

Work, Waste and Climate: A Landfill Delirium

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Waste as Work

For some time, one of the big themes of contemporary art photography has been modern waste. One after another, photographers such as Sebastiao Salgado (1997) and Edward Burtynsky (2009) have produced impressive images showing ragpickers roving over smoking landfills on the outskirts of cities like Manila or Mexico City; migrant shipbreakers swarming atop the towering carcasses of decommissioned ships to extract steel or furniture on the beaches of Bangladesh, troops of lower-caste manual workers carting human waste from latrines in Delhi, figurative descendants of Victorian-age wastepickers cooking toxic discarded electronic components over open fires to extract scarce materials in southern China. Such photographs famously bring to light not only the poverty and suffering endured by their subjects, but also the unprecedented volume of waste – much of it of new varieties – produced by international manufacturing, services and trade. But they are important for another reason as well: they offer a reminder that taking care of waste will always be work. And the more waste, the more work.

Why should anybody need to point this out? Every office worker knows that productivity depends on workplaces being cleaned out at night. Every student of feminism understands that the tremendous volume of care work that underpins capitalism is partly about recycling and looking after waste. Every fan of post-apocalypse science fiction realizes how quickly even the shiniest urban towers fade back into the soil without daily repair and waste removal. As the anthropologist David Graeber points out, “only a very small part of the time human beings spend working is spent in producing anything, at least in the sense of bringing new things – shoes, sausages, fluorescent light bulbs, even buildings – into being. Much more is spent adjusting, refashioning, repairing, maintaining, cleaning, rearranging or transporting things” (Graeber 2012: 288). A large part of that has always been, broadly speaking, working with and looking after waste.

COMPUTERS ARE OCCUPIED LARGELY IN PROTECTING CONSTANT CAPITAL THROUGH, AMONG OTHER THINGS, WASTE MANAGEMENT.

And search for low costs for this labor. Hardly confined to housework. When BP spilled 4.2 million barrels of oil into the Gulf of Mexico, the company sent a workforce of almost exclusively African-American inmates to clean up the toxic spill IN PREFERENCE TO/while community members, many of whom were out-of-work fisherman, struggled to make ends meet. BP’s decision to use prisoners instead of hiring displaced workers outraged the Gulf community, but the oil company did nothing to reconcile the situation.

ALSO: Protecting constant capital is a primary function of the information/computation industry. WORKERS TAKING CARE OF NUKES AND OTHER CAPITAL.

Yet many intellectuals are gripped by recurring fantasies that one day waste work will disappear or be enormously reduced through mechanization, regulation, and techniques of “proper disposal”. Believing that the increasing miniaturization of computers will someday usher in a “weightless economy”, for example, they forget that the “problem of toxic waste becomes more intense as the chips get smaller”

and the competitive rush to obsolescence more all-encompassing (Hughes 2016: 191). Entranced by visions of robots taking on the work of cleaning up after humans, they forget that robots, too, are powered through the production of waste and ultimately amount to just more junk that will have to be disassembled, worked over, converted and diluted or isolated through human effort. It is partly because they serve as an antidote to such delusions of labourless perpetual motion that the photographs of a Salgado or a Burtynsky are so valuable.

These illusions are sustained in part by the fact that some of the same forces that have increased waste volumes over the last two centuries – and especially over the last 40 years – have also tended to conceal the nature and structure of the labour that goes into contending with it. Many contemporary misunderstandings surrounding waste – including some shared by waste experts – have been encouraged by this elision.

