CFI

COMMODITY FRONTIERS

Issue 4, Fall 2022

Waste Frontiers

The Journal of the Commodity Frontiers Initiative

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Commodity Frontiers

Capitalism, Contestation, and the Transformation of the Global Countryside

The Journal of the Commodity Frontiers Initiative

Image*: Llamas grazing behind the old signboard of the "Cuprita" copper mine, Bolivia.* Source: Hanne Cottyn, 2018.

Mission Statement

Commodity Frontiers is the Journal of the Commodity Frontiers Initiative (CFI). Edited by a group of scholars and researchers from various disciplines and organizations in the CFI Network, the Journal explores the history and present of capitalism, contestation, and ecological transformation in the global countryside. The point of departure is the commodity frontier concept, which describes sites and processes of the incorporation of "resources" into the expanding capitalist world economy; resources like land, raw materials, knowledge, and labor. In the past 600 years, commodity frontier expansion has been characterized by ecological and distributional conflicts; the displacement and dispossession of Indigenous peoples and other groups; racialization and othering across colonial, settler colonial, and postcolonial geographies; and the production of class, gender, race, and other inequalities.

Each themed issue of *Commodity Frontiers* includes articles about theorizing, studying, and teaching with commodity frontiers. The Journal features reflections and reviews on the uneven and often violent dynamics of capitalist expansion, social change, and ecological transformation on global as well as local scales, in the past and at the present. Contributors include historians, social scientists, (political) ecologists, artists, and activists who work on global commodity production and circulation, rural societies, labor history, the history of capitalism, colonial histories, social metabolism, and conflicts and counternarratives in the countryside. *Commodity Frontiers* endeavors to carry out one of the central goals of the CFI: to provide long historical perspectives on problems that are often assumed to be modern, and to link historical and contemporary research to critically recast our thinking about sustainability, resilience, and crisis.

Commodity Frontiers is a biannual open-access publication housed in the Brown Digital Repository and distributed through email subscriptions.

Objectives
Commodity Frontiers aims to provide accessible content from multiple perspectives on the past, present, and future of commodity frontier expansion and dynamics. We feature research and educational activities undertaken by academics, artists, activists, and other civil society actors. By inviting short contributions from our multidisciplinary and multi-sectoral networks, and distributing the open-access Journal through our website and the Open Journal System, we aim to reach a broader audience than typical academic publishing allows. We strive for "real-time" reports and reflections on contemporary issues, and contributions that link past and present.

Editorial Process
The articles in *Commodity Frontiers* are not double-blind peer reviewed. Rather, Section Editors purposely invite contributions related to the theme of each issue from experts in respective fields. All articles are reviewed by Section Editors and at least one Editor-in-Chief.

Contributions
Articles that appear in *Commodity Frontiers* are invited contributions. We do not accept uninvited manuscripts. If you would like to contribute to *Commodity Frontiers* or the CFI, there are four routes.

Article contributions: If you would like to contribute an article to one of the sections of the *Commodity Frontiers* journal, please send a short note with your contact information and your area of expertise to the section editors (contact information is on the website) and to Mindi Schneider (mindi_schneider@brown.edu).

Journal theme proposals: If you have an idea for a themed issue of the journal, please send inquiries to Mindi Schneider.

Lexicon entries: We are building a *Commodity Frontiers Lexicon* that will be housed at the CFI website. If you would like to contribute an entry to the Lexicon, or if you would like to write a response to an entry that's been published, please contact Eric Vanhaute (eric.vanhaute@ugent.be), Hanne Cottyn (hanne.cottyn@ugent.be), and Claudia Bernardi (clod.zeta@gmail.com), the Lexicon editors.

Round Tables: We will occasionally host virtual round tables on the website and social media to debate concepts, approaches, and politics surrounding commodity frontiers. If you would like to contribute a round table proposal, please email Mindi Schneider.

Acknowledgements: Mindi Schneider does the design and production work for *Commodity Frontiers*. Special thanks to Marjolijn Dijkman for our logo and cover design, and for invaluable design advice. Thanks to Andrew Creamer for managing the journal in the Brown Digital Repository. Thanks to Jeanne Loewenstein for design support. Thanks to all of the contributors to this issue for sharing their work and insights.

Cover image: Scrapyard Metal Waste. Photo credit: Pixabay.

Editorial Introduction
Commodity Frontiers 4, Fall 2022

Waste Frontiers

Mindi Schneider

Photo source: Pixahive.

What is to be done with waste?

In a time when mountains of garbage, oceans of pollution, and blankets of carbon dioxide are regular parts of "nature," *doing* something with waste seems paramount.

One proposal is to reduce waste through reducing consumption, as degrowth advocates and other environmentally-oriented activists urge. Maintaining current production and consumption levels while recycling, and perhaps turning "waste" into new "value," is another, especially from entrepreneurial and techno-optimist camps. Innovation — a buzzword in research and project work for the past several years — is certainly alive and well in the world of waste.

Other options are legislative. Most governments have long decided to store municipal garbage in landfills, while others have opted to burn it. Where there is radioactive waste, storage in silos and vaults is

standard. Internationally, storing excess carbon in soils and plants is a current policy focus. No one really knows what to do with the Great Pacific Garbage Patch or the other plastic islands that dot our seas.

In any case, perhaps the most common practice for "doing something with waste" is making it invisible to the global elite who produce most of it. Waste of all kinds is exported from "North" to "South" and from neighborhoods and regions of privilege to those of marginalization. In their book, *Pollution is Colonialism*, Max Liboiron (2021) powerfully argues that pollution and waste are not side effects of colonialism…they *are* colonialism. In other words, the ability of societies to dispose of wastes — to move them around, store them, hide them from privileged view — is fundamentally predicated on assumed access to someone else's land. For Liboiron, asking what is to be done with waste is only part of the question. Equally important,

> As more attention is being focused on waste, **it becomes crucial for the humanities and social sciences to contextualize the problems, materialities, and systems that are not readily apparent** to the invested but casual observer. **Otherwise, waste seems like a technical problem rather than a social, cultural, economic, and political problem** (Liboiron, 2018, emphasis in original).

Scholars in the field of Discard Studies, of which Liboiron is a founder, explore these questions of waste and processes of wasting. They examine multiple facets of waste from multiple disciplinary and action-oriented angles. They deal in the dirty and discarded, viewing the world through waste-colored glasses.

In this Issue of *Commodity Frontiers*, we take inspiration from Discard Studies and other waste scholars to situate waste in a commodity frontier perspective. Pointedly, anthropologist Jacob Doherty (2022) recently highlighted,

> the cultural and ecological co-constitution of resource frontiers and waste frontiers, situating them in capitalism's expansionary imperative and maps.

Waste, then, captures both the coexistence of resource and waste frontiers and the dual role of waste within the capitalist economy, both as a pre-condition and a result of enclosure, production, and accumulation.

Waste frontiers have become prime sites of appropriation, initiating new cycles of accumulation.

Building on these insights, we asked contributors to explore waste as, in, and/or on commodity frontiers. We are interested in learning how trash heaps, mining dregs, hydrocarbons, nuclear wastes, and excesses of all kinds can teach us about the flexibility and staying power of capitalism, and about ways of life that challenge or subvert it. The Issue is in no way comprehensive. Instead, it offers contributions that elucidate initial explorations and propose provocative entry points into the intersections of waste and commodity frontiers.

Specifically, the pieces in the Issue situate waste in the present and historical expansion of capitalism. They ask questions about producing, managing, and theorizing waste. They examine equity issues around who is responsible for making waste, who is most intimately impacted by waste, and who is defined *as* waste, or as deserving of living *among* waste. They look at how patterns in the distribution of waste's benefits and harms reproduce entrenched global and local inequalities. And they invite readers to ask what can be learned about capitalism - and perhaps about themselves - from studying how waste-in-capital is defined, produced, offloaded, recycled, valued, commodified, managed, experienced, countered, and unevenly invisibilized. In short, they open up "waste" as a material and discursive frontier, operating in service of capital accumulation, colonial expansion, and the maintenance of social hierarchies.

Vinay Gidwani's provocative essay on waste as "capitalism's dialectical frontier" (p. 1) opens the Issue. He offers nine propositions, ranging from the material and figurative production of waste, to its racialized discursive use in colonial violence

and dispossession, to waste as external and internal frontiers for capital. Gidwani urges that,

> Capitalism as a motive force is not merely the historical oddity of money chasing more money relentlessly, it is the unremitting accretion of waste, whose effects have been profoundly destructive for societies and the planet…*the accumulation of social wealth under capitalism, always unequal, is concurrently the accumulation of waste, always mediated by racial logics* (p. 10).

Gidwani's essay anchors the Issue theoretically, raising fundamental issues, questions, and arguments for further examination.

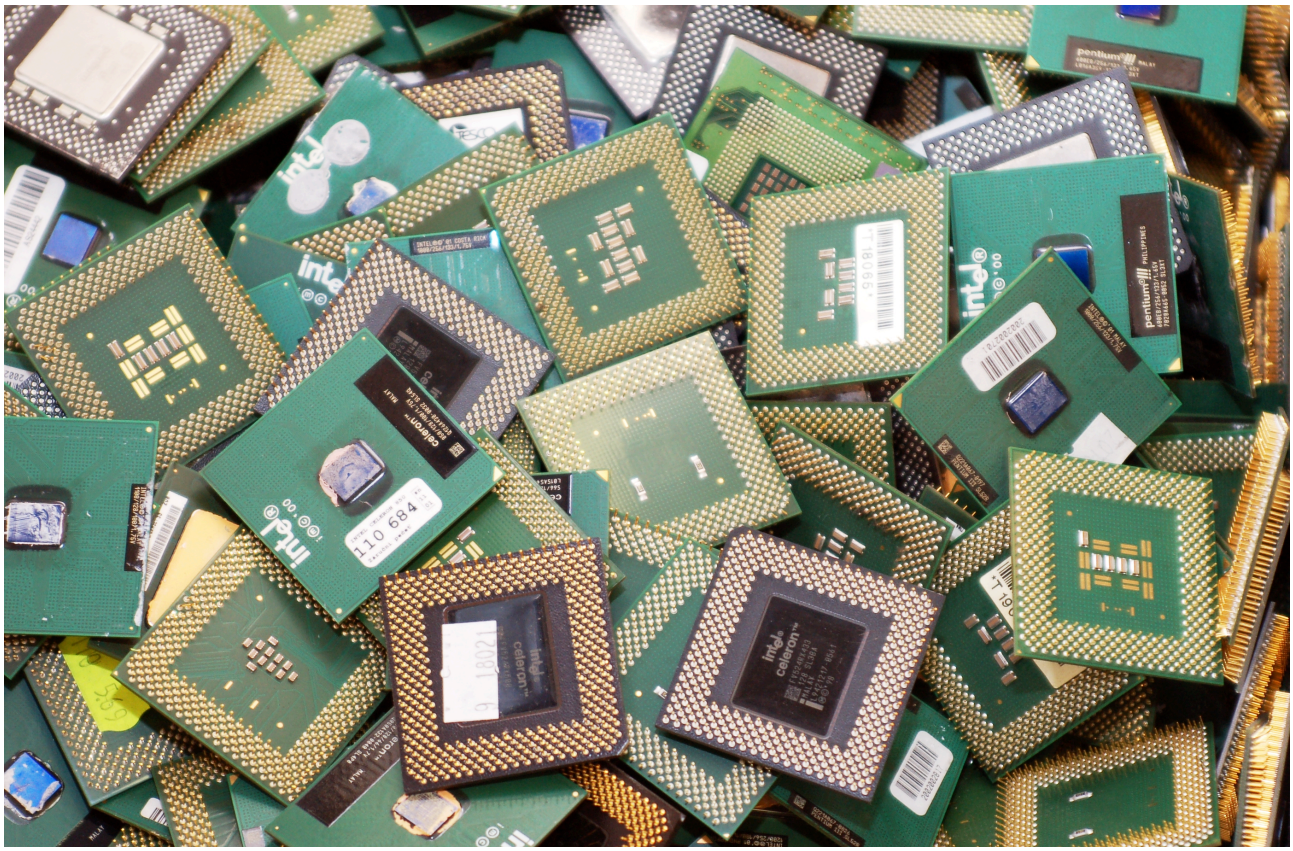
Some of those questions are taken up by Federico Parra in his contribution on the waste frontier in Colombia. Parra traces transformations in how waste is understood and solved as a public concern in Colombia, focusing on the struggles of waste pickers for recognition and rights.

In a similar vein, Gemma Jennings's piece also looks at shifting conceptualizations and politics. For her, the focus is **hydrocarbon waste** politics across Algeria and France. From the discovery of oil in late-colonial Algeria, through resource nationalism in the 1970s, and landing in conflicts over shale gas fracking in the present-day, she traces the deep and shared history of hydrocarbon waste.

Deborah Delgado-Pugley's contribution comes "from the field." She shares insights from her experiences with youth and students navigating the expansion of the **gold-mining waste** frontier in Peru. Written from her position as a professor of Sociology who offers field-based fieldwork methods courses, she looks at teaching, learning, and the role of education in frontier processes.

Situated in the material and technical underpinnings of green transitions, Henrik Vigh's essay explores how growing demand for green-tech is driving a circuit of irregular mining and **e-waste** dumping in Ghana. He shares insights from a project at the Centre for Global Criminology at the University of Copenhagen in which he and colleagues are

> tracking the global movement of minerals from Ghana through supply chains, into



Retired CPUs. Photo Source: Ondrej Martin Mach, 2010, Wikimedia.

production sites, across legal and economic landscapes, and back to the country's e-waste dumps where they are mined once again for their mineral remains—illuminating in the process a dark and slightly odd case of circular economy.

Turning to **nuclear waste**, Maarten Vanden Eyde shares a conversation he had with Ele Carpenter, a Professor in Interdisciplinary Art & Culture at Umeå University in Sweden. They discuss her curatorial research in "The Nuclear Culture" project, the urgency of nuclear visibility, and notions of deep time responsibility and forgetting.

Entering the world of **food waste**, William Conroy reviews a recent book by David Boarder Giles (2012) entitled, *A Mass Conspiracy to Feed People: Food Not Bombs and the World-Class Waste of Global Cities*. The book is an anthropological look at the Food Not Bombs organization, and the ways in which they have consistently served free meals to people in need for more than 40 years, in part through the provision of wasted food from dumpster dives. For Conroy, this is, a book about capitalist waste, the violent making and reproduction of global cities, and the forms of mutual aid and care required to ensure the bodily metabolism of those that have been thrown out and abandoned by the metabolic churn of contemporary forms of capitalist urbanization.

Closing out the Issue is a special contribution from Philip McMichael on *Frontiers of Commodification and Historical Capitalism*. The piece is an extension and deepening of the commentary he offered in a virtual roundtable to discuss the CFI research agenda in December, 2021. He proposes a lens of "ontological encounters" to address "the mutual conditioning of distinct ontologies in conjunctures of interaction, such as commodity frontier expansion." His piece outlines five kinds of encounters around 1) colonial dispossession of native peoples, 2) commodification of frontier "resources" and the international mobilizations this can generate, 3) "agrarian citizenship," 4) farmer and farming types, and 5) "climate-smart agriculture." McMichael's piece, in true McMichael fashion, gives its reader much to chew on!

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The Accumulation of Capital as the Accumulation of Waste: Nine Propositions

Vinay Gidwani

Keywords: waste, capitalism, colonies, racial hierarchies, frontier, entropy

Abstract: This short essay shows how "waste", historically and in the present, has operated as capitalism's dialectical frontier: animating its relentless drive for profit, subtending its racial hierarchies, and through its unevenly accumulating burdens, throwing planetary ecosystems and vulnerable lives into mounting peril.

Waste on a River Bank, Delhi. Photo credit: Mayank Bhatnagar, 2008. Used with permission.

Proposition 1: The Production of Waste

Capitalism is a historically peculiar system. Money, markets, wage labor, private property, profit-making, and commodities – in short, ingredients that are associated, even conflated, with capitalism – are neither unique nor subsequent to it. It is the historical articulation of these, in spatially heterogeneous forms, into

a planetary process of "ceaseless accumulation" (Beckert 2021) that is distinct. But if the rise of a global apparatus "in which money is perpetually sent in search of more money" (Harvey 2010, p. 40) is the essence of this strange force, a less obvious but no less consequential hallmark is its relentless production of "waste". This production occurs in three intertwined registers: discursive *seeing*, bio/physical *excretion*, and the transformation of low into high *entropy*.

As the logic of capital strives to reshape the world in its image, an ideology of profit congeals that comes to view the earth as "*terra economica*": "a landscape of wasted potential, in which all of the world is potentially, or not yet, capital…" (Goldstein, 2012, p. 358). Waste, as the economic and moral antithesis of value, comes to provide vitality and sanction to diverse projects of capitalist value-making. It is "an enemy to be engaged and beaten" (Neeson, 1993, pp. 30-31). This antithetical aspect of waste, as a logic that stymies the accumulation of property, is mirrored in the various ways it comes to (and continues to) connote not merely the uncultivated or untended, but also the pointless, the misdirected, the futile; the ineffectual, the foolish, and the worthless; the idle and the improvident; the excessive, prodigal, and the improper.

Time, money, words, things, and nature: all may now be wasted, and are censured accordingly within capitalism's ascendant common-sense.

If waste multiplies in seeing and imagination, it also multiplies in physical quantity as capitalism revolutionizes the global extraction, production, exchange, and consumption of commodities. This new epoch of untrammeled accumulation forever alters human and extra-human life through a strategy of "cheapness", with enormously destructive consequences for world-ecology; cheap nature, cheap money, cheap work, cheap care, cheap food, cheap energy, and cheap lives (Patel and Moore, 2017) stoke the furnace of capital, scorching bodies, communities, and ecosystems and leaving the world awash in commodity excreta.

Another way of grasping this: the ceaseless accumulation of capital condemns the world to "degenerate in the direction of greater entropy", whether we understand this entropy "either as disorder, or, in a complementary formulation, as a descent into the wrong kind of 'orderedness', i.e. uniformity…" (Biel, 2012, p. 2). Our addiction to a trajectory of growth predicated on uninhibited consumption – what Livingston (2019) calls "self-devouring growth" – and our associated dependence on fossil-fuels as an energy source has stretched earth's dynamic capacity to absorb the disorder of pollution (heat, waste) to its limit, with potentially catastrophic implications for the future of our species and other life forms. The contamination of oceans by microplastics, for example, appears to be altering our planet's ancient cooling process, interfering with "deep-sea food webs and the ocean's natural carbon cycles" (Imbler, 2022).

The takeaway? Capitalism is as adept at seeing waste in its unrelenting quest for profit as it is in producing waste in that pursuit.

Proposition 2: The War on "Waste"

John Locke's *Two Treatises of Government* was first published in 1690. It expounds the core tenets of his bourgeois individualism (Shapiro, 2003) and Chapter V "Of Property" in The Second Treatise contains his formative statement on the labor theory of property (Wood, 1984; Gidwani, 2012). The idea of "waste" figures prominently in this chapter, performing an elemental moral and political function. "America", with its ostensibly limitless expanse of waste becomes the origin story for the conquest of divinely granted common lands and the birth of private property. The subjugation of idle waste sanctions settler conquest. Locke's theory "unsees" prior claims of indigenous inhabitants, unable to concede that uncultivated lands might be in active use. For Neocleous (2011, p. 508), therefore, "Locke's theory of private property is *simultaneously* a theory of war" that sanctions violence and dispossession in the name of improvement and industry.

The idea of waste must be grasped within a constellation of mutually reinforcing concepts. Thus, if waste is one watchword that sanctions liberalism's illiberal undertakings, "improvement" is another (Williams, 1975, esp. Chap. 7). Locke's theory of property sits within the wider seventeenth century discourse of improvement evoked in publications such as Gervase Markham's *The English Husbandsman* (1613), Walter Blith's *The English Improver, or a New Survey of Husbandry* (1649), Andrew Yarranton's *The Improver Improved* (1663), or John Smith's England's *Improvement Revived* (1670) (Wood, 1984).

Collectively, such tracts enact a *seeing* and *scene* where forms of land and labor that diverge from normative ideals of husbandry are not only viewed as waste, but also as receptacles of disorder that sustain idle, unruly masses. As Neocleous (2011, p. 514) summarizes, "Enclosure would therefore provide employment for idle people, mastering the 'masterless men' without obedience or discipline. Wasted land, wasted labor and wasted time went hand in hand."

Neocleous makes no mention in his provocative essay of Jeremy Bentham, a hugely formative figure for British jurisprudence and policymaking. Barbara Arneil in a recent article reveals how Bentham, motivated by his utilitarian sympathies for a "productive form of power" that would maximize the usefulness of society's resources, also came to regard idle land and idle labor negatively, as the root causes of "pauperism". He championed proposals to establish domestic and settler colonies that would "solve pauperism rooted in 'waste' land and agrarian labor" while yielding economic and ethical benefits to society – profits for investors and improving the pauper through labor (Arneil 2021, p. 1147).

