

Book Reviews

Gabrielle Hecht. ***Residual Governance: How South Africa Foretells Planetary Futures***. Durham, NC: Duke University Press, 2023. Pp. 288. Open access. ISBN: 9781478024941.

Residual Governance is a gripping account of the mine wastes of the Rand, viewed from the perspective of activists and community leaders. Over the course of a century, more than one-third of all the gold ever mined on Earth was extracted from the Rand, leaving it hollowed out and turned inside out. Gold and uranium started forming 3 billion years ago in the region where a colossal meteor struck – a ‘star wound’ or astrobleme – which pushed a giant mass of granite to the surface, making it accessible to human hands. Now, the residues of extraction that are visible from space stand as testament to residual governance, and they foretell planetary futures because the age of the Anthropocene is the age of the accumulation of residues.¹

The tons and tons of uraniferous tailings that mark Soweto would never have come to be were it not for the institutions of racial capitalism. What enabled South Africa’s gold to flood global markets was apartheid, which instituted the racial contract of cheap labour that funnelled hundreds of thousands of male mineworkers from all over southern Africa to work in the gold mines. Apartheid’s racial contract guaranteed the extraction of value at low cost, allowing the white landowning class to accumulate capital. Apartheid simultaneously etched racial discrimination into the bodies of the miners, who worked in conditions so toxic that they became contaminated by residue. This racial contract underpins the logic of racial capitalism.

As Gabrielle Hecht underscores, the racial contract is also techno-political. Racism is not a side effect of capitalism and capitalism cannot lead a way out of poverty: racism is utterly essential to capitalism because all capitalism rests on racialized divisions ‘between the free and the unfree, between valuable humans and disposable humans’, as Cedric Robinson observed in the early 1980s (at 10). The racial contract is techno-political because the institutions, systems, artefacts and machines that enable accumulation by dispossession are purposefully designed to enact political goals, which then become formalized by technocratic language and the need for expert knowledge.

But the racial contract is also indelibly interwoven with ecocide because capitalism and consumerism have produced colossal residues in many forms – some visible such as mine tailings or plastic pollution; others such as greenhouse gas emissions

¹ M. Hennessy Picard, O. Barsalou and T. Beigi, ‘Welcome to the Molysmocene’, *Critical Legal Thinking*, 21 November 2017, available at <https://criticallegalthinking.com/2017/11/21/welcome-to-the-molysmocene/>.

or chemical pollution, which are invisible to the eye. These residues, by their sheer volume, acquire an agency all of their own, and continue to inflict social and environmental devastation, instituting a form of generational racial capitalism long after the abrogation of the apartheid regime. As Hecht cuttingly observes, '[p]recisely because they materialize in infrastructures and environments, they do not require individual racists to continue their damage (though if they did, there would be no shortage of volunteers)' (at 12)

This conceptual framing of racial capitalism is shaped by Hecht's preceding contributions to the field of science, technology and society (STS) – notably, her remarkable 2012 publication *Being Nuclear: Africans and the Global Uranium Trade*, which, unlike many de-historicized accounts of the continent, situates Africa inside the Nuclear Age and as the primary location of the Anthropocene.² *Being Nuclear* focused on the occupational hazard of radiation exposure at the source of the transboundary supply chain that was necessary for the development of the nuclear industry. One of the book's contributions, which is still relevant today in the wake of revelations in Niger about the open pit mismanagement of radioactive *radon* waste by Cominak, a subsidiary of the French energy group Areva, is the detailed exposure of the environmental legal asymmetry between radiation regulation exercised by the French in the 'post-colonies' in comparison to the guarantees to prevent environmental harm effective in the 'metropole'. Contrary to most studies of nuclear regimes that focus on the use of power and the pursuit of rational self-interested energy systems, Hecht instead documents the impact that atomic energy has had on the mismanagement of hazardous radioactive wastes, which prolong the material legacy of racial capitalism of colonial powers in formally sovereign African states. *Residual Governance* continues to investigate the waste (mis)management of mining extraction in South Africa, reminding us that hazardous uranium extraction in that country fuelled nuclear armament programmes and nuclear power stations in France, the United Kingdom, the USA and Israel.

