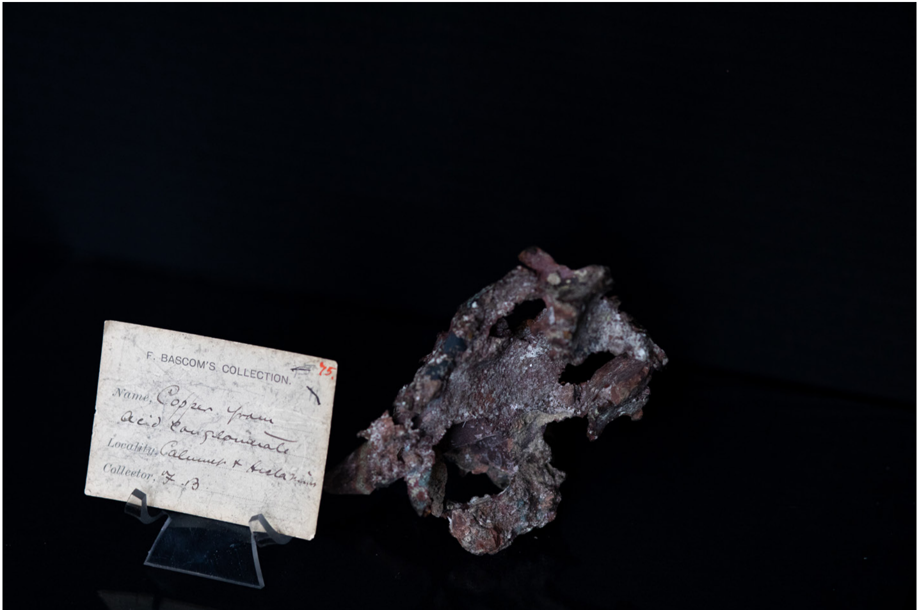

The original specimen and collection label of Florence Bascom's Copper specimen, showing early collection practices at university mineral collections. Image from Bryn Mawr College Special Collections, B.0075, with permissions of the curators.

Special Issue
Mobilizing Museum Minerals: Critical Approaches to Mineralogical Collections

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Editorial: Mobilizing Museum Minerals

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Introduction

From the Museu de Ciência e Técnica da Escola de Minas (Brazil) to the Smithsonian Institution (USA) and the Naturhistorisches Museum Wien (Austria), many encyclopedic and natural history museums are known for their significant collections of mineral specimens. Stored in early cabinets of curiosities where gems and precious stones spoke to a collector's wealth and travels, these collections now mark natural history galleries in museums around the globe which represent rich sites of scientific research and public engagement. Despite their continuing popularity, however, mineral collections are relatively absent in critical museum scholarship, especially decolonial or environmental museology. Such omissions, including that of colonial narratives from mineral displays, are 'not accidental', write geologist Selby Hearth and curator Carrie Robbins (2022: 4). Rather, this silence 'reflects a corresponding absence within the geological community' (Hearth and Robbins 2022: 4). In this special issue of *Museum & Society*, we aim to showcase burgeoning critical approaches to the collection, interpretation, and display of mineralogical specimens in museums while expanding understandings of their transformative potential in an era of rising ecological injustice. Ranging from conceptual explorations of mineral cataloguing to reflections on reclaimed biocultural heritage, the papers gathered in this issue suggest productive pathways for scholars and practitioners to attend to the social, political, and environmental qualities of museum minerals.

The rise of scholarship, activism, and artistic interventions around Earth sciences specimens calls upon the museum field to respond to and reflect on the changing meanings, expectations, and responsibilities of mineralogical collections and exhibitions. Despite Hannah-Lee Chalk noting in 2011 that Earth sciences collections 'remain largely untheorised' in natural museology compared to taxidermy and dioramas (Chalk 2011: 19), only recently have museum scholars and curators begun to critically examine mineral displays (Paterson and Witcomb 2021; Phillips 2022; Baker 2023; Witcomb and Henry 2023).[1] The care and provenance of ethnographic objects have tended to dominate discussions of 'decolonization' in museum studies, but historians of science have long understood the intrinsic relation between science, empire, and structural racism and are increasingly advocating for anti-racist and anti-colonial frameworks to extend to museums' scientific and natural history collections (Das and Lowe 2018; Gelsthorpe 2021). For example, a preliminary study by curator David Gelsthorpe (2021) showed that a significant portion of the Manchester Museum's (UK) mineral collection was sourced from formerly colonized regions; and indeed, Hearth and Robbins (2022: 4) ask, 'what is Western colonialism without gold, silver, diamonds, or copper?'

