were able to excrete and because their digesting and excreting allowed them to endure. Following Bataille’s phrasing, this expenditure is not a by-product but a motor, which propels the animal perpetually forward. Waste would function as an index of the movement that serves as a central element in the lives of (most) animals. (ibid. p.13-14)

Animals continually eat and defecate, their scat weaving an extended and dispersed form of sociality that, playing with Leroi-Gourhan’s (1993) privileging of the “anterior field” of hands and faces, of subjects and objects, as the realm of *social*, Reno calls the “posterior field”. The problem is that we, in the West at least, have swallowed wholesale the story of our transcendence of this “posterior field” and its associated “animality” (Massumi 2002, Derrida 2002), mistakenly taking the story of waste to be all about us. Understood as a mass noun, waste loses all relation with this sense of the material and semiotic entanglement of human life within a wider ecology, offering only its negative spectre threatening us with our demise. Through the metaphor of animal scat, waste is re-figured as a fundamental currency of inter- and intra-species communication and exchange. From a mirror held up at the margins of the ‘anterior field’ of sociality that dominates anthropology, waste – and the ‘posterior field’ it connects to – leads us to an expanded idea of the social itself, in all its more-than-human, disjunctive, distanced, non-voluntary strangeness. Viewed within this scatological and metabolic register, the response to the urgent questions posed by waste

moves from a singular one of quantity to much more nuanced, and plural, questions of quality. To extend Donna Haraway's (2007) idea of those "who meet and break bread together but not without some indigestion", what kind of *companion species* are we?

The possibility of a metabolic anthropology

Folded into the history of "mass waste" is the revolution in industrial production brought about by the rise of synthetic chemistry from the 1860s onwards (Bensaude-Vincent and Stengers 1996). From the new found wealth of artificial dyes unleashed after William Henry Perkin accidentally produced the first aniline dye whilst trying (and failing) to synthesise quinine (see Taussig 2009), to the synthesis of urea by Friedrich Wöhler, chemists working in university and industrial laboratories profoundly transformed the material make-up of the artefactual world that has grown around us. Not least in the development of the organic (and some inorganic) polymers that have come to be known as plastics. As Susanne Küchler (2010) argues, anthropology's focus on the "abstract and conceptual nature" of the design (and production) process - as we saw in the transcription of mental to material form at the heart of Daniel Miller's theory of objectification - leaves the discipline ill-equipped to incorporate these newcomers to our material and metabolic life within its accounts of the social. The cheap, disposable razor I found amongst my rubbish serves as a useful thing with which to think through the importance of attending to differences these synthetic materials make.



Photo 6. The disposed razor.

It was designed to be produced cheaply, meet regulations and perform well enough for the one, maybe two, shaves I used it for, which isn't bad value for the 32p I paid for it. It's made from injection-moulded polystyrene and two thin, sharpened sheets of steel. Polystyrene is a synthetic organic polymer first produced industrially by I.G Farben in the 1930's and used abundantly since the 1950's in both its solid and foam form. The chemical industry knows this material well: chemical composition, thermal properties, reaction to UV light and oxygen. In terms of production design, polystyrene is the perfect material; cheap, solid, durable and easily mouldable, ideal for the "workmanship of certainty" (Pye 1968) that characterises modern industrial production. This degree of control marks the triumph of human techné (Tonkinwise 2005), with both materials and production processes standardised so that each saleable thing is as close to model as possible, smoothing out any resistance or friction with the material world: production finally made in the image of objectification. The revolution in material production brought on by the plastics industry underwrote an explosion in the population of 'medium-sized dry goods' (Latour 2009) that have so fundamentally shaped, and been shaped by, material cultures across the world (Miller 2007).

