

Retrospective Thinking: Decolonizing Minerals at National Museums Scotland

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Abstract

This paper explores the mineral specimens held by the Science and Technology department at National Museums Scotland (NMS). It examines what these objects and their provenance reveal about the Museum's collecting methods and how they reflect and perpetuate colonial attitudes in Britain in the nineteenth century. It is informed by a review of stored Science and Technology collections, prompting detailed examination of each object and its records.

Case studies show that stories of the people involved in mining and manufacturing processes are absent from NMS documentation while the collectors and Museum staff loom large. Archival research can remedy this to an extent, but it is time consuming and still leaves an incomplete picture.

The paper considers whether it is possible to set about retrospectively compensating for stories not told and how we can ensure documentation for our contemporary collecting does not follow a similarly biased pattern.

They worked strenuously for six days a week at a wage of 9d a day plus two cups of rice and a pinch of salt. They were little better than slaves...

Dr Siaka Stevens, *What Life Has Taught Me*, 1984: 95-6

The Industrial Museum of Scotland is not intended to be a Museum of Scottish Industry alone, but a Museum of Industry of the world in special relation to Scotland.

Dr George Wilson, *Directory of the Industrial Museum of Scotland*, 1858: 6

Introduction

In 2018 Subhadra Das and Miranda Lowe emphasized that telling the 'whole story of science', including that of specimens held in natural history collections, was an essential part of decolonizing museums (2018: 11). Calls such as this coincide with a long-standing movement within the museum sector to address legacies of empire and colonialism (Dresser and Hann 2013; Wintle 2013; Bodenstern and Pagan 2014), accelerated by the anti-racism protests of 2020.¹ Museums in Scotland are dealing with these legacies too, and this paper will explore mineral specimens in the Science and Technology collection at National Museums Scotland (NMS), as well as the gulf between source communities' experiences and collectors' aspirations, as illustrated by the quotations above.

Mineral specimens fall into two departments at NMS: Natural Sciences and Science and Technology. The specimens held by the Natural Sciences department were collected primarily for studying the natural world,² while the Science and Technology collection was acquired to illustrate industrial processes of extraction and use. This is reflected in the categorization and documentation of objects, although as this paper shows, their connections with people have been erased. The records contain little about how objects came to be in the collection beyond the names of acquisition sources and notes on geographical location.

Using an object-centred approach, we authors closely engage with examples of Science and Technology minerals, taking steps to investigate links with colonialism and to acknowledge the difficult histories surrounding them. The work is set within wider research to understand the shifting nature of what minerals represent beyond their value as commodities; for example, we analyse changing views of their discovery, circulation, and classification, as well as of their use (Ferry 2013; Richardson and Weszkalnys 2014). As collectors of contemporary material culture, we authors also examine how anthropological approaches have responded to the continuing demand for natural resources by centring the social impact of extraction (Richardson & Weszkalnys 2014: 5), arguing that exploitation of resources is not a legacy of colonialism but its continuation through contemporary and evolving land relations (Mackinnon 2019; Liboiron 2021).

The research in this paper is informed by a review of stored collections, which prompted detailed examination of objects and documentation. This quickly revealed the limitations of our records and led us to carry out further research using archives and secondary literature. Our study forms part of wider plans at NMS to embed decolonial practice into everyday work. Imperial and colonial activities associated with our collections are being researched across departments (Voigt 2020; Laurenson 2023) and displays and labels are being changed to address historical bias. Moreover, collaboration with source communities has been taking place, and staff are taking part in anti-racism training.³

Towards Decolonizing the Museum

There is nuance and complexity to the word 'decolonization', with no universally agreed upon definition (Soares and Witcomb 2022). Definitions have been offered, particularly within anthropology (Bell 2022; Gray 2022; Liboiron 2021) and museology (Kreps 2011; Lonetree 2012), including one given by the International Council of Museums. The latter organization defines it as a 'process that institutions undergo to expand the perspectives they portray beyond those of the dominant cultural group, particularly white colonizers'.⁴ We have accepted this definition because we seek to expand and document the histories of the specimens beyond prevailing narratives that understand them as raw industrial materials. We authors acknowledge, however, that the use of the term 'decolonization' within a museum setting is contested (Tuck and Yang 2012; Weber-Sinn and Ivanov 2020). Scholars such as Kassim (2017) question 'whether large British institutions... can and should promote 'decolonial' thinking, or whether, in fact, they are so embedded in the history and power structures that decoloniality challenges, that they will only end up co-opting and collecting decoloniality'.⁵ Other scholars are more optimistic, noting the progression from 'initial recognition of the complicity of museums in colonialism to discussions of how to remedy the harm and the potential for transformation for the future of museums' (Wali and Collins 2023: 331).

