

## 8 Mining for Digital Culture: Dispossessed Lives Through the Lens of Art

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### Introduction: Mining as Digital Labour

This chapter takes on digital labour from the perspective of mining, by thinking through two artworks that expose the colonialist and extractivist nature of mining practices that undergird the development and maintenance of digital infrastructure. Digital infrastructure is supported by metals and rare earth minerals mined from various corners of the planet, with a concentration of mines in the Southern Hemisphere. These raw materials, also termed ‘technology minerals’, are ‘the geological sources for the metals, alloys, and chemical compounds used in the production of modern technology’ (Ali et al., 2019). For example, in a mobile phone, the circuit board requires copper, tantalite and silicon, while the battery makes use of lithium, cobalt, nickel, and manganese. The body of the phone usually contains aluminium and titanium, while the assembled glass screen uses tin, potassium, bauxite, and silica. Everything, from semi-conductors to batteries, circuits to screens, requires raw materials, such as copper, tantalum and lithium, mined from earth.

Within the ‘circuits of labour’ (Qiu et al., 2014) in our digital infrastructure, mining belongs to the arm of material labour, which involves manufacturing, construction, and processing. This material labour, however, is often entangled with issues of extractivism, colonisation, armed conflict, child labour, organised crime, corruption, and pollution. On the labour end, miners could be subjected to various levels of exploitation and violence as military groups vie for control of these lucrative resources. While the pursuit of digital products is not directly responsible for these issues, research has shown that mineral extraction can escalate local conflicts (Berman et al., 2017). The global demand for smart devices intensifies the pressure to provide raw materials, exacerbating existing conflicts in politically unstable regions. On the ecological end, the earth has to meet the strenuous demands of mining, placing ecosystems under pressure. Extractivism devastates local ecosystems due to land degradation, the toxic release of waste water, pollution, and deforestation (Jacka, 2018).

From this perspective, digital labour in the case of mining includes both the labour of earth and that of the miners. Aside from emphasising human labour, it is important to take a posthuman lens to study ‘how mediatic networks and their material counterparts elicit the performance of nature, through the incorporation of minerals excavated from the bowels of the earth’ (Wan, 2019, p. 250). To account for the extractivism of mining, one needs to trace both the politics of labour exploitation and the environmental damage involved, such as habitat loss and species extinction, as part of this extractivist practice.

Technological minerals are mostly sourced from the Global South. For example, tantalum’s largest producer is in Brazil, with 40% coming from Latin America (IGF, 2017), while the Democratic Republic of Congo’s (DRC’s) production of cobalt accounts for over 40% of the world’s supply (ITA, 2022). Australia produces the world’s largest share of lithium, the second largest of cobalt, and fourth in rare-earth elements (Netherlands Enterprise Agency, 2023).

Minerals that are mined under contentious conditions with human rights violations are termed ‘conflict minerals’<sup>1</sup> and are monitored under US and EU legislation. The European Union has a list of conflict-affected and high-risk areas recognised as sources of conflict minerals. This list at the time of writing includes zones in 28 countries (European Commission, 2023), and most of these countries were formerly occupied by European colonisers, and many are politically unstable and have poor governance structures post-independence. For this reason, the exploitation associated with mining hit Indigenous and Black populations particularly hard. In Latin America, conflicts with Afro-descendant and Indigenous communities are often reported, as mining activities take place usually on traditional land, leading to expropriation and pollution of their lands, waters and forests (OECD, 2022, p. 22). In Aboriginal Australia, totemic meanings of landscapes are destroyed and are sometimes traded for economic growth and job opportunities for the Indigenous (Cousins, 2020). Bainton aptly observes that ‘even when Indigenous communities voluntarily agree to resource extraction, they are seldom signing up to absorb the full range of social and ecological costs that extractive companies so frequently externalise’ (2020, p. 2).