Domestically, Bentham advocated for farm colonies on waste land that would be funded by private investors through a joint-stock company, rather than the public purse. Wealthy investors would "buy shares in the NCC [National Charity Company] and then realize future returns", reaping the productivity gains of intensive agriculture from "500,000 paupers including children until 21 … [who would be] engaged in unpaid agrarian labour on cheap, enclosed, waste land" (ibid., p. 1150). Thus, the problem of pauperism would be efficiently solved through private enterprise, creating profits while putting idle resources to use.

Sound familiar? *In Thinking Like an Economist: How Efficiency Replaced Equality in U.S. Public Policy*, sociologist Elizabeth Popp Berman contends that from the 1960s an "economic style of reasoning" became a "taken-for-granted approach to policy problems" in Washington, DC, and key to this approach was the value placed on "efficiency"; thus, "in social regulation it valued policies that maximized social benefits while minimizing societal cost" (2022, p. 11, 14, 15). As I have shown elsewhere (Gidwani, 2008), efficiency and morality have a tangled history within liberal political economy, licensing market-friendly "reforms" and, when necessary, extra-economic violence in the name of banishing waste and ushering improvement.

How did Bentham, a resolute anti-imperialist, come to support the establishment of a settler colony in south Australia? Arneil wagers an answer. She notes that, as with his proposal for domestic colonies, pauperism "is the target in both cases with the common solution to segregate/transport paupers to waste land, engage them in agrarian labor to become industrious and create profits, overseen by a joint stock company" (2021, p. 1153). The conspicuous difference in Bentham's advocacy of a foreign colony lies in his effacement of indigenous populations and their land uses and claims. Like Locke's America, Bentham's Australia is a *tabula rasa*, "uninhabited, unoccupied and nothing worth". The few times Bentham acknowledges the existence of indigenous communities he is scornful, at one point characterizing them as "'brutes in human shape, the very dregs even of savage life … prepared at all times … for plundering the industrious'" (ibid, p. 1154). The anti-imperialist is ready to support their "extirpation" for civilization's, and capitalism's, greater good.

Proposition 3: Waste as External Frontier to Waste as Internal Frontier

Initially then, "waste" materially and figuratively indexes an *external frontier* to be colonized for capital – whether through direct state-led expropriations, by indigenous smallholders, via settler expansion employing subterfuge and force, or through concessions that outsource sovereign power to corporations funded by private investors (Barkan, 2013; Li and Semedi, 2021).

In British India, for example, the specter of waste appears with tedious regularity in land settlement documents after the late eighteenth century. They exhort policies that invest certain social groups deemed industrious and entrepreneurial with land titles, while denying the customary rights or common claims of others deemed unruly or indolent. These acts of agrarian dispossession consistently excoriate meager or unproductive uses of land, highlighting revenues and profits that diligent application of labor and efficient stewardship would generate. The source of this colonial ideology, which was such a powerful catalyst for projects of landscape transformation across the world – colonial Bengal, the conquered prairies of the American Midwest, and Zionist settler projects in Mandate Palestine, to name but a few – can be traced to a lineage that connects Locke to the high priests of classical political economy.

By the nineteenth century, when industrial capitalism's apparatus of mass production has supplanted "war capitalism" as the dominant regime of capital accumulation (Beckert, 2014), concerns around waste and efficiency begin to shift from the *external* to the *internal frontier*. Machines, technologies of work-discipline, and accounting innovations are marshalled to curtail waste of land, raw materials, and labor-power within the production process (Pollard, 1963; Thompson 1967; Rosenthal, 2018). If appropriating the dormant potential of idle land and labor for profit through imperial expansion was the guiding imperative of an earlier epoch, the concern now shifts to the threat posed to profits by waste of resources already in use.

Even as metropolitan capital employs the state as a battering ram to pulverize competition from artisanal producers in the colonies and carve out new markets for their finished factory-made products, the global expansion of a capitalist space-economy simultaneously intensifies competition among metropolitan producers. Thus, Karl Marx foregrounds "socially necessary labor time" as a structural imperative that confronts individual capitalists: innovate technologically and organizationally to obey this average rate of profit or perish! All through, production remains the horizon of political economy.

But alarm over the hazards of city life – dirt, pollution, garbage, stink, noise, congestion, crime, and loneliness – has begun to swell. William Blake's 1794 poem "London" captures the social anomie:

> I wander thro' each charter'd street,
> Near where the charter'd Thames does flow.
> And mark in every face I meet
> Marks of weakness, marks of woe.

Frederick Engels in *The Condition of the Working Class in England* (1844) can write of "the brutal indifference, the unfeeling isolation of each in his private interest". Wordsworth, Dickens, Hardy, and other literary icons rehearse Blake's grim appraisal of the industrial city; Hardy, for instance, describes London as "a monster whose body had four million heads and eight million eyes".

The era of mass consumption is yet to arrive, so the environmental burdens of post-consumer waste remain in the realm of the unthought. Marx is typical in this regard. In Volume 3 of *Capital*, he underscores the cost-savings associated with economies of scale in production and its positive effect on the profit rate. He writes:

> It is the resulting massive scale of these waste products that makes them into new objects of trade and therefore new elements of production. *It is only as the waste products of production in common, and hence of*

> *production on a large scale, that they acquire this importance for the production process and remain bearers of exchange-value.* The waste products, quite apart from the service that they perform as new elements of production, reduce the cost of raw material, to the extent that they can be resold, for this cost always includes normal wastage, i.e. the average quantity that is lost in the course of processing. To the extent that the costs of this portion of constant capital are reduced, the rate of profit is correspondingly increased, with a given magnitude of variable capital and given rate of surplus-value (Marx, 1981, pp. 172-173; my italics).

Marx subsequently distinguishes "economy in the refuse of production, achieved by re-use" from "economy in the creation of waste, i.e. reduction of the refuse of production to its minimum" (p. 197), furnishing examples from flax-growing, the wool industry, silk manufacturing, and the chemical industry. But he is vague on how "waste products of production in common … remain bearers of exchange value." What portion of the exchange value of such "waste products" remains intact after being used in the production process? Is this waste reusable as raw material in future production without further transformation? Does it require application of new labor to revive its exchange value? Would Marx have altered his assessment if he were attentive to the diverse material properties of "so-called waste"? What if Marx had lived in a world saturated by post-consumer waste?

Proposition 4: Waste as Destructive Creation

By the second half of the nineteenth century the socio-ecological contradictions of industrial capitalism, including soil exhaustion from overuse of chemical fertilizers in commercial agriculture, which Marx had begun to anticipate (Foster, 2000, p. 156), were on full display. The clamor for sanitation infrastructures to address growing quantities of household, commercial, and factory waste, rapidly gathered momentum, as the the English "sanitary idea" -- linking filth with disease -- spread around and beyond the Anglo-American world (Prashad 2000; Melosi 2008).

The concurrent deepening of a bourgeois *weltanschaaung* wrought a normative transformation of the senses: as sights and smells associated with waste became increasingly offensive, demand for sanitary services escalated. Racist typecasting that contrasted the personal hygiene of white colonizers to the excremental excess of native bodies was commonplace in sanitary discourse. "In the colonial Philippines," for example, "white American health officers frequently cast local inhabitants as 'promiscuous defecators,' while conveniently erasing any mention of their own bodily functions" (Anderson, 2010, p. 169). Just as waste land and wasted labor power were viewed in the diagram of racial capitalism as signs of deficiency in native populations, providing ballast to profit-oriented proposals of colonization, a supposed glut of human waste came to mark native lack of civic order and reason, debilitating to both bodily and economic vitality.

Ironies abound in these annals of capital. Waste was never unmitigatedly 'bad'. It depended.

As Susan Strasser documents in *Waste and Want: A Social History of Trash* (1999), practices of reuse, repair, and recycling, once pervasive in western societies, fell into decline by the end of the nineteenth century as an emerging culture of consumerism, anchored by new products, glitzy advertising, and shopping arcades (the catalyst for Walter Benjamin's *Passagenwerk*) interpellated new subjects of consumption. The two world wars sparked short-lived recycling booms for wastepaper, glass, textiles, bone, kitchen waste, and metal products as supplies of essential raw materials were disrupted. For a brief period, economic efficiency coincided with reuse in policy proclamations and "the language of anti-waste and thrift came to the fore" (Cooper, 2008, p. 719).

It was not to last. After World War Two, production of disposable goods soared as they became symbols of affluence, freedom, and hygiene.

In their pessimistic take on this new consumer culture, Horkheimer and Adorno evoked a scenario in which consumers were trapped in a "cycle of manipulation and retroactive need" (2002, p. 95). Marcuse in *One-Dimensional Man* characterized advertising, public relations, indoctrination, and planned obsolescence as "no longer unproductive overhead costs but rather elements of basic production costs," that is to say, "production of socially necessary waste" as the sine qua non for administering industrial society (2002, p. 52). It was precisely this "throwaway" society, conjured by shifts in production and marketing strategies, that journalist and critic Vance Packard cuttingly denounced in *The Waste-Makers*. While lauding "obsolescence of function," where a product becomes outmoded by the introduction of a new product that is functionally superior, he was deeply skeptical of the two other modalities by which products were being rendered obsolete: "obsolescence of quality" (when a product breaks down or wears out) and "obsolescence of desirability" (when an otherwise "sound" product becomes "worn out" because a "styling or other change makes it seem less desirable") (1960, Chap. 6).

Guiltinan's (2009) sobering analysis of "destructive creations" – products designed to become obsolete – affirms Packard's disquiet. The "objective of planned obsolescence," Guiltinan notes, "is to stimulate replacement buying by consumers" and that the "most direct way to speed replacement demand is to shorten the usable life of a product through one or more… physical obsolescence mechanisms" (2009, p. 20). These include limited functional life design (or "death dating"), design for limited repair, and design aesthetics that result in reduced satisfaction. Thus, design strategies that emphasize "fashion positioning" over "durability positioning," or that build in the prospect for functional enhancement through addition or upgrading of product features, encourage "premature disposal" by consumers.

Proposition 5: Waste in the Anthropocene

In *Wasted World*, Hengeveld (2012) confronts the planetary impact of worldwide growth in population and consumption, particularly since the 1970s. Identifying high mass consumption in rich countries as a primary cause of our contemporary ills, he makes the critical observation that not only is each generation using more resources per capita than earlier ones, it is producing increasing amounts of "nondecomposable waste" that cannot be recycled "because many of the products we produce …cannot be broken down by enzymes made by living structures" (2012, p. 100). The effects of these waste products, notably carbon dioxide – a direct outcome of our petrochemical dependence – are profound; they include warming of the atmosphere and oceans, irreversible melting of polar ice caps and mountain glaciers, biodiversity loss, and microplastic pollution. He laments that: "The plants and animals on which we rely for our energy and food are dying out or becoming toxic because of the toxicity of our waste. Our resources are being exhausted, and our waste is beginning to pollute our environment and food on a large scale" (ibid, p. xiv).

By foregrounding the dire effects of nondecomposable waste from an earlier epoch where human societies produced mostly decomposable waste, Hengeveld nuances the Anthropocene thesis. He contributes to a deepening re-assessment of a concept originally coined by Crutzen and Stoermer (2000) to recognize the cumulative impact of humans on Earth's systems.

Growing numbers of scholars now contend that the concept is limiting because it seems to hold humanity in general responsible for our ecological catastrophe. By contrast, history reveals that human alterations of landscapes and planetary processes have accelerated to calamitous proportions mainly in the past five hundred years of colonialism and capitalism, critically abetted by a proliferating jumble of racial ideologies and practices (Malm and Hornberg, 2014; Haraway, 2015; Moore, 2015; Corwin and Gidwani, 2021).

Microplastics in the Ocean. Photo credit: Naja Bertolt Jensen, Unsplash.

Proposition 6: Waste as Capitalist Entropy

Nicholas Georgescu-Roegen's landmark book *The Entropy Law and the Economic Process* begins with the fundamental premise that "the material basis of life is an entropic process," which is to say that "any life-bearing structure maintains itself in a quasi-steady state by sucking low entropy from the environment and transforming it into higher entropy (1971, p. 10). Reproaching the "mechanistic sin" of economics, Georgescu-Roegen contends that an economic process based on the qualitative transformation of available energy (for example, fossil fuels) into a dissipated form where that free energy is now bound and unavailable is evidence of the capitalist economy's fundamental unsustainability. In entropic terms, our economic system continuously converts low entropy matter-energy that is available for, say, mechanical work into high entropy matter-energy that is unusable (either altogether so due to technological limitations or, at a minimum, without new inputs of available energy to "reverse" high into low entropy).

Employing the vocabulary of thermodynamics, Georgescu-Roegen calls high entropy forms "waste" and deems the transformation of low entropy into high entropy an "irrevocable" process (ibid., p. 18). And, indeed, in the qualitative sense, once something dissipates it may be possible to renew or recuperate some of its use value, in a reconfigured form; but it can never be restored to its original state. Georgescu-Roegen puts it bluntly:

> The faster the economic process goes, the faster the noxious waste accumulates. For the earth as a whole there no disposal

> process of waste. Baneful waste once produced is there to stay, *unless we use some free energy to dispose of it in some way or another* (ibid, p. 305, my italics).

This is why 'recycling' cannot be a cure for consumerism: it generates the illusion of progress without confronting the steep environmental costs of manufacturing the goods we consume and discard (MacBride 2013; Lepawsky 2018).

This is why 'green capitalism', which dangles the promise of continuing accumulation minus environmental harms – proposing engineering or market solutions for capitalism's ailing parts without questioning its web of socio-technical relations, political hierarchies, and economic tendencies – remains a spectral cure for current ills (Dempsey 2016; Goldstein 2018).

This is why the idea of a 'circular economy', where all waste is recuperated, all material loops are closed, and all products are recycled indefinitely is "in any practical sense, impossible … because even cyclical systems consume resources and create wastes and emissions" (Corvellec, Stowell, and Johansson 2021, p. 3). Or, as Cullen (2017, p. 483) observes, echoing Georgescu-Roegen: "Every loop around the circle creates dissipation and entropy, attributed to losses in quantity (physical material losses, by-products) and quality (mixing, downgrading). New materials and energy must be injected into any circular material loop, to overcome these dissipative losses."

There are, expectedly, blind spots in Georgescu-Roegen's framework. Although he flags the problem of "underdevelopment", he has little to say about the violent histories of colonialism and capitalism, or their racial dynamics, that subtend it. Georgescu-Roegen never considers how the economic process as a "sorting" of low to high entropy outcomes entails a severely unequal distribution of benefits and burdens – with colonized peripheries and populations (domestically and abroad) bearing the burdens of high entropy through resource extraction, labor exploitation, and waste disposal, while metropolitan elites reap the economic and psychic benefits of utilizing low entropy matter-energy (McIntyre and Nast, 2011; Vergès, 2019). Moreover, with the accumulation of CO2 emissions, microplastics, 'forever chemicals', radioactive waste, and so on, high entropy waste production has tilted into the realm of "hyperobjects" (Morton, 2013), whose insidious impacts Georgescu-Roegen could have scarcely imagined.

Proposition 7: Waste as Dissipation of Working Bodies

As noted, Marx's spotty observations on waste orbit around "the refuse of production" that is re-utilized, thereby driving down the costs of production with consequent upsides for the rate of profit. But he also discusses waste in another register, namely the wasting of human material, in *Capital*, Volume 3. Here Marx is considerably more insightful and cutting:

> The contradictory and antithetical character of the capitalist mode of production leads it to count the squandering of the life and health of the worker, and the depression of his conditions of existence, as itself an economy in the use of constant capital, and hence a means of raising the rate of profit.… Yet for all its stinginess, capitalist production is thoroughly wasteful with human material, just as its way of distributing its products through trade, and its manner of competition, make it very wasteful of material, resources, so that it loses for society what it gains for the individual capitalist (1981, p. 180).

Elsewhere, in Volume 1 of *Capital*, in his chapter on "The Working Day", Marx describes how "in its blind and measureless drive, its insatiable appetite for surplus labor, capital oversteps not only the moral but even the merely physical limits of the working day." He thunders:

> It usurps the time for growth, development and healthy maintenance of the body. It steals the time required for the consumption of fresh air and sunlight.… It reduces the sound sleep needed for

> restoration, renewal and refreshment of the vital forces to the exact amount of torpor essential to the revival of an absolutely exhausted organism (1976, p. 375).

Marx's corpus of writings is rife with instances documenting capital's denudation of labor's capacities to "be human". He repeatedly highlights the theft of labor's capacity to be "use-value for itself" that is, to develop its creative capacities for ends it desires. The recent accumulation of writings on surplus populations – "wasted lives" (Bauman 2004), "wasteland of the dispossessed" (Sanyal, 2007), the "precariat" (Standing, 2011), a "floating reserve army" (Breman, 2013), and "expulsions" (Sassen, 2014) – suggests that global capitalism is increasingly ill-equipped and disinclined to absorb new job seekers. Is this a new conjuncture in the turbulent world history of capitalism, or simply a reminder that capitalism "begins not with the offer of work, but with the imperative to earn a living", that "'proletarian' is not a synonym for 'wage labourer' but for dispossession, expropriation and radical dependence on the market" (Denning 2010, pp. 80, 81)?

In poor, labor-surplus economies with vast youth demographics, informal economies – subsistence-oriented or petty capitalist – have always been the major creators of livelihood and reservoirs of employment. Within this realm, it is conservatively estimated that approximately 1% of the world's urban population sustains itself through waste recycling, reuse, and repurposing of commodity detritus. These workers – stigmatized, under-valued, and deeply vulnerable – provide critical economic and ecological services to cities by lowering their waste burdens in highly cost-effective ways. Their work is "infrastructural": invisible but pivotal for the reproduction of cities (Gidwani and Maringanti, 2016). Yet, as cities privatize management of municipal solid waste (MSW) in the name of "efficiency" – creating a new frontier of "primitive accumulation" that encloses a quasi-common, urban waste, for corporate enterprise – the livelihoods of waste collectors and scrap dealers are imperiled (Luthra, 2020).

Given the health hazards and low incomes characteristic of informal recycling livelihoods it may seem as though this is not cause for alarm; but globally, the compulsion to undertake waste-related labor has invariably fallen on working classes from subaltern communities. In India, these are frequently Dalit, Muslim, and lower caste migrants who come to the city to escape inherited rural oppressions, such as those of caste. Perniciously, caste gets a new lease on life in cities by virtue of the matter workers are compelled to handle. The contemporary city produces new relations of "untouchability," with waste workers saddled (yet again, in a grim repetition of historical wrongs) with a double burden: first, a means of economic survival and social being that asks them to dispose waste matter disproportionately generated by affluent households; and second, to bear the ontological burden of "not touching" – physically and figuratively – the urban bourgeoisie, who consider them dirty by virtue of their daily contact with waste matter (Anantharaman, 2019; Kornberg, 2019).

Proposition 8: Value Struggles Around Waste

In his oft-cited "Right to the City" essay Henri Lefebvre (1996, p. 147) reminds us that, "The human being has the need to accumulate energies and to spend them, even waste them in play. He has a need to see, to hear, to touch, to taste and the need to gather these perceptions in a 'world'."

Waste and wasting are, thus, constants of human existence, essential to life itself. But the social valences that come to attach to them are variable. We have seen that as capitalism and colonialism become world-making modes of organizing nature and economic life, they inaugurate a "war on waste". People, places, things, and practices that are seen to hinder money's pursuit of more money are deemed waste and targeted for improvement – by enclosure or extermination – employing the apparatuses of law, ideology, technics, subterfuge, and racialized violence (Tadiar, 2022).

Scrapyard Metal Waste. Photo credit: Pixabay.

In fact, capitalism's relationship to waste has always been partisan. It is not waste and wasting per se that are intolerable: *who wastes and to what end are the crux of the matter*.

Urban planner Kevin Lynch once observed that, "where material shortage is the norm, discarding things is a notorious way of demonstrating power" (1990, p. 31). Perhaps he was echoing Thorstein Veblen, who in his 1899 classic, *The Theory of the Leisure Class*, famously asserted that "waste of time and effort" and "waste of goods" are both methods of "demonstrating the possession of wealth" (2007, p. 60). While the 'haves' flaunt their wealth by wasting, the 'have-nots' live a different reality. As workers they are enjoined and induced to work harder through growing casualization of employment and new forms of digital Taylorism; as consumers they are encouraged to expend time and money on the ephemeral and embrace "prosumerism", producing as they consume, for corporate profit.

In short, capitalism has never begrudged waste when it has carried the promise of profit. Whether this involves willfully neglecting the negative social costs of production; undermining laws and regulations aimed at internalizing them; minting money from laying waste to lives, communities, and the earth through prison, military, and war-making industries (Gilmore, 2007; Krupar, 2013; Reno, 2020); or, more insidiously, deploying a vast apparatus of advertising and marketing to sustain a "consumer's republic" (Cohen, 2003) wedded to habits of discarding, disposing, and continuously upgrading.

Proposition 9: What Is to Be Done?

Capitalism as a motive force is not merely the historical oddity of money chasing more money relentlessly, it is the unremitting accretion of waste, whose effects have been profoundly destructive for societies and the planet. So, to alight on a coda, *the accumulation of social wealth under capitalism, always unequal, is concurrently the accumulation of waste, always mediated by racial logics*.