Given the structural limitations of cultural institutions and growing public recognition of museums' complicity in extractive capitalism and (post)colonial violence, critical perspectives on museum minerals have primarily been advanced by groups and individuals external to museums. In 2022, for example, Kopo Oromeng and Eleanor Armstrong facilitated an activist workshop titled 'Unearthing the Collection' at the University of Delaware (USA), which proposed alternative frameworks for public-facing content in mineralogical museums (Armstrong and Oromeng 2024). The same year, members of the scholar-activist collective Beyond Extraction launched a virtual counter-tour of the Royal Ontario Museum's (Canada)

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exhibition of rocks, gems, and minerals to shed light on the institution's significant financial ties to the mining industry.[2]

Artists, as well, have included geology and mineralogy[3] collections in their work. In 2019, Illana Halperin (b. 1973) assembled a 'mineral biography of New York' at the Hunterian (UK), combining photographs, drawings, and a piece of mica into a personal exploration of the 'deep geological past' (Paterson 2019). In 2022, the Royal Ontario Museum showcased Kent Monkman's (b. 1965) *Being Legendary* (2022), featuring his paintings alongside some of the museum's 'natural history' specimens, which included an empty plinth for *pâpâmihaw asinîy* – a stolen and sacred buffalo-head-shaped meteorite that is finally being returned to the Plains Cree after a 20-year battle.[4] Interventions by scholars, artists, and activists are also furthering critical inquiry on the entanglements of museums with extractive industry (Mahony 2017; Serafini and Garrard 2019; Sharp 2022a). We therefore propose that, like anthropology and art museums, mineralogical museums and collections should be held accountable to the communities with stakes in the stories and objects on display. As the papers in this issue demonstrate, such change is beginning to take root worldwide through academic, professional, and art-based initiatives in museums and beyond.

In this introduction, we first outline existing museum studies literature informing our critical line of questioning about Earth sciences in museums. We then sketch interdisciplinary avenues for future research around mineralogical collections. Finally, we provide a brief synopsis of the issue's papers in their order of publication and offer closing thoughts on their generative potential.

Setting the Frame: Critical Museology

In recent years, three research trends have informed the direction of critical museology: studies which concern the power relations that pervade museums, including their colonial and racist legacies; explorations of museums' roles in responding to the climate crisis, sometimes described as sustainable or environmental museology;[5] and projects that recentre museum workers and their practices.

Amid institutional efforts to reframe or return anthropological collections according to reflections on their social harm, 'decolonial museology' emerges as a significant framework for assessing the current state of practices relating to mineral collections and exhibitions. But the framework itself remains nebulous, its understandings and applications varying across geographic, institutional, and professional contexts. Amy Lonetree, for example, first anchored the concept of decolonizing within North American museology by showing how national and tribal museums could prioritize Indigenous knowledge and exhibit the 'hard truths' of colonialism (Lonetree 2012). Since Eve Tuck and K. Wayne Yang's formative essay, 'Decolonization is Not a Metaphor' (Tuck and Yang 2012), scholars and cultural workers have also grappled with the potential co-optation of the term and its institutional limitations in settler-colonial states (Arora 2021; Phillips 2022).[6]

In places like Canada, the USA, or Australia, decolonial museum practice has become synonymous with the rematriation/repatriation of objects and ancestors and with the redressing of Indigenous sovereignty and access (see, for example, the Decolonizing Initiatives of the Museum of Us in San Diego in Macdonald 2022). In European museums, decolonization might take on a broader meaning, connecting to anti-racist practices of collaboration and representation, of reckoning with the 'past' violences of empire. For Carine Ayélé Durand, decolonial curating entails 'putting together as many perspectives as possible' (Durand and Larsen 2024: 355), while John Giblin, Imma Ramos, and Nikki Grout argue that decolonizing can 'include almost any aspect of museum work' and more specifically 'concerns the proactive identification, interrogation, deconstruction and replacement of hierarchies of power that replicate colonial structures' (Giblin et al 2019: 472). This emphasis on pro*activity* resonates across perspectives: decolonizing the museum is understood as a practice (Vergès 2023: 13), 'a verb' (Macdonald 2022: 11), 'a work in progress' (Arora 2021: 130), or 'a journey' (Durand and Larsen 2024: 357).