Both large-scale mining (LSM) and small-scale artisanal mining (ASM) come with their own problems. The World Bank names features of ASM as ‘low investment, labour intensive local production, informality, as well as no or low levels of mechanisation’ (2009, p. 9). ASM accounts for approximately 80% of the mining workforce globally, including a total of over 45 million workers across 60 countries. The rest are hired as LSM industrial miners with organised work practices, using often a form of open-pit mining that is supported by machinery (Raeymaekers & Côte, 2022). For example, in Colombia, LSM has been the target of guerrilla groups. In order to safeguard their interests, some companies seek the financial and political support of extreme right-wing paramilitary and guerrilla groups, an act of illegality that has been linked to the killings of political opponents as well as human rights defenders (OECD, 2022). On the other hand, issues of livelihood are particularly linked to ASM, where local communities are actively removed from other industries such as farming. In DRC, militias deliberately target farmland to destroy crops and animals, so that the local population has no choice but to shift towards mining as their mode of subsistence (Smith, 2021). Rape has also been weaponised as a tool to subjugate them (Laudati & Mertens, 2019; Smith, 2015), as a means to take away human dignity, so as to violently ‘[uproot] people from their lived worlds and [make] them available for a particularly capitalistic form of extractive capitalism’ (Smith, 2015, p. 7).

Environmentally speaking, mining puts heavy pressure on ecosystems. 80% of deforestation of Indonesian forests, for instance, was caused by LSM (Saepudin et al., 2022). Previously mined areas, as shown by research in the Amazon, is in general hard to rehabilitate (Kalamandeen et al., 2020). Regardless of LSM or ASM, mining is a heavily toxic industry that causes serious environmental degradation. Toxicity not only persists in the environment but also affects future generations as forms of slow violence (Nixon, 2011; Parikka, 2016; Wan, 2021). In DRC, in a study of pregnant women and newborns in Lubumbashi between 2013 and 2015, researchers correlated birth defects with paternal occupational mining exposure. Comparing this to other studies, they also concluded that the metal concentrations found in pregnant women are among the highest ever reported statistics (Van Brusselen et al., 2020). A 2017 study in the Katanga region shows that pregnant women and their fetuses can be exposed to high levels of lead, if they practice geophagy (soil-eating) to treat nausea, vomiting, abdominal pain, and other pregnancy-related issues.

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LSM toxic waste, such as mercury and arsenic, is often left in the form of a slurry in the mine's surrounding landscape and are guarded by tailing dams. Tailing dams could lead to disaster if they are not managed properly. For instance, after copper is separated from rock, the tailings are collected in pools held in by dams. In January 2019, the collapse of the Brumadinho Dam in an iron-ore mine in Brazil killed over 270, with the release of 11.7 million m<sup>3</sup> of toxic slurry. The polluting effects flowed downstream and affected communities over 120km away (Katwala, 2019; Silva Rotta et al., 2020). Therefore, beyond human suffering, extractivism also dispossesses non-human animals, plants and other organisms of their agency over the ecosystems they are situated in. As such, it is important to view the digital labour of mining as situated at the intersection of land and body.

## Through the Lens of Art

In the rest of this chapter, I turn to the analysis of two artworks. Rather than a sociological or data-driven lens, the two artworks serve as theoretical objects<sup>3</sup> that open up the politics of mining as digital labour in its intersection with extractivism. They provide a research-informed as well as affective and embodied lens that allows us to witness the lives and legacies of mining communities, and the violences of mining or living in these areas of ecological abandon. The artistic lens also invites an aesthetic and political intervention in recognising how mining is implicated in our digital infrastructures. Through the artworks, the chapter places particular emphasis on the DRC to allow for a more precise analysis.

The digital labour of mining is intertwined with extractivism and its colonial histories. Extractivism follows a colonial logic where the world economy is structured through the conquest and colonisation of the Americas, Africa and Asia. This logic is consolidated through the exploitation of raw materials from the colonised to support the industrial development and prosperity of the Global North (Acosta et al., 2013; Calvão et al., 2023; Velmeyer, 2022). This extractivist logic maintains the lingering effects of colonial infrastructures of power that can be observed in the mining of technology minerals, all disproportionately concentrated in the Global South (IGF, 2017; Schaffartzik et al., 2016).