At most times and in most places, a certain amount of waste work has been integrated in fairly obvious ways into people's everyday lives and the natures that make up those lives. In vast numbers of rural villages, for example, food waste is part of animal-raising, animal waste is part of field care, and plant and animal waste, cleaned up and recycled through fire, is part of the care of grain, forests, water and humans alike. These varieties of subsistence waste work, knowhow about which is shared widely in many societies, are not always sharply distinguishable from what may be less-visible activities of photosynthetic organisms, rocks undergoing weathering, ocean currents, and other nonhuman beings that are constantly working in ways that maintain livable climates. In many urban societies under capitalism as well, diverse kinds of waste work skills have been extremely widely distributed over the visible surface of society, usually under a bewildering variety of other names – from rag-and-bone collection to quilt manufacture to wartime metal and paper drives to the recycling of sugar sacks and other packaging into clothing – and always overlapping with knowhow concerning repair, refurbishment, maintenance, renovation and so on (Strasser 1999). In Soviet society, although the wastes of the nuclear and oil industries were consistently hidden away under expert administration, the world of ordinary people was full of incomplete goods and buildings constantly *na remont* (under repair), demanding intimate engagement with nonhuman things that, unlike the seemingly finished, immutable, passive consumer goods of the West, were constantly striking back and in need of the application of varied popular waste-manipulation skills. Apartment balconies were kept stocked with bizarre trash so that TV antennae could be fashioned out of aluminum forks, baskets out of sliced rubber balls, buckets out of old tires, and so on (Alexander 2012). In Indonesia, a different dynamic has taken hold in the wake of the throwaway society: the further one goes from Jakarta through the Outer Islands, the more recycled unrecyclables – used disposable razors, reconstituted cigarettes – begin to appear for sale, repackaged, in local markets (Sangkoyo 2012).

However, contrary imperatives generally come strongly into play in societies characterized not only by rampant urbanization and fossil-fuelled industrialization but also by globalized trade, planned obsolescence, throwaway goods, cyclical construction booms, landfills and municipal sewer systems. **GEORGE IN BLOOD AND FIRE:** concentration, if the possibilities of rapid depreciation are not thwarted, investment in constant capital is the source of an enormous dis-accumulation. This poses an exact limit on the energy price strategy. If the Low sector work is transformed into High sector capital and it becomes so concentrated and vulnerable that it can be immediately depreciated, the whole strategy collapses. Protecting constant capital is a primary function of the information/computation industry. **WORKERS TAKING CARE OF NUKES AND OTHER CAPITAL.** In a sense, what ensues is merely a version of what Marx described as a metabolic rift, but it has some special characteristics that he did not describe in much detail. Three of these deserve particular mention.

First, waste becomes more separated physically from daily livelihood and consigned to the activities of a land resource construed as nonhuman, or to faraway “pollution havens”. Ordinary waste is placed out of sight in fenced-off sites under the jurisdiction of a small cadre of mechanized experts with specialized waste knowledge, where soil and bacteria take on the unpaid labour of waste out of sight of the public, or transported to where only the poor will see it; nuclear waste is removed to policed sites where it can be worked on by geological time or kept circulating in unpublicized networks. As a threat to the creation of value and not to be engaged with by ordinary workers; some waste is even shipped across oceans. Thus in creating simplified, nonnatural humans capable of producing commodities out of simplified, nonhuman natures, capital also creates a simplified realm of dirt and garbage disaggregated and distanced from the realm of wage labour from which surplus must be extracted. In this world, every house may well have the same appliances, but not necessarily a balcony or backyard stuffed with odd discards or outhouses. In exchange for not having to do much waste work themselves, citizens tacitly agree not to mention the waste work that other humans and nonhumans do. Discards can be redeemed from the status of “waste” only by becoming managed “resources”. The same work/waste logic is applied to climate. Just as the labour of coping with spoiled food and exhausted packaging is concealed in the landfill, the work of maintaining and repairing the earth’s climate is diverted to rock formations to be filled with liquid carbon dioxide, industrial plantations of cloned or artificial trees, or specially-modified organisms concealed on farms or under the ocean’s surface – processes that await new Salgados and Burtynskys who will perhaps someday make them more visible.

Second, waste knowledge becomes expert knowledge, while many vernacular waste skills are lost. Just as, in much of 19th-century Europe, what had been the domains of those who knew their way around kitchens, watermills, woodlands, horses, sailing ships and so forth was aggregated into “energy” under the control of specialists charged with the augmentation of industrial labour productivity (Huber 2009, The Corner House 2014), so too waste has largely detached itself from, say, housekeeping, swidden, and everyday, labour-intensive *bricolage* and repair work and passed into the hands of engineers, state authorities and technicians and the partially deskilled labour resources they call upon.