Advances in decolonial museology, however, have primarily attended to objects and histories of overtly cultural significance (such as art, material culture, or 'sensitive heritage'[7]),

leaving rocks and mineral collections the purview of 'objective' Earth sciences (e.g., Weber 2021). We find this disjunction particularly striking given the last decade's flourishing literature on museums and the climate crisis, the latter having accentuated critical linkages between empire, Western science, and environmental injustice. Only recently have scholars such as Janice Baker (2023) and Laura Phillips (2022) sought to incorporate the geological within critical museology. Inspired by Baker's call for museums to 'reinterpret realms of the inorganic and inhuman with the same commitment previously given to humanism' (Baker 2023: 86), we believe climate-informed museum scholarship is well suited to support emerging changes and dialogues around collecting, interpreting, and exhibiting rocks and minerals.

Contributions to environmental museology have typically fallen into one of two areas: museums' education- and object-based practices, such as research, curation, and programming; and operations, including energy usage and sustainable exhibition design. In the first area, authors agree that audiences and their stories mandate museums' obligation toward climate mitigation (Langham 2021; see also Cameron and Neilson 2015; Newell et al. 2016; Sutton and Robinson 2020; Jørgensen et al. 2022; Janes 2023). Given the public's consistent trust in museums and the fact that the latter are 'the only social institution with a three-dimensional, cultural memory bank' (Janes 2023: 84), museums are called upon to optimize their knowledge, collections, and expertise in visitor engagement into impactful programs that educate and inspire social action around urgent issues like carbon emissions, water pollution, loss of biodiversity, and climate disasters. These efforts might include exhibitions that connect local heritage and extinction (Searle 2020) or art workshops that mobilize the affective dimensions of environmental degradation (East 2014).

Professionally, the environmental turn in museums has also generated new collectives (e.g., the Coalition of Museums for Climate Justice based in Canada), institutions (like the Climate Museum, USA), and initiatives to reduce museums' operational footprints – museologists having long advocated for the latter. In 2007, curator and palaeontologist Richard Hebda suggested that museums lead sustainable operations by example, reducing their electricity consumption and using eco-friendly building materials (Hebda 2007). While this is no easy feat for institutions known for energy-intensive climate-controlled storage and shiny, new facades, growing numbers of initiatives and guidelines are emerging to support the 'greening' of museums, ranging from waste reduction to energy efficiency.[8] Finally, rising activist pressure against oil corporations' sponsorship of museums has also yielded recent victories, with several Dutch museums ending their partnerships with Shell and the National Museums of Scotland cutting their ties with BP. Though scholarship on fossil fuel sponsorship is still emerging, and partnerships with the mining industry are problematized to a much lesser degree than collaborations with oil giants (see Sharp 2024), preliminary divestments such as these remain a marker of the museum field's environmental shift.

These decolonial and environmental branches of museum studies are increasingly being drawn together in generative ways.[9] With mineralogical collections in particular, opportunities abound to further climate-informed museum work that is critically grounded in 'nonmetaphorical decolonization' (Phillips 2022: 120) and extends beyond corporatized sustainability discourse.[10] Curators and collections managers, for example, might expand on Gelsthorpe's preliminary study (2021) and trace their mineral collections to histories of empire or ongoing conflicts. In settler-colonial contexts like Canada, Phillips has also suggested pathways for reparative work by highlighting Anishinaabe interpretations and Anishinaabemowin vocabulary for the specimens at the Miller Museum of Geology in Kingston, Ontario (Phillips 2022: 126-8). Baker's line of questioning about the Dynamic Earth display at the Melbourne Museum (Australia) is also productive: 'To what extent,' she asks, 'does the aesthetic display highlighting each object's "finest" qualities cover the real politics, conflict and disruptions attached to fossil fuels and energy production?' (Baker 2023: 120).