Can we exit the Capitalocene before we annihilate ourselves as a species? That's unclear. The repertoire of "solutions" that are trotted

out – curing our addiction to fossil fuels, shifting to electric vehicles, scaling back our habits of profligate consumption, banning single-use plastics minimizing air travel to reduce greenhouse gas emissions, expanding global carbon markets, embracing "slow food", replacing territorial mining operations with "green mines", aspiring to "zero-waste" cities and circular economies, even geo-engineering and carbon capture – range from the pedantic and well-meaning to the boisterously technocratic and ill-informed.

Every little bit helps, of course. Cultivating an ethos of reuse, repair, refurbishment, and recycling, backed by a robust extended producer responsibility regime that disincentivizes planned obsolescence and incentives "durability, reusability, and repairability" of objects (Lepawsky, 2018, p. 168) is a good place to begin. This may lead us away from our currently distorted model of growth and accumulation, predicated on unsustainable throughputs of matter and energy and unevenly distributed burdens of high entropy and toxicity.

Ultimately, though, we must shatter and surpass the dictates of profit, embracing an ecological program of co-existence with other humans and our extra-human companions. Patel and Moore (2017, Conclusion) spell out the formidable challenge this poses. They call for a "reparation ecology", a program that pivots around "recognition, reparation, redistribution, reimagination, and recreation." *What does this mean?* It means altering how we recognize, think about, and interact with the web of life in which we are embedded; it means embracing restitution for the historical damages of racial capitalism; it means redistributing resources as well as the social burdens of repair and reproduction; it means "seditiously" reimagining spaces and modes of working and living; it means offering "equitable chances" for recreation and hailing the "joys of idleness".

Waste and wasting are not the problem. The problem is what we waste, why we waste, how much we waste, and who benefits from that waste.

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*All photos provided by the author.

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Environmental Colonialism and Hydrocarbon Waste in Historical Perspective: The Case of Algeria and France

Gemma Jennings

Keywords: oil, waste, colonialism, France, Algeria

Abstract: This article analyzes the history of hydrocarbon waste across Algeria and France. Focusing on the critical years between the discovery of oil in late-colonial Algeria in 1956 and Third World resource nationalism in the mid-1970s, the paper traces a shifting conceptualization of hydrocarbon waste: from political lever to economic loss to human rights violation. The paper argues that this shared history still shapes the politics of hydrocarbon waste today and shows how this history calls into question conventional distinctions between colonial and neo-colonial eras, a debate that erupted powerfully during the recent Hirak protests in Algeria.

Burning gas against the sky. Photo credit: Ianolan, iStock

In January 2020, protesters across Algeria chanted, 'There will be no gas, there will be no oil, tell France to exploit [gas] in Paris' (Belakhdar, 2020). The protesters were part of the Hirak movement that rocked Algeria between 2019 and 2021, seeking sweeping change to the political system, and ousting long-term President Abdelaziz Bouteflika. Opposition to the state's hydrocarbon policy was a central theme of the

protestors, who condemned new proposals to liberalize the sector and to exploit shale gas as an attack on the nation's sovereignty by an illegitimate regime (Belakhdar, 2020; Benfodil, 2020).

Shale gas in particular had been a deeply controversial issue in Algeria since exploration began in 2013. Protestors saw it as wasting and polluting precious water resources in the Sahara, where oil and gas reserves are concentrated, and this helped fuel a deep regional discontent with the authorities in Algiers (Belakhadar 2020). The controversy was compounded when the heavy French role in the fracking project emerged.

Opponents were uneasy about the control Algeria's former colonizer would wield over the nation's precious resources and outraged that French companies were attempting to dump on Algeria the environmental consequences and toxic waste of a practice already banned in France itself (Aczel, 2020; Aczel et al, 2018; Chiki, 2019). At the same time, economists and politicians from across the globe, including the African Energy Chamber, have condemned French-backed campaigns to restrict funding for overseas fossil fuel projects and to introduce a carbon 'border tax' for the European Union. Labeled 'colonialism in green' these measures are seen as a new means of trapping the global South at the bottom of the economic and environmental supply chain, saddled with the pollution and financial costs of foreign consumption - past and present (Ramachandran, 2021; Rouaud, 2021; Tamma, 2021).

The history of hydrocarbon waste and its links to colonialism between Algeria and France is clearly a long one: it has impacted the evolution of states, citizenship, and sovereignty on both sides of the Mediterranean. This paper traces the shifting conceptualization of hydrocarbon waste: from political lever to economic loss to human rights violation, in the critical years between the discovery of oil in Algeria in 1956 and the mid-1970s when Algeria led a global movement for resource nationalization as a means to remake the world economic order (Byrne, 2016; Ogle, 2014). This paper will show how this history still shapes the politics of hydrocarbon waste today and continues to call into question conventional distinctions between colonial and neo-colonial eras.

Hirak protesters in Algeria have been vocal about what they see as a continuation of colonial policy into present-day approaches to oil industry waste. In particular, protestors link fracking with the infamous French nuclear testing in the Sahara and perceive the government in Algiers as puppets or collaborators in the plunder of the region's resources. This undermines the legitimacy of the Algerian state in several ways: in its perceived betrayal of the central national narratives of political and economic independence from France, in its perceived failure to protect its own citizens, and in its fueling of factional, regional, and secessionist tensions. (Belakhdar, 2020)

In reality, however, the French colonial regime was deeply invested in minimizing the impacts of hydrocarbon waste in the Sahara. This was not altruistic, but largely because French officials saw effective management of pollution as key to maintaining what remained of French political legitimacy and especially to encouraging secessionism in the resource-rich southern region they hoped to retain, even as the war of independence progressed and they prepared to cede independence to the north.

The French encouraged regional secession primarily by deploying oil resources and rents to define the Sahara as politically, economically, and ethnically distinct. They hoped to cultivate a discourse of political legitimacy rooted in economic development there, incorporating desert territory even beyond Algerian borders into Chad, Mali, and Niger (Davis, 2013, 321-324; Suggitt, 2018). It was from this perspective that the regional colonial office approached one of the most visible forms of waste emanating from the industry in the late 1950s: gas flaring.

Gas flaring was already commonplace, particularly at the Sahara's largest oilfield, Hassi Messaoud, due to the large proportion of associated gases extracted along with oil.

Environmental concerns per se were minimal - in fact, specialists welcomed the practice, attributing the growth of new plants and grasses to the water vapor and clouds of soot coming from the gas flares (Lerat, 1971). However, the Saharan regional government became increasingly concerned about the local perception of gas flaring. Colonial officials wrote to oil companies explaining that Saharan residents had a 'strong interest' in the gas as a local power source, and were concerned about its treatment as waste (Lecourt, 1960).

Officials pushed oil companies to capture and bottle the gases, which could then be sold at low prices to the local market (Lecourt, 1960). This had the added advantage of allowing the more valuable oil to continue to flow directly to European France, instead of being partly consumed locally. Gas flaring, then, was not at all seen as an environmental waste and only partly as a material or economic waste. Primarily, officials saw it as a wasted opportunity to politically entrench the colonial regime in the Saharan space and reinforce their effort to build a localized resource legitimacy.

Oil companies initially balked at the proposals, arguing that a new refinery approved in the north would drive down energy prices nationally and that a Saharan-specific market was not economically viable (Dullieux, 1960). Regional officials, however, were insistent on the importance of bottled butane in a regionalized market, even considering driving surplus production to help realize cross-Saharan economic links beyond Algeria. In 1961, a year before independence, gas processing for the local market began in the Sahara (OCRS, 1961; Economic and Social Commission, 1961). In these ways then, colonial approaches to waste differed sharply from present-day protestor narratives emphasizing deliberate neglect. In fact, oil industry waste was carefully managed as a tool to seek political and economic legitimacy and to construct a Saharan resource frontier.

Carried across the Mediterranean by the expanding hydrocarbon network, similar dynamics were also present in European France, where the contention between oil companies and local government over oil byproducts and pollution played a critical role in the social politics of late imperial rule and then decolonization. These mechanisms are perhaps clearest in the prolonged clashes between the municipal council in Marseille and oil companies over the retirement of old or undesirable oil depots. The local government had already benefited from the rush of funding coming from the oil industry. Government and corporate strategy pushed the late-wartime developmental narrative hard, particularly from 1958, earmarking generous funding, derived from oil sales, specifically for 'Algerian' aid and development in the metropole.

But their efforts to spend hydrocarbon rents on improved housing perversely linked 'slums,' 'antisocial behavior' and social housing specifically to the 'Algerian' issue (Nasiali, 2016, 79-82). Moreover, the municipal choice of social housing sites for migrants was directly shaped by antagonism with the oil companies over their old depots. In a conflict spanning over a decade, companies had refused to relocate their older sites, despite rising local concern about their waste, notably leaching pollutants, and fire hazards. The local council had to force the issue through a policy of 'trade off', reacting favorably to new oil company applications for depots or service stations only if an undesirable site was repurposed or sold to the council itself, who then used this highly polluted land for social housing (Barnier, 1977; Lacroix, 1977; Marseille technical services, 1972; Marseille Municipal Council, 1965). Far from simply dumping waste and pollution, then, French hydrocarbon policy of the colonial era utilized waste management strategies to entrench itself into regional space on both sides of the Mediterranean. Oil companies and local government were key actors in shaping these policies, which helped power specific narratives about state legitimacy, Algerian identity and particularly Saharan ethnicity.

After independence in 1962, the waste produced by the oil sector, and particularly gas flaring, was reimagined by the new Algerian government, which faced vast economic recession and needed to establish its imagined

nationhood in practice, notably by integrating the Saharan south within the new nation-state. As the gas market grew through the 1960s the Algerian state reframed flaring as a critical national political and economic concern, integrating the issue of waste into a wider struggle against neo-colonialism. They construed flaring by foreign oil companies as careless destruction of the valuable national heritage of natural gas, a destruction facilitated specifically by a neo-colonial political structure that still granted oil concessionaires vast powers and control over natural resources (Malti, 1997, 172-5). Algerian officials thereby integrated concerns about flaring and waste into the wider project of Third World resource nationalism. This larger discourse worked to establish sovereign control over natural resources, particularly oil and gas.

For the Algerian state, the project was double-pronged: a fundamental attack on enduring French influence in Algeria and a larger offensive against the rights of foreign concessionaires globally. Algeria was a leader in this Third World campaign, promoting rhetoric which, through the 1970s, increasingly interwove sovereign rights over resources with human rights. Their central argument was that a state should be internationally recognized as the owner of natural resources within its sovereign territory in order to promote the human rights of its citizens through economic development facilitated by these resources, free from external influence. This stance was ultimately adopted by the United Nations and the Organization of African Unity.

The invocation of human rights here was politically polyvalent, as it had the additional benefit of making the sovereign state the hegemonic human rights protector on its own soil (Augenstein, 2016). This worked against the instrumentalization of human rights by neo-imperialists in the Global North.

Ultimately, though, this approach exacerbated both the problem of waste and regional tensions. First, when Algeria nationalized its oil industry in 1971, the environmental impacts of the extractive industries became entirely a national state issue, with no international recourse or oversight available to local residents. Regional tensions were exacerbated by rapid industry growth and increasingly limited financial benefits for local populations, as oil revenues and prices were centralized and lucrative oil sector jobs were dominated by employees from the politically predominant north (Sebe, 2014; Schliephake, 1977, 110-115). At the same time, the combination of nationalization itself and the push to maximize the oil profits badly needed for industrial development removed economic incentives for international companies to minimize flaring, due to low local gas prices and high taxation on gas production (Ubhi, 2021; Toledano et al, 2017).

Meanwhile, whilst the Algerian government continued to pay lip service to international efforts to minimize flaring, in practice judicial oversight remained poor. This is partly due to difficulties tracking flaring outputs, which still continue in the Sahara today (Ubhi, 2021). No financial penalties were levied by the Algerian state before 2005, despite estimates that rank Algeria as one the world's largest flarers. (Orubu, 2014; Toledano et al, 2017).

In these ways, the pursuit of resource sovereignty and the enfolding of waste concerns within it encouraged the wasteful and polluting practices of the industry, particularly flaring. The limited scope of legal challenge and the governmental neglect of the issue have continued to drive regional and anti-state tensions in Algeria right through to the present day. Paradoxically, in present-day Algeria, protestors condemn the government's failure on this issue as evidence, not of sovereign Algerian control, but of French influence and Algiers' neglect of the south. Still more strangely, in present-day politics, fraught with concern over French environmental colonialism, it is French legislation that sometimes offers the best chance of challenging and managing waste in the region - particularly the impacts of fracking. Whilst the Algerian government continues to support fracking, the 2017 French Duty of Care Act finally offered some legal recourse. The law covers environmental or human rights harms caused by the activities of French businesses

operating anywhere in the world (Aczel, 2020). Unfortunately, since Total's withdrawal from the proposed Algerian fracking venture in the face of public outrage in 2015, the impacts of this French legislation on unconventional oil and gas exploitation in Algeria have not been fully tested. Nor, in the face of ongoing Algerian state support for fracking, does it offer any protection against the operations of non-French international companies operating in Algeria.

Despite the perception of present-day hydrocarbon policy - and particularly approaches to its waste - as a continuation of colonial policy in Algeria, today's situation can perhaps best be conceived as the product of a history in which waste initially served as means of cooption and ultimately became a means of exclusion. Throughout the period this article discussed, hydrocarbon waste policy has continued to materialize deep regional divisions, but has moved from being a political tool, intended specifically to enhance regional differentiation in the service of colonial control, to an economic concern bound up in nation-building, with the unintended consequences of isolating the local population, deepening regional tensions and thus undermining sovereign legitimacy.

Today, now three years on from the height of the Hirak protests, human and environmental rights claims against hydrocarbon waste in the Sahara still have their best and only legal recourse through the deep, ongoing connections to French industry and French legislation.

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Inside an Amazonian Communal Reserve: Education and Youth in a Frontier of Gold-mining Waste

Deborah Delgado-Pugley

Keywords: waste, gold, mercury, education, youth

Abstract: The gold-mining waste frontier collides with conservation efforts in the south of the Peruvian Amazon, placing Indigenous communities in a challenging landscape. This essay shares insights from the field on how the process of frontier expansion is lived and experienced by Peruvian youth, written from my position as a professor of Sociology based in the city of Lima. It narrates daily life situations and encounters among young people, approaching the frontier through the eyes of students at an elite university in the capital of Peru, and at the high school of the Puerto Luz native community. The piece first takes you to the field in the Amarakaeri Communal Reserve, then contextualizes the landscape in a global and national policy panorama to show how global agendas and local expectations resonate with each other. Finally, it engages dialogues among youth and the role of education in frontier processes.

The borders of the Communal Reserve look like savannas. They are very long patches of sand in the middle of the forest; dry, hot, and silent. Photo credit: Deborah Delgado-Pugley.

To reach the Amarakaeri Communal Reserve coming from the south of Peru, it is necessary to travel through several small gold mining camps and wastelands left behind by former operations. A patchwork made of dunes, dredgers, pieces of vividly-colored plastics, motors, and small machinery assemble a landscape where myriad operations employ a few hundred people shifting to work 24 hours a day. Propelled by very high international prices of gold, such itinerant ventures have been transforming this part of the Amazon since 2008. Migration from the Andes to the Amazon, circulation of people and minerals, and the flow of cash are core elements of this tropical forest transformation.

This article is based on experiences shared by myself and my students of Sociology at the Catholic University of Peru. I have taught fieldwork methods at the frontiers of resource extraction in the Peruvian Amazon for many years. I believe that first-hand observation of how commodity frontiers occupy vast areas of the Amazonian territory—how they displace forest uses and practices of Indigenous Peoples and introduce new materialities—is a perspective that allows students to better understand the political ecology of their country. In the years I've been teaching in this area, gold mining waste has emerged as a puzzling and unavoidable materiality.

Beyond my practice as a teacher, of the past decade, I have been researching how climate policies at multiple levels of governance interact with landscapes characterized as "natural" in the Amazon Basin. I've realized that many of the most vocal Indigenous Peoples' organizations that are active in the multilateral arena try to occupy and use that political space as platforms to influence what is occurring in their lands. They actively defend their homes from multiple sources of environmental degradation as they try to attract resources that can give them more political leverage (Delgado, 2019). Trying to better understand what motivates the social action of Indigenous Peoples' organizations and political actors, I have frequently visited their territories. Going from their lands to other spaces of discussion and collective action has been part of my process of conducting multi-sited ethnography.

A trip with students to the Amarakaeri Communal Reserve in the spring of 2017 was memorable. Transported by pickup vans with Indigenous leaders from the Harakmbut people as guides, my students and I were surprised by how much gold mining waste had consumed the area. The borders of the Communal Reserve looked almost like savannas with mounds and patches of dry, hot sand. As we crossed the very shallow Madre de Dios and Colorado Rivers during the dry season, I couldn't stop thinking about how those meager waters had been transformed by mercury and other toxic materials introduced through the expansion of the mining frontier. Rivers are a key part of rainforest ecosystems and social life that occurs there, and the radical transformation of the area through waste takes us to radically different ecological futures that are hard to imagine in social and political terms.

Mining waste appears in my fieldwork and teaching as a materiality that corrodes vital socioecological processes in the Amazon. Waste has become a useful focus in my fieldwork, as it helps examine and explain broader processes of commodification and collective interpretations of the environment. Gold mining leftovers are not wanted by any actor. They can be purposely discarded and disregarded, but they become important parts of new environments in which daily life takes place.

The village popularly known as Delta 1 is a place to buy equipment for mining operations, find restaurants and brothels, and send money out of the camps. It doubles the size of the biggest native community inside the Protected Area's buffer zone, Puerto Luz. It is a forced stop on our way to the Protected Area. Delta 1 is about 5 hours' distance on a non-paved road away from the main center of mining operations in Madre de Dios.

Operations around Delta 1 are manifestly less intensive than other cores of the business located there such as Mazuco or La Pampa, but

The village of Delta 1. A former mining camp, now a "centro poblado", which is now one of the most densely populated places around the Amarakaeri Communal Reserve. Photo credit: Deborah Delgado-Pugley.

they sustain an urbanized space where every single door is a shop or a service. It is a dynamic, hot, and surprisingly quiet village during the day.

As you pass through it, you can feel that despite the urban context, it is not a place where an individual can stay anonymous. Each person's movement is tracked by several eyes. Most of the buildings—being their business or services—channel the fruit of work on extraction sites out of the territory. These businesses offer essential services for the circulation of wealth as they absorb the capital that workers and small investors take out of this ecosystem.

People from Amarakaeri Communal reserve know Delta 1 well and try to avoid spending much time there. They have some ties with migrants who permanently reside there since they are now their "vecinos." The relationship between Delta 1 and the village is uneasy; villagers know how detrimental the presence of Delta 1 is for their territory.

The case of the Amarakaeri Communal Reserve illustrates an important conundrum for the Peruvian State: gold mining in the Peruvian Amazon has created growing waste landscapes inside Protected Areas. This is particularly salient in the south, where according to the National Protected Areas Service (SERNANP), natural protected areas span 44.78% of the Madre de Dios region (SERNANP 2012, p.18). At the same time, 70% of the region's economic activity is related to artisanal and medium-scale alluvial gold mining. This industry was responsible for deforesting 60 km2 of primary forest between 2017 and 2019. As a byproduct of the extensive use of mercury and the stir of soil and water, the degradation of formerly forested areas affects a more significant area, particularly on the meanders of different tributaries of the Madeira River.

This trend contrasts starkly with how Madre de Dios was imagined by conservationists. At the end of the twentieth century, Madre de Dios was pictured as a key landscape at the borders of Peru, Brazil, and Bolivia where many important rivers fringe. It was envisaged as a well-protected corridor of staggering biodiversity that could thrive for generations to come. It was eye-marked with great enthusiasm for its potential to preserve several important species and a robust rainforest ecosystem. As a result, Madre de Dios hosts three of the most emblematic Protected Areas of the Peruvian Amazon (the Bahuaja Sonene National Park, the Tambopata National Reserve, and the Manu National Reserve); two Communal Reserves (Amarakeri and Purús); and the Mashco Piro and Madre de Dios Non-Contacted Indigenous Peoples territorial reserves.

It is widely recognized that the Amarakaeri Communal Reserve (ACR) is today one of the protected areas most affected by mining activities. Thus, the rampant contradiction created by the expansion of legally recognized areas for nature preservation and unregulated mining operations is embedded in daily life. The Amarakaeri Communal Reserve is home to the Harakmbut, Matsiguenka, and Yine

Peoples. Alluvial gold mining in the reserve's buffer zone began during the third cycle of the Madre de Dios gold boom in 1999 (Arriarán & Gomez, 2008, pp. 145). The effects of this activity were felt in the southeast of this area just a year later (Tavera, 2020, pp.159), concerning and engaging the communities of the area. Today, of the ten Indigenous communities that make up the ACR buffer zone, three have primarily mining-based economies: Puerto Luz, Barranco Chico, and San José de Karene (ECA, 2019).

Pressure on Indigenous communities is intense. Among non-indigenous populations surrounding the territories, primary engagement in mining is 31 times greater than the sum of the three Indigenous communities (Tavera 2020, pp. 78). It is unknown exactly how many families in the three Indigenous communities engaged with gold production are directly extracting gold, but, as we could observe in Puerto Luz, this metal and its byproducts are a key factor in their daily lives.