Due to the complexity of the term *decolonization*, the phrase 'towards decolonization' (Soares and Witcomb 2022: iv) better reflects our work, acknowledging the ongoing and evolving processes needed to 'sensibly approach our collective colonial wound'. Through our research and practice, we aim to add to the work of decolonizing that is taking place in museums. Specifically, we are ensuring that the stories we tell are more complete, that they accurately reflect the diversity of voices within our collections and audiences, and that we are dismantling racist and colonial structures that are commonly perpetuated by our own systems.

Collecting and Colonialism

Formerly the Industrial Museum of Scotland, NMS was established in 1854 in the wake of the Great Exhibition of 1851, which stimulated widespread interest in industrial manufacture. The

museum began as part of the Department of Science and Art, a branch of the government that promoted education in industry, science, and art (Cole 1857: 4) (Figure 1).

The first director of the museum, Dr George Wilson (1818–59), aimed to collect and display the widest remit of objects relating to the ‘science of useful art’ (Wilson 1856: 3). This included industrial raw materials, equipment used in manufacture, and the resulting products (Swinney 2014: 134). Wilson took advantage of every possible contact to encourage collecting, utilizing a global network of Scotsmen. In 1856 the first accounts of international collecting appear in the records, with objects being sent from Western Africa, Chile, Minnesota, and Jamaica (Industrial Museum of Scotland 1856: 166).

The bulk of the museum’s collecting overlapped with British colonial activity. The role of Scots in the British Empire is well-known (Mackenzie and Devine 2011; Mackillop 2021), and their impact can be mapped onto the collection; Scottish geologists, traders, missionaries, scientists, medics, and military personnel acquired objects from throughout the Empire and shipped them to Edinburgh.



Figure 1: Edinburgh Museum of Science and Art, Great Hall pre-1875. © National Museums Scotland

This impulse to collect non-Western objects occurred across science and technology museums, as Samuel Alberti argues, to ‘emphasize the technological supremacy of Western culture’ (2022: 220). Wilson believed Britain to be the most advanced nation, and that gathering material from ‘savage technologists’ was necessary to complete the museum’s collection (Ash 1986: 49). Richard Finlay suggests that collecting the ‘other’ was a deliberate attempt by Scots to contrast their supposed superior national characteristics against those of ‘inferior peoples’ (1997: 18). Furthermore, the way in which these objects were displayed in museums, under Western classification systems imbued with power and authority (Turner 2020: 186), presented a public justification for expansion and imperial rule (Giblin et al. 2019: 471).

Recording Acquisitions

Understanding the collecting histories of a museum and the way it has recorded acquisitions is an important part of decolonizing practice. The documentation and classification of objects acquired within a Eurocentric framework often continue to reflect that imperialist structure (Turner 2020: 188). More specifically, NMS holds records of all object acquisitions from 1855 onwards in a series of registers. Those belonging to the early years of the museum's record keeping often provide little information about how objects came to be in the collection, beyond the names of donors and vendors, together with geographical notes. The use or purpose of an object is not necessarily described, and there are no references to wider human involvement in obtaining the objects.

Gaps in historical records are common, a reflection of whose voices and stories are considered important (Carter 2006; Hearth and Robbins 2024). This is true of mineral collections, in which 'museal silences' deny the human processes that brought the specimens from the ground and into the museum (Hearth and Robbins 2022: 13). Moreover, Das and Lowe note that these absences, 'perpetuate structural racism within modern society by whitewashing a history where science, racism, colonial power are inherently entwined' (2018: 4). Museal silences have several causes, as outlined by Mason and Sayner (2019). In the case of the Science and Technology mineral collection, 'museums thinking they have nothing to say' (Mason and Sayner 2019: 11) holds true; the objects have historically been viewed through a lens of technology and utility, concealing the human stories behind mineral acquisition (Hearth and Robbins 2022: 13). Only when a different viewpoint is considered can these 'hidden histories' be illuminated. Brief accounts of new acquisitions can also be found in the museum's historical annual reports, where the words 'Red Indian', 'native', and 'less civilised nations' are common. These are illustrative of the colonial attitudes at the time of acquisition and must be challenged: as Zeefuik and Modest observe, language used in museums is often exclusionary, constructing an 'us and them' relationship (2018: 38).