The two artworks selected reflect this dynamic and are created by artists based in or have conducted research in DRC and Belgium, its former coloniser. The installation of these works in European and Congolese settings enables artists to do advocacy work and open up questions towards the audience. Both artworks also tie together medianatures and bring into focus the complex political economies of mineral supply chains. In *A Geology of Media*, Jussi Parikka proposes the term medianatures to denote the co-constituting spheres of connection between media and nature, 'where the ties are intensively connected in material nonhuman realities as much as in relations of power, economy, and work' (Parikka, 2015, p. 14). Medianatures connect the physicality of geophysical matter and eco-habitats with the technology produced, such as accounting for the geophysical processes that allow minerals to come into being, for example, through the cooling of lava rock after a volcanic explosion, or leaching of rock minerals in the circulation of geothermal fluids in the Earth's crust.

The first piece, focusing on copper, is an installation called *802. That is where, as you heard, the elephant danced the malinga. The place where they now grow flowers* (2016), by Congolese artist Sammy Baloji. The work was acquired in 2020 by Tate Modern's Africa Acquisitions Committee and was installed in the London Museum between 2021 and 2023. The second piece, focusing on lithium and tin, is *Future Flora: Manono* (2019), by Belgian artist Maarten Vanden Eynde. This was installed in Framer Framed gallery in Amsterdam (Feb-Jun 2023) in the group exhibition *Charging Myths* created by the On/Trade/Off artistic collective, which works between Lubumbashi, DRC and Brussels, Belgium.

## Sammy Baloji: On Copper



Long Description: Figures 8.1 and 8.2 Sammy Baloji, 802. That is where, as you heard, the elephant danced the malinga. The place where they now grow flowers

A black and white view shows a plain gallery wall with an arrangement of white framed photographs. Each photograph shows a close up of a person's body such as a torso abdomen back or arm. The skin in each photograph has intricate patterns of raised scars from scarification. The frames are of various sizes and are hung in a clustered non uniform pattern on the wall.

**Figures 8.1 and 8.2** Sammy Baloji, 802. *That is where, as you heard, the elephant danced the malinga. The place where they now grow flowers*

802. *That is where, as you heard, the elephant danced the malinga. The place where they now grow flowers* shows the medianatures of copper. The installation, which takes the space of an entire room, is centred around the mining and circulation of copper, as it is central to Congolese economy and political conflicts. In the middle of the room are shiny golden mortar shells displayed as planters, with living plants Indigenous to central Africa's Copperbelt.<sup>4</sup> On one wall, a series of 32 black and white photographs feature scarified body parts, predominantly the torsos of naked individuals. Echoing this motif of scarring patterns are two octagonal copper ceiling plates hung on an adjacent wall. Eight prints of red wallpapers, again with similar patterns, are placed opposite the photographs.

In an earlier installation in Paris, the installation was built inside a room made to resemble European salons. The copperplates were hung instead on the ceiling, as a reference to metallic moulded ceilings common in North America, Australia and South Africa in 19th–20th century, used to cheaply emulate European plaster ceilings. One could say that this reference to European salons emphasises Congo's way of participation in the 'civilised' world – by supplying its raw materials through mining projects, and in the extractivist process, scarring itself. Famously, European powers divided up African land in the Berlin Conference of 1884–1885, also known as the Congo Conference, and allowed free trade throughout the Congo Basin by all 14 signatories, which fostered an enduring extractive relationship.

Copper has been one of the most important metals for the development of communications technology such as the telegraph cable and the circuit board. As Cunha (2020) writes, 'No copper, no Industrial Revolution' (p. 41). Copper was an important technology mineral for the colonial times,<sup>5</sup> but today, one might suggest that digital connectivity is similarly reliant on copper. Copper is essential for circuit boards, as they have exceptional conductivity and thermal properties, which are necessary for signal transmission and heat dissipation.