Building institutions to assert territorial control at a resource frontier: a global context

Communal Reserves shaped in Peru are a *sui generis* form of conservation that deserve particular attention. They emerged in a context in which Peru's system of protected areas promoted the participation of local populations and Indigenous Peoples trying to reconcile their territorial demands with the need for its conservation (Orihuela, 2020). The first communal reserve, Yanesha, was created in 1988. Today there are ten communal reserves in the country, and another two have been proposed. In 2005, a Special Administration Regime (No. 019-2005-INRENA-IANP) stipulated that the management of communal reserves must be conducted through open-ended administrative contracts between SERNANP and non-profit administrative contract executive bodies (ACEs), which legally represent the title-holding Indigenous communities (Solano 2013).

The organization of a non-profit administrative contract executive body (ACEs) by local communities to engage with the Protected Areas Service is a laborious task. It involves collective action that implies agreement among communities that are scattered in the area, coordination and benefit sharing of money and natural resources. This effort can result in Amazonian Indigenous Peoples having more leverage to negotiate alternative livelihoods. Harakmbut, Matsiguenka, and Yine Peoples have made great efforts to that end. By way of these contracts, communities can make use of assigned territories in accordance with their traditional practices, organizational forms, and values that sustain conservation. In sum, the particularity of the communal reserves is that they permit direct use of woodland flora and fauna for the benefit of titled communities located in the protected area's buffer zone (Sernanp 2019). They also guarantee decision-making mechanisms that place Indigenous Peoples above other possible users. Thus, communities exercise freedom and autonomy of action if conditions for conservation agreed with SERNANP are sustained.

Through alliances at international levels, and with conservation initiatives they develop in their territories, Indigenous Peoples' organizations go into multilateral spaces such as the United Nations to gain allies, funds, and political support to assert control over disputed lands. I have been following the effort of Indigenous leaders to convince the international community of their willingness and ability to guarantee that the forest will remain standing. Through organized events and encounters with policymakers and global celebrities, a busy political agenda helps bring leaders' discourses into many spheres of influence.

But what does the right to manage land according to Indigenous priorities mean when the land is piled on with mining waste? How can a forest surrounded by growing mining waste be managed? Thinking strategically about the toxic materiality introduced by the gold boom is certainly a task that Indigenous Peoples organizations try to face. Their long-term and constant goal is still to strengthen their control over valuable land, as they are a minority pressed by a ravaging economy that is engaging people in their communities.

Leaders of environmental organizations partnering with Indigenous Peoples' organizations, the Pan Amazonian organization of Indigenous peoples COICA, the Harakmbut Indigenous people, the then Vice Minister of Environment of Peru, and the then head of the Delegation of Peru to the COP25 of the United Nations in Madrid, 2019. Photo credit: Walter Quertehuari, President of the Amarakaeri administrative contract executive body.

Teaching on the frontier of waste and gold: views from the capital and from the reserve

Frontiers, as real-life spaces where daily life occurs, are unsettled ground where actors consistently renegotiate their access to resources. This section provides a view of local dynamics through the eyes and experiences of Sociology students from the capital and from the high school in Puerot Luz.

I encouraged a group of students to prepare their fieldwork focusing on gender as we started the seminar. There wasn't much written from this perspective at the time and it was a fascinating issue to explore. Students left for the field with prepared questions about gender in Indigenous politics, and about how household activities were distributed by gender considering the particularities of Puerto Luz. Once there, they broke the ice, and approached the women of the community. After some informal conversations, students decided to develop more in-depth collective conversations with women. As I looked from the distance, a group of women and children was progressively forming at the bus stop at the end of one afternoon. Their conversation continued until sunset. As an outcome, the students prepared a report that motivated debate among the members of the class. The report was transmitted to the ECA and it also joined an effort that built on the territory.

Four years after this fieldwork—in 2020—I was part of a team that built a strategic plan for Coharyima to better integrate gender in their organization's efforts. Awareness was raised on the key importance of Indigenous women in leadership as well as justice issues that concern them.

Another group of students gathered information and reflected on how environmental governance is deployed in Puerto Luz, which got them into long conversations with the school director about the role that education might play in raising environmental awareness in such a complex context. The high school received students from other villages that came to Puerto Luz to finish their studies. My university students organized a

Students organizing a conversation with women of Puerto Luz and their young children on the bus stop. Photo credit: Deborah Delgado-Pugley.

conversation with those high school students at Puerto Luz during one of our last afternoons in the village. They invited me in. We had conversations about what they expected to achieve after completing their studies and how they would like to voice grievances in their communities in law.

Local students' perspective on the waste frontier was framed both in terms of migration and aspirations of using legal tools to defend their land. Some students aspired to follow higher studies in Law and Engineering; others simply did not believe that it was an option for them. They expressed their strong desire to live outside of Puerto Luz, and how difficult it is to spend their youth watching their land desertify and water become scarce and polluted as the result of the only economy that is very profitable.

Time spent in the classroom was valuable to make sense of the context in which young Indigenous people think about their future. They want to see their landscape restored. They want a strategic approach to managing chemicals that are making the landscape ever more fragile. Engaging with Indigenous youth is important for understanding their concerns about the future. It should be further supported.

There is a growing challenge in the area as law enforcement shows its limits and gold mining activities further impact the forest and people living there. State agencies that work on conservation are capable of making alliances with local Indigenous communities, but the force of gold mining is stronger in many of the borders of the Protected Area. As mining is a global process with sustained global demand, pressure to maintain and expand the industry will continue. In

this context, the waste left behind by former operations might be seen as an opportunity to think collectively about the consequences of several actors' actions in this now fragile landscape. Action over the waste, which is now in nobody's hands, can be progressively addressed.

As Liu and others argue, "currently, there is limited research regarding revegetation in ion-adsorption rare earth mining wastelands, although this is essential for redirecting mining into a path that might restore intervened landscapes" (Liu et al 2017). Scientific agendas could permeate education to reinforce each other. Education and research can play a role in connecting the dots and building a shift in collective action regarding gold mining waste. To do so, education in social science —including firsthand observation of frontier dynamics—is a step to show different policy paths to deal with gold-mining waste in the Amazonian context.

Considering the position of the youth in the area, investment and labor-intensive activities devoted to actively experimenting with how to change the social place of gold-mining waste in the landscape can open perspectives and opportunities. Learning how to prevent, reduce and handle waste should be part of the conversation among actors in the territory, helping change power relationships, reshaping the networks rooted in the place, and giving some new opportunities and forms of education for young people to reimagine the future.

High School students in Puerto Luz. Photo credit: Deborah

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Illegal Ecologies: From Irregular Mining to the Dumping of E-waste

Henrik Vigh

Keywords: e-waste, irregular mining, environmental crime, Ghana, circular economies, green transitions

Abstract: This article focusses on an inter-disciplinary and mixed-methods study of the critical circuit of minerals from irregular mines to e-waste dumps in Ghana. The move towards green energy and climate smart solutions has resulted in an increasing global demand for the minerals needed for low-carbon technology. This surge has caused a boom in irregular mining activities and trade in the Global South as the needed resources are moved north for inclusion in electronic components and products. Ironically, when depleted, these items often end up back in the same region as where the resources used to produce them were extracted. Shipped and traded as second-hand products they are discarded in e-waste dumps where they are mined once again for their mineral remains.

Electronic waste at Agbogbloshie, Ghana. Photo source: Wikimedia Commons.

Green transition is a site of socio-political struggle. Our efforts to achieve sustainable environmental change are challenged by forces that profit from pollutive or exploitative practices. Forest protection is undermined by clandestine logging; the safeguarding of the atmosphere by the smuggling of ozone-depleting substances; and the use of minerals in climate smart solutions by irregular mining activities and the dumping of e-waste as energy storage devises become depleted. The

implementation of positive environmental policies is resisted or counteracted by illegal means, making environmental crime a prime matter of concern for green transition.

Taking a criminological approach to the issue, the Centre for Global Criminology, at the University of Copenhagen, has embarked upon an investigation of some of these lesser known challenges to green transition. More specifically, we are currently researching the *irregular* mining and movement of minerals in and from Ghana. This entails charting their flow from point of extraction to depletion. More specifically, we are tracking the global movement of minerals from Ghana through supply chains, into production sites, across legal and economic landscapes, and back to the country's e-waste dumps where they are mined once again for their mineral remains – illuminating in the process a dark and slightly odd case of circular economy.

The perspective is a particularly timely one – and Ghana a particularly illustrative case. Due to growing green-tech demand, minerals such as gold, silver, manganese, bauxite, lithium and rare-earths are increasingly and irregularly mined with grave environmental effect (Uneca 2015; Carvalho 2017; World Bank 2019). Once mined they are traded, incorporated through and into legal structures and used, amongst other things, to produce efficient tech components such as batteries, computer chips etc. What makes the Ghanian case exceptional is that such components are, when depleted, increasingly discarded in the country. Ghana is currently home to some of the world's largest e-waste dumping-grounds[1], making the critical circuit of minerals, along their full life cycle, add to the initial negative ecological impact. In the current setting this means that the minerals that could be part of the solution, by providing the resources needed for efficient green-tech solutions and energy storage, become part of the problem. Their potentially positive effect is countered by the fact that their exploration is the cause of significant environmental harm by destroying forests and polluting waterways. In other words, if our attempts to minimize climate change results in an increasing demand for various minerals, a boom in irregular mining, and further detrimental dumping of electronic components and devices, then climate change mitigation ironically runs the risk of polluting the environment.

Ghana provides an interesting example of a more general problem. The fact that the Global South delivers the resources needed to sustain the consumption and 'progress' of the Global North is obviously old news. The 'gold coast', as the area used to be called, was early on a zone of plunder of slaves and minerals. Current developments, however, flaunt not just the systemic extraction, but equally highlights how areas within the Global South has come to constitute 'zones of waste'. They have become prime points for the hazardous discarding of depleted products and materials**.** Ghana has, as such, turned into a central node in the global movement of waste currently struggling with unmanageable amounts of second hand clothes, with unsurmountable amounts of used plastic, and – more recently – with increasing quantities of e-waste.

Green Transition and Environmental Harm

Our research focus is thus of urgency in relation to the field of green transition. Environmental crime – defined as illicit acts causing harm to the environment – is currently "the world's fourth largest crime sector… growing at 2-3 times the pace of the global economy, [w]orth as much as USD 91 billion to USD 258 billion annually [and] depriving countries of future revenues and development opportunities" (Nellemann et al 2016:4). It is, thus, both among the most profitable and destructive kinds of organised crime as well as the most dramatically expanding – a fact which has led leading pundits to term it a significant 'threat to our future' (EIA 2008). By highlighting the social, political, and economic forces that fuel environmental crime we seek to generate the knowledge needed to counter a destructive and counterproductive phenomenon (cf. Nellemann et al 2016). We are focussed on doing so by clarifying the constitution and scope of what we term 'illegal ecologies', defined as environments shaped by harm and pressures.

[1] Ghana is both an importer of e-waste proper as well as a major importer of second-hand electronics. As second-hand electronics can be shipped and imported without adherence to the rules and regulations attached to e-waste the trade in such defunct or depleted electronics provide a bureaucratically 'lean' way of getting rid of such waste.

Ghanaians working in Agbogbloshie, a suburb of Accra, Ghana. Photo source: Wikimedia Commons.

The concept of 'illegal ecologies' builds on earlier work within political ecology (Wolf 1972), a perspective further developed in the 1980s with a focus on ecosystem change and the role of political and economic forces (Bryant and Bailey 1997). It follows a tradition that shifts our perspective from a technical, natural-scientific focus on ecosystems to a socio-ecological and political perspective (Blaikie 1985, Escobar 1999). In doing so we apply a cross-disciplinary approach to environmental problems (Robbins 2012), which traces the political constitution of environmental degradation across scale (Rocheleau et al 2013; Bedford et al 2019). Political ecology obviously predates yet resonates with later work on the Anthropocene (Crutzen 2002; 2006), and not least the so-called 'Capitalocene' (Harraway 2015). However, the specific idea of illegal ecologies extends political ecology into the field of criminology (Stretesky et al 2013). The theoretical approach thereby adds to 'green criminology' (Bernie and South 2013), a sub-field focused on environmental crime, and the roles of corporations and states in the exploitation and degradation of ecosystems (Sollund 2015). It echoes more global-cum-transnational perspectives (White 2013; Spapens et al 2016) as well as 'southern criminology' initiatives (Goyes 2019), which have addressed the international, (extra)legal, capitalist, and post-colonial issues involved, thereby granting us a unique capacity to explore the shadowy underbelly of green transition.

Tracing Illegal Movement

The Ghanaian case provides a particularly striking example of the linking of the local to the global, the legal to the illegal, and the progressive to the destructive within the current move to green transition. Not only is the country home to a large irregular mining industry –

ranging from small-scale artisanal '*galamsey*' mining to large-scale irregular mining exploitation (Botchwey et al 2018; Yankson & Gough 2019; Hilson 2019) – it also serves, as said, as the dumping grounds needed to tend to the end-stage of the product life-cycle of electronic components such as, for example, larger energy storage devices. It thus constitutes a fieldsite from where to fathom both the detrimental effects of irregular mining, its social and political dynamics, the larger global circulation of minerals, and the issues related to their depletion (cf. Spabens et al 2016).

However, while both irregular mining, smuggling and dumping are matters of growing local and global concern little is known about the interconnectedness of these. We know that the need for minerals to power the transition to clean energy is estimated to increase up to a 1000% – leading to increasing prices and causing a further rush in irregular exploitation and movements (World Bank 2017). We know that the move toward climate smart solutions is currently hampered not just by a mineral shortage in relation to, for example, the production of batteries and electronic chips, but also that they generate increasing irregular activities to meet the demands and produce increasing amounts of e-waste[2]. Yet we still have little clarity of the illicit extraction and trade of minerals, and the dumping of the resulting e-waste.

The Centre for Global Criminology strives to fill the knowledge lacunae through illuminating the full lifecycle of irregularly extracted raw materials and following the minerals in question as they become entangled in trade, products and waste (cf. Wallerstein 1974, Kopytoff 1986; Marcus 1995; Tsing 2011). Doing so may clarify how the environmental harm that follows from irregular mineral exploitation and illicit dumping is engendered by social, economic, and political dynamics in and beyond their points of extraction (Spapens op. cit.). More specifically, our project traces a *critical circuit* by ethnographically illuminating the interconnectedness of the above mentioned three key facets, namely the irregular mining of minerals, their transnational trade, and eventual dumping. This unique approach enables us to trace the drivers and practices of such mining activities, to shed light on the grey zones between unlawful exploitation and lawful enterprise (cf. Tijhuis 2006, Richardson and Wezskalnys 2014, Sollund 2016), and to illuminate how the endpoint of such resources, e-waste, is legally traded at one point only to be irregularly smuggled and dumped in another. It thus connects the study of *global* crime (cf. Edwards & Gill 2004, Sausdal & Vigh 2019), with *environmental* crime (Situ & Emmens 1999, White 2009a, Sollund 2016) and thereby allows us to clarify what one of the world's leading green criminologists, Rob White, has termed 'the eco-global' manner that such crime critically intersects and impacts green transition (White 2009b, see also Bisschop 2016). The Ghanaian case clarifies thus not just the way that green transition may lead to pollution in the Global South as a result of increasing irregular mining activity, but also how such minerals are illicitly traded both before and after their depletion: Waste, be it plastic, clothes or electronic, is shipped to Ghana through existing flows and via formerly negotiated infrastructures and transactions and dumped in sites such as Dagomba-Line, the Kpone landfill, and the Korle Lagoon, catering to the waste produced by electronics, plastics, and clothes

Interconnecting Lines of Research

Such an approach involves a journey from local realities along trading routes, production sites, spaces of consumption and back. In this perspective, Ghana is both *initium* and *terminus* for the critical circuit described, and the larger exploration of how Ghanaian minerals are irregularly mined, smuggled. It provides a window to a set of emerging challenges to climate change mitigation and green transition. Subsequently, the research trajectory is engaged in illuminating – via long-term fieldwork engagement – how such minerals are extracted in Ghana; how are they traded, moved, and marketed; and how e-waste is traded, shipped and dumped.

Following the movement of raw minerals out of and e-waste into Ghana necessarily entails moving between sites just as both politico-legal and economic perspectives are needed in order

[2] https://www.theguardian.com/business/2022/may/10/electric-car-battery-shortage-looms-in-2025-warns-stellantis-boss.

to grasp the dynamics at play. Taken together, the different foci of the subprojects allow for a transnational and cross-disciplinary approach that explores environmental crime from both practical, pecuniary and policy perspectives. Our focus on extraction of minerals in Ghana investigates, thus, how minerals are illegally extracted and how such irregular mining feeds into, or clashes with, local economies and livelihoods and global interests: The focus on trade, looks at the way that irregularly mined minerals are moved and how this is economically and politically negotiated and protected – just as it digs into the manner in which the transition from irregular to regular. While the similar perspective is central to the examination of the dumping of tech-waste and e-waste. It investigates the legal landscapes traversed and the economic flows navigated in which we are hard at work mapping existing accountability structures, rules, regulations and the ways that they are negotiated and sidestepped across different national, international, and transnational settings.

Our project is, in this manner, an itinerant research endeavour that follows the critical circuit in question from mine to e-waste. The combination of in-depth ethnographies, a transnational focus, and cross-cutting legal and economic analysis enables us to move in informed manner from the specific to the general in its green criminology illumination. Connecting social realities and concrete practices (ethnography) with market developments and interests (economy) and legal and policy developments (law) makes it possible to grasp a dimension of green transition that remains relatively unknown, yet which constitutes a grave matter of concern in relation to viable climate solutions. On a policy level, this may subsequently generate a knowledge base from where to secure viable solutions in mineral extraction and inclusion into green tech by strengthening regulatory policies and practices in cooperation with stake holders (ranging from 'the Ghana National Association of Small Scale Miners' to the 'the Ghana Chamber of Mines' to 'the International Council of Mining and Metals') and international bodies. In a more social perspective, the focus grasps not only the movement of irregular minerals and its various stage of inclusion into, for example, green-tech products. The ethnographic fieldwork shows how minerals are mined in both their points of extraction and points of depletion, that is, from the mining in open pits to the mining of depleted electronic products and components. Yet such irregular industries mine not just minerals, they mine people. Not only are the people working in the country's irregular mining sector similar to ones mining e-waste for mineral remains in gendered, generational and socio-economic ways, they equally compare in terms of poor health and low life expectancy.

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Nuclear Waste Culture: Projecting the Past into the Invisible Deep Future

A Conversation with Ele Carpenter.

Maarten Vanden Eynde

Keywords: Nuclear Culture, Atomic Age, Anthropocene, Nuclear Decoloniality, Radioactive Waste, Uranium Mining, Nuclear Weapons, After Present, Golden Spike, Memory, Remembering, Forgetting

Abstract: The Nuclear Culture project of Ele Carpenter is the overarching title for her curatorial research into art and nuclear culture covering the full material trace of radioactive materials from uranium mining, energy and weapons production, decommissioning and waste. The curatorial process involves working closely with artists and a range of nuclear contexts, carrying out field research, commissioning new artworks, curating exhibitions and hosting roundtable discussions and symposia. The project started in 2011 when Carpenter was invited to talk about how artists might respond to submarine dismantling by the Submarine Dismantling Project Advisory Group (SDP-AG) who were advising the British Ministry of Defence on how to take apart and store their old laid up nuclear submarines, some of which still have their old reactors on board. This article is a conversation between Maarten Vanden Eynde and Ele Carpenter about the urgency of nuclear visibility and deep time responsibility of radioactive waste in a period of increasing insurmountability.

Maarten Vanden Eynde: How did your involvement in the Submarine project lead to your interest in radioactive waste?

Ele Carpenter: The SDP-AG discussion began as a strategic debate about the ethics of dismantling to make space for new build but was soon transformed into a debate about recycling and waste storage. Certain categories of materials, such as fuel rods, were simply emitted from the discussion because it was assumed that they would already be removed and safely stored prior to submarine dismantling. In this way, precedents are used to close down questions rather than open them up and sequences of material processes are isolated into separate work packages that could be looked at differently. The SDP-AG documents referred to the GDF – Geologic Disposal Facility for high-level waste, without any actual plan to build one in the UK. So just because something is policy doesn't actually mean it exists. And in parallel, when we're thinking about nuclear waste; just because it is out of sight, it doesn't mean it does *not* exist. This was the spark for the Nuclear Culture project.

MVE: Compared to other examples of waste, nuclear waste seems to be at the top of the waste pyramid as far as longevity. Did this play an important role in the decision making to determine the shift from the Holocene to the so called Anthropocene?