The book follows in the footsteps of Martin Arboleda's *Planetary Mine*, highlighting the geological force of extractivism in the Anthropocene, and Max Liboiron's *Pollution Is Colonialism*, which describes waste governance as a system of power distribution to consolidate capitalist hegemony.³ Hecht's book equally describes the spatial injustice of mining landscapes, which form 'sacrifice zones' where the health of neighbouring residents is permanently impaired by exposure to heightened levels of toxic chemical pollution.⁴

The book is richly illustrated with montages of photographs and charts, showcasing the toxic beauty of mountains of rubble accumulating near informal settlements. Solid rock tailings emerge like profane totems on the peripheral wasteland of the Rand (at 100, Figure 3.8).

² G. Hecht, *Being Nuclear: Africans and the Global Uranium Trade* (2012).

³ M. Arboleda, *Planetary Mine: Territories of Extraction under Late Capitalism* (2020); M. Liboiron, *Pollution Is Colonialism* (2021).

⁴ Juskus, 'Sacrifice Zones: A Genealogy and Analysis of an Environmental Justice Concept', 15(1) *Environmental Humanities* (2023) 3.

1 Defining Residual Governance

Residual Governance is a historical book, tracing South African mine waste mismanagement from the 1880s to the present. But as the title suggests, it is also a conceptual book: 'residual governance' is the shadow counterpart of the governance of progress, economic growth and sustainable development. It is the governance of the sediments, traces, leftovers and excrements of 150 years of capitalism and consumerism, the scraps after the main event. Though minute or even invisible, these residues are accretive, unruly and overwhelming, leaking into and permeating the environment, bodies and communities. Through techniques of simplification, ignorance and delay, residual governance abets accumulation by contamination, obfuscating accountability and liability. At the same time, it is the 'leftover governance' that the activists of living ruins are left to contend with and resist.

Specifically, residual governance is an instrument of power and population control resting on the double helix of racial capitalism (white owner / black slave) and toxic colonialism (dumping waste on the poor). Residual governance grants the right to pollute the segregated poor with silica dust, cyanide, uranium and decant acid water from the empty tunnels of the excavated Rand, as zombie waste progressively seeps to the surface. These features of residual governance are on devastating display in Hecht's account of how South African activists have challenged the problems of acid mine drainage (the hollowed-out Rand), dust pollution (the inside-out Rand) and South Africa's Chernobyl or the proximity of households and livelihoods to the Witwatersrand's uraniferous tailings.

2 Racial Capitalism

A central feature of residual governance is the establishment of racialized waste infrastructures: from the metropolis to the farmland, waste management is racialized. Hecht calls it the slow violence of the mining infrastructure (at 109). The book documents the cartography of power distribution by following the production of abandoned wastes and waste infrastructures, which become mobilized as a tool of population management. Under apartheid, waste rock was used to demarcate racial zones, buffering the white 'Ormonde' neighbourhood from Soweto. Mining rock was effectively weaponized to entrench segregation (at 108). In Johannesburg, rock dumps and tailings dams dominated the landscape and helped define city planning: black households 'downwind' were exposed to silica particles at the same time as white households 'upwind' were preserved from the dust bowl (at 86–87, 106, 134). Attempts to grass the dams failed to contain the dust. The accretion of residual material also created toxic time bombs. In 1974, a heavy rainstorm burst a tailings dam, with *force majeure* releasing the operator from liability. Again, in 1994, despite early warnings that new deposits would burst the dam, dam failures on unstable ground extended the sacrifice zones.⁵

This spatialized racism can be found in many places around the world – most notably, in Palestine – where sieged communities have notoriously become dumping sites

⁵ On the concept of the sacrifice zone, see, e.g., Lopes De Souza, "'Sacrifice Zone': The Environment–Territory–Place of Disposable Lives", 56(2) *Community Development Journal* (2021) 220.

for Israeli colonies situated upstream.⁶ In *Coal, Cages, Crisis*, Judah Schept examines the topography of racial capitalism in Central Appalachia, where mining and carceral geographies meet, and decommissioned mining towns rejuvenate their racialized ‘extractivism’ through the carceral industry.⁷

3 Toxic Colonialism

Over the course of a century of gold extraction, residual governance manufactured ignorance about toxicity. At the turn of the 20th century, the mining industry resisted legislation on occupational health protection from the silica particles infiltrating the lungs of workers, the proximate cause of an epidemic of disease (silicosis, lung cancer, tuberculosis) and disability – a burden borne by the women left behind in the former homelands (at 86–87). Under apartheid, the South Africa Atomic Energy Board declared radon innocuous, dismissing reports of toxicity. In the 1960s, the Chamber of Mines and the Department of Water Affairs reported that water radiation levels were being kept under permissible limits (at 54–55). Local objectors were considered troublemakers and silenced. But independent research ultimately established that 2,200 tons of uranium have accumulated in South Africa rivers as a result of 122 years of mining (at 76). When formal environmental impact assessments were introduced in the late 1990s, their reporting was poorly disseminated by the governing authorities, until the press leaked the extent of the damage, and new regulation was passed to quell political backlash (at 181–190). Eventually, toxic acid mine drainage seeped back to the surface as water rose through the excavated hollow Rand, contaminating the land once more. The hydro-politics of residual governance intersected with mining to pollute fertile farmland, contaminating crops and cattle.