Copper, in this piece, is as scarred as the black bodies on display. Scarification was a practice employed across Africa as a way to identify someone's tribe, which is integral to their sense of identity and community. The images on display are rephotographed from original archival photographs Baloji found in the Royal Museum of Central Africa<sup>6</sup> in Tervuren, Belgium. He cropped out surrounding details from the originals, thereby creating focus on specific scarification patterns, dots, shapes and lines carved into black skin. These scarification patterns continue on the octagonal copperplates. The accompanying text on Tate Modern's catalogue suggests that 'by inscribing the ceiling plate with scarification patterns, Baloji is engaging in an act of symbolic reclamation of the material indigenous to his native country' (Allen, 2019).

The scarification motif, perhaps the most outstanding aspect of the piece, directly conveys the violence of mining affectively. The close-up photographs, expressing affective pain and trauma, symbolises the dispossession of cultural heritage, as scarification disappeared from Congolese culture in the process of colonialism's spread of Christianity. Baloji uses these patterns as a monument to commemorate the aesthetic and cultural systems that have been lost to colonisation. The wall of photographs maps copper mining practice onto scarred black bodies, bringing to mind the toxified bodies of miners, toiling under the threat of militia violence. This scarring is further mapped onto the copperplates themselves through the technique of bas-relief, tying bodies and copper together.

This imbrication of body and mineral visually demonstrates what Kathryn Yusoff refers to as the 'geologies' of extraction. 'Geologies' refer to how 'particular bodies and subject positions' are seen as 'disposable in the shadow economy of extraction' (Yusoff, 2018, p. 59). Those who live in these resource-rich locations find themselves drawn into an international division of labour (Maxwell & Miller, 2012), as 'rural land-connected communities are converted into industrial labour reserves' (Bainton, 2020, p. 14), generating the back-end raw materials for technological development.

The title of the installation further offers insight into how such geologies of mining are not new to the contemporary extractivist regime. The title combines fragments translated into English from the book *Le Vocabulaire d'Elisabethville: Une histoire d'Elisabethville de ses origines* (1965), written by André Yav. Elisabethville, the colonial name of Lubumbashi, was the capital of the mining region of Katanga.<sup>7</sup> The book refers to Elisabethville as 'copper capital city' (VII), showing its importance in the copper trade. The first part of the title '802.' references a railway built to transport mined minerals towards ports. Specifically, 802 is the model number of a locomotive that carried Kenyan men in World War I in the region. In the book, the author laments the participation of Africans in 'the war of the Whites', 'the foreigners who domesticated us in slavery' (XXXVIII, 2). This war reference, of course, is reflected in the use of mortar shells in the installation, now repurposed into banal vases, also a reminder of militia activity in the area. From scarred copperplates to weaponry that maims and kills to display objects, Baloji fluidly shows the malleability of copper and its implication in violence.

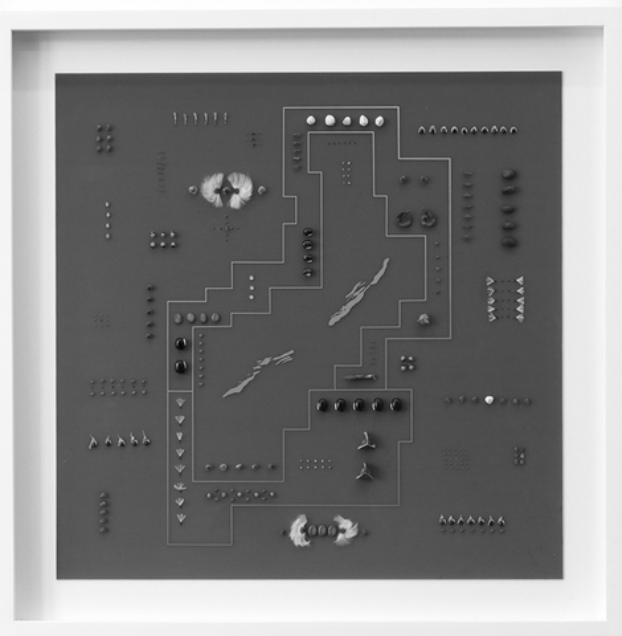
The idea that the material is transformative also lies in the fact that the copper sourced for the installation is not necessarily from Congo, even though it likely contains traces from Congo. As Baloji explained, 'nearly all of the copper from Congo is extracted and exported, then fused with copper from other countries, such as Chile, and finally sold in massive quantities for large-scale industrial use' (Dessent, 2023). This globalised nature of copper returns us to the Katangan railway system, which already at the time established the practice of transporting away Congolese copper for processing elsewhere.