But, as with much of museological reform, resources and professional capacity (or lack thereof) remain a serious challenge, and the often identified disconnect between museum theory and practice can be restrictive. In 2003, Danielle Rice had already argued that the slippage between scholarship and practice produces a series of 'illusory museums' divorced from tangible experience (Rice 2003: 77). In *Post-critical Museology*, Andrew Dewdney, David Dibosa, and Victoria Walsh have also troubled the academy's 'theoretical ruminations

on the museum' in contrast to a 'perceived lack of connection with the "real work" of the museum, the everyday practices, practicalities and realities in which decisions are made and unmade' (Dewdney et al 2012: 76). Thinking within the critical frameworks outlined above, we are inspired by the methodological framework put forth by Nuala Morse, Bethany Rex, and Sarah Harvey Richardson in the 2018 issue of *Museum & Society* they edited. Rather than isolating practice from political concerns, they suggest that viewing museums as 'peopled organizations' opens new possibilities for research and reveals everyday museum practices as inseparable from power relations (Morse et al 2018: 115-6). In this issue, we therefore encouraged submissions by museum professionals and highlighted our interest not only in histories and theories surrounding museum minerals, but in their related museological practices.

An Interdisciplinary Approach to Mineral Collections

In what follows, we engage with multiple academic disciplines to speculate on preliminary research directions. We hope that these will motivate further dialogue and critical inquiry between and among scholars, museum workers, and the communities they serve.

Empire and Extraction

When activist facilitators toured the Royal Ontario Museum's mineral gallery in 2022, they issued the following statement: 'Colonialism and extraction go hand in hand'. They went on to describe the interpretive narratives of mining-sponsored displays as 'glamorizing gold, wealth and empire'.[11] With the reflexive and reparative frameworks informing much of museological reform today, have museums' Earth sciences collections lagged far behind wider critical practice? Do they deserve these growing critiques of their connections to industry and empire? As Hearth and Robbins (2022) note, one reason they may lag is that the often-destructive realities of extraction and the colonial relations inherent in mined specimens continue to be overlooked in mainstream public communication and geological research. By contrast, networks of resource extraction and their epistemic connections to coloniality and empire are increasingly documented in other fields, including economics, anthropology, media studies, and history of science. In particular, the concept of *extractivism* has inspired research across cultural studies and visual arts and is a helpful starting point for understanding the 'extractive impulse' of empire and colonialism that could productively inform critical reinterpretations of contemporary mineral collections.

Economist Alberto Acosta defines extractivism firstly as the intensive extraction of large amounts of natural resources from the earth, often intended for export (Acosta 2020: 392). The concept, especially in its applications by scholars from the Global South, also illustrates that the practices of 'colonial and neocolonial looting, accumulation, concentration, and devastation' and modern capitalism are 'two sides of the same process' (Acosta 2020: 393). In other words, extractivism as a mode of accumulation took its contemporary form through widespread colonialism and persists throughout neocolonial and neoliberal states (Acosta 2020: 393), underpinning extractive industries and, in particular, the increasingly intensive mining of critical minerals deemed necessary for the global transition to renewable energy. Since the sixteenth century, the science upholding extractive activities like mining and oil extraction has been geology, a discipline that anthropologist Kathryn Yusoff positions as a colonial practice – a 'category and praxis of dispossession' that rearranges the Earth through colonial invasion, ecological disruption, and racialization (Yusoff 2018: 67; Yusoff 2024: 229). For Yusoff, geology as a discipline established the grounds for extractive 'seeing', or seeking to control and possess (Yusoff 2024: 221). It made Indigenous territories legible for extraction and dispossession via mapping and surveying, transforming earthly matter into valuable resources, and categorizing people and places as 'human, subhuman, and inhuman, to extract and control the surface and subsurface' (Yusoff 2020: 663, 666).

In practice, the geological foundations of empire not only resonate in the 'museal silences' (Mason and Sayner 2019) of often celebratory mineral exhibitions; they emerge throughout the very history of museums. From the collecting expeditions of early geologists to the popular displays of minerals in the great exhibitions of the nineteenth century, the urge to extract and showcase raw material underlines, per Alistair Paterson and Andrea