Racist and incorrect terminologies persist within institutional systems and understandings through time. These infrastructures organize knowledge and have material force (Turner 2020: 189), shaping both staff and audience understandings of the past. On a practical level, the UK Museums Association Toolkit for Decolonizing Museums recommends that museums 'develop collections management systems which can record diverse perspectives in non-hierarchical ways'.⁶ Indeed, Ananda Rutherford, postdoctoral fellow at the University of the Arts, London, stresses the importance of ensuring that systems of documentation and research, as well as institutional hierarchies, are designed for their specific purposes rather than replicating colonial systems.⁷

Empire and Minerals

Mineral resources have been defined variously, and these definitions are entangled with the outlook of the age in which they were given (Richardson and Weszkalnys 2014: 12; Ferry and Limbert 2008: 3). For our purposes, minerals are naturally occurring, and they become resources when people attach meaning and use to them, frequently for the creation of wealth.

It is no secret that the growth of the British Empire was fuelled by mineral resources from colonized territories. Profits from mining activities went to British businesses and paid for further colonizing efforts, whilst the resources themselves powered the industries of the Empire (Hearth and Robbins 2022: 13). Accordingly, the economic potential of mineral deposits was a powerful motivation to colonize a region (Gelsthorpe 2021: 21). By default, the mineral collection at NMS reveals attempts to exploit the resources of the Empire, although once in the museum, the minerals were regarded as more than economic resources. They were intended for display and education, to be used, explained Dr George Wilson, both in university teaching and to inform the wider population.⁸ Thus, as described by Richardson and Weszkalnys (2014: 11), the value of minerals has transformed as they travelled through different contexts and times. This process continues as we revisit these collections.

In the following section, we use provenance research case studies to reveal and engage with colonial histories. Provenance research is broadly recognized as an element in decolonization as it 'offers an opportunity to interrogate collections, asking how, why and

when each item was acquired'.⁹ Hugo deBlock emphasizes its importance, stating that only when a collection has been thoroughly researched 'will the museum be able to transform its careful blueprint of a decolonized museum into a more ambitious and successful exercise' (2019: 279). Provenance research is also an important component in the construction of object biographies, themselves powerful tools for demonstrating the dynamic capacity of specimens (Joyce 2015: 19) to illuminate the complexity of their own identities (Kopytoff 1986: 89) and the webs of relationships surrounding them. In 'Objects and the Museum', Alberti discusses how the object biography approach enables us to 'study not only what it means for an object to be in the museum...but also what is particular about the institutions that house them' (2005: 571). Our provenance research case studies begin to do that, but we acknowledge the difficulty identified by Kristin Weber-Sinn and Paola Invanov (2020: 69). It is challenging to maintain a critical perspective while conducting this research within an institution that does not fully accommodate an exploration of power relationships. Moreover, it can be hard to deviate from entrenched epistemologies.

Case Studies: Minerals in Depth

Specimens from Ulwar

The model in Figure 2, acquired by the museum in 1874, depicts several figures working in a copper smelting furnace. Records say that it came from Ulwar, now known as Alwar, India. While the date of the model's creation is not given, it can be assumed to come from the nineteenth century when the region was governed by either the East India Company or the British Raj. An examination of this object, which is one of a group of eight from the same donor, reveals inequality within the historic record, and highlights the challenges of constructing the narrative of a group or class of people whose written sources are not readily accessible to us (Chakrabarty 2000: 98).