Baloji's observation highlights that while colonial extractivist dynamics persist in the exploitation of Congolese labour, the realities are further complicated by supply chain dynamics under national and international policies,<sup>8</sup> and the ongoing competition for contracts and rights over Congo's rich deposits. Rubbers (2021) lists 'American majors, Canadian juniors, South African and Australian exploration companies, Chinese state-owned enterprises, and businessmen from Belgium, India, or Israel' (p. 3) as some of the key actors in the region since early 2000s, against the backdrop of legal fights of ancestral land claims by locals. While Congo is the third largest supplier of the world's copper and the top producer of cobalt, a by-product of copper extraction, the mining industry has not proven to bring necessary economic growth, due to the exploitative labour conditions, conflict dynamics, rebel fighting and the sheer amount of competing deals and unfair trade practices (Katz-Lavigne, 2019; Namahoro et al., 2023; Rubbers, 2021). For instance, in the Sicominex copper-cobalt joint venture between China and Congo, 68% of the shares is held by Chinese partners, while only 32% is held by Congolese state miner Gecamines (Ngila, 2023). Much of the mined copper and cobalt is simply moved into Chinese hands for further processing and sales, leaving little profit for the Congolese.

This next part of artwork's title, 'the elephant danced the malinga' is mentioned in Section X of *Le Vocabulaire d'Elisabethville*. It describes the travelling troupe of Circus De Jonghe from Belgium in Elisabethville, performing European ballroom-dancing (meaning of malinga in Swahili). The final line of the title turns to 'The place where they now grow flowers.' This line connects to the plants grown in the installation, native succulents to the Copperbelt that are commonly sold in Europe as houseplants. These two lines refer to the cultural crossings between Europe and Africa – European dancing travelled to Congo, while Congolese plants entered European living rooms. This emphasises the web of objects, materials and cultural practices that bind Congo to its former coloniser. Congo cannot be Othered from the 'civilised', 'developed' world, if the 'civilised', 'developed' world needs to depend on it for the provision of technology minerals, or use its plants for decoration. Ironically, the plants that are decimated due to Copperbelt mining are instead domesticated and propagated in Europe.

The artwork opens up viewers to the dynamism of global trade and circulation of copper and native plants from the Copperbelt. It acknowledges the violence of mining to native culture, native flora and the limited agency of Congolese over the minerals produced on their own lands. The digital labour extracted here covers the non-human performances of earth and plants, and while this labour is crucial to digital infrastructure, the Congolese continues to struggle to grow their economies from the hard work of mining.

## Vanden Eynde: On Lithium and Tin



Long Description: Figure 8.3 Maarten Vanden Eynde, Future Flora: Manono II

A square white frame hangs on a white wall containing a black and white artwork. The artwork features a dark gray board on which various small three dimensional objects are arranged. These objects include small spheres, triangles, and abstract shapes in black, white, and gray. A thin white line snakes around the board, connecting different clusters of objects in a pattern. Three larger irregularly shaped organic forms appear in the centre, top, and bottom of the arrangement.

**Figure 8.3** Maarten Vanden Eynde, Future Flora: Manono II

Like Baloji's work, *Future Flora: Manono* continues to demonstrate 'infrastructural colonisation' (Dunlap & Riquito, 2023) that extends from humans to more-than-human networks. As Dunlap and Riquito write, 'This colonisation, as opposed to colonialism, looks at the microcosm of territorial control, landscape and socio-cultural change, exploring the literal colonisation of habitats, people, social fabrics and more-than-human networks' (2023, p. 5).