Witcomb (2021: 199), 'the ways in which colonialism was a cultural practice'. Science historian Richard Bellon, for example, argues that nineteenth century institutions like the Museum of Practical Geology firmly operated within the marketplace of the British empire (Bellon 2007). Established by Henry de la Beche[12] – director of Great Britain's Geological Survey – this museum answered to 'Britain's vast imperial economy, with its heavy reliance on the extraction, industrial application and transportation of minerals and ores,' existing insofar as it proved useful to the imperial state (Bellon 2007: 320). In an analysis of historical collecting practices in Western Australia, archaeology and cultural heritage scholars Paterson and Witcomb similarly highlight the economic underpinnings of mineral collecting, noting that the motivations of private collectors were 'to educate prospective investors' (Paterson and Witcomb 2021: 213). We echo these authors' position that re-imagining the future of such collections must start with understanding the entanglements of extractive industry and colonial incursions into Indigenous lands (Paterson and Witcomb 2021: 200). While critically reflecting on the economic relationships that facilitated the development of museum collections may be daunting given the financial challenges facing our field, such reflection also presents a ripe opportunity to re-affirm curatorial autonomy, especially if aligned with other institutional frameworks related to decolonization.

The economic and colonial roots of most mineral collections, now identified by scholars and activists alike, are certainly not a conclusion to museum mineralogy; rather, they are a base from which to rework, reimagine, and reinterpret. As media studies scholar Shannon Mattern compellingly writes, the illumination of rocks in museums helps to 'crack their geochemical code – to read them as cosmological repositories, time capsules, history books, material missives from distant stars' (Mattern 2020: 115). Yet these rocks, Mattern continues, 'don't only record the past; if lit just right, their glow can illuminate a pathway toward the future' (Mattern 2020: 115). Echoing Mattern, Yusoff suggests that counter-reading geology does not entail taking away from existing interpretations; it simply requires supplementing their accounts (Yusoff 2024: 480). If resource extraction unearths geologic life for the purposes of contemporary economies, 'it also creates openings and passageways of unintended fractures' that may lead to the building of other worlds (Yusoff 2024: 481).

Time and Temporality

Recurrent in existing literature and in this issue's papers are the motifs of time and temporality – the recursive movements between the present, past, and future of mineral artefacts and collections, as well as museum workers. Three dominant registers stand out within this theme: the deep-time of geology and chronotopes of the museum, the time spent working in mineral collections, and the timing of the research presented in this issue.

The museum is already theorized as a site for disrupting a linear conception of time (see, for example, Walklate 2022). The foundation of the western museum as a social institution delineates not only space, but time – preserving the past, demonstrating progress towards the present, and inspiring futures. As a result, museums uphold modernist ideas of permanence and atemporality: objects unchanged, preserved and taxidermied, their decay postponed. Mineral exhibitions perform an especially durable atemporality through their interpretive narratives of deep time, their typically slow-to-change displays, and the stasis of mineral specimens themselves. While labels may highlight an object's site of extraction (ironically, perhaps a place whose mainstream name has since changed), singular interpretive narratives often overlook the object's transformation into a resource. Tracing histories, examining records, or piecing together networks of circulation, the curators and theorists featured in this issue grapple with the praxis that is working to situate collection materials in time and space.

The same fiction of atemporality is true of museum records. Histories, processes, and transformations that lead samples to the museum are absent or curtailed in preference for the geological and chemical composition as a defining structure. Moving beyond hegemonic framings of deep time or geological age (which work to solidify the onto-epistemic 'scientific' view from nowhere critiqued by Donna Haraway 1984), multiple authors in this issue also examine the timelines that brought specimens to the museum. As Armstrong and Oromeng (2024) explore, this might entail documenting time in the labours of extraction and transportation,

or in the labour of collectors, curators, scholars, and artists who engage with the objects. The Fossil Preparation Lab at the Field Museum, for example, makes visible the time that preparing specimens can take.

As a final register of time, in our initial call for papers for this issue, we suggested that the production of critical scholarly work on mineral museums was 'late'. What does it mean to think of 'lateness' and to position work in this issue as 'catching up'? While papers draw on an expanding body of scholarship, how might the frameworks proposed here determine which futures can be manifested in the mineral gallery? While we leaned into the desire to reach scholars and practitioners working with similar questions, we are reluctant to foreclose on other radical possibilities. Instead of being 'late', we want to understand divergent developments in mineral and geological collections, grappling with questions closely tied to education, extraction, and geopolitical futures. What if, to draw on José Esteban Muñoz (2019: 185), we embrace the 'crashing wave of potentiality' that is the confluence of existing ideas in museum studies, environmental humanities, and geology? Rather than sweeping us into the stream, it might offer space to forge new courses down the waterway.