Third, and finally, waste becomes an abstract thing lacking internal differentiation and divorced from the dense networks of relations that otherwise would give it sense. In landfills, plastic packaging mixes with cardboard, construction refuse and organic substances until municipal authorities are belatedly forced to re-enlist citizens’ unpaid labour to try to re-separate waste streams that had earlier been combined. In sewers, sewage mixes with food scraps from garbage disposal units. Fossil- and biotic-origin carbon dioxide are mixed and indiscriminately dumped into the same carbon sinks, while carbon dioxide itself is aggregated into the abstractions “greenhouse gas” and “carbon dioxide equivalent”. These processes of abstraction, built into the quotidian expert politics of shifting and concealing waste work, lie at the root of numerous popular and expert delusions: for example, that the “anthropocene” era begins with human use of fire in the landscape, or that landfill overflow is something for which individual consumers are responsible, rather than the industrial, mining, commercial and construction concerns that, in the UK and other countries, generate the vast bulk of landfilled wastes (DEFRA 2006). As such, they are akin to the more general capitalist abstraction processes that continually try to divide a simplified “society” from a simplified “nature”, obscuring the complexity of subsistence.

Waste Crisis as Work Crisis

If waste is work, waste crisis (including climate crisis) is work crisis. For capital, crisis point is reached not when planetary boundaries or limits are breached, nor when waste sinks physically fill up, nor when energy return drops to a level below energy investment, any more than it is reached when workers suffer fatal heart attacks on the assembly line. Problems emerge, rather, when human and

nonhuman beings can no longer deliver enough unpaid work, including cleanup work, to zones of commodified labour to make investment of previously-accumulated surplus capital profitable. Under capitalist competition, this is a recurring phenomenon due to the fact that each increment of increase in the productivity of exploited wage labour requires delivery of a far greater increment of unpaid work, including what Jason W. Moore (2015) calls appropriated ecological surplus. This leads periodically to the exhaustion or “maxing out” of the capacities and energies in question (which are always parasitized from historical and evolutionary pathways more or less systematically distinct from those explicitly dominated by capital) and a move by capital to new frontiers. The free or low-cost waste-handling and other capacities of human and nonhuman beings along these new frontiers then in turn also become fatigued, sclerotic or inflexible, their constitutive, non-commodified relationships frayed and their flexibility vitiating in the same way. **GEORGE BLOOD AND FIRE 222-23: Finally, the military and police extirpate unproductive and anti-productive workers as well as the efficiency of work relation. Indeed, these were not unrelated tasks. The most benighted knew that even, or especially, very productive employments of labor-power created highly entropic human “wastes” LOSSES OF ENERGY that must be extracted from the production flow, killed and then dumped. The smoothest machine creates its share of “used up,” “burnt out,” “degraded” energies that must be expelled at the completing of every cycle or the next cycle will become extremely inefficient. This is true for variable capital as well as constant, and so even the most sophisticated form of capitalism confronts its share of “criminals,” “bandits,” “guerrillas,” “terrorists,” “revolutionaries,” “perverts,” and “witches,” IMMIGRANTS MUSLIMS who cannot be recycled. The trick is to find them, hence the need for detectors—spies, agents, and dossiers—and then to destroy them. The long history of executions, assassinations, death squads, “antiterrorist” campaigns, and “counterinsurgency” warfare is a story not of “incidental expenses” arising from anomalous “faulty social relations.” These things were as essential to capitalist production as a condenser is to a heat engine.** Capital again fails to find places to go, contributing to overaccumulation.