The turn to landscape and topology in *Future Flora*<sup>9</sup> emphasises the territorial control involved in Congolese lithium mining, a key technology mineral that embodies the green future. Lithium plays a key role in the decarbonisation of the global economy, leading it to be classified as a critical or strategic raw material by various governments like the United States, United Kingdom, and the European Union. In 2020, the European Commission projected a substantial surge in lithium demand to meet electric vehicle battery needs, with estimates suggesting an 18-fold increase by 2030 and a staggering 60-fold increase by 2050 (Bernal, 2021).

The work of Vanden Eynde takes us to the lithium mining town of Manono in the DRC. *Future Flora: Manono* is a printed circuit board decorated with a variety of seeds and grains collected from Manono. The square artwork is showcased inside a wall-mounted frame. On a dark green surface is a set of dots and lines reminiscent of a circuit board found inside digital devices. Manono holds significant lithium ore reserves and has a history of thriving as a tin ore mining town (Dewaele et al., 2016). Belgian settlers discovered cassiterite in the region, leading to a period of active mining between 1915 and the 1980s. However, political unrest and declining tin prices left the town in disarray until the resurgence sparked by lithium discovery. Recent research suggests that cassiterite may serve as an indicator mineral for lithium pegmatites (Kaeter et al., 2021), implying that former tin ore sites are likely rich in lithium. This trend is mirrored, for instance, in Cornwall, England, where historic copper, tin and tungsten mines have been revived to extract lithium since 2021.

The artwork's focus on Manono brings to light the historical continuity between earlier colonial excavations of tin and contemporary demands for lithium, raising questions as to the transfers of power over the mines. Similar to the copper supply chains discussed in the earlier example, this mine in question belongs to yet another foreign company. In the work, copper circuits are artistically arranged to create intricate lines. These angular lines trace the geography of the mining concession set up by the Australian mining company AVZ Minerals, demarcating Manono Project and Manono Extension, covering a land mass of over 430 km<sup>2</sup> (approximately seven times the size of Manhattan). Two patches of elongated, island-like copper plate represent the topology of the main lithium ore reserves that AVZ is drilling, reaching depths of 2000–5000m into the ground, respectively.

From colonial Belgian to contemporary Australian mining companies, Manono offers a snapshot into how infrastructural colonisation persists post-independence. The topological map within the artwork traces the contours of violence imposed by global capital, embodied by the Australian mining company AVZ, upon both humans and the environment. While the lines map ore and mining operations, other geographical features such as the Lukushi river, hills, highways, and towns are intentionally omitted. This omission underscores the priorities of those converging on Manono: the ore is paramount, while local populations, culture, flora and fauna take a backseat. The understanding of land and local ecology remains precarious as external entities like AVZ enter as foreign investors with limited regard for conservation and the welfare of local communities. An impact assessment report from the company explicitly states that due to historical disturbances from past mining operations, there are no recognised archaeological or cultural heritage values to consider (AVZ Minerals, 2021, p. 38), further illustrating the continued colonial violence in contemporary mining projects aimed at providing raw materials for digital infrastructure.

Moreover, the artwork visually fuses nature with circuitry boards, reflective of the medianatures described by Parikka (2015). The seeds and grains depicted are collected in Manono, representing the native plant species that are present in the area. The seeds remain unlabelled, but could, theoretically, be used to recreate the original fauna and flora in the area after mining operations conclude, carrying memories of the land as an alternative archive. These plant seeds raise questions about the agency of plant life within mining concessions. Certain plants have adapted to grow in these mineral-rich zones, where a particular soil composition is created by the metals present, such as copper and cobalt. At the same time, the threat of extinction due to mining generates the need to create a mini seed bank of plant species that grow in the area. Inspired by the Copperflora conservation programme,<sup>10</sup> Vanden Eynde transforms these seedbanks into an organic archive for local plants in mining sites, revealing the interplay between digital culture and nature, while preserving the seeds for posterity.