Posthuman and Mineral Collections

Human-environmental relations are an ongoing area of research for scholars across disciplines, highlighting various understandings of the 'human' and the 'nonhuman/environmental' for different communities. Many Indigenous ontologies see these concepts as fundamentally interrelated rather than separated (see, for example, Todd 2015). While rematriation/repatriation is an increasingly visible practice in museums that hold Indigenous cultural collections, the care of stones as nonhuman kin is also taking place, for example, in the return of certain meteorites to their communities proximate to their impact sites.[13] Recognition is also underway with respect to caring for other nonhuman kin in the museum (Krmpotich and Stevenson 2024). For example, architectural choices align the Museum of Native American History in Washington, DC with cardinal directions, and let dawn sunlight into the collections, embracing environmental engagement with museum collections (e.g., Ostrowitz 2008).

Concurrently, posthumanism and the reckoning with kin beyond humans has transformed Eurocentric, western scholarly thinking, especially in the environmental humanities. Texts that understand lithic and other nonhuman parts of our world as fundamentally shaping the cultures of today offer a different framework for thinking about extraction, empire, and exploitation (Leopold 1987; Povinelli 2016: xx; Puig de la Bellacasa 2017) which emphasizes the interrelation of the physical world and its social contexts. Engagement with the materiality of the Earth is foundational in this field, as it is to see plants or animals (including humans) as related to earth(l)y materials around them. In the contexts of mineral collections, such insights might direct us to think about what curatorial strategies could extricate specimens from their systematized allotments and intertwine them with other elements of the museum.

Even in the west, this distinction between human and nonhuman is not as enduring as one might think. As Jeffrey Jerome Cohen (2015) shows, medieval Gulf and European communities also saw stones as vibrant, animated materials with a liveliness no longer understood by western culture. Similar reflections are made in Brigitte Buettner's (2022) work on precious stones, minerals, and gems – such that together this historical posthumanism offers tantalizing glimpses of methods linking extractivism and cultural objects to understand why certain minerals were valuable within particular societies.

Lithic participation in contemporary life is, perhaps, most visible in the uses of stone for memorials and memory work – a subfield within museum studies itself. From witch-graves to circle-stones like Stonehenge (UK), to purpose-built lithic sculptures like the Jewish Memorial in Berlin, to *sieidi* stones in Sápmi (Reinhart 2016), we see minerals beyond museums as part of our posthuman environments. What, then, if we saw these many geologic kin of the mineralogical collection as but another memorial or piece of memory work, drawn from around the globe and beyond and assembled into a new lithic mise-en-scène in the museum?

Just as the formation of collections was shaped by ideas of collecting the world through empire, the movement of rocks, stones, and other earthly materials into the museum transformed them into specimens for display, removed from their lifeworlds and original contexts. What is

considered important about them as objects is also dynamic over time, demonstrating wider cultural understandings of nature and culture (Franza et al. 2020). As Elizabeth Ferry (2010) shows in a study of exhibitions at the Smithsonian, minerals have been subject to regimes that showcase nature as resource, order, spectacle, and fine art respectively between the mid-1800s and late 1990s. Such progress means that we can also theorize and curate differently now. After all, these minerals will outlast us and our museums: this is but one step on their billions of years-long journeys.

Overview of the Special Issue

The articles in this special issue reflect professional and academic perspectives and grew out of a set of collaborative review workshops. They are loosely grouped according to the following themes: reparative frameworks; historical foundations and critical engagement with collections; exhibitions and object studies; and conceptual object biographies.

Our reparative frameworks begin with a two-part exploration of Bryn Mawr College's collection near Philadelphia (USA), where geologist Selby Hearth, curator Carrie Robbins, and many of their students trace the relationships between individual specimens and their catalogue records, reflecting on what information is left out along the way. The first part examines the information and knowledge built up and lost over time for specimen V.4476 in the collection, while the second imagines what reparative cataloguing practices might look like within academic institutions. Analyzing a combination of catalogued and newly resurfaced fieldnotes of John Woodward at the Cambridge University Library and British Library (both UK), Josh Hillman's paper then excavates the muted influence of the expertise of domestic mineworkers and gem cutters on Woodward's understanding of gems and development of a taxonomy for metallic ores. Similarly digging into the archives to suggest new interpretive frameworks for mineral displays, Angela Strauß takes us to the Natural History Museum Berlin (Germany) to reveal the economic, political, and scientific motivations underlying mineral donations in nineteenth-century Prussia.