EC: Positioning radioactive waste as exceptional in terms of longevity is a complex claim, and really opens up the question of what constitutes waste, and within whose timeframe. Nuclear Physicists often explain that radioactive isotopes have a half-life, which means they do not actually last forever, their toxicity is not infinite because they are in a constant state of decay. Unlike elements such as mercury which are actually stable forever, and will lie in big underground waste pools until the end of time. But, and there are a lot of buts… radioactive isotopes easily

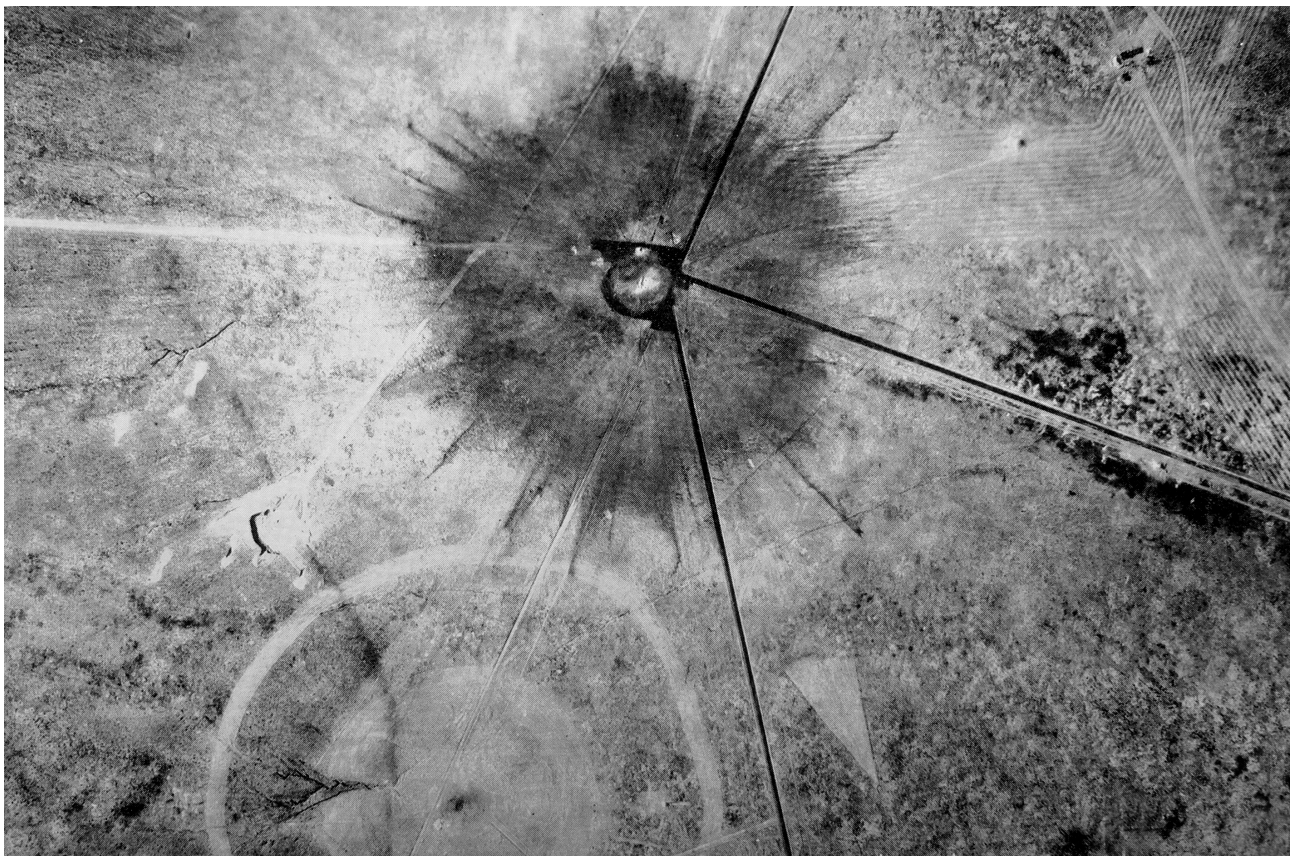
circulate in the biosphere through airborne dust and water, and are in danger of being inhaled and ingested, which is why they need to be contained and maintained for millions of years. I often argue that humans have a specific responsibility for their manmade radioactive isotopes which are produced through nuclear fission in a reactor. High-level long-lived isotopes are extremely dangerous for millions of years, which is 'forever' at the human scale. You can look up the half-life of any radioactive isotope, then remember that it needs to be isolated from the biosphere for ten times it's half-life (for example Plutonium 239, produced in reactors to make nuclear weapons, has a half-life of 24,100 years. This means that after 24,100 years it will only be half as radioactive as it is today, in 48,200 years it will be a quarter, etc). But this category of man-made or anthropogenic isotopes doesn't include Naturally Occurring Radioactive Materials (NORM) such as uranium and all her daughters, thorium etc, which can be dumped as tailings from mining operations without much nuclear regulation due to their NORM status (Hecht, 2012).

There are several classifications of radioactive waste: high-level, intermediate level and low-level waste produced by the nuclear industry, research and medicine. This is quite different from fallout from atomic explosions (Masco, 2015), and tailings from mining (Hecht, 2012). However, like radioactive waste both fallout and tailings cause contamination. Fallout is certainly a marker of the start of the Nuclear Anthropocene, with the first detonation in 1945, and peak testing in the mid-1960's which can be detected in mudflats around the world (Zalasiewicz, 2015). However radioactive waste is literally another layer, and will become a deeper geologic layer where anthropogenic isotopes are inserted into the fossil record in geologic disposal facilities (GDF). So we might consider fallout and geologic burial as two forms of evidence of human activity on the planet which are likely to outlive the human species.

MVE: In 2019, the Anthropocene Working Group (AWG) of which the before mentioned Jan Zalasiewicz is the Chair, voted in favor of submitting a formal proposal to the International Commission on Stratigraphy (ICS) to define the Anthropocene epoch in the geologic time scale. They proposed to locate potential stratigraphic markers, the so-called golden spike (GSSP) markers, in the mid-twentieth century. This time period also coincides with the start of the Great Acceleration and the Atomic Age. Is the start of Atomic Age, and maybe more precise, the detonation of the first atomic bomb called The Gadget, the right time and place to put the so called golden spike of the Anthropocene?

EC: The golden spike argument is a bit heroic, as if the vast and messy impact of humans can be defined in a single act, moment or marker. Reality is more enmeshed or entangled, and it makes more sense to map the networks of nuclear assemblages for which we need to take responsibility for today. This is certainly an aesthetic/ethical question about how we represent the nuclear age as an historical heritage problem, or a current condition of contamination combined with a renewed geopolitics of nuclear energy and weapons. Russia is clearly using the threat of nuclear weapons and the vulnerability of nuclear power plants in its war against Ukraine. At the same time their negligence of waste sites is a great cause for concern.

MVE: Yes I agree. Neatly stacking geologic strata on top of each other and generalizing conclusions relating to human representation, or even responsibility, is a tricky exercise which seems to be part of the history of science in general. Only by looking at the history of the term "prehistory" or "pre-literary history" for instance, which was used for the first time in 1836 (!) in the Foreign Quarterly Review for antiquarians in the UK, we know what can go wrong by defining and generalising categories. And history seems to repeat itself by the recent creation of the fault line between the new geologic time frame 'Before Present' or BP (also known as Before Physics, which is the new year zero and starts on January 1st 1950), and the undefined and speculative time frame that comes afterwards, the 'After Present' or AP. Is this another semantic way to avoid responsibility by a few for the dire and often long term consequences for the many? Or differently put, isn't long lasting waste like plastics, forever



Areal view of the explosion of first atomic bomb, nicknamed 'The Gadget' that was detonated at the Trinity Test Site near Alamogordo in New Mexico (US) on 16 July 1945.

chemicals, and for sure nuclear waste, per definition always someone else's problem?

EC: These time frames, or rather framings of time, create neat academic research packages, but negate continuity. Your question about waste being 'some-one else's problem' is interesting because the 'others' in this context are often indigenous people who are striving for the contemporary relevance of their culture to be understood. There are indigenous communities across the globe that have generations of experience of living with uranium mining and tailings, nuclear weapons testing, and contamination from nuclear research centers, who are now dealing with legacy waste as well as new waste storage proposals.

The temporality of responsibility is also important, where the some-one else is yet to come. So your question could be interpreted as waste will be a problem for 'future generations' if it is not dealt with today. And this is really the premise of the radioactive waste management argument for geologic storage of radioactive waste. GDF stands for Geologic Disposal Facility, but there's still a debate about the difference between storage and disposal. Storage enables continuous monitoring and responsibility. Whilst Disposal presumes that the safety case ends post-closure, and that the site will be safe forever. But GDF's aren't actually built yet, and high-level waste is highly problematic right now. Humans are still producing nuclear waste, so as soon as one GDF is open, the next one will need to be built. There are also many shorter-term storage sites (100-300 years) that need consideration. The point is that a 'deep time site-marker' might be a distraction from the multifarious layers of cultural responsibility that we need to explore today, rather than tomorrow. I think the way to communicate over deep time is to have a constructive way of communicating and listening right now. One of the most important impacts of the deep time marker debate is that it has engaged a younger generation of artists in thinking about nuclear culture. There are a lot of projects and ideas that are useful for understanding our contemporary cultural

radiological landscape which will have an influence on how we conceptualize the future. I hope that one day artists can be more involved in these kinds of humanities research project, but there's still an expectation that artists will visualize data, rather than interrogate the ethics of visual cultural processes.

MVE: Do you see a difference in attitude towards different kinds of waste within a colonial context in relation to disposal? Is nuclear waste an oddball, and if so in what way, or is the way it is being moved and dumped across international borders similar to other kinds of waste?

EC: I don't know much about other kinds of waste, so I can't really compare. But sadly the patterns of colonization are everywhere. Even the language used to classify different kinds of waste has a colonial dimension, where radioactive materials in the 'global north' have a 'nuclear' designation', but radioactive materials in the 'global south' do not. Gabrielle Hecht's book 'Being Nuclear' (2012) is all about when and where a radioactive material becomes designated and regulated as 'nuclear'. So firstly we have to rethink the terms of reference, and consider what is missing from international safeguards. Uranium extraction and nuclear testing are colonial projects that are simply not addressed by international nuclear regulation in the same way as the parts of the nuclear industry more typically located in the western/global north such as energy and weapons production. The European debates on radioactive waste do not include the historically unregulated colonial extraction and contamination of indigenous lands and communities. These processes are categorised outside of a Western definition of waste for very specific historical and colonial reasons, as Gabrielle Hecht describes in relation to South Africa. More research is needed into more conventional kinds of radioactive waste management and storage between countries. I've just finished a book chapter which addresses art and nuclear decoloniality (Carpenter, 2022), discussing projects by Lise Autogena in Greenland, Gabriella Hirst in Europe and Australia, and Alex Ressel and Kerri Meehan in Australia. My main argument is that we have to learn to negotiate radioactive contamination and the process of decolonization as ongoing, never-ending projects. There will not be a point at which colonization is resolved, or decontamination finished. I use Tuck and Yang's term of 'incommensurability' to describe the impossibility of white settlers solving these problems to absolve their own guilt. Of course we need scientific research on how to solve problems of toxic waste, but they need to acknowledge and work with other kinds of creative and indigenous cultural knowledge, the one that historians might call 'pre-historical knowledge'.

Attitudes towards radioactive waste have however changed enormously in the last 70 years. At the start of the nuclear age there was scant regard for nuclear safety, as Kate Brown (2013) carefully documents in her book *Plutopia*. Visit any nuclear site in Europe today and they will make a distinction between their 'legacy waste' inherited from a time when 'out of sight' was 'out of mind', and their ~~waste~~ management of recent waste where the regulators have a rough idea of what they are dealing with. The basic (European) premise regarding high level waste is that it shouldn't really be moved at all. However the UK offered international reprocessing of fuel rods at Sellafield for many years, and although the THORP reprocessing plant is now closed, they still have a backlog of waste to 'return' to countries such as Australia and Japan. I'm not very clear about the ethos of this waste-exchange, but it means that the UK is now trying to send intermediate waste to Australia (Tory Shepard, 2021). Radioactive waste is probably an odd-ball in that it is more regulated and more researched than many other kinds of waste. It has a high political profile, and governments are heavily investing in community consultation processes to try and site GDF's. The EU has a directive for countries to embed knowledge of waste sites within culture for millennia, and I don't think any other waste category has this much attention!

MVE: Indeed I think there is not any other waste material that sparked such a creative effort to think of ways to preserve knowledge about the dangers and contents of nuclear storage facilities. The proposals are manifold, ranging from massive monumental markers in the

landscape or obscuring and hiding it 'out of sight', to even religious cults making use of repetitive rituals of remembering. It confronts us with the fragile and insignificant nature of our existence. None of the cultural communication features of human society have endured long enough to safeguard information so it can still be 'read' or at least understood ten thousands of years in the future. Not a single language or graphic writing system, let alone a computer, survives that long. Maybe encoded messages in DNA strings could do the job. But how to communicate that this is the place to look? What solutions for this cultural conundrum did you come across that might give us the best chances of communicating with future generations?

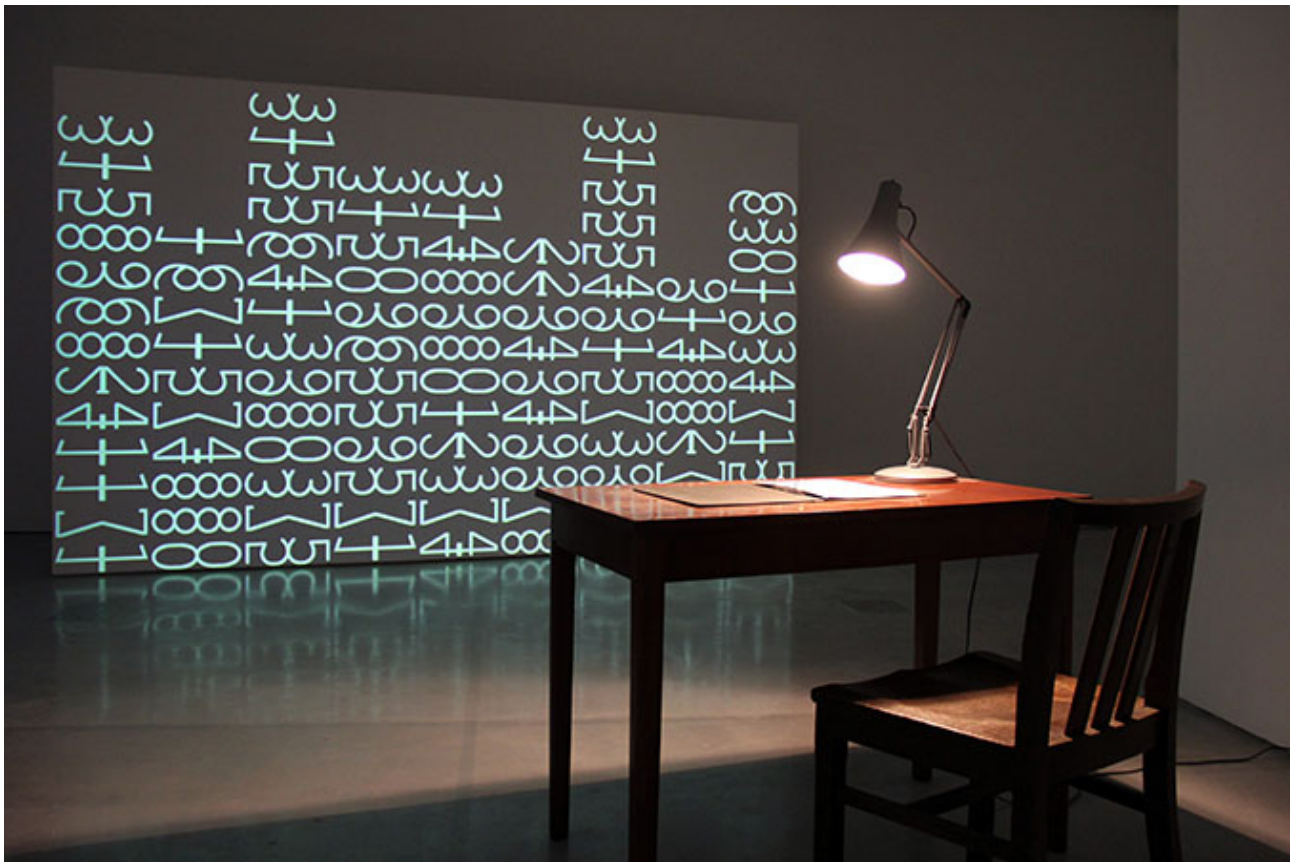
EC: Over the last five years I've been following Alex Ressell and Kerri Meehan's work with the local community in Gunbalanya in Arnhem Land, in the Northern Territories of Australia[1]. Here the aboriginal community have a continuous culture warning about the dangers of Sickness Country that goes back over 60,000 years. The rock art painting that tells the story of Sickness Country warns people against disturbing the land which will make them sick. The traditional Bulah Djang Coronation Hill paintings continue this warning, and have contemporary relevance right now. *Sickness Country* neatly outlines the landscape where uranium deposits lie close to the surface, and have been mined since the 1950s mostly against the wishes of the traditional land owners (Alex Ressel and Kerri Meehan, 2017). There is no 'before' or 'after' present in this environment; there is only before and after colonisation. The artwork continues to education future generations whilst uranium continues to decay for another 4.5 billion years.

Alex Ressell and Kerri Meehan, *Sickness Country, Photograph* (2017).

[1] Alex Ressel and Kerri Meehan, artists website available at <https://www.ar-km.com/> (last accessed 28 Feb 2022)

As we discuss in our new book chapter (Carpenter et al, 2022) Alex Ressel and Kerri Meehan's collaborative projects create and gather artworks that explore the role of intergenerational storytelling in the culturally rich uranium landscapes of the region. Working closely with the local Aboriginal community, the artists are learning to rethink the nuclear landscape in relation to Country, kin and temporality, drawing on 60,000 years of cultural knowledge. [2]

The radio artwork *Sickness Country* (2017) by Ressel and Meehan is a compilation of conversations with people in the region about how the contemporary ancient culture has developed knowledge about uranium, including a rock art painting that depicts a person sick with Miamia, with swollen joints from disturbing the land (see photo above)[3]. In the program notes, the artists explain that: "Sickness Country is an area within the Kakadu National Park that has been known as a sacred and dangerous place for thousands of years. According to ancient and living stories, disturbing the earth, taking rocks away, camping, harvesting crops or getting cut in Sickness Country could have grave consequences. In the 1950s, uranium prospectors looking for ore bodies in Australia's remote North found rich mineralizations close to the surface in areas of Kakadu".Throughout the program, the interviews move increasingly closer to the correlation between the warnings of Sickness Country and the uranium deposits just below the surface. Local people explain that mining only shifts the potency of uranium from one place to another, where it will eventually cause destruction, such as that seen in



Thomson & Craighead, *Temporary Index*. A temporary index is an array of decorative counters that mark sites of nuclear waste storage across the world. Each counter is a kind of totem marking the time in seconds that remains before these sites of entombed nuclear waste become safe again for humans. These timeframes range from as little as forty years or as much as one million years.

[2] Injalak Arts Centre website available at <https://injalak.com/> (last accessed 28 Feb 2022).

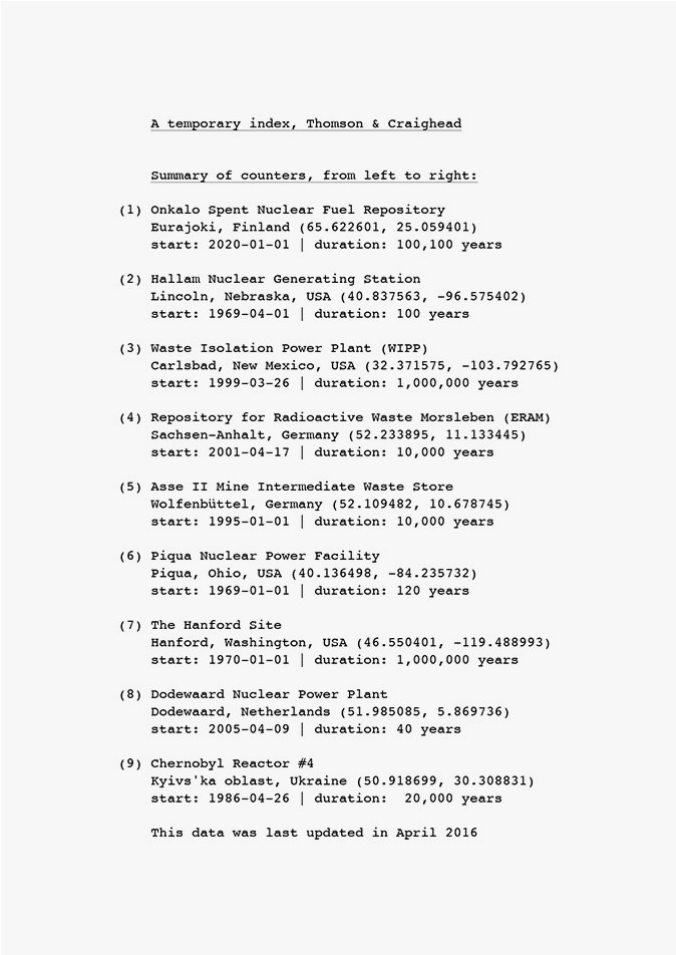
[3] *Sickness Country*, radio artwork, by Alex Ressel and Kerri Meehan, broadcast on Resonance 104.4FM, 18 October 2017, <https://www.ar-km.com/sicknessCountry.html https://www.ar-km.com/sicknessCountry.html> (last accessed 28 Feb 2022).