At first glance, the abstracted representation of *Future Flora* may not convey a sense of violence, but similar to Baloji's work, Vanden Eynde's creation is rooted in the erasure of Congolese bodies and culture. The form is inspired by the *lukasa*, a memory board used by the Luba people, who lived in what is now central-southern DRC. The resource-rich nature of the region was no secret, as the Luba Empire (1585–1889) was built upon commodities trade, including copper, iron and diamonds extracted from mines in Central Africa. The *lukasa* served as a specialised memory board conveying knowledge held by an official group known as the Mbudye, responsible for preserving oral histories, myths, legends, customs, and the lineage of rulers. The board was read by touching the beads with the right forefinger; each bead's colour, size, and shape conveyed specific meanings, making it inscrutable to outsiders but provides a source of hidden stories for those who understood its language.

This reference links contemporary Western technological development to the erasure of the Luba Empire in the colonial era. Civil war erupted in the 1880s over ivory and slaves, providing an opportunity for European powers to absorb the kingdom into the Belgian Congo Free State. The *lukasa* reference underscores the erasure of traditional knowledge through resource exploitation and colonisation while simultaneously positioning the artwork as a physical memory board for the modern age. The archive of seeds and grains native to the region is kept intact through the artefact. If the *lukasa* has been created for expert knowledge, the legibility of this contemporary memory board is also important – who owns the knowledge to rehabilitate the ecology of devastated and polluted mining sites? This question is pivotal as locals are displaced from mining areas, discouraged from farming or agriculture, and mining emerges as the only economically viable option for the Indigenous population. A meticulous study of local ecology would be essential for land restoration and the reintroduction of native plants once mining activities conclude.

*Future Flora* highlights the disappearance of local peoples, their knowledges, memories and the ecologies they lived in through the extractivism of mining. Its topological representation echoes the erasure of local livelihoods in service of the mines present. Here the labour of earth is made visible in its destruction for the sake of digital infrastructure, while its violence remains hidden behind the clean and precise lines of the circuit board.

## Conclusion

The two artworks offer commentary on mining and intervene through the bodies of humans, plants and seeds, thereby opening up discussions on the agency of labouring bodies, human, and non-animal, in the mining industry. They invite us to examine the digital labour of mining through a double lens: one that scrutinises labour exploitation of humans, and another that delves into the labour of earth and the ensuing environmental devastation that follows extraction. The posthuman perspectives offered emphasise that digital labour encompasses not only the efforts of human miners but also the participation of the Earth itself, and how mediatic networks are inextricably linked to nature.

These works demonstrate the coincidence of multiple layers of exploitation in more-than-human terms. As Dunlap and Riquito (2023) emphasised, infrastructural colonisation takes over social identity of people, their habitats and more-than-human networks. Indeed, the two pieces think through mining as dispossession through layers of disappearance and erasure. Firstly, the erasure of culture heritage is emphasised through the references to Congolese cultural belonging through scarification practices and to the Luba people's memory culture. The violent effacing of naked bodies referenced in Baloji may also be seen as a comment on the bodily harm and sexual violence conducted by militia groups to 'terrorise, pacify, and demoralise local populations to make them more compliant' (Laudati & Mertens, 2019, p. 66). Secondly, both pieces represent the absorption of Congolese labour into the large supply chain machinery of extractivism and how they are drawn into and subsumed under the international division of

about Baloji. Critiques show mined copper sold elsewhere proves to be of little economic value for the miners as bottom-feeders in the economic chain. Vanden Eynde emphasises the presence of foreign investment and their land appropriation, at the cost of erasure of local towns, riverways, and natural landscapes.

Situated in Congolese-Belgian colonial networks, these artworks point to a complex implication of history and ongoing exploitation in the mining of technology minerals. Baloji's piece, in particular, tells a complex tale of the relationality between Congo and European powers, and questions our ethical position towards Congolese exports, when we have Congolese metals in our technological devices, and Copperbelt plants in our living spaces. Read diffractively, these two pieces show an abstract image of mining – in Baloji, as scarred bodies of copper, and in Vanden Eynde, as the circuitry of digital infrastructure.