This “maxing out” is not measurable physical depletion but more in the nature of a loss of ability to perform for capital. It does not occur when resources run out but rather at the multiple points where the boundaries that capital uses to distinguish natural resources from paid work and unpaid reproductive work stop functioning in a productive way for capital. For example, women begin to refuse to do tasks of cleanup, disassembly and repurposing without pay. Landfills become inoperative not just when there is no more soil to cover the rubbish with, but when they become sources of too much unrest in adjacent settlements. Similarly, following a period of flexible adaptation, ocean surface layers and land-based organisms begin to balk at diluting and processing excess fossil-origin CO₂ (MacKey, Prentice et al. 2013). Conversely, geological or biological formations fail to isolate or stabilize the identity of radioactive substances with long half-lives to the extent that capital requires. And so on. It is here, and not when official “payments for ecosystem service” programmes come into force (see below), that the hitherto free use of “ecosystem services” begins to “cost” capital. Formalized ecosystem service transactions are merely efforts to rationalize the distribution of some of these new costs among various fractions of capital.

One expression of – and contribution to – the “maxing out” of human and nonhuman abilities to provide unpaid services to the process of surplus value creation is regulation. Thus the US environmental regulation of the 1960s and 1970s – necessitated by widespread environmental movements – was almost immediately experienced by neoliberal ideologues as a curb on accumulation or even a “growth ban” (Lane 2015, Robertson forthcoming) because it was seen to pinch off the pipeline carrying capital’s wastes to the free waste sinks it needed to ensure labour productivity. The question then became, as always: where to find a fresh frontier? Capitalist commodities – and the rents that partake of the value they bear – are *transcultural* and *transnatural* phenomena, and always need new appropriable life forces outside the world of established commodity relations in order to sustain themselves. These life forces might be found in an area where physical contamination has not yet affected accumulation, or where low-cost cleanup workers have amassed relevant skills from their past lives, but they might also be made available in an economically-accessible area where less regulation

exists or where social movements are criminalized. Hence, for example, the emblematic, picaresque trans-Atlantic roving of the ship *Khian Sea* in 1986 in search of a place to unload a deadly cargo of toxins from Philadelphia that could not be dumped in the regulated zones of the United States.

Since the 1970s, however, two forms of magical thinking about regulation have suggested that perhaps capital need not search for new frontiers of appropriable free human and nonhuman work, but just return to using old ones. One fantasy holds that, rather than being a *symptom* of the decline in the usability of old frontiers where free work can be mined, regulation is the *cause*, and that if it were removed, the vitality of the old frontiers would still be there for capital's appropriation. Oppress women anew, the thinking goes, and they will obediently go back to providing unpaid reproductive work in support of a male labour aristocracy. Oppress immigrants through threats of expulsion or exclusion and they will quietly go right back to providing previous levels of low- or no-cost labour. Abolish welfare programs, and capital can once again tap old reservoirs of free work without having to pay increasing costs for their maintenance. Get rid of environmental regulation, in addition, and all of the previously-costless activity of organisms in the old waste dumps on land, in the sea and elsewhere will instantly return to effective service in the cause of capital *gratis*. This is one meaning of Trumpism, which only carries to extremes certain wishful, simplistic impulses long visible among many fractions of capital.

A second form of magical thinking about regulation is ecosystem service markets. Here the idea is that the old frontiers of appropriation are indeed worn out, and that environmental regulation is indeed an unavoidable expression of this fatigue, but that the old frontiers can be patched up and revived through various ingredients imported from new frontiers, as a skin graft from a leg or a laboratory culture can help reconstruct a burned face. Tokens of cheap regulatory relief can be mass-produced that will enable capital to go on using old frontiers – as long as it creates new frontiers somewhere else. Instead of reducing their environmental impact at home, businesses can comply with environmental norms and laws by buying standardized, low-cost units of environmental compensation (CO₂ emissions reduction equivalents, units of bat conservation, internationally-transferrable mitigation obligations and so on) from the other side of the country or the other side of the globe, thus evading expensive pressures for structural change. Extractive and pollution pipelines that conventional environmental regulation threatens to pinch off can be repaired by novel products derived from a further, second-order retooling of human and nonhuman nature. For example, power plants in Europe can “offset” their greenhouse gas emissions by colonizing as-yet unappropriated parts of the photosynthetic capacity of tracts of land in Latin America, Africa or Asia. More generally, corporations can mine the future for such units by claiming that their investments in ecosystem services prevent a measurably greater increment of environmental degradation from occurring elsewhere, and that their purchase of these increments of “avoided degradation” cancel out the destructiveness of their own activities. For example, steel or chemical firms can be conceptualized as “no longer producing waste” because what they do produce has been “cancelled out” by their payments for certified, relative waste “savings” in other places and – especially – in future time. Ecosystem service markets thus work as an expression of self-fulfilling colonial mythologies contrasting unimaginative Others “fated” to destroy their environment through slash-and-burn farming or irresponsible industrial development with enlightened investors who alone are capable of independent action to ensure of the future of nature. Aside from the obvious fantastical, numerological aspects of this sort of accounting, attempts to open ecosystem service frontiers set in motion the same sort of dynamic of “maxing out” seen along other frontiers. For example, organizing even a single new waste-processing ecosystem service such as carbon sequestration following capitalistic requirements may soon exhaust or “max out” the capacity of the relevant land to provide it, as happened in the Chiapas case described by Tracey Osborne (2015), where “emphasis on timber species and requirements for thinning and clearing underbrush ... attracted pest infestations, thereby

