VISUAL ESSAY 1

EXTRACTION OLD AND NEW: TOXIC LEGACIES OF MINING THE DESERT IN SOUTHWESTERN AFRICA

Mike Hannis and Sian Sullivan

Roots and routes of extraction

This visual essay draws on a 2017 journey from the South African Cape to the Khan valley of Namibia, tracing toxic (deter)mining legacies of roots and routes of mineral extraction. Copper, ilmenite, diamond, zinc and uranium exploitations encounter indigenous presence and resistance as colonial and corporate mineral 'rushes' intersect with local realities and cultural landscapes. Environmental mitigation efforts and 'offsetting' schemes may also leave toxic heritage in their wake as they greenwash profit-driven extractive agendas.

In 1685, after seeing green copper-bearing rocks brought to the Cape by Nama people, the Dutch East India Company (VOC) dispatched Cape Governor Simon van der Stel on an expedition 400 miles north, to investigate the viability of mining copper near the !Gariep or Orange River, now the border between South Africa and Namibia. Demonstrating the historical interplay of intangible cultural heritage with extractivist colonial agendas, such journeys relied on local Nama(qua) guides who shared their knowledge of springs with colonisers who would displace them from their ancestral lands. On a 2017 field research journey tracking early colonial expeditions northwards from the Cape to the Khan River, we found these routes peppered with past and present mining sites (Figure 1).[1]

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FIGURE 1 Mining sites mentioned in the text.

Ilmenite

FIGURE 2 Ilmenite mined from fog-shrouded coastal sands around Brand se Baai near the Olifants river mouth produces titanium dioxide, a brilliant white pigment used in products from paint and paper to toothpaste and sunscreen. Operated by US company Tronox and Australian firm Mineral Resource Commodities, a legacy of environmental harm is created as large areas of sandy coastal habitat are excavated to access underlying heavy mineral sands, which are then processed by acid leaching.

FIGURE 3 Aware of environmental impacts, the companies attempt to 'rehabilitate' mined areas. Miles of green plastic netting, intended as windbreaks to encourage re-establishment of vegetation and invertebrate biodiversity, instead become a new layer of toxic heritage and environmental harm. An environmental officer for one of the Brand se Baai mines told us, however, that few previously existing species have yet returned, nonetheless sharing their belief that 'Mother Earth' (their words) is very forgiving of destruction caused by mining.

Diamonds

FIGURE 4 Not far beyond Brand se Baai, excavations and spoil heaps appear whose scale and extent dwarf the ilmenite workings. The next 500 miles of coastline have been massively reshaped by over a century of diamond mining. At Oranjemund, just north of the Orange River, decades of digging have pushed the Atlantic Ocean back hundreds of metres behind giant walls of sand and concrete, allowing the shoreline to be excavated down to the bedrock where diamondiferous gravels are found. These land operations are now winding down as the focus shifts to marine mining, leaving semi-abandoned towns such as Kleinzee (left) set in vistas of green plastic fencing purporting, as at Brand se Baai, to shelter re-establishing desert flora (right).

Copper

FIGURE 5 Van der Stel did find copper in the Northern Cape. This picture shows his exploratory diggings, burrowing into a rocky outcrop that is indeed remarkably green. In the 1850s, with the Cape Colony now under British control, high-grade ores were found nearby, and Okiep, near Springbok, eventually became 'the richest copper mine in the world', causing immense environmental excavation and landscape reshaping.

FIGURE 6 In areas like this, mining companies come and go over long periods of time, driven by fluctuations in market prices, technologies, labour costs, tax incentives, environmental regulations and the general compliance (or otherwise) of governments. The last pits in the Okiep area have recently closed, leaving a devastated landscape heritage of spoil heaps, closed mines, emptied towns and unemployed communities. This figure shows an abandoned desert golf club for former local elites, illustrating how the landscape of ruination has become a heritage of both the inequity and limited sustainability of mining ventures.

Zinc

FIGURE 7 The nearest current mining boom to Okiep is happening a hundred miles east near Aggeneys at the recently opened Gamsberg zinc mine, whose Indian owners Vedanta hope to extract 214 million tonnes of ore over a 30-year period. This figure shows an aerial view of Gamsberg in mid-2017.[2] The Gamsberg mountain sits within the Succulent Karoo Biome, one of the world's 36 'biodiversity hotspots'. Vedanta's mine is hollowing out this spectacular inselberg, the acknowledged core of the Critical Biodiversity Area identified in the Namakwa District Bioregional Plan and thus an area central for sustaining biodiversity heritage. Toxic for biodiversity, such impacts will allegedly be 'offset' by enhanced conservation of similar habitats nearby. Under these offsetting plans Vedanta will take control of further large areas of land in the area (Hughes et al. 2015), but how effectively these areas will themselves be protected from future mining remains unclear.