Figure 2: Model of an iron smelting and puddling furnace from Ulwar. © National Museums Scotland

The model and its companions – another furnace model, and a selection of copper and iron ores, pyrites, and slags – were donated by Major Thomas Cadell (1835–1919). True to form, the register, database, and annual report give no further information about the locality,

method of obtaining the items, or the donor. Research must be carried out to give these items meaning beyond their use as illustrations of an industrial process. It is relatively easy to create a picture of the place of origin from a British perspective by using texts such as *Ulwar and its Art Treasures*, written by British Surgeon Major Hendley, which quotes a description of the region's minerals, penned by Cadell:

...[in 1873] there were then thirty iron-smelting furnaces in the State, which yielded about 536 tons of iron per annum of a quality very suitable for the production of agricultural implements. Copper is found in pockets in many places, but, as in so many other parts of India, is at present hardly worth the trouble of production, the foreign metal being so much cheaper (Hendley 1888: 16-7).

Cadell is a well-documented figure whose family were prominent in both Scotland and Colonial India (Jeffery 2020: 236). Cadell was a British Army officer and a recipient of the Victoria Cross for his role in the Siege of Delhi (1857). Later he was a political agent in Ulwar (1872–77) and ended his career as the Governor of the Andaman and Nicobar Islands (1879–92) (Jeffery 2020: 126). His writing and active contributions to collections mean that his voice has helped shape the historical record.¹⁰ His legacy can be explored in archives and museums, as well as at his family home at Cockenzie in East Lothian.



Figure 3: Copper and iron mining scene at Alwar, Rajasthan. Taken by Thomas Cadell. Public Domain. <https://commons.wikimedia.org/w/index.php?curid=39198069>

J. F. Watson's *Vienna Universal Exhibition 1873: A Classified and Descriptive Catalogue of the India Department* lists photographs taken and supplied by Cadell, which show copper and iron mining in Ulwar. At least one of these is now in the public domain (Figure 3), described as 'possibly depicting the entrance to Dareeba (sic) copper mine'.¹¹ The image and the figures accompanying the models are the only available representations of the people behind the extraction of minerals that are represented by Cadell's objects. The workers are unnamed; we know little of their lives, or of their perspectives on mining, although twentieth-century studies of industry yield insights into the impact of British economic and social structures on India (Karmakar 2015: 287).

At first glance, it is easiest to flesh out Cadell's story and to see mining in Ulwar from the British perspective. However, although constructing historical narratives 'involves the uneven contribution of competing groups and individuals who have unequal access to the means for such production' (Trouillot 1995: XXIII), there are ways to understand the perceived omissions. In the introduction to Rosalind C. Morris' edited volume *Subaltern Histories* (2010), the author reinforces the idea that silences stem from complex roots: 'historical circumstances and ideological structures conspire to efface the possibility of being heard for those who are variously located as the others of imperial masculinity and the state' (2010: 7). Understanding these roots is necessary to comprehend the narratives – or lack thereof – of objects and sources. For example, the British were not the longest-standing influence in colonial India. Pramatha Nath Bose (1855–1934), a geologist working for the Geological Survey of India, remarked on the impact of the caste system, which predated the British Empire by thousands of years. It affected the development of industry in India and determined the social classes of people who worked in it (Nath Bose 1896 :82).

The intertwining of Indian social categories with British colonial hegemony reveals why collaboration with descendants of source communities is increasingly employed within anthropology to form deeper, nuanced understandings of colonial objects, and to repair historic wrongdoing. Projects such as those highlighted by Joshua Bell demonstrate the power of such work and its ability to fill silences, address inequalities within the record, and ensure that complexity is tackled appropriately (2017: 250). A similar approach could be applied to the collection of objects donated by Cadell. We hope this would create an opportunity not only to acknowledge colonial links, but to work with local organisations and descendants of source communities to understand different historical perspectives, and to explore meaning that is embedded within our collection.

Exhibitions of Empire

The Great Exhibition of 1851 (Figure 4) and the International Exhibition of 1862, both held in London, represented key moments in the development of science and industry collections (Leapman 2001: 7). When they closed, many objects that had been on display were distributed to various British institutions, including the Industrial Museum of Scotland.