Fukushima. This trace maps response-ability, shifting away from the language of the global industry of extraction to an awareness of ecological connectivity. So that telling these stories becomes an awareness of planetary nuclearity. Uranium extraction is rarely included in the nuclear discourses of the global north, and these works seek to make visible deep-time material traces along with the knowledge of the landscape passed on through generations.

I'm also thinking of semiotician Thomas Sebeok's (1984) concept *Atomic Priesthood*, beautifully enacted by Robert Williams and Bryan McGovern Wilson in their Cumbrian Alchemy project (2013). The artists' wider project investigates how knowledge of the past is embedded in the landscape, language and place names in Cumbria, weaving together the recent nuclear history of the region with its Norse history. There are encoded messages everywhere but we have to have the time, cultural knowledge and frameworks to be able to read them. Our experience of place is so mediated through data, you need to be present in a place both physically and digitally to be able to read it. Digital spatial mapping presents another set of challenges, which have yet to be fully explored.

The *Safe Cast* citizen science project for communities to monitor their own radiation levels is another good example. Crowd-sourced data collection might be one of the most effective forms of communicating with future generations because of the critical mass of people involved, and the distributed data collection. Everyone needs to learn to use a Geiger counter, and everyone needs to know some basic radiation protection safety. The Covid-19 pandemic has raised awareness of virus protection, and people are fairly well-trained in UV protection these days, so why not radiation protection? Guarding against dust inhalation and ingestion is vital if there's a domestic or international release of radioactive isotopes.

And last but not least, as part of the Nuclear Culture project I worked with artists Jon Thomson and Alison Craighead on their *Temporary Index* artwork. The work is comprised



of an array of counters that mark sites of nuclear waste storage across the world. The artists explain that each counter marks the time in seconds that remains before these sites of entombed nuclear waste become safe again for humans. The live decay-rate counters, markers of time as well as place, are adapted to the specific sites in which they are shown, and can be presented as the whole array of counters, or as single totem clocks. The artwork has been a central counter in all the Nuclear Culture exhibitions where it has measured the temporality of the nearest radiological waste site or contamination risk.

In 2017-2019 Thomson & Craighead were commissioned by the Nuclear Decommissioning Agency (NDA) and High Life Highland to create a *Temporary Index* counter for Nucleus, the newly built Nuclear and Caithness Archive at Wick, Scotland. The Nucleus building is home to the archives of the UK civil nuclear industry and the historical archives of the county of Caithness. It is also 30km from the Dounreay nuclear site which is undergoing a 300-year decommissioning process. *Temporary Index* is a totemic object of contemplation providing a way for humans to

measure ourselves against the long atomic time frames recorded in the Nucleus Archives, which will be passed on from generation to generation. As far as I know the work still lacks a label which references the time period of the counter. This is because the NDA wants to prioritise cultural engagement with deep time of somewhere else, but is not always comfortable referring to the radiological activity of sites closer-to-hand. Their focus is on the waste management process rather than the longevity of the isotopes. As Sebeok intuited, perhaps the best way to communicate into the future is to listen to the past.

MVE: That is a beautiful way to end the conversation unless there is anything else you would like to add or ask?

EC: There's a lot of focus on remembering, but what about forgetting? Perhaps we also need to focus on how to forget? I love the counterfactual storytelling in McKenzie and Spinardi's (1995) paper on tacit knowledge and building nuclear weapons. It's exciting to think that humans might soon lose the knowledge to build nuclear weapons. However, the weapons themselves, and the vast military-industrial complex created to build them still needs to be dismantled and stored safely. Whatever the ethics of production, waste management is here to stay.

MVE: Thank you Ele, I'll try to remember to forget from time to time, and I'll make sure not to forget to remember for the rest of the time.

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*All photos provided by the author.

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Waste Pickers' Struggles over Labor and Rights at the Colombian Waste Frontier

Federico Parra

Keywords: waste pickers, informal workers, formalization, waste management, labor struggles

Abstract: This article presents a historical overview of the transformation of the way in which waste has been understood and solved as a public problem in Colombia. It describes the struggle of organized waste pickers to not be excluded due to the prevailing model of waste management and explains their achievements in terms of organization and remuneration for the public recycling services they provide. It also discusses the relationship between these struggles and the changing narratives around waste management in Colombia. Finally, the article focuses on the contradictions and tensions that emerge from a system in which informal waste pickers are recognized and remunerated as service providers, but at the same time, policies on the matter seek to co-opt the benefits directed to this sector to be enjoyed in the market of public service provision by actors other than waste pickers. The article is based on the author's professional experience accompanying waste picker organizations since 1997 in their process of influencing the regulatory framework and the struggle for their rights. The academic support for this article is based on the author's research for his doctoral degree in political studies and international relations.

Informal waste pickers of Popayan, 2017. Photo credit: author.

The changing waste frontier in Colombia: from unwanted externality to commodity

Until the 1940s, waste and waste management were not considered major issues in Colombia. Regulating norms and institutional guidelines didn't exist. Waste picking and processing was organized around the contracting of private waste collectors, or the collection by mandate of the municipal authority. The collected waste was dumped into rivers and open-air areas surrounding the municipalities.

Between the 1950s and early 1980s, with demographic growth and rapid urbanization, the amount of waste particularly in urban centers increased massively to a point where institutional minimums to solve the problem became necessary (Parra 2017). Growing cities like the capital of Bogotá, with it's today more than eight million habitants, had to face increasing sanitary and health problems with waste being dumped in public spaces and an inefficient collection systems.

Thus, it was necessary to establish a system to guarantee collection, which meant defining who collects and how waste is collected from the streets. During this period waste collection and dumping were organized by the state. There were no other actors involved, since the problem of waste as well as its solution, was understood as a public responsibility. Sanitation services were provided by the government through a nascent institutional framework linked to the health sector. Gradually the responsibility was left in the hands of the municipalities.

This changed at the end of the 1980s and early 1990s in the context of the neoliberalization and dismantling of the welfare state. The aim of these transformations was to stop the state's monopolistic intervention in the provision of public services, and to leave it to the market, so that the state would limit itself to regulating and monitoring the provision and guaranteeing it through the assistance of corporate actors (Tabarquino 2011). With these transformations, market-based and end-of-pipe solutions were introduced. Waste became a commodity, located at the end of the consumption and production chain. Private companies collected it from public spaces, transported and buried it in landfills. Under the new regulations, the figure of controlled burial of waste in landfills was introduced as the "only" modality of neutralizing waste. The more waste produced and dumped in public spaces the better for the waste-collecting companies. Policies to reduce waste based on intensive consumption habits and industrial production processes, or on recovering and/or recycling packaging were not introduced. The conceptualization of waste as a public problem to be attended to at the end of the consumption chain is also reflected in the fact that waste management in Colombia is regulated by a law of public services, and not by a law of waste management.

Institutional reforms flanked the liberalization process of public services. For the waste sector, it meant that responsibility for public sanitation was removed from the health sector to newly created institutions in the Ministry of Economic Development, and later in the Ministry of Housing, City and Territory. A Regulatory Commission for Sanitation and Water was created for tariff issues and the newly created Super Intendance of Public Utilities was in charge to oversee and control the provision of public services.

The liberalization of waste management, the commodification and privatization of waste collection, transport, and its burial in landfills happened to the detriment of those actors who historically had based their livelihoods on the recovery of packaging and other potentially recyclable waste, i.e., the waste pickers.

Waste pickers' struggles for labor and rights

Dominant narratives around waste have mainly been constructed by national and local governments, with a particular role of the Bogotá government. However, with the liberalization of the sector in the 1990s other actors like waste management companies and international organizations (Inter-American Development Bank and the Organization for Economic Cooperation and Development (OECD)) became highly influential.

In the dominant narrative on waste since 1994 preeminence was given to financial sustainability and the search for profitability (Wilson 2007). A main argument for the liberalization of waste

management was that free competition would ensure a quality service, coupled with increasingly lower and more comfortable prices for users. In this way, an unprecedented business was configured for private and mixed companies; allowing them to charge users more than the real costs of providing the service. Newly adopted public policies sought to maintain, sustain and stabilize the liberalized model of collection, transportation, and controlled burial of waste. Some of them directly or indirectly affected the work of waste pickers, generating restrictions on some of their activities, or even worse, criminalizing stages of their work

Parallel to the changing public waste policy, a system of recovery and management of potentially recyclable waste emerged "from below," by waste pickers themselves. People marginalized by the lack of formal job opportunities and internal migration from the countryside to the city found a means of subsistence in recycling. This created a first step of people working in open dumps and recovering recyclables like metals, cardboard papers, glass, and later plastic from the waste deposited. In a second step, along with the emerging value chain for recycling, recyclables were commercialized. With the policy of closing open-air dumps and replacing them with sanitary landfills from the late 1980s onward, waste pickers were expelled from dumping sites and forced to work in the streets to recover the same materials, this time from bags of waste deposited by citizens on sidewalks to be collected by garbage collection, transportation, and burial services.

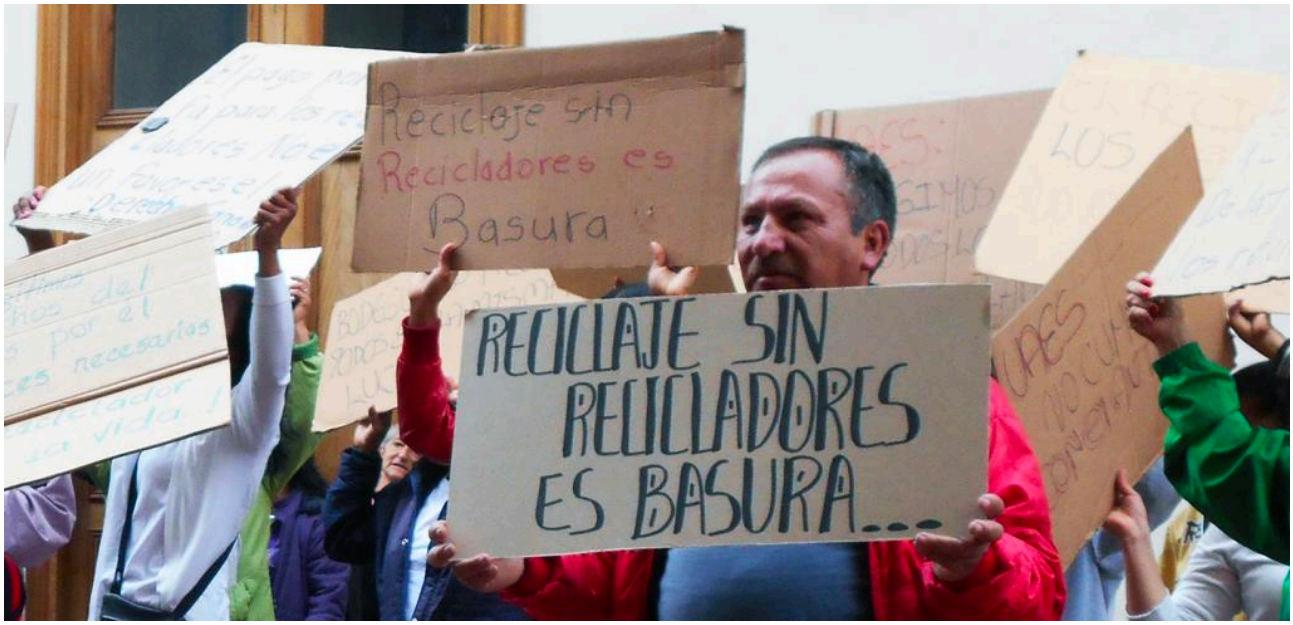
Recyclable waste is collected and transported by various means of transport, mostly human-powered. Recyclables are taken to recycling warehouses where waste pickers sell them to those who run the warehouses, mainly middlemen, with very few owned by waste pickers organizations. Waste pickers are paid by weight for each type of recyclable material, resulting in much more exhausting, time-consuming, less productive, and more lowly paid work. In this moment of crisis, waste pickers started to organize.

The organizing process began in the 1990s and was influenced by multiple factors. First, waste pickers had to resolve their means of subsistence in the face of the closure of dumpsites in which they worked. Second, there was a need for some waste pickers to resist threats of eviction from settlements located on what public authorities called "occupied public lands." Third, support entities such as the Social Foundation or the National Department of Cooperatives DANCOOP started to promote the organization of waste pickers. And fourth, a massacre of waste pickers in the city of Barranquilla in 1992 made organization for self-protection increasingly imperative. By that time, waste pickers felt an increasing need to defend themselves against discrimination in general and from waste management policies and public authorities that categorized them as a "problem" in particular.

By 2010 the National Recycling Study estimated that there were 60,000 waste pickers in Colombia. This figure has increased until today, however a solid and updated estimate does not exist. Of these, in 2012 30% were organized in either associations or cooperatives.

Among the strategies of struggles applied, organized waste pickers have carried out mass mobilizations and protests in front of government institutions whose measures affected them. They have mobilized public opinion by means of communication strategies aimed at changing discrimination into new views that would recognize their environmental and economic contribution. They have built alliances with small intermediaries in the recycling value chain, especially with the aim to protect the right to work. Finally, they have formulated public policy counter-proposals to the government, and demanded their rights through legal channels. To this end, they were supported by various organizations and professionals who helped to strengthen the capacities of waste picker leaders so that they could engage in the arenas of power where decisions were made regarding the public management of waste.

Their legal strategy consisted of using a figure for the protection of citizen rights called *Acción de* Tutela. Here, citizens can appeal to the judiciary when their individual rights are affected by a public policy or by the actions of a "government institution." Thus, waste pickers' initial legal strategy centered on how several public policies affected their daily lives. For example, the expulsion of their settlements due to public space recovery policies, restrictions to access waste due to privatization policies of the waste collection service, mobility restriction



Waste pickers protestors in Colombia ("Recycling without waste pickers is trash"), 2014. Photo credit: author.

policies on roads justified by the alleged modernization of cities (Parra 2020).

Many of these *tutela* actions reached the Colombian Constitutional Court, where they were reviewed and pronouncements were made in favor of the waste pickers. Examples proclamations include the right to remain in their work (Sentencia T 724 2003, Sentencia T 291 2009), the right to circulate in cities using their means of transport until the municipal governments develops processes to replace these means (Sentencia C 355 2003), the right to certain and safe access to recycling understood as that which provides their vital minimum or their basic means of subsistence (Auto 275 2003, Auto 366 2014), the right to be recognized as part of the solution to solid waste management in the cities, the recognition of their condition of poverty and vulnerability that added to the benefits that come from their work and which are of a public nature identifies them as subjects of special protection of the state (Fernández & Parra 2012).

The jurisprudence in favor of waste pickers has raised important debates regarding waste, the first of which may have to do with the notion of waste as "property." In 2002, a national decree established that waste was property of the state, which ceded rights to companies providing public collection, transportation, and burial services, thus turning waste pickers into thieves. Aware of the criminalization of their work, waste picker organizations throughout the country mobilized against the government, resulting in the repeal of this notion of waste ownership and its replacement by the notion of responsibility. In other words, waste is no longer property of the state but it is the state's responsibility to provide a clean area enjoyed by all citizens.

Another major debate that emerged from the jurisprudence in favor of waste pickers was the definition of who can provide public services. Due to the neoliberal policies adopted in the 1990s, it was intended that the state would cede the provision of services to private actors that, regulated in a market, would compete by offering better prices and higher quality of services to citizens. One of these measures sought to define that communities could only organize to provide public services in small municipalities with less than 5,000 subscribers, i.e. municipalities of approximately 15,000 or 20,000 inhabitants. The waste pickers' struggle was aimed at demonstrating unequal treatment and showing that this measure condemned them to urban contexts in which their activity was not economically sustainable. The Constitutional Court agreed with the waste pickers (Sentencia C 741 2003), pointing out that the category of private enterprise could not be "naturalized" to the condition of "efficiency;"and that communities, including waste pickers, could be organized in any municipality to provide services such as recycling. A major achievement was to

include associations and cooperatives as entities that can provide public services. This was in direct opposition to guidelines that stated only private companies could be preferred providers of public services such as waste picking in Colombia.

The incorporation of waste picking into public services

The waste pickers' legal achievements were to be transformed into public policies. The first government to develop such mandates was the "Bogota Humana" government under mayor Gustavo Pedro (2012-2015). In the absence of national regulations that defined how workers in informal employment such as waste pickers would be recognized and remunerated as public service providers, the government of Human Bogota designed a new model (Rateau & Tovar 2019). In this, waste pickers were fully identified through a census, a mechanism was established to measure each kilo and ton collected and transported by waste pickers, and a basic equation was established to remunerate waste pickers under the logic of avoided costs. In 2013, the first payment was made to waste pickers for the recycling service they provided to the city.

By the same year, the national government began to formulate national policies that sought to comply with constitutional orders, as well as projecting a route to meet the recycling goals required to join the OECD (Organization for Economic Cooperation and Development). In 2016, the national government issued a national decree defining the formalization route for waste picker organizations to be recognized as providers of a public service (Decree 596 2016). The previous year, the national government had also defined a cost structure that allowed remunerating the recycling activity based on the same logic of paying waste pickers for the costs they avoid for the waste collection companies (Resolution 720 2015).

It is in this context that tensions and contradictions emerged around questions of how to comply with constitutional orders. Organized waste pickers pushed for recognition and protection of their work in the terms in which they had developed it for decades, and proposed gradual advances and improvements. This included guarantees for the consolidation of their organization as productive units by acquiring motorized vehicles, own recycling warehouse, and machinery. Their aim was to sell recyclable materials directly to intermediaries or to the recycling industry, obtain better prices, and make the leap to the pre-transformation of some recyclable materials. In order to achieve this, it was necessary to define a special and protected regime for waste pickers.

The national government did not share the compliance mechanism developed by the government of Bogota Humana (Samson 2014), nor the proposal made by the waste picker's organizations. Instead, it considered that complying with constitutional orders meant formalizing waste pickers, and this in turn meant formalizing waste picking. Formalizing recycling in turn implied including this component within the public services of waste collection, transportation, and management. Given that in Colombia public services are constitutionally governed by a principle of free competition, formalizing recycling ended up meaning "opening the doors" so that anyone (not necessarily waste pickers) could compete for the provision of recycling services.

From that moment on, recycling was going to be remunerated from citizens' payments for public waste management, an incentive that did not exist before. This motivated waste collection companies, foundations, non-governmental organizations, intermediaries in the recycling value chain, as well as other actors to register as recycling service providers, seeking to be paid for the service.

The national government intended to give an advantage to waste pickers. Hence, it established a gradual process of eight phases through which waste picker organizations could be officially recognized as service providers accompanied by municipal and national authorities. However, the proposed advantages did not accrue for waste pickers. Many of the requirements for formalization have simply been too difficult for waste picker organizations to comply with (Parra 2019).

Today, waste pickers' struggles are focused on ensuring that the existing regulatory framework for their formalization as public recycling service providers guarantees the rights that were set forth in jurisprudence. This includes exclusive

Marchers supporting the waste pickers' movement in Colombia, 2010. Photo credit: author.

access to recyclable waste and remuneration, which was considered a structural affirmative action by the Constitutional Court.

Despite all difficulties, national policy has enabled a route for the remuneration and recognition of waste pickers' organizations as service providers throughout Colombia. Although the payment system does not recognize the real operating costs for waste pickers, it provides extra income for their organizations and for a significant percentage of them, which has meant improvements in their living conditions (Parra & Abizaid 2021). The recognition of waste pickers' organizations as providers of public recycling services has opened a space for the public to better understand the structural role of waste pickers in sustaining a city. This has helped to dismantle discriminatory representation that for decades weighed on this sector of informal workers.

The struggle of Colombian waste pickers,—heir recognition and remunerations for a highly needed sustainable public service—has inspired waste picker organizations around the world. For example, the Latin American and Caribbean Network of Waste Pickers has promoted in its member organizations the struggle for recognition and remuneration as "recycling service providers" in their national contexts. The experience of Colombian waste pickers has been visited not only by waste picker leaders from other countries but also by academics, journalists, and policy makers to learn from it.

Conclusion

Formalization has a different meaning for each actor involved in it; authorities may relate it more to the notion of legalization, while for waste pickers, it means recognition, integration, and enjoyment of the labor benefits of formal workers. Waste pickers' struggles for labor and rights at the changing waste frontier in Colombia have shown that formalization must be shaped with the waste pickers themselves, otherwise it ends up formalizing the work (in this case recycling) without formalizing and protecting the livelihoods of the informal workers.

To formalize waste picking requires knowing and understanding the work, needs, and conditions of waste pickers. It necessitates creating platforms to coordinate the process with those involved, especially informal workers. The formalization process needs to be gradual and must start from what already exists; that is, from the already existing working conditions, schemes, and organizational forms. It must also proceed from a deep understanding of the value chain in which informal workers work. The regulatory framework designed for formal actors cannot be applied to the formalization process; particular labor regimes are required for informal workers and their organizations.

The case of Colombian waste pickers has shown that many of the beliefs and discourses upon

which waste management is based need to be reviewed considering the knowledge and contributions of waste pickers. One of the most interesting elements corresponds to promoting the integration and remuneration of waste picker organizations in the provision of public recycling services as a sustainable niche for this marginalized population. The inclusion of the collection, transport, and commercialization of recyclables as a public service component should remain in the hands of waste picker organizations. Opening the provision of these activities to the public service provision market means the dispossession of waste pickers as waste becomes a profitable niche for private actors.