Bridging these historical foundations and wider critical engagement with mineralogical collections, Danielle Kinsey uses the concept of emodities – the creation of emotional commodities – to investigate how diamonds came to be sold as desirable and glamorous forms of carbon in nineteenth century Britain, particularly to women. Laura Pannekoek then documents Canada's participation in the international exhibitions of 1851 and 1855, demonstrating how the mineralogical collections of the Geological Survey of Canada promoted a form of 'settler geology'. Canadian settler-colonialism is further unpacked in the next essay, as Frédéric Bigras-Burrogano and Jordan B. Kinder show the epistemological parallels between coal, oil, and dinosaur fossils at the Royal Tyrrell Museum, Drumheller (Canada), and consider the potential of contemporary artistic interventions for exposing and perhaps remedying the extractive entanglements of museums. In a case study of the National Museums Scotland in Edinburgh (UK), Georgina Grant and Ellie Swinbank trace elements of both the Natural History and the Science and Technology collections from mine to museum, highlighting elements that have been invisible to staff in contextualizing these objects. Moving to another Scottish collection, Erika Anderson reports work at the University of Glasgow's Hunterian Museum and Art Gallery (UK) reconnecting mineral specimens with their imperial and colonial histories as part of larger work at the museum to embed Scottish (hi)stories of and complicities with the British Empire across their collections. Next, Anaïs Walsdorf's object biography traces the origins of a coal sample in the John Percy collection in the Science Museum Group collections (UK) to the 1873 Vienna World Fair and an Indigenous mine in Aotearoa New Zealand.

Turning to focus on the visitors to the museological exhibits, curator at the Sedgwick Earth Sciences Museum in Cambridge (UK), Liz Hide suggests that highlighting the colonial power structures that sent Charles Darwin to Chile and enabled him to collect a chalcopyrite specimen can work towards reparative interpretations of collections. Then, giving a visitors-eye view of the bitumen extraction and tar sands of Fort McMurray, Alberta (Canada), Elysia French follows the ways in which the museum and guided tour play with ideas of the wilderness and the industrial sublime to create a compelling – if frightening – narrative about the success of the petrochemical industry in the province. Alana Osbourne's article contextualizes the

(re)curation of the Africa Museum in Belgium within ongoing extractive practices in the Democratic Republic of Congo, highlighting the tensions of conducting decolonial work in a former metropole. Next, using as a case study Rome's Museum of Civilizations (Italy), Silvia Pireddu suggests pathways for museums to innovate their interpretations of mineral specimens by blurring the lines between disciplines and merging art, anthropology, and science.

Finally, the issue concludes with three object biographies which closely consider items in collections. First, Annemarie de Wildt reflects on her own curatorial practice to trace the shifting meanings of the Dutch Golden Coach and examine how the Amsterdam Museum in the Netherlands has recently incorporated contemporary anti-colonial critiques into its display. Next, Livia Cahn's first-person contemplation of a fleeting encounter with a radioactive drill core in Haut-Katanga, Democratic Republic of Congo, raises critical questions about museal absences, the return of geological specimens, and the anthropological potential of 'the underground'. In the closing essay of the collection, Eugenia Kisin tells the story of Bideford black, an earth pigment mined from North Devon, UK, inviting critical reflection on the cultural history of natural materials and their synthetic replacements.

This special issue explores emerging directions in professional and scholarly work relating to minerals in and beyond museums. Ranging from theory-led contributions to practice-driven reflections, each paper demonstrates how drawing across historical, geographical, geological, and museological work can enrich research and engagement on mineralogical collections, including their conservation, interpretation, and display. We therefore hope that the issue serves as an important academic and professional starting point for mobilizing museum minerals towards more just futures.

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Notes

1 See also Sebastian De Line, 'Racial Capital from the Arctic Circle to the Global South: Indigenous Labour in Museum Collections', 25 April 2024. Presentation, Queen's University, Kingston, Canada.

2 Beyond Extraction, Camille-Mary Sharp, Christopher Alton, Zannah Matson and Emma McKay, 'Mining at the Museum', 2022. https://www.beyondextraction.ca/mining-at-the-museum, accessed 30 July 2024.