reducing carbon storage” (75); **SARA PENA, OTHERS??** the same thing may happen when capitalized forest conservation becomes needed to supplement the raw appropriation of forests conserved or cultivated over generations of relations with indigenous peoples now suffering evictions or criminalization. It should not need to be pointed out that the disrespect for existing vital relationships involving nonhumans that is inherent in ecosystem service fabrication processes is an analogue of the racism, sexism, or criminalizing procedures that are mobilized in capital's appropriation of the unpaid work of humans in support of wage labour productivity.

Waste and Climate: The Case of Landfill Gas

Landfill gas (LFG) is one good example of waste naturalized into a fetishized abstract object under a regime of urbanization, globalization, planned obsolescence and financialized infrastructure. No landfill gas, one might say, without landfills – that is, without a particular ecological organization of society in which waste as work is hidden away in the mechanized dump and its technicians, transport lines, soil microorganisms, confining fences and linings and, sometimes, resident troops of wastepickers. No landfill gas, either, without sweeping pressures toward competitive overproduction; a structure for aggregating discarded matter from a vast diversity of sites and processes; an intellectual tradition of commensurating divergent social processes into chemical formulas and redistributing blame downwards as a result; and a history of defeated or dormant skills of disassembly, repair and composting. Yet once “waste” is crystallized into LFG and other, similar objects, it becomes difficult even to raise the political problems suggested by the photographs of a Salgado or a Burtynsky, or to think about the hard work of seeking pathways toward civilizational alliances among waste workers, farmers, industrial labour, householders and indigenous peoples. Reducing LFG emissions becomes an uncriticizable “positive step” in a political programme dominated by experts, state regulators and capitalists.

If the concept of landfill gas as a problem of large-scale waste dumps is one means through which the politics of capitalist exploitation and appropriation is obscured, the concept of LFG as methane, a “greenhouse gas”, is a means through which the history and causes of climate change are hidden. When the presence of such greenhouse gases in certain quantities becomes identified with the problem of climate change, then mitigation focussed on molecules regardless of their origin becomes the organizing principle of a solution, and an abstract “society” the agent of change. LFG becomes the political as well as the chemical equivalent not only of disintegrating methane clathrates, exhalations of methane from rice paddies, coal mine methane leaks and so forth, but also of fracking and forest policy outcomes, pollution from adipic acid plants, and carbon dioxide-increasing road-building programs. It becomes a self-contained “waste problem” concealing the connections between work and the fossil fuel complex as well as those between work and the landfill complex. And it becomes wholly “solvable” as soon as LFG is converted into another resource, like coal, for increasing the productivity of wage labour, at which point capital can move on to the next “waste problem” without confronting the appropriation-rooted dynamics of either the solid waste crisis or the climate change crisis. Through the spatial and conceptual organization of waste, the landfill industry comes to reinforce the fossil fuel industry, and vice versa, in alliance both against ordinary communities affected by their operations and against any serious attempt to address either the solid waste or the climate crisis.