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*All photos provided by the author.

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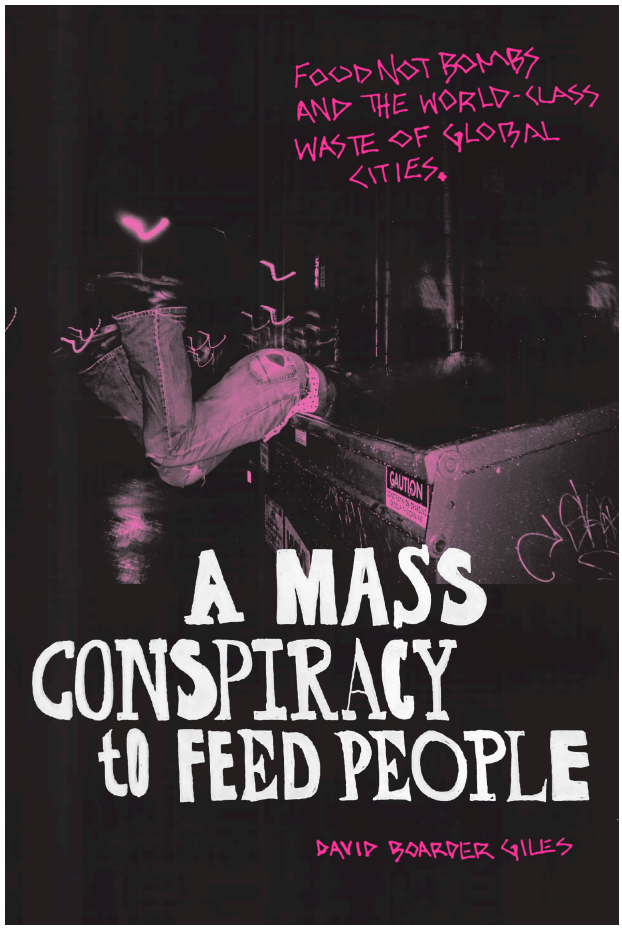
"In the detritus of the political present": A review of *A Mass Conspiracy to Feed People*

William Conroy

Keywords: waste, surplus, global cities, urbanization

Book reviewed: Giles, D.B. (2021) *A mass conspiracy to feed people: Food Not Bombs and the world-class waste of global cities*. Duke University Press.

More than a few social theorists, over the past two centuries, have argued that the contradictions (and nightmares) of the capitalist present produce the ingredients for capitalism's own undoing. While Marx and Engels are perhaps most famous for their rousing contention, in the *Communist Manifesto*, that the bourgeoisie produces (above all else) its own grave-diggers, they are certainly far from alone in engaging that problematic. Indeed, the critical question – at least for many within the vast domain of radical social and political thought – is not really *if*, but *what* and *who*: not whether the contradictions are accumulating, but *what* precisely those pertinent contradictions are, and (perhaps most importantly) *who* those grave-diggers will be. Anthropologist David Boarder Giles, in his recent book *A Mass Conspiracy to Feed People*, is hardly so grandiose in his language, and he certainly does not frame his account in this way. His work is not concerned with eschatology, and it can't be accused of identifying a singular subject of history. Giles is, however, concerned with precisely these kinds of questions, which have animated so many before him. And he finds his answers (and ingredients) in quite unlikely places: in the squatted homes of "world-class cities," amongst the homeless and unemployed, and – perhaps most strikingly – in the dumpster. In Giles's more poetic words, a "more radical world is…not only possible, *but it endures in the detritus of the political present*" (p. 231, emphasis added); "the churn of late liberalism's aggregations and disavowals creates," according to Giles, "the interstices for assembling the otherwise" (p. 223).



Of course, this might all sound fairly abstract, so it is important to briefly zoom in. Giles's more explicit, and grounded, objective in *A Mass Conspiracy to Feed People* is straightforward enough: he aims to develop an anthropological account of Food Not Bombs (FNB), with a particular focus on its operations in Seattle (where he conducted the bulk of his fieldwork) as well as several other global and globalizing cities –

Melbourne (Australia), New York, San Francisco and beyond. As the uninitiated quickly learn, FNB is an activist organization that serves free meals to those in need – the homeless, the unemployed, the vagrant, the expulsed – and one that has done so with astonishing consistency for over 40 years across the United States and internationally. It is also, in Giles's words, something of a "motley crew," differing from "most meal programs" in crucial respects (p. xv). Whereas other food assistance programs are often "hidden" away in "basements and other marginal spaces," FNB insists on sharing their food "in public view," often leading to clashes with municipal authorities (p. xv). Whereas other programs might shy away from explicitly political orientations, FNB embraces an anarchist ethos. Whereas other programs often operate according to a strict hierarchy, FNB has reproduced itself for decades without much of a rulebook or any centralized leadership. And finally, whereas other programs might subsist on the donation of "fresh" food, FNB subsists off of the "shadow economy of wasted food," which, at times, requires its participants to dive into the trash in the name of their "global plot to give things away" (p. xiv and p. 1).

Still, as Giles himself is quick to point out, this is not "just a book about FNB" (p. 3). It is, rather, a book about capitalist waste, the violent making and reproduction of global cities (see, for context, Sassen, 2001), and the forms of mutual aid and care required to ensure the bodily metabolism of those that have been thrown out and abandoned by the metabolic churn of contemporary forms of capitalist urbanization. Put differently, this is a book that moves dexterously across levels of conceptual abstraction and between geographies, wagering that if we are to make sense of the contradictions of the present – and to grasp some of the ways in which they might be resolved – we must consider how capitalism "manufactures scarcity through waste-making" in general; how global cities create "world-class waste and massive displacement" in particular; and how those dynamics produce "discarded surpluses and displaced people" within specific geographies (like Seattle, Melbourne, New York, and San Francisco) as well as "novel forms of political organization and nonmarket economy" in their wake (p. 5). It is this easy theoretical and empirical movement that is this book's greatest strength. "Waste" becomes a conceptual thread that is used to weave together complex arguments: to demonstrate capital's reliance on "uncommodities" that serve as the "ontological precondition of scarcity, [and as the] ineluctable substrate of market exchange and capitalist value" (p. 46); and to describe the making of "nonmarket counterpublics" within several global cities, which are constituted by people that have been banished from those cities' "market-publics" and forced to subsist on the "latent commons" left behind by revanchist gentrification and elite urban consumption (see p. 80 and 85; see also, Smith, 1996). Giles has, in other words, conducted an ethnographic account that is "in/of the world system" (p. 18), and which also has much to say about capitalism and capitalist waste in the abstract.

And yet, in Giles's haste to weave together this narrative through the motif of waste, and to account for commonalities – between not only Seattle and Melbourne, but gentrification, unemployment, and food waste as well – salient distinctions arguably fall from view. For example, at various moments in *A Mass Conspiracy,* we find passages that swiftly sketch the "surpluses" produced by the contemporary global city. We encounter "[s]urplus food abandoned by retailers. Squatted homes and low rent kitchens overlooked by the real estate market. [And a] surplus population abandoned by labor markets and underserved by social welfare agencies." This is, after all, the "raw material" that helps to make FNB (p. 80). And Giles is certainly aware that not all of these people, places, and things are "wasted" in the same way. (He distinguishes, crucially, between "abject mobile capital" and "abject spatial capital" (p. 112).) Still, in such passages – which appear at various points in the text – the specific dynamics that determine whether something (or someone) is rendered as waste by capital and/or the neoliberal state are left under-theorized, and ultimately obscured. So too are the specific forms of governance that different kinds of waste demand, and the widely divergent capacities of different kinds of waste to structure subsequent rounds of urban capital accumulation. One is even, perhaps, left to wonder if all the processes described in *A Mass Conspiracy* – which come together to make FNB – are best conceived in relation to the category of waste at all. The stretching of "waste" into so many domains of contemporary political and economic life seems to both reveal and conceal.

These are not so much criticisms of Giles's work, however, as avenues for future exploration and theoretical specification. And it is a testament to the book's originality and intellectual sophistication that it opens up several more. For example, for readers of *Commodity Frontiers* it is perhaps notable that *A Mass Conspiracy* gestures toward, but does not directly address, the non-city, raising the question of the relationship between global city-making, waste, and the geographies of *extended urbanization* (see Brenner, 2019). Indeed, the non-city looms in *A Mass Conspiracy*, functioning largely as an absent presence structuring the making and unmaking of the global cities that Giles concerns himself with. We hear of the gentrification of Occidental Park in Seattle, which hosts the "aesthetically impressive office complex for Weyerhauser, *a timber company that is one of the world's largest private owners of commercial forestry land*" (p. 109, emphasis added); of the "recent, broke arrival[s] *to the city*" that engage with FNB, presumably streaming in from other cities and hinterlands alike (p. 99, emphasis added); and of the networks of flexible accumulation and migration that the global city – as the command and control center of neoliberal capitalism – both presupposes and produces. (And this is to say nothing of the zones of intensive agricultural production that remain offstage, but which surely produce FNB's scavenged food in the first instance.) Future work, therefore, might build on Giles and engage directly with the socio-ecological waste produced in and by the operational landscapes of the global city, and trace the shaping force that such waste exerts on the historical-geographical evolution of the planetary urban tissue. That is, of course, much easier said than done. But Giles's mammoth undertaking in *A Mass Conspiracy* is as good an inspiration as any.

Finally, if the preceding paragraphs have largely tracked Giles's engagement with *what* questions – following his attempt to establish what exactly the socio-ecological contradictions of the present are (or at least some of them) – we would do well to close by reflecting more explicitly on his engagement with the question of *who* can get us out of this mess (and *how*). As noted, Giles finds political hope in those "minor" economies made out of the detritus of neoliberal capitalist urbanization – and in the collective worlds forged by the homeless and unemployed, by "punks, students, hippies, Quakers, vagrants, itinerants, and other radicals" (p. xv). And he suggests that the actions of FNB's "motley crew," in particular, have wider relevance for political thought and action today. This is because they underscore the "complexity, hybridity, and already existing diversity of our political and economic systems" (p. 252). Groups like FNB demonstrate, for Giles, that our prevailing political and economic regimes "have interstices" – that they produce them – which allow for more than alterity and opposition, but for enduring "illiberal" assemblages as well (p. 221). In this sense, Giles provides a map of the fault lines of the present and identifies (at least some of) the heterogenous actors already cobbling together a different kind of future. And yet, this too leaves several fundamental questions on the table – questions of tactics and strategy in particular. For one, it remains unclear how the "counterpublics" produced by these actors might turn into something more – how these "motley crews" might grow beyond the "interstices." Surely capitalists and global city makers are not going to simply acquiesce in the face of minor economies – so how do we make them major?

This is the question of *how*, and it is further complicated by the approach to the state offered by FNB – as inspiring and important as their work is. In Giles's telling, FNB was (and is) formed in relation to the state; "from its earliest days, [FNB] has emerged from the fringes or minorities of urban market-publics in response to efforts by municipal agencies to remake public space" (p. 180). For Giles, FNB thus demonstrates that state authority can never be total; that resistance exceeds state power, reorganizing the operations of the state while still being structured by them. Nevertheless, FNB itself is also quite explicitly anti-statist, accentuating the problem of how their interstitial and prefigurative politics of de-commodification and democracy might take hold beyond the margins. As the geographer Christian Parenti has argued, "the modern capitalist state does not have a relationship with nature, it is a relationship with nature" (Parenti, 2015, p. 830), and it has certainly functioned alongside and in the interests of capital in its waste-making endeavors. But we can just as surely say that the state maintains some relative autonomy and room for maneuver. Indeed, this relative autonomy is exemplified in Giles's recognition that "FNB's actions [have] sometimes bounded, sometimes provoked or intensified the state's efforts to control food distribution" (p. 182). As

such, the state appears to be a critical resource for those concerned with making a better world, on a broad scale.

Giles, for his part, does not offer many reflections on this front – nor should he. His project is a very different one. He is telling the story of FNB, waste, and the global city, and he is largely uninterested in giving recipes to the literal cook-shops of the future. But in a world in which the detritus continues to pile up, strategic questions of how to get out of this mess – of how to take power and generalize democratic modes of existence – seem only to grow more urgent.

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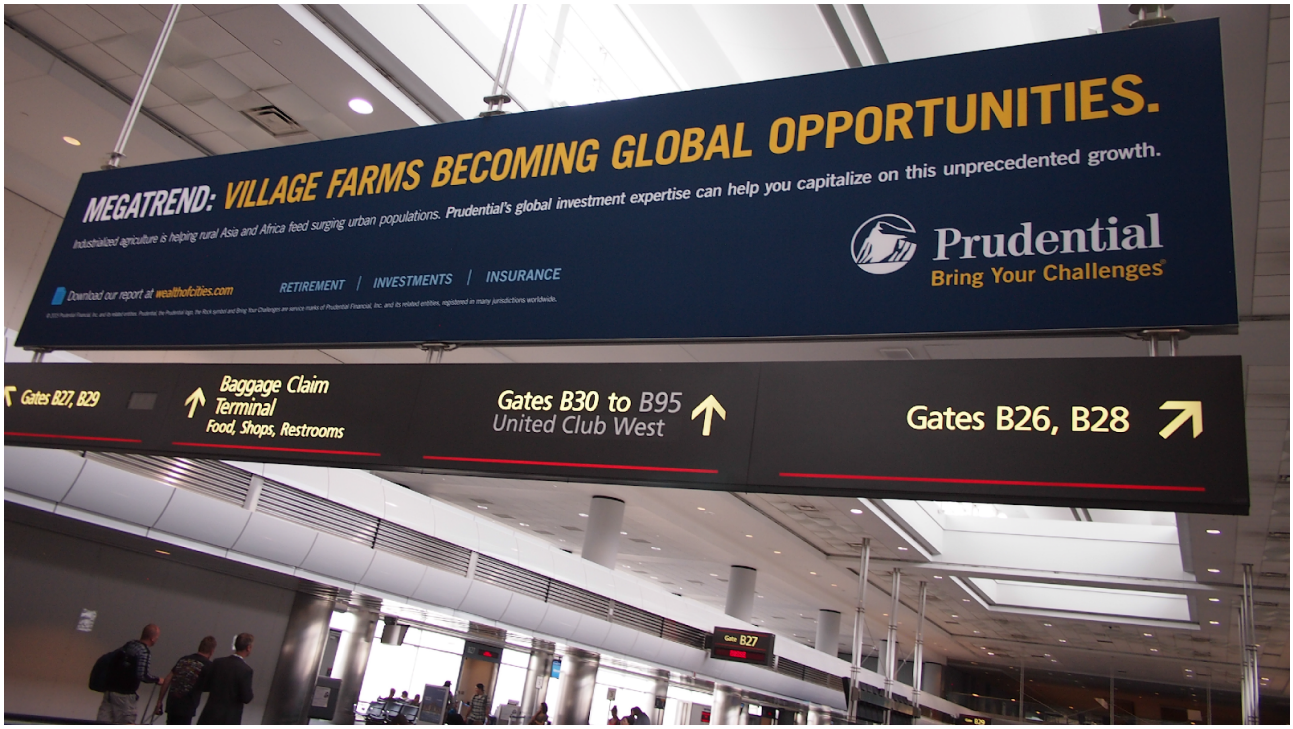
Frontiers of Commodification and Historical Capitalism

Philip McMichael

Keywords: historicization, imperial power, temporality, friction, ontological encounter

Abstract: Commodity frontiers embody global-scale power transitions, grounded in place-based frictions. These historic processes of countryside remaking involve commodification and local socio-ecological dialectics, addressed here through a (suggested) lens of "ontological encounters."



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Editor's Note: On December 9, 2021, Philip McMichael was part of a virtual roundtable to discuss the CFI research agenda. In this special contribution, he extends the commentary he offered during the roundtable. We are grateful for his careful and critical engagement. - MLS

Overview

'Commodity frontiers and the transformation of the global countryside: a research agenda' is an ambitious attempt at path-breaking interdisciplinarity in combining and ordering so-called 'fringes' of capitalist expansion. In this section, I offer comments and questions of clarification regarding the authors' turns of phrase in replying to their interlocutors (Beckert et al. 2021).

Focusing on the 'history of the making of the modern world' suggests more than, for example, 'global history,' since they wish to 'speak to the present.' The latter suggests an overriding *analytical purpose* in this project – one seeking to 'gain perspective on contemporary dilemmas,' summarized as 'our current socioecological predicament.' The perspective is clearly historical, and insofar as the countryside (as 'regions of extraction') is the focus the analytical framework might best be framed as *historicization* of the countryside. This approach animates three particular dimensions: (1) distinguishing the project from conventional empirical history – thereby encouraging the intended interdisciplinary dialogue; (2) promoting a relational world-historical sensibility as key to the authors' objective of historicizing the present – since the present *embodies* a certain history; and (3) understanding historicization of the countryside as a cumulative but contentious ecological reductionism, expressed in urban disdain for rural culture - in consequence of the 'metabolic rift' writ large[1]. This is consistent with the authors' terming commodity frontiers as 'fringes' of modernity. It also confirms/enables an epistemic approach restoring, rather than erasing, the socio-ecological value of rural life-worlds, as expressed, or at least evident, in the contested processes of annexation of particular 'frontiers' (cf, Escobar 2008).

The conceptualization of commodity frontiers as 'fringes:' not just places but relational processes, is an important perspective – not only because it speaks to this urban/rural divide, but also because it sets up the distinction between 'commodity frontiers' as *units of observation* of 'commodity regimes' as *units of analysis*. A question here concerns establishing a 'unity of the diverse' commodity frontiers for distinctive 'patterning' of commodity regimes? The authors suggest such patterning signifies moments of transcendence of socio-ecological limits to capitalist expansion with techno-political substitutions (as fixes): of slave- by indentured-labour, wood by coal, manual labour by machinery, and so on. These of course are re-orienting shifts in the broad sweep of capitalism, but they are not necessarily globally contemporaneous[2]. This is where international power relations become significant, in enforcing 'unity of the diverse' across quite uneven colonial empires – exemplified by Britain's mid-nineteenth enforcement of 'free trade imperialism' on recalcitrant states, via military[3] and/or economic[4] power. 'Patterning' also suggests, of course, hegemonic orders – as in Giovanni Arrighi's formulation:

> A dominant state exercises a hegemonic function if it leads the system of states in a desired direction and, in so doing, is perceived as pursuing a universal interest. It is this kind of leadership that makes the dominant state hegemonic. But a dominant state may lead also in the sense that it draws other states into its path of development (1990, 367).

While this quote is essentially for illustration, it does raise the question of the dimensions of regime power, where 'commodity regimes' coincide with (or even straddle) geo-political regimes. And their defining power relations vary with empires, state systems, military force, certain property relations, imperialism, *Haute Finance*, foreign aid, value chains, future foreclosure via commodification and/or digitalization, reinforced with ontological power via inevitability -- licensing enclosure and erasure of 'foreign' life-worlds and resilient practices.

It is noteworthy that the authors refer to fixes centered on country-sides for extra-urban 'resource' extraction -- not only to emphasize the significance of landscapes, but also to highlight how various 'fixes' prefigure socio-ecological disruption on a broadening scale. And it is important here to sequence these moments as reinforcing a historic cumulation of the metabolic and 'epistemic' rift

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[1] Cf Ajl (2014).

[2] For example, from the 18th to the 19th century, the American cotton commodity frontier straddled two distinctive conjunctures/fixes identified by the authors: slave labour, and wage labour, systems – where the C18th slave-holding Tidewater aristocracy coexisted with a mobile plantation frontier in the early to mid-C19th as industrialism and the City of London's new discount market financed a shift "from a family institution to an industrial system" (Dubois 1969, 152). Cf, McMichael (1991) and Tomich (1994).

[3] Gillo Pontecorvo's film, *Burn*, captures such 'patterning.' https://www.imdb.com/title/tt0064866/.

[4] Amitav Ghosh's novel, *River of Smoke* is a dramatic depiction of the cynical exercise of British power in this geo-political moment in orchestrating the opium trade between India and China.

(Schneider and McMichael 2010). Resulting soil exhaustion as territorial farming cultures are displaced alongside rising carbon emissions constitute the temporality of today, as characterized by Andreas Malm:

> For every year global warming continues and temperatures soar higher, living conditions on earth will be determined more intensely by the emissions of yore, so that the grip of yesteryear on today intensifies – or, put differently, the causal power of the past inexorably rises, all the way up to the point when it is indeed 'too late'. The significance of that terrible destiny, so often warned of in climate change discourse, is the final falling in of history on the present (2016, 9).

Specific methodological issues: food for thought

Maxine Berg's reference (2021, 2) to the authors' conflation of commodity frontiers with rural societies raises complicating questions regarding the difference between *extraction* of resources as commodity inputs (mining) and *production* of agricultural (and aquatic) commodities[5].[1] In largely focusing on the latter, I raise two intimately related methodological issues that may be useful: local/global dialectics, and 'ontological encounter.'