Acid and Arsenic

FIGURE 8 The Tsumeb copper smelter in northeast Namibia is owned by Canadian company Dundee Precious Metals (DPM). Originally serving a now-closed mine, it specialises in producing copper from ore containing high levels of arsenic and sulphur, a process banned in many countries on environmental grounds and thus indicative of the global displacement of environmental harms. It processes around 250,000 tonnes of copper ore concentrate a year, half of which is imported from a DPM mine in Bulgaria, the rest coming largely from Chile and Peru. Arsenic trioxide is stockpiled in the open air and sulphur is processed into sulphuric acid, shipped by train to Rössing, for use in leaching uranium ore. Derailments of these acid trains, as shown in the figure, can lead to major toxic spillages (see eg Simiyasa 2022: image by M. Hannis, 2022), leaving legacies of post-extractive waste rather than wisdom that 'sits in places' (Basso 1996; Baird 2022).

Uranium

FIGURE 9 Namibia is one of the world's top five uranium producers. Owned since 2019 by China National Uranium Corporation, the Rössing uranium mine in the Namib desert (above) has produced more uranium than any other mine in the world. It was opened in 1976, while Namibia was controlled by apartheid South Africa. Just across the ephemeral Khan River is the Husab uranium mine (below), also majority-owned by China. When opened in 2017, Husab represented the single largest Chinese investment in Africa. As well as sulphuric acid and other chemicals, processing uranium ore into 'yellowcake' (the basis for nuclear reactor fuel) requires electrical power (produced mainly by diesel generation) and enormous volumes of water, piped into these desert mines from a desalination plant on the coast. Biodiversity offsetting is again proposed to mitigate the legacy of environmental harms caused by these processes (Sullivan 2013), although it is unclear how these practices can offset the radioactive future heritage entangled with uranium mining.

Future mining

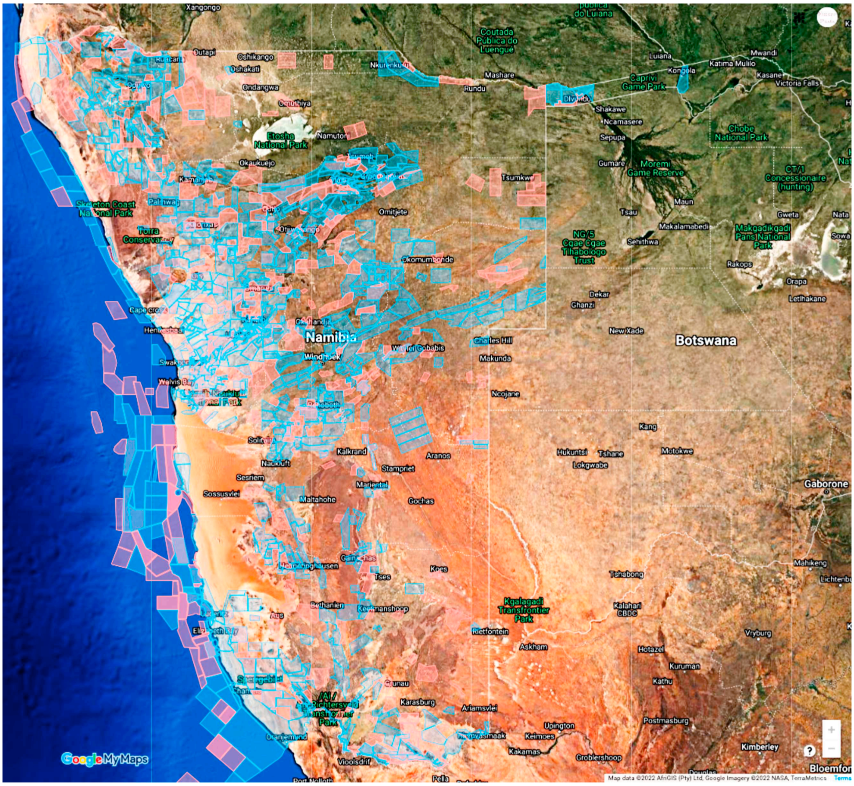

FIGURE 10 The next mineral rush in Namibia is likely to involve minerals such as tantalum and lithium, required for 'green' technologies. Gold mining is also expanding rapidly, and offshore oil exploitation seems imminent. Prospecting and extraction licenses cover Namibia's land- and sea-scapes, as shown in this 2017 snapshot of the online cadastral mining map for Namibia, showing Active Mining Licenses (blue) and License Applications (pink).[3] Clearly, the future heritage of this mining impact is likely to intensify in its toxic burdens and disruptions to human and other-than-human health.

Post-apartheid governments in South Africa and Namibia welcome international mining companies as agents of growth in their mineral-rich but cash-poor countries. But tax revenues, while substantial, are reduced by the companies' ability to use their influence to negotiate favourable terms. Often the lion's share of the profits goes abroad, just as it did in the days of the VOC or the British Empire. Historical processes of extraction, and their inherited legacies, help make sense of present mining trajectories and associated future toxic heritages in southern Africa, and beyond.

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Notes

1 This essay develops from a longer referenced blog post at https://www.futurepasts.net/post/2018/03/04/extraction-old-and-new. Except where otherwise stated all photographs are by Sian Sullivan, September 2017, originally shared on https://www.futurepasts.net/instagram
2 Source: https://im-mining.com/2017/11/28/vedanta-zinc-international-ge-south-africa-collaborate-ground-breaking-greenfields-digitalisation-initiative-gamsberg/
3 Adapted from https://maps.landfolio.com/Namibia/

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