But follow this razor to landfill and a different perspective opens up. The razor moves from a discrete, durable *object* to becoming a *thing*, a more or less durable coming together of materials and forces (Ingold 2007, 2011). Within the work of Tim Ingold, materials are not the stable substrates for our stuff seemingly promised by industrial production (and social theory) but a living "meshwork" of "substances which flow, mix, and mutate.... sometimes congealing into more or less ephemeral forms that can nevertheless dissolve or re-form without breach of continuity" (Ingold 2011, p.86). Waste is such fascinating and unsettling stuff precisely because it lays bare this inherent movement that is present within even the most familiar things. As it is unmade within the metabolic bacchanalia of the landfill cell or open sea, the important questions are not about this razor's materiality in relation to human experience but what this material we call polystyrene *can do*. What relations can it enter into? What chemical romances is it disposed to? How do its numerous additives - bisphenol A, adipates and phthalates - behave in contact with the hormonal system of a frog or concentrated in the fatty tissue of yellowfin tuna or of this academic? Do these potentialities change when it is ground down to tiny fragments by the grinding maw of geology? These questions remain frighteningly open because so little is known about the metabolic afterlife of polystyrene, and most of the other plastics and synthetic compounds used in industrial production. What is known makes clear the far-reaching impacts of these new, synthetic additions to the 'world of materials' from which we grow and live (Duis and Coors 2016, Freinkel 2011, Thompson et al 2009).

Once launched into the world, bisphenol A has a life of its own that may very well undo ours. Braungart and McDonough (2009) estimate that of the 80,000 chemicals used routinely by modern industry⁴, only 3000 have been tested for toxicity⁵. The “unknown unknowns” (to use Donald Rumsfeld’s terminology) of the metabolic life of materials remain simply unimportant to the “projects” by which we come to know, and refashion, the material world in our own idealised image.

The real danger of an *animist* perspective is that these questions are relegated to a world of “brute matter” and primary qualities of interest only to the objective, physical sciences, which leaves both this “world of materials” as well as the scientific and industrial practices that are so fundamentally reshaping it outside the purview of anthropology. As those working within the field of STS have long argued (for example, Latour 2004, Stengers 2010), to reify these properties as “primary”, distinct from the “secondary” qualities of interest to anthropology, is to misattribute an always *partial* knowledge of a substance for the “brute” substance itself. By focusing exclusively on the *materiality* of things – in particular, as they are caught up in the everyday worlds of consumption – anthropology excludes itself from so much of the material life of our stuff: from its birth within the industrial plants of Dupont or Dow Chemical Company to its re-birth in landfill cells or oceanic ecosystems. If instead, we approach all materials (and their properties) as being made manifest within the situated and partial practices of human world-making (Ingold 2007, Latour 2004, Stengers 2010), then the distinction between materiality and matter names nothing more than different domains of practice, different traditions of knowledge-making and production, not different ontological or disciplinary realms. Not only should this disposable razor be of interest to an anthropology of contemporary grooming habits but so should its birth and re-births as a material thing.

To engage with this metabolic dimension of waste requires following stuff beyond the bin and exploring the not-so-everyday lives of waste management companies, environmental scientists, biochemists, NGOs, fishermen whose lives bring them into ever-growing contact with the after-lives of these new, and not so new, materials we are busy making our world with. This calls not only for a re-appraisal of waste within society but a widening anthropological engagement with the industrial and post-industrial modes of production that are so profoundly transforming this “world of materials” we live in. There is an important tradition of research following the condi-

4 Each of which has at least 5 by-products during production and an unknown number of potential compounds as they metabolise.

5 Toxicity tests are only a small indicator of the metabolic potential of these chemicals; animals are fairly good models for understanding (giving form to) acute toxicity but less good for modelling the toxicity of chronic exposure. And they based on the twin assumptions that chemicals remain stable and that it is only human bodies really matter

tions of work within and around the mines, refineries, mills and factories that have marked the industrialisation of production around the world, engaging ethnographically with questions of organization of labour and social relations (see Holzberg and Giovannini 1981, Ortiz 2002), displacement and migration (Breman 1996, Ballard and Banks 2003), gender relations (Ong 1991, Lee 1998, Mills 2003, Karim 2014) and health (Checker 2007, Singer 2011) that feed into wider critical debates around globalization, inequality and environmental justice. In following industries' varied impacts on health and environments, this research engages seriously with the metabolic dimensions of industrial production but the logic of production itself is generally approached through the *amaterial* lens of economic theory: the metabolic is marginalised to by-products and their consequences.