Figure 4: Frontispiece – The Transept, Dickinson's comprehensive pictures of the Great Exhibition of 1851, from the originals printed for His Royal Highness Prince Albert, Vol 2, 1854. Courtesy of the Ironbridge Gorge Museum Trust, Sir Arthur Elton collection

In 1862, museum director Thomas Archer (1817-1885) wrote directly to the commissioners of each of the colonial exhibits at the International Exhibition requesting that they send objects to Edinburgh:

I beg to point out to you the desirability of depositing some portion of these materials which illustrate the productive resources of your Colony in this Museum, which being established by the Government for the sole purpose of giving an impulse to the industrial pursuits and disseminating knowledge respecting the sources of industrial materials, is specially adapted to further the objects which the Colonial Governments doubtless had in view in sending their productions to the International Exhibition.¹²

This and similar earlier approaches were evidently successful, as the museum received large donations from the exhibitions. With respect to minerals, the museum's 1857 Annual Report (1857: 149) describes acquiring: 'from the Royal Commissioners of the Exhibition of 1851, massive specimens of the ores of iron, lead, copper, zinc, and cobalt'. Many of these are still in the collection, including specimens from parts of the former British Empire. The 1862 acquisition was even larger although many of the objects have since been deaccessioned.

The exhibitions are recognized as symbols of the British Empire, and it has been argued that the structure of the Great Exhibition established a hierarchy of nations and reinforced ideas of British superiority (Purbrick 2016: 1). This perpetuated the representation of people from source countries as others and supported British nationalism (Auerbach 1999: 189). Kriegel (2001: 169) describes, for example, how the subcontinent was portrayed 'alternately as a fertile land, an Oriental bazaar, a military threat and a colonized possession'.

Objects now at NMS that were part of the exhibitions' raw materials displays, along with the text of the 1851 catalogue, demonstrate that their places of extraction were only useful to Britain as resources (Auerbach 1999: 101). The raw materials were less important than the finished products they were used to make, further diminishing the importance of their origins. As Purbrick (2016: 6) proposes, 'the value of mined and mineral substances, such as iron, coal or copper, exist only in relation to their suitability for conversion into industrial formations, their incorporation into operations of human life in nineteenth century Europe'.

According to Grey, the 'selective choosing of exhibits in the Great Exhibition structured this difference between British industrial might and perceived 'backwardness' of production in places such as India and the Caribbean'.¹³ Taking these exhibits, placing them in collections, and keeping them for almost two centuries without redressing the way in which they were documented perpetuates colonial attitudes.

Even superficial research can suggest deeper stories. For example, some of the objects from the 1851 acquisition relate to copper mining in South Australia. These are products of a colonial process that, from the 1820s, displaced and dispossessed Aboriginal people, diminished their population, and made them reliant on 'colonial handouts' (Harris and LaCroix 2001: 426). At the same time, thousands of immigrant workers, such as miners from Cornwall, were settled in the area which came to export ten per cent of the world's copper by 1850 (Harris and LaCroix 2001: 435). This indicates a history of trauma and injustice, one which needs to be linked to the objects' records so that their story and context is understood to be more complex than that which describes them as raw materials or symbols of British imperial power.

Iron Ore from Sierra Leone

In 1946, the Keeper of the Technological Department, Alex Hutchieson (1892–1975), received samples of iron ore from Gartsherrie Ironworks in Coatbridge, North Lanarkshire, Scotland. The ores were used in the Gartsherrie blast furnaces and came from various sources, including Sierra Leone (Figure 5). At the museum, the ores were used to illustrate iron production in a redisplay of the Hall of Mining and Metallurgy.

Gartsherrie Ironworks was owned and managed by William Baird & Co. Established in 1830 by brothers William and James Baird, the company was a large enterprise, operating blast furnaces and a cement works at Gartsherrie, as well as coke ovens, collieries, and

a brickworks across Stirlingshire, Lanarkshire, and Dunbartonshire. By 1864, Gartsherrie Ironworks had thirty-six blast furnaces and employed around 10,000 people. At the time, it was probably the single largest producer of pig iron internationally.¹⁴



Figure 5: Iron Ore from Sierra Leone. © National Museums Scotland

The ironworks looked far afield to obtain the amount of iron ore they required. In 1927 the company became interested in iron ore deposits in Marampa Chiefdom in the Northern Province of the Protectorate of Sierra Leone. The ores were discovered during a geological survey carried out by the British colonial government in 1926 (Kaniki 1973: 74); the survey itself reflected colonial designs for resources that the territory could yield. In 1930 the Sierra Leone Development Company (DELCO) was established, obtaining mining rights over the ores. A British enterprise, William Baird & Co. owned 47.5 per cent of DELCO, as did Northern Mercantile & Investment Co. Ltd., whilst the remaining 5 per cent belonged to United Africa Co. Ltd.¹⁵