It is worth observing in a bit of detail how this is achieved in one of the 403 landfill gas projects administered worldwide by the United Nations’ Clean Development Mechanism (CDM), which are collectively expected by 2030 to produce certificates entitling the buyers to avoid environmental restrictions that would otherwise require them to reduce 938 million tonnes of carbon dioxide-equivalent emissions (Centre on Energy, Climate and Sustainable Development 2016). Like all such

projects (not only the 403 landfill gas projects, but all 8,466 carbon-crediting projects that have appeared in the CDM pipeline), Mexico's Puerto Chivos Landfill Gas Project produces these carbon credits for its buyers (in this case the British firm CO₂ Global Solutions) via a political process of *scenario elimination*. In the case of Puerto Chivos, this process establishes the CDM project's burning of the landfill's methane to generate electricity as the sole action connected with dump operations that could reduce emissions and thus mitigate climate change. Only by identifying the project developers as responsible for undertaking the sole initiative that could address the climate change impacts of this particular waste dump (and, implicitly, such developers in general as the only parties who could address the climate change impacts of such waste dumps in general) can their ownership of the carbon credits be established, their rental claims founded, and their profits and those of the buyers be defended. That is, for the credits to be valid, all alternative ways of addressing waste issues in the region (Zaragozas) must be discredited if not criminalized outright.

Thus the Puerto Chivas Project Design Document (PDD) has no choice but to rule out even such modest ventures as recycling the organic fraction of the solid waste feeding the landfill as an alternative way of reducing methane genesis and thus climate impacts. After all, realization of this alternative would not only invalidate the carbon credits as tradeable units, but also establish the property claims of whatever movements had arisen to promote recycling in the area. No evidence or argument is marshalled for this act of elimination: the recycling of "part of the organic waste (particularly cardboard and/or paper) that is destined for landfilling" is simply "not considered a plausible alternative to the project activity". (In CDM methodology, to say that such alternatives are "implausible" is stipulated in law to be equivalent to saying that such alternatives simply could never happen; multiplicity is logically at odds with the creation of rents.) As the PDD states, the "emphasis in waste management in the case of Puerto Chivos landfill is to control the waste flows and make sure that waste is treated and disposed of in a controlled site properly. Hence, this alternative is dismissed" (ENERGREEN Atizapán S.A., Carbon Solutions de México S.A. et al. 2013: 15). That is, the only alternatives considered are those that assume the existence and necessity of landfill complexes without prior recycling. Via the same non-argument, aerobic composting of organic waste (for example, food and green waste) that would otherwise go to the landfill – an alternative which, like recycling, would likely be much more labour-intensive than the CDM project – is summarily ruled out as "not a plausible alternative to the project activity": "the main intention Puerto Chivos landfill is to control the waste flows and make sure is treated properly as of a controlled site" [sic] (ibid.). In keeping with this bias, the public consultation about the project excluded discussion of even such extremely limited alternative possibilities for reducing the local environmental impacts of the landfill, about which nearly 90 per cent of the 40-odd people present (mostly professionals, teachers and students) were reported as being dissatisfied. According to the PDD, project proponents succeeded in promoting an understanding among these "stakeholders" that the "project will bring an environmental, health benefits and solve odour concerns from the local community, since it will allow reducing GHG emissions from LFG emitted to atmosphere" [sic] and that it was "very important" to develop the project (ibid.: 69-70).

WITH THIS KIND OF FW, CAN'T EVEN THINK ABOUT MORE SYSTEMATIC ALTERNATIVES.

Conclusion

What are the effects of capital's restless attempts to appropriate unpaid cleanup work done by humans and the rest of nature? Neglect of this question has led to repeated confusions about what waste is and how it might better be approached. A refreshed perspective is especially important in an era in which discussions about solid waste have come to focus largely on landfills and discussions about global warming to focus largely on real or imaginary carbon sinks. Critiquing these discussions, and their

intersection in carbon credit schemes involving landfill methane, is one foundation for moving forward across a wide range of issues in political ecology.

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