This ‘agnotology’ or science of wilful ignorance creates intra-generational (race, class, sex) and intergenerational injustices, sustained by the materiality of residues beyond the whim of particular regimes. The slow violence of the apartheid era has extended into and even worsened in the democratic era, which saw the rise to power of the African National Congress. Laws enacted by the democratic government have allowed the first-generation remnants of gold mining to become the feedstock for a second generation of uranium mining. Residual governance continues today with a third generation of pollution and scavenger mining, which could be qualified as ‘craterology governance’: the voids of mining pits result in sinkholes, which are filled for stability reasons with uraniferous slime material, which in turn seeps to the surface and contaminates farmland, further aggravating the slow violence. This intergenerational legacy confirms the existence of the ‘planetary mine’ since the techno-sphere is capable of extracting value even from its own refuse.⁸ This ability of capitalism to feed off its own trash has resonance today with the distinctive turn to a circular economy, creating affluence via previous rounds of effluence.

⁶ S. Stamatopoulou-Robbins, *Waste Siege: The Life of Infrastructure in Palestine* (2019).

⁷ J. Schept, *Coal, Cages, Crisis* (2022). The prison is located on the site of several mining entrances where prisoners were forced to mine coal for the state of Tennessee for 70 years.

⁸ See Labban, ‘Deterritorializing Extraction: Bioaccumulation and the Planetary Mine’, 104(3) *Annals of the Association of American Geographers* (2014) 560.

4 Resisting Residual Governance: Hope in Activism

Residual Governance eschews detailing the laws, institutions and processes through which residual governance functions – an approach, as Hecht astutely observes, that would make for ‘tedious reading’ (at 32). Rather than focusing on state and corporate bureaucracies, she points her spotlight on the activists, community leaders, journalists, scientists, urban planners and artists who have ‘responded to the depredations of residual governance’ over a century of gold mining (at 6). Through their example, she shows that residual governance can be resisted, albeit with great effort.

The women and men who Hecht honours in *Residual Governance* are the heroines and heroes passed and living, across racial, class and ethnic divisions, who refuse to allow residual waste to escape unnoticed, doggedly fighting for public and media attention and resisting residual governance’s dehumanizing effects: from Mariette Liefferink (an Afrikaans-speaking white woman who raised the alarm on acid mine drainage with ‘fearsome persistence’) (at 61–78), to Ernst Cole (the devout African Catholic whose sensitive photographic images captured the humiliating rituals of mine work in the 1960s) (at 90–100), to Jeffrey Ramoruti, Patience Mjadu and other members of the Tudor Shaft settlement (who refused to be treated as toxic discard and eventually achieved their quest for decent housing) (at 129–161). These individuals stand alongside news reporters (Center for Investigative Environmental Journalism), grassroots non-governmental organizations (EarthLife Africa and the Federation for a Sustainable Environment), legal aid groups (Centre for Environmental Rights) and academia (Johannesburg and North-West universities) who have objected and continue to object to residual governance and are pushing regulators and governing bodies to change their approach.

In the absence of restitution, or just compensation, some actors resist with knowledge, either by objecting to the dishonest and obfuscating scientific reports on acid mine drainage and uranium exposure (such as Chamber expert Denis Wymer, who urged the industry to adopt a ‘proactive and open strategy’ for addressing acid mine drainage) (at 57) or by grappling with messy embodied, local and social knowledge (such as the Gauteng City-Region Observatory’s report on the mining landscapes of the region, which repaired epistemologies of ignorance about mining landscapes) (at 126–171).⁹ Hecht also resists modes of un-governance, describing the absurdity of some regulatory recommendations, such as asking parents to limit children’s exposure to contaminants in the open air, again a manifest illustration of the production of ignorance about the pathways of radon contamination.