DELCO constructed a 52-mile railway to transport the ore from Marampa to Pepel, from where it could be exported to Britain, Europe, and the United States (Jarrett 1956: 156). The first shipment of ore, 24,000 tons, set sail in 1933. Bound for the United Kingdom, 8,000 tons of it was sent to Gartsherrie Ironworks (Dundee Evening Telegraph 1933: 3). Production quickly grew, and by 1941 over one million tons of iron ore was exported from the mine, half of which was shipped to Britain (Jarrett 1956: 156).

Mining at Marampa was labour intensive, with most physical work undertaken by a local African workforce housed in 'compounds' close to the mine. Reports describe the housing as basic, dirty, and overcrowded (Abdullah 1992). In contrast, white workers were offered skilled and supervisory roles, along with high wages and comfortable living quarters which included tennis courts, a club, and a bowling green (Sierra Leone Development Co Ltd 1938).

Low wages, poor labour conditions, and ill-treatment of African workers persisted in the early years of DELCO. Dr Siaka Stevens (1905–1988), former leader of Sierra Leone, worked for the Company from 1931 until 1946. Stevens described the working conditions as 'terrible', continuing: 'they worked strenuously for six days a week at a wage of 9d a day plus two cups of rice and a pinch of salt. They were little better than slaves' (Stevens 1984:

95-6). In 1935 and 1938 the miners staged strikes. Demands included a wage increase, a thirty-minute lunch break, uniform rates for overtime pay, and payment when absent from work due to an accident. Workers also complained of ill-treatment by European supervisors (Abdullah 1992: 27).

The ill-treatment reflected the lingering legacy of slavery, which had been abolished in the Sierra Leone Protectorate only in 1928 (Whyte 2015: 242). A British colonial official revealed that on arrival, European engineers were taught that 'all Africans are lazy, dishonest and thoroughly bad and above all, that they are devoid of human feelings and self-respect'.¹⁶ Bullying and force were deemed necessary.

Sierra Leone itself saw little benefit from DELCO operations. During this period of mining, between 1933 and 1975, 82.75 per cent of the total economic benefits generated went into British ventures, whilst 17.25 per cent went to Sierra Leone, which was allocated to labour wages, tribal authorities, and the Government (Hoogvelt and Tinker 1978: 73). The extraction of mineral resources and the exploitation of African labour continued to benefit DELCO, and to enrich industrialized Britain and Europe. However, no industrial improvements, particularly in iron and steel making, were developed in Sierra Leone (Swindell 1967: 346). In 1975, DELCO went into liquidation, caused by increasing financial pressures and by the deteriorating quality of the ores (Hoogvelt and Tinker 1978: 79). Its closure left behind a troubled legacy of unemployment, the mines having been the mainstay of Marampa's economy (Pijpers 2020: 114).

With regard to the iron ores from Marampa that entered the museum collection, and in line with the other case studies, the registers provide little detail. However, new research, such as the information presented above, has revealed a more complete and complex picture, not simply of the raw material from which iron was made, but also of practices of mineral extraction for the economic benefit of the British Empire at the expense of a local workforce.

Taking Action

We have demonstrated that research can enhance understanding of the inhabitants of regions from which objects in our collection were extracted (Ferry 2013: 9), and that the silences within documentation perpetuate colonial structures. In attempting to fill these gaps in the records, it has become evident that, while archival research can give insight into the colonial activity and create a more textured understanding of these items' provenance, it is often easier for researchers in the UK to learn about the collectors than about those who laboured to extract, and whose lives were often ruled by imperial power. This is a position that is replicated across many collections (Ferry 2013; Gelsthorpe 2021).