3 Geology is primarily the science and history of rocks, and it comprises mineralogy as a subdiscipline; the latter more specifically focuses on minerals and their properties. Museum exhibitions like the Royal Ontario Museum's *Teck Suite of Earth's Treasures*, for example, often house geological and mineralogical specimens in singular or adjoining spaces under the broader descriptor of Earth sciences.

4 Angela Amato, 'Creator's Stone Meteorite to be Returned to its Historic Site After Over 150 Years', Toronto Star, 30 September 2022. https://www.thestar.com/politics/creator-s-stone-meteorite-to-be-returned-to-its-historic-site-after-over-150-years/article_21802c70-07f3-5659-844a-42d3b1593a9c.html, accessed 2 September 2024.

5 We use the term 'environmental museology' to encompass museum studies literature concerned with environmental sustainability and the climate crisis. The term is more commonly used in French-language or Portuguese-language publications, such as

Boudjema 2019 and MINOM and ICOM, 'Declaración Lugo- Lisboa. XX Conferencia Internacional Galaico-Portuguesa' ['Lugo-Lisbon Declaration. 20th International Galaic-Portuguese Conference'], 1 August 2020. https://www.minom-icom.net/files/declaracion_lugo-lisboa_gal_es_pt.pdf, accessed 2 September 2024. See Campolmi 2015 for its use in English.

[6] See also Sumaya Kassim, 'The Museum Will Not Be Decolonised', Media Diversified, 15 November 2017. https://mediadiversified.org/2017/11/15/the-museum-will-not-be-decolonised/, accessed 2 September 2024.

[7] See, for example, Philipp Schorch's edited special issue of Museum & Society titled 'Sensitive Heritage: Ethnographic Museums, Provenance Research and the Potentialities of Restitutions' (Schorch 2020).

[8] See, for instance, Centre for Sustainable Curating, Using the Resources at Hand: Sustainable Exhibition Design, 2024. https://sustainablecurating.ca/about/using-the-resources-at-hand-sustainable-exhibition-design/, accessed 2 September 2024 (a guide to sustainable exhibition design); the consulting organization Ki Culture's various 'Ki Books' on Waste & Materials and Energy (https://www.kiculture.org/ki-books/); and the Tate Museum's 'Environmental Policy': Tate, 'Tackling the Climate Emergency', n.d. https://www.tate.org.uk/about-us/tate-and-climate-change, accessed 2 September 2024.

[9] For example, the Using the Resources at Hand guide cited above evokes local treaty responsibilities in calling for the art sector to reduce its waste and pollution on Indigenous territory. In 2015, the environmental group BP or Not BP also connected Indigenous land rights with concerns over oil sponsorship in a protest against the British Museum's BP-sponsored exhibition on Indigenous Australia titled *Stolen Land, Stolen Culture, Stolen Climate*: Claire Voon, 'Internal Documents Show How BP Oiled the Wheels at UK Museums', Hyperallergic, 4 May 2016. https://hyperallergic.com/295638/internal-documents-show-how-bp-oiled-the-wheels-at-uk-museums/, accessed 2 September 2024. Camille-Mary Sharp has also written about the need to connect decolonial museology with growing resistance to corporate sponsorship in museums (Sharp 2022b).

[10] Corporatized sustainability discourses in museums might include 'greenwashing' (when polluting companies sponsor environment-related projects to improve their public image) (Evans 2015; Miller 2018); ESG or 'impact investing' schemes that currently do little to improve carbon emissions (Buller 2022); and an industry-backed narrative that intensive mining for 'critical minerals' is the backbone of our global climate transition (Archer and Calvão 2024).

[11] Beyond Extraction, Camille-Mary Sharp, Christopher Alton, Zannah Matson and Emma McKay, 'Mining at the Museum'.

[12] La Beche was also the son of a plantation owner in Jamaica, and he wrote the pamphlet *Notes of the Present Condition of Negroes* upon his return to the plantation in 1823-4 (Yusoff 2024: 224). Yusoff poignantly highlights this fact to further connect the 'geologics of accumulation' with racialization and enslavement.

[13] Erin Ross, 'A Piece of Sacred Meteorite is Returned to An Oregon Tribe', Oregon Public Broadcast, 22 February 2019. https://www.opb.org/news/article/tomanowos-sacred-meteorite-is-returned-oregon-confederated-tribes-grand-ronde/, accessed 2 September 2024.

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