But one cannot resist residual governance with knowledge alone: ‘[K]nowledge alone, however necessary for establishing a predicament’s parameters and delineating its complexity, never suffices to spur remediation or repair’ (at 7). Knowledge is always imperfect, insufficient and incomplete, and expertise is typically exclusionary, muscling out embodied, local and social knowledge. Knowledge matters, but using it effectively also requires affective commitment and emotional engagement. This conviction guides

⁹ Gauteng City Region Observatory, *Mining Landscapes of the Gauteng City-Region*, Research Report no. 7, January 2018.

Hecht's analytic and storytelling approach and prompts her to use images throughout the book to communicate ideas and emotions that words cannot capture (at 8).

5 The Role of Hopeful/Hopeless Law

Although laws and institutions do not occupy the centre stage in *Residual Governance*, the book hints at their dual character: they must both enable capitalist or state-led extraction and curb (or be seen to appear to curb) its worst excesses – a phenomenon that Karl Polanyi dubbed the 'double movement' in *The Great Transformation*.¹⁰ Tracy-Lynn Field explores the double movement in state laws governing mineral extraction in *State Governance of Mining, Development and Sustainability*.¹¹ As Hecht's account of South African activists shows, the laws that enshrine protective measures are a constant source of hope, a resource for activists to continue the struggle and a site of contestation and defence against regression. But even these hopeful, protective laws form part of the technocracy that undergirds the racial contract.

In the history of South African mining regulation, for example, mine health and safety legislation prohibited the release of acid mine water, even during the apartheid era. There is a reported case from 1934 of a prosecution for an infraction of this prohibition. The democratic era in South Africa was characterized by an explosion of legislative activity enshrining lofty principles and laws operationalizing the state's protective role, such as a constitutional right to a healthy environment, more stringent environmental controls, a law that specifically instituted perpetuity liability for managing 'extraneous water', generous rules on standing and a pro-public interest litigation rule on costs called the 'Biowatch principle'. The function of these laws is to create hope and to palliate, but they also institute a false hope because the effort then moves to reframing social and political struggles over residues into legal terms in a way that also exaggerates the role of lawyers and judges – a dynamic César Rodríguez Garavito described as 'law's protagonism'.¹² The loftiness of these laws and institutions drives a hopeless 'we have good laws, but lack good implementation and enforcement' narrative, and the effort that goes into precisely delineating and documenting their existence is a technical distraction. And even when constitutional standing before the courts leads to remedies, the South African state systematically fails to enforce those decisions.¹³

6 Paying Attention to 'Living Ruins' and Living with Waste

The infrastructures of residual governance continue to exact racial capitalism on a generational scale. But these infrastructures are also living ruins in which new political, social and economic systems are taking root. *Residual Governance* would fall

¹⁰ K. Polanyi, *The Great Transformation* 2nd edn (Beacon Press, 2001).

¹¹ T.-L. Field, *State Governance of Mining, Development and Sustainability* (2019); see also A.A. Rossotto Ioris, *The Political Ecology of the State: The Basis and the Evolution of Environmental Statehood* (2014).

¹² Rodríguez Garavito, 'Ethnicity.gov: Global Governance, Indigenous Peoples, and the Right to Prior Consultation in Social Minefields', 18(1) *Indiana Journal of Global Legal Studies* (2010) 263.

¹³ A. Lindner, 'Localising International Law: The Implications of Sustainable Development in the Lives of Waste Pickers in South Africa' (2020) (PhD dissertation on file with the University of Kent, UK).

into the trap of modernization and progress if it were only an account of ruination. Following Anna Tsing's *The Mushroom at the End of the World*, life is still possible in capitalist ruins, and we need to pay attention to the assemblages that emerge from the lifeways of inanimate matter and non-human and human beings. We might also be interested in how residual governance contends with these new systems.

Two industries are waxing in the living ruins of the Witwatersrand's mine wastes. First, artisanal and small-scale gold mining subsists in the hollow mines: Hecht mentions the precarious existence of so-called *zama zamas* (at 171–179), but since the book was finalized, the *zama zama* industry has come sharply into the spotlight following the rape of a television crew on one of the mine dumps in August 2022. For tens if not hundreds of thousands of men and women, artisanal mining is a livelihood. But, in South Africa, it is also an informal, criminalized and persecuted industry. The state's attempts to regulate it have been half-hearted, at best. Police clamped down in November 2023, when 3,300 soldiers were deployed. After the rape, communities spoke out about being held hostage by *zama zama*'s gunfire, turf wars, petty theft, robbery, stabbing and cable theft. The bursts of residual violence pose ethical dilemmas for activists who not only defend artisanal miners but also help host communities, showcasing the complexity of keeping everyone's humanity in view. Second, Hecht mentions overlaps between the illegal artisanal gold mining industry and the recycling industry (at 135). A Community Work Programme in Kagiso, for example, identified overlaps with copper and scrap metal recycling and waste recycling, leading to spillover and new conflicts: individuals and groups, with the guts, desperation and survival ethic, are forcing through the abyssal line.¹⁴ These workers, relegated as residue, are now penetrating, infiltrating the fabric of gentility – there is no wall high enough to keep them out. This is how the mine wastes of the Witwatersrand foretell planetary futures.