Local/Global dialectics

The authors clearly aim to avoid fetishism of commodity frontiers. That is, commodity frontiers are not without local consequence. In which case incorporation of 'frontier zones' into world market relations reorganizes local orders, sometimes several times over with the succession of regimes and technologies. This is particularly the case where landscapes are remade or rehabilitated with new commodity frontiers[6]. Recent conversions to carbon forestry are a case in point. Thus, Lacandon farmers, subjected to food regime dumping of subsidized corn in the Mexican markets, embrace carbon forestry as a survival strategy (Osborne 2011). There is a double enclosure at work: first, through the price form *campesinos* find their corn unable to compete with cheapened imported corn, forcing them to seek alternative sources of income; and second, resort to carbon forestry as the principal source of alternative income as determined by the new value of timber/forestry production subsidized by carbon credits[7]. The overall point is that imperial and global capitalism's local consequences are absolutely at issue in understanding 'the making of the modern world.'

A contemporary commodity frontier, of substantial local/global consequence, is detailed in Deborah Barndt's account of *Tomasita*, the 'corporate tomato'[8] produced in Mexico for export to ubiquitous fast food and retailing outlets of North America. The improved seed varieties originate in Mexico but are developed and patented in Israel or the United States. Such seeds need heavy doses of pesticides. The company employs hundreds of young women moved seasonally from one site to another via a mobile *maquiladora*:

> … the only Mexican inputs are the land, the sun, and the workers. … The South has been the source of the seeds, while the North has the biotechnology to alter them … the workers who produce the tomatoes do not benefit. Their role in agro-export production also denies them participation in subsistence agriculture, especially since the peso crisis in 1995, which has forced migrant workers to move to even more scattered work sites. They now travel most of the year—with little time to grow food on their own plots in their home communities . . . with this loss of control comes a spiritual loss, and a loss of a knowledge of seeds, of organic fertilisers and pesticides, of sustainable practices such as crop rotation or leaving the land fallow for a year – practices that had maintained the land for millennia (1997, 59-62).

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[5] Agroforestry represents some combination of the two, of course. Further, commodity production frontiers over time become sites of accumulation for agro-inputs, as well as agro-processors.

[6] Goldstein notes the Indonesian government's expansion of oil palm plantations onto degraded land (for rehabilitation) to avoid further deforestation (2014, 131).

[7] Termed 'new enclosures' by Peluso and Lund (2011).

[8] Named as such to mark its ethnic and gender labor origins.

Such waged work may be supplemented with remittances from the north by migrant husbands/fathers/sons. This *commodity frontier* has a broad impact, as a component of a full-scale commodity regime, premised on the globalization of export agriculture. It is symbolized by NAFTA's dumping of artificially subsidized corn in Mexican markets, undercutting local maize culture, and expelling farmers to migrate as farm labor to the US and Canada (Sexsmith 2016).

This kind of frontier regime represents histories of 'dispossession by accumulation' (to reframe the phrase), labour diasporas and migrant circuits, landscape conversion on large and continuing scale, political territorialism, coloniality, white supremacy, and uneven environmental degradation.

Anna Tsing's concept of 'friction' (2004) resonates here, in the authors' specification of ecological relations, resource competition and social resistance playing out as localized processes. Here local insertion/imposition of commodity frontiers assume an endless variety of impacts across space and time, depending on both *extant* food producing practices, the disposition of labour, and the solidity of local socio-political structures[9]. Local resistances, whether social or natural[10], shape the conditioning of commodity frontiers, reinterpreting or particularizing an essentialist market epistemology associated with global capitalism, as it imposes technologies in the quest to standardize accumulation practices[11]. Resistances compare with one another as multivalent responses in a shared global political-economic conjuncture, the 'commodity regime.'

For example, the corporate agro-export regime is dramatically captured in Amalia Leguizamón's *Seeds of Power. Environmental Injustice and Genetically Modified Soybeans in Argentina*. Here, the soy frontier on the Pampas has intensified with China's rising imports to feed its enlarged pork industry, with export revenues funding national social welfare programs. Soybeans are: "farmed from a distance, with the aid of satellites and high-tech instruments, by professionals and entrepreneurs who 'farm' from the comfort of urban settings and IT offices... [transcending] the urban/rural divide by modernization of the countryside." Meanwhile mothers mobilize around child health risks from agrochemicals: "these women bring to the table a way of 'knowing' risk that is different from modern, corporate-sponsored science ... [emerging] from felt, lived experience of taking care of loved ones, of gathering data constantly on their children" (2020, 146-7). Frontier representation defies frontier experience.

Again, the dimensions of the commodity frontier not only embody spatio-economic power relations, but also poisoning of landscapes and their human inhabitants, generating local rights struggles. And such local movements inform the work of international agrarian movements to consolidate such rights violations for global attention – described, for example, by Ingeborg Gaarde in: *Peasants Negotiating a Global Policy Space: La Vía Campesina and the Committee on World Food Security* (2017). In these senses the commodity regime embodies not only the social and biophysical dimensions of 'frontier zones,' but also local exercise of unseen global power relations, mediated by local political and economic elites (Halperin 2013). In these respects, to understand how commodity frontiers/regimes are accomplished, how local subjects receive, legitimize, and/or contest commodification is critical[12]. This is the substance of local/global dialectics, with distinctly Polanyian 'double movement' overtones, insofar as the cumulative impact of the economistic fallacy of commodity regimes is life- and Earth-threatening.

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[9] The edited volume, *Contesting Development* (McMichael 2010), registers a variety of domestic struggles against the local impacts of neoliberal political economy, exemplifying how a universal policy has a distinct local effect.

[10] Eg, monocultures, pests, superweeds, drought, firescapes, floods, and so on.

[11] Tsing's nuanced approach notes 'transnationalism' translates as either a liability (to a TNC/cronies), or an asset (to a local struggle). She argues for taking sides by making sides – that is, delineating how political voice works through translation/inter-cultural practices that are either deceptively localizing or liberatingly universalizing (2004, 212).

[12] Cf Peluso's observation that territorialization is 'an expression of relationships that emerge, operate, and converge across and within localities, national spaces, and global networks' (2005, 13).

These kinds of actions express worldwide struggles against violent commodity frontiers, and/or so-called green capitalist frontiers -- as at least a global containment strategy with respect to human rights and to time. Naomi Klein's concept of 'disaster capitalism' and its Shock Doctrine explicitly focuses on corporate mobilization to undercut counter-movements, via complicit states, and now their collective institution, the United Nations – as in its partnership with the World Economic Forum to stage a Food Systems Summit in the Fall of 2021 (McMichael 2021). That is, the local/global dialectic works both ways. Here, recent mobilization by private corporations as "trustees of society" (Schwab 2019), to capture global food governance, includes state-sanctioned alliances between agribusiness, financiers, and digital firms. Of course, this intervention was met with a massive global 'food sovereignty' countermovement (Ahkter 2021), with a broad social alliance much like the Indian uprising against PM Modi's attempt to create a new commodity frontier to corporate investment in export agriculture (Narayanan 2020).

Ontological encounter

This term addresses the mutual conditioning of distinct ontologies in conjunctures of interaction, such as commodity frontier expansion. It draws attention to ways in which socio-political systems or cultures are necessarily modified in that encounter (McMichael 2019). Commodity frontier interactive dynamics involve forms of reshaping, adaptation, accommodation, competition, and/or appropriation. I outline five kinds of encounter by way of illustration.

One specific encounter involving colonization of the New World was premised on dispossessing native peoples of their habitats[13]. Thus, following imperial orders, Sydney's first governor (1788) proclaimed immediate sovereignty over all lands in. This proclamation was informed by British philosopher John Locke's doctrine of natural law: grounding rights to landed property in the application of labour to the land. As an 1838 *Sydney Morning Herald* editorial observed of Aboriginals:

> This vast land was to them a common – they bestowed no labour upon the land – their ownership, their right, was nothing more than that of the Emu or the Kangaroo… The British people … took possession … and they had a perfect right to do so, under the Divine authority, by which man was commanded to go forth and people, and till the land (cited in McMichael 1984, 41).

Bruce Pascoe's *Dark Emu Black Seeds: Agriculture or Accident?* recaptures a civilization based in a landscape and soil management ontology of so-called 'pre-historic' people: "Aboriginal people are born of the earth and individuals within the clan had responsibilities for particular streams, grasslands, trees, crops, animals and even seasons. The life of the clan was devoted to continuance" (Pascoe 2014, 145). The Australian case is unique since settler colonization omitted formal dialogue or treaties between settlers and Indigenous people. Aboriginal land rights remained unacknowledged until late-twentieth century recurring protests precipitated the 1993 Native Title Act, stemming from the famous Mabo decision, whereby the High Court rejected the (settler) concept of *terra nullius* in favour of the common law doctrine of Aboriginal title. Nevertheless, powerful mining interests have empowered the federal government to limit Indigenous rights to negotiate, rather than veto, future developments on their land. There remain 250 groups who "retain a cultural connection to land and who still live, or wish to live, primarily in accordance with indigenous laws and customs' (Short 2016, 128). Meanwhile the Australian 'food sovereignty' movement has been recently chastised for its neglect of Indigenous sovereignty and inspired to recognize its own role in ontological encounter (Mayes 2018).

From a second, related perspective, commodification of frontier 'resources' can generate challenges that mobilize international support. This is exemplified in Joan Martinez-Alier's characterization of the 'environmentalism of the poor' (2002). Here, Indigenous peoples of necessity adopt the modern language of 'environmentalism' to protect their landscapes, even as natural reproduction is culturally

[13] Cf, Palmer (2020).

inherent. This is partly opportunistic, as local ways are not commensurate with modernist ontology, nevertheless protective adaptation to Western expression is a method of ontological interrelation[14]. Stephanie Fried's study of Kalimantan Dayak communities soliciting modern legal assistance in protecting their forests of swidden agriculture by 'writing for their lives' underscores this point (2003). Martinez-Alier notes capital's extractive imperatives generate tension "between economic time, which proceeds according to the quick rhythm imposed by capital circulation and the interest rate, and geochemical-biological time controlled by the rhythms of Nature, …expressed in the irreparable destruction of Nature and of local cultures which valued its resources differently" (2002, 215). This contradiction between different languages of valuation is captured in the distinction between a practical ontology of mangrove conservation, and the violent ontology of corporate retailing ('all the shrimp you can eat'), which plays out at a distance, with:

> the loss of livelihood for people living directly from, and also selling, mangrove products. Beyond direct human livelihood, other functions of mangroves are also lost, perhaps irreversibly, such as coastal defence against sea level rise, breeding grounds for fish, carbon sinks, repositories of biodiversity (for example, genetic resources resistant to salinity), together with aesthetic values (2002, 80).

A third ontological encounter is represented in Hannah Wittman's research depicting Brazilian landless worker struggles to realize 'agrarian citizenship' (2009). As enshrined in the 1988 Brazilian Constitution (its seventh since independence in 1822), the permission for productive occupation of speculative landholdings by the landless legitimized new settlements by the *Movimento dos Trabalhadores Sem Terra* (MST), a chapter of the international peasant coalition, *La Vía Campesina*. Wittman refers to the revaluing of small farming communities as environmental stewards in an urban-based market culture -- premised on expanding domestic commodity frontiers in the Amazon and the *Cerrado* regions via marginalization of small producers and Indigenous people. Such combinations of logics help to redefine countrysides. Here, Wittman and Blesh (2017) examine how MST camps embrace emancipatory responses where they are able to complement/replace market logic with agroecological farming, aided by President Lula's Zero Hunger Campaign, with the state providing market outlets to distribute MST staple foods to the Brazilian poor. The outcome of such action illustrates ontological encounter between capitalist relations and collective small farming cultures, exemplifying how markets can be (re)embedded in social-ecologies.

A fourth form of ontological encounter is implicit in Jan Douwe van der Ploeg's three-fold categorization of modern farmers: capitalist, entrepreneurial and peasant-like. His juxtaposition of 'value-adding' and 'ecological capital' addresses fluidity and overlap among three types of farming. Van der Ploeg's research in Europe and Latin America reveals widespread interaction especially between entrepreneurial and 'peasant' farming (2009). This underlies the expansion of 'value-chain farming' since the early 2000s, fostered by public-private partnerships (PPPs) to integrate small producers into commercial, monocrop agriculture, requiring purchase of agro-inputs. Inflation of the latter, alongside the volatility of single crop commerce, has resulted in rising value-chain farming indebtedness (McMichael 2013). The initial ontological encounter as small-producers adopt value-chain agriculture generates a process whereby farmers withdraw from commercial engagement and rebuild and self-manage their material base as 'ecological capital' (van der Ploeg 2009), reconstituting farming along agroecological lines (eg, Khadese et al 2018). Here, farming is practised as co-production, involving the interaction and mutual transformation of human actors, and living nature (Schneider and McMichael 2010, Da Viá 2012). In modernist ontology such 're-peasantization' is routinely invisibilized: "peasant-like ways of farming often exist as practices without theoretical representation. Hence, they cannot be properly understood, which normally fuels the conclusion that they do not exist or that they are, at best, some irrelevant anomaly" (van der Ploeg 2009, 19). This may be obscured by engagement in pluriactivity and other non-agrarian activities – in many

[14] This approach is exemplified in the film, 'The Kayapo: Out of the Forest,' appealing to international audiences to support Amazonian Indians in their struggle against a hydroelectric dam: https://www.imdb.com/title/tt2575058/1989, and a similar appeal by Brazilian rubber tappers to protect the forest: https://pulitzercenter.org/stories/green-jobs-could-help-save-amazon.

cases a necessary, but not sufficient, condition of existence or survival for modern peasantries, or Indigenous peoples, as they retain attachment to the countryside and knowledge of its cultivation[15].

A fifth kind of ontological encounter is represented by 'climate-smart agriculture' (CSA). In 2014, the UN launched *The Global Alliance for Climate-Smart Agriculture* (GACSA), represented as a "voluntary, farmer-led, multi-stakeholder, action-oriented coalition committed to the incorporation of climate-smart approaches within food and agricultural systems" (United Nations 2014). Purveyed by the corporate and institutional world, CSA 'frontiering' is an outcome of ontological encounter insofar as it represents partial appropriation of agroecological practices. But it operates largely as a rebranding exercise, in leveraging climate change as a vehicle for accumulation via intensification of existing technologies (Taylor 2018).

The notion of 'ontological encounter' might serve as a method to depict the mutual conditioning of socio-ecological arrangements. The preceding examples illustrate what are often referred to as 'hybrid' outcomes. Interactions involve quite distinctive ways of facing off, usually in one-way directions, but not without various forms of resistance, in adaptation, impasse, or rejection. The methodological goal is to recognize that a 'commodity frontier' represents some *composite re-ordering*. Likewise, a 'commodity regime' would be constituted by conjunctural countryside histories, where, however geographically specific, they embody common historical forces structuring conjunctural tensions which in turn shape successive regimes.

Ontology is an effective way of analyzing the historical forces, relations and assumptions that constitute governing practices of socio-ecological organization. Hugh Campbell's recent book, *Farming Inside Invisible Worlds* (2020), is a powerful account of the mis/fortunes of settler modernist farming ontology in *New* Zealand over time. The settler farm, as unit of analysis, encloses land and pastoral family identity via an ontology at odds with extant island socio-ecological relations, overriding Māori and landscape ecologies. Campbell's ontological method reconstructs settler farming as a boundary-making sentiment and enterprise. Initially, New Zealand represented the consummate 'British farm,' in violent encounter with 'early' *Aotearoan* gardens. And as farm *unit* productivism and homogenizing technologies encounter *enveloping* eco-system dynamics, and rising environmentalist and Indigenous rights politics in the present, ontological encounter illuminates the changing fortunes of modernist agriculture[16].

These political-ecological dynamics come to erode the sustainability and legitimacy of settler farming, as a model of modernist agricultural political-economic boundary-making. Here, Campbell raises the question of how to conceptualize adoption of alternative ecological measures in New Zealand's contemporary landscapes. In posing the critical question: "alternative to what?" (2020, 20), he invokes the common (and problematic) conventional/alternative binary. As argued here, the encounter itself embodies reconciliation, generating postcolonial forms of farming and revitalizing territorial/nested food markets.

In short, addressing 'ontological encounter' enables engagement with the consequences of commodity frontiers that are so often erased, displaced, or devalued. To recover what has been lost or simply discounted in the encounter enables a more robust depiction of countryside histories, rather than projecting a modernist assumption that they all eventually resolve into a singular, universal form. All such ontological encounters may have their particularities, but since 'outcomes' are historical, they embody broader meanings and dynamics. Campbell's story of settler farming ultimately encounters its antitheses, ignored for two centuries, but now requiring resolution.

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[15] For example, Peruvian Indian, Justo Oxa: 'The community, the ayllu, is not only a territory where a group of people live; it is more than that. It is a dynamic space where the whole community of beings that exist in the world lives; this includes humans, plants, animals, the mountains, the rivers, the rain, etc. All are related like a family. It is important to remember that this place is not where we are from, it is who we are (quoted in de la Cadena 2010, 352). Here: "just as people have a right to their land, so land has a right to its people" (Grey and Patel 2015, 436) which fully captures Indigenous ontology in the practical, rather than abstract, sense.

[16] Cf, Symposium on Farming in Invisible Worlds: https://link.springer.com/article/10.1007/s41130-021-00157-9.

On a world-historical scale such encounters are expressed in the current politicization of ongoing enclosure[17] of small farming (and Indigenous) systems - led by the International Planning Committee for Food Sovereignty (IPC), *through* ecological makeovers on farms at various scales for soil/farm resilience (cf, IPES-Food 2018, Khadse et al 2018, Philpott 2020), to recent recognition of Agroecology by the UN Committee on World Food Security (CFS/HLPE Report, 2019). Today we are experiencing ecological consequences, and while 'agribusiness as usual'[18] and agroecology are ontologically distinctive, they condition one another -- in a self-forming, contradictory conjuncture.

Such ontological encounter is necessarily historical, with variable outcomes: long-term environmental devastation and ongoing climate emergency, short-term agricultural bounty via PPPs, 'climate-smart agriculture' and its contradictions[19], 're-peasantization,' agroecological experimentation and other emancipatory possibilities (Rosset et al 2019, Toledo 2022), and remaking industrial agriculture frontiers[20].

In sum, such ontologies are more than ideal types, since they are historically produced/enacted, and therefore comparable as mutually conditioning, defining conjunctural relations. Insofar as their interdependencies express frontier *and* world ordering, taking account of their encounters may be of methodological assistance to this project -- in offering a more complex account of the overlapping tensions and possibilities in each historical conjuncture.

Conclusion

While I have concentrated on more contemporary commodity frontier remaking of countrysides, offering methodological suggestions for the instances addressed, there is great variety of such frontiers across space-time. Addressing encounters between local and global ontologies may not only help to historicize countrysides, but also, to the extent such ontologies evolve, the encounters may signify new, or transitional, commodity regimes. The trick here is to develop a rubric for capturing representative frontier complexes across the centuries, including how they reflect techno-political transformations, as suggested in the proposal.

One final comment concerns the development of digital frontiers via bio-physical mapping techniques. Arguably an extension of land grabbing, digitalization represents a 'data grab' (Fraser 2019). Each square kilometer, with every square centimeter of farmland, is undergoing mapping, "for soil, nutrients, moisture, and sunshine, and combining that with massive genomic data sets to suggest AI-designed 'climate-smart' agroecosystems building from DNA upwards, [and] ecosystems will be engineered for optimal performance" (IPES-Food and ETC Group 2021, 63). Bio-digital technologies in northern large-scale industrial agricultural regions[21] are now selecting converted land in the global South as a new data frontier. These interventions introduce 'precision agriculture,' where sensors can generate remote information for managing machinery and fertilizer and chemical applications to targeted units of land for efficiency and yield increase, with data blockchain consolidation providing "value for seed and chemical firms, agronomists, co-operatives, farm insurance providers, and machinery firms" (Fraser 2019, 899). In the global South, infrastructures to extend digital surveillance techniques are in their infancy, however data ('new soil') "from new parts

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[17] Whether through land grabbing, value-chaining, or market predation (cheap food dumping, reduction of public supports, rising agro-input costs), for example.

[18] Cf the International Assessment of Agricultural Science & Technology for Development (IAASTD 2008).

[19] Sustainable Rice Intensification (SRI), in West Africa (https://sriwestafrica.org/) and India (Vidal 2014, 2019): SRI substantially reduces powerful methane gas emissions, encouraging rice-using companies like Mars and Kelloggs, and the agribusiness colossus Olam to set up the Sustainable Rice Platform (SRP).

[20] And in the case of commodity frontiers of mining, the phenomenon of private equity firms competing for Congolese cobalt in this so-called 'green capitalism' moment captures a further paradox of ontological encounter.

[21] Where they are used on "over 75% of corn acres in the United States, 80% of grain farms in Australia and two-thirds of all arable land in the Netherlands" (Stone 2022, 2).

of the world and different types of cultivation systems are crucial to the development of digital technologies and algorithms" (Stone 2022, 5, 9). This phenomenon anticipates a new, distinctive, and powerful commodity frontier/regime all in one…

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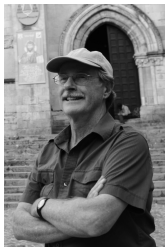

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