As artworks displayed in 'civilised', 'developed' Europe, these pieces invite audiences to contemplate their relationship to the intertwined legacies of violence and mining, through evocative visuals and symbolic motifs. How might we take their ideas forward as we enter into an era where there is no foreseeable end to mining? Is expanding the circuitry of digital infrastructure worth the human suffering and environmental costs? These questions demand our careful consideration as we navigate the complex terrain of mineral extraction in an increasingly interconnected world. The interdependence between human and non-human agencies must be recognised, as mining operations continue to test new frontiers of the deep sea<sup>11</sup> and outer space. In maintaining 'a posthuman ecological view that recognises the agency of earth itself and the labour it performs in producing the minerals we so eagerly extract' (Wan, 2019, p. 261), how might we answer the invitation of these artists to rethink and imagine other ways of building our digital futures? The digital labour of mining intersects with the violence of extractivism, with the risk of irreparable harm to both human and non-humans.

## Notes

1. <sup>1</sup> Tin, tantalum, tungsten, and gold are the main minerals governed under the US Dodd-Frank Act (Section 1502) and EU Conflict Minerals Regulation.
2. <sup>2</sup> Geophagy is local to various parts of sub-Saharan Africa, as well as Latin America (Gundacker, 2017).
3. <sup>3</sup> As theoretical objects, the artworks 'compel us to propose, interrogate, and theorise' (Verhoeff, 2012, p. 73) through their historical contexts, materiality, and aesthetic representations. See further Verhoeff (2012) on theoretical objects.
4. <sup>4</sup> Copperbelt refers to a mining region in Zambia and the Democratic Republic of the Congo (DRC), which is one of the ten most polluted areas worldwide, mainly due to mineral mining for phone and car batteries (Van Brusselen et al., 2020).
5. <sup>5</sup> See further the historical study of copper and technology in Blake-Coleman, 1992.
6. <sup>6</sup> The museum is a colonial ethnographic and natural history museum, originally built to showcase King Leopold II's Congo Free State in the International Exposition of 1897.
7. <sup>7</sup> The book, written originally in a local variety of Swahili, has been translated to standardised Shaba Swahili and subsequently into English, in a project spearheaded by German anthropologist Johannes Fabian, with the assistance of Kalundi Mango, administrator at the Ethnological Museum of Lubumbashi. The book is an account of historical events and stories told by domestic servants in Elisabethville from 1843 to 1965, giving detailed accounts from the vantage point of the locals as more and more Europeans arrived, and changed the way they lived and laboured (Fabian, 1990).
8. <sup>8</sup> See, for instance, how the effects of Chinese national policy disrupt the powers and economic arrangements in the supply chain. In an effort to protect domestic supply since 2023, China has nationalised rare earth resources as well as forbids the export of specific technologies used to extract and separate rare earths. With its current 90% market share in rare earth processing, this monopoly would provide China with immense economic and geopolitical leverage (Nguyen & Onstad, 2023).
9. <sup>9</sup> This artwork is an extension of earlier works created by the artist, namely *The Immortality Drive* (2018–2019) and *The Great Decline* (2019). These works all aesthetically connected material histories and ecology to the digital circuit board. *The Immortality Drive* mimicked the image of the first silicon monolithic integrated circuit or microchip, while *The Great Decline* created the outline of blueprints of the Svalbard Global Seed Vault, bringing attention to the biodiversity decline that is a result of technological over-development. Other works in this series include *Future Flora: Fungurume* (2022), which mapped a copper mine in Fungurume, DRC.
10. <sup>10</sup> See further CopperFlora, 2018.
11. <sup>11</sup> Oceanographers have discovered polymetallic nodules that contain precious metals such as manganese, nickel, cobalt, and copper, which are all technological minerals in high demand. Remotely operated vehicles equipped with specialised tools and machinery would collect or cut the mineral-rich materials from the seabed, and subsequently pump them to the surface for processing (Kang & Liu, 2021; Leal Filho et al., 2021). The digging and dredging of the ocean floor by

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