7 Waste Un-governance

The result of such overlapping leakage is what, following Deval Desai and Andrew Lang, we could term 'un-governance' or expert ignorance about adequate prescriptions to solve complex problems, such as climate and pollution.¹⁵ In the age of poly-crisis, Desai and Lang observe that global institutions are confronted with the difficulty or impossibility of matching their institutional structures with the scale of the problems they identify. For example, the Paris Agreement under the United Nations Framework Convention on Climate Change regime typically un-governs the catastrophe that unfolds with voluntary agreements and meek procedural obligations – an ad hoc piecemeal attempt at confronting the cluster of distinct climate crises that interact in ways in which their effects tend to reinforce each other in unpredictable ways.¹⁶

¹⁴ De Sousa Santos, 'Beyond Abyssal Thinking: From Global Lines to Ecologies of Knowledges', 30(1) *Review of the Fernand Braudel Center* (2007) 45.

¹⁵ Desai and Lang, 'Introduction: Global Un-governance', 11(3) *Transnational Legal Theory* (2020) 219.

¹⁶ Humphreys, 'Ungoverning the Climate', 11(3) *Transnational Legal Theory* (2020) 244; United Nations Framework Convention on Climate Change 1992, 1171 UNTS 107; Paris Agreement on Climate Change 2015, 3156 UNTS 79.

If residual governance manufactures ignorance,¹⁷ it also adopts corresponding techniques of un-governance. The book describes this rule of expert ignorance under the regime of ‘molecular bureaucracy’.¹⁸ First, there are no legally binding obligations to abate uranium pollution levels, only World Health Organization recommendations, because of a persistent ‘lack of knowledge’ on the hazardous consequences of radon by specialized agencies such as the International Atomic Energy Agency. Second, although the *Global Acid Rock Drainage Guide* is used as a collection of best practices to construct mine water treatment facilities in the Rand, the water released by the treatment plants still bears significant sulphate loads, therefore granting a right to pollute to the industry as long as the procedural requirements and ‘best practices’ are met (at 82–83).

8 Conclusion

Paraphrasing Donna Haraway’s *Staying with the Trouble*, we conclude by stating that the book does not offer easy solutions but, rather, ‘stays with the rubble’ of racial capitalism, weaving many threads with the various contributions in the fields of STS and discard studies. Residual governance is now colonizing other spaces that are to be hollowed out, with new initiatives designed to mine the deep seabed¹⁹ and the moon,²⁰ signalling new strategies and techniques of appropriation in areas beyond national jurisdiction (and where resistance and activism is likely to be less physically present). In the deep seabed, the process of mineral extraction coincides with the process of waste storage. This industrial process or direct air capture of atmospheric carbon dioxide enables oil and gas companies to sequester saturated air in empty spaces carved out of geological rock formations. Ecological reservoirs used to store captured carbon dioxide include depleted and disused oil and gas fields and deep saline aquifers, showing once again capitalism’s ability to extract value from its own residual spaces.

Tracy-Lynn Field* 

University of the Witwatersrand, Johannesburg, South Africa

Email: tracy-lynn.field@wits.ac.za

Michael Hennessy Picard 

University of Edinburgh, United Kingdom

Email: mpicard@ed.ac.uk

<https://doi.org/10.1093/ejil/cha043>

* The author receives funding from the Claude Leon Foundation, South Africa.

¹⁷ See Alexander and O’Hare, ‘Technologies of Unknowing Waste: Displacement, Depoliticisation and Disappearance’, 88(3) *Ethnos* (2023) 419.

¹⁸ Hepler-Smith, ‘Molecular Bureaucracy: Toxicological Information and Environmental Protection’, 24:3 *Environmental History* (2019) 534.

¹⁹ ‘Norway’s Parliament Backs Deep-sea Mining Plans’, *Financial Times*, 5 December 2023.

²⁰ Gilbert, ‘Implementing Safety Zones for Lunar Activities under the Artemis Accords’, 10(1) *Journal of Space Safety Engineering* (2023) 103.