On the other hand, there has been growing attention to the practices of traditional and craft production (for example Herzfeld 2004, Malafouris 2008, Marchand 2010, Ingold 2011), which situates learning within the perceptual, gestural, affective, social and didactic registers of making. Within this field of research, materials themselves start to become lively and integral to the practices of making in which they are co-opted; shifting, as Ingold (2007) argues, the focus from the “already-thrown” objects of material culture to the processes of formation, of *making*, as they found within human ways of life that grow in correspondence with an environment. In a critical response to Ingold paper, Miller (2007) points out that the materials engaged with in this research on making between tend to the natural – stone, wood and wool – that are fast becoming marginal to contemporary production and consumption. I agree with Miller that anthropology needs to be part of the conversation with this coming world of materials that will be as much synthetic as natural; but this requires an active and critical engagement with practices of industrial design and production as well as an attempt to forge alliances with designers, material scientists, regulators and industry to catalyse new forms of production (see Küchler 2010). One promising approach that chimes with the metabolic approach outlined here is the “cradle to cradle” ethos proposed by Braungart and McDonough (2009). Based on the simple observation of that “waste is the food for what is to come”, it works against the simplistic focus on reduction the paradigm of “mass waste” encourages.

The key is not to make human industries and systems smaller, as efficiency advocates propose, but to design them to get bigger and better in a way that replenishes, restores and nourishes the rest of the world....[In this way]we can be humbled by the complexity and intelligence of nature's activities and we can also be inspired by it to design some positive side effects to our own enterprises instead of focusing exclusively on a single end (p.80-81).

Conclusion

The *animist* sensibility outlined in the first half of this paper approaches waste as a profoundly social phenomenon. Through Mary Douglas's (1984) formulation of dirt as "matter out of place", waste serves as the abject antagonist to the systems of ordering and classifying, of making sense and meaning, that define the diversity of human social worlds. Daniel Miller's dialectical understanding of the social turns this process of ordering on its head by articulating the central role "stuff" plays in shaping place, habit, identity, meaning and value. This attention to the complexity of how objects are woven into the fabric of lives and places allows for a much more nuanced and fine-grained understanding of how waste is generated, as well as potentially reduced, in the course of everyday lives. The problem with this *animist* approach, as I have tried to explicate it, is that this much needed attention to *material* culture extends only as far as the "processual significance [it has] in relations to persons and socio-political relations" (Tilley 2007, p.17), tied to a logic of *form* that moves seamlessly from idea-form to object-form to forms of social relation. Waste makes visible the limit beyond which culture and the material once again go their separate ways.

The real danger, as I see it, is that we – as anthropologists – remain profoundly indifferent to the composition of a "common world" (Latour 2004) beyond a social realm narrowly defined, complicit in a division of labour that leaves:

scientists coming from hard sciences to define primary qualities – the essential ingredients that really make up the world, ingredients that are invisible to common eyes and visible only to the scientists' disembodied and disinterested gaze – while the common men and women are limited to secondary qualities that do not refer to what the world is like but only to their cultural and personal imaginations' (Latour 2004, p.222-223).

These questions of the composition of a common, *metabolic* world – that, crucially, reminds plural all the way down – lie at the heart of the society I'm writing about and for. Taking waste seriously requires us to not only follow its placement/displacement within human ways of life – within what Reno (2014) calls the "anterior field" of the social – but also to engage with it *relationally* as a "moment of exchange" within a much more than human ecology, or meshwork, of metabolic transformations: the "posterior field" of a much-more-than-human sociality. This re-framing of the social requires anthropology to actively engage with the modes of production - of materials, things, knowledge - at the heart of the societies we are making; to form working (and wary) alliances with designers, material scientists, chemists, ecologists, industry, consumers, policy-makers, regulators, in trying to re-think and re-make our ongoing contribution to the commons of this world.

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