The practicalities of embedding this new research into NMS's systems are complex. The Colonial Histories and Legacies Action Plan 2022–2025 commits to 'identify, understand, challenge and engage with imperial and colonial histories associated with our collections' (2022: 1). This tends to focus on high-profile changes to interpretation, as well as funded projects that will deliver immediately visible results. Research and routine additions of information to records during essential collections care and documentation enhancement tasks can be harder to make time for as curators' roles become increasingly stretched. As we hope this paper has shown, however, these processes can reveal enlightening stories that ought to be captured and transmitted to our audiences. In doing so, we can contribute towards bringing about a decolonized collection that is more befitting of an inclusive, twenty-first century museum, and we can demonstrate a depth of knowledge that will have a lasting legacy.

As we continue with work in the stores, we must be mindful of provenance, taking time to note it as we sort through records, before delving deeper into its implications. We must also record what we find and acknowledge any shortcomings. For example, we will use our collections database and wider documentation systems to record what we have discovered about Cadell and Ulwar, but we must also endeavour to place this information in the context of the wider impact of the British Empire in India. Reflecting on extractive industries, we must leave space to add voices from source communities whenever we have an opportunity to do so. For example, we will record what our research has revealed about DELCO's operations in Sierra Leone and the depth it adds to our understanding of the colonial experience; we

will also contextualize objects from the Great and International Exhibitions, challenging the attitudes they helped to shape.

As practitioners, we will work with our Collections Data and Digitisation team to review our existing systems and discuss how we may appropriately adapt them. It will be an opportunity for interdisciplinary learning from our colleagues working with ethnographic collections in the department of Global Arts, Culture and Design, who have expertise in this area. This work will enable us to share our findings through our online database, publicly acknowledging the problematic nature of our historic documentation. Hannah Turner states that the museum database is the 'internal mechanism of the museum', and highlights that online access gives the impression of access to the 'raw data' of the collection (2020: 189), while Haidy Geismar asserts that digital documentation systems now have more intellectual authority than objects themselves, so it is essential that this data tells a complete story as it directly impacts public knowledge (2018: 111).

Sharing with organisations and researchers in countries of origin is of vital importance as well.¹⁷ It is only by disseminating our findings that the specimens will be meaningful outside our own individual contexts, and that we will identify opportunities to collaborate more broadly. Such collaborations will be complicated, as will the decisions about how the gaps are to be filled. Bell, however, offers an example of using objects in collaborative approaches to decolonize collections (2017: 250). In recounting a case study in which Yup'ik elders encountered nineteenth-century objects in a museum in Berlin, Bell describes the results as 'personal and communal remembrances, songs, and the telling of stories by the delegation, all of which helped enliven the collections and empower the elders to return to their communities with knowledge about their displaced heritage'. The opportunity to accomplish something similar with our collections and to make reparations by reconnecting objects with their source communities is compelling.

Contemporary Collecting

As centres of knowledge production for our audiences, museums have a duty to counter the impression that colonial extraction was purely an historic event. We are as dependent today on extractive industries underpinning production and consumption as ever. Technologies, from lighting and transportation systems, to personal electronics, require minerals that are obtained through extraction activities (Jacka 2018: 62), the impacts of which range from ideological disputes to armed conflicts and loss of life, livelihoods, and environments (Ballard and Banks 2003: 289).

Lee Mackinnon frames processes such as the extraction of cobalt and lithium in the Democratic Republic of Congo as a continuation of exploitative colonial practices: 'the digital revolution [is] reliant upon a legacy of violent expropriation that reiterates racist and classist attitudes...the spectacle and effect of technical supremacy still manage to efface the ethics of production in the manufacturing of technics' (2019: 3-4). James Smith uses the phrase 'economic colonialism' to encapsulate the situation (2015: 6), and Mantz (2008) paints a similar picture of the extraction of coltan, another essential mineral in the digital world. All are united in understanding these as legacies of historical extraction patterns.

Researching the mineral collections at NMS has prompted us to consider whether museums can play a part in addressing such injustices by using collections, documentation, and interpretation to educate. Museums can promote a mindful approach among visitors, making them more aware of technology consumption and the exploitation of labourers while inspiring innovation or activism. The starting point is to educate ourselves about our practices for collecting contemporary technology. NMS's communications collection, for example, charts the history of telephony from its beginnings through to up-to-date smartphones packed with precious metals. We also pride ourselves in the sector-leading work we have carried out in contemporary collecting around technologies that were developed in response to climate emergency and biodiversity loss. The documentation does not, however, chart the impact of these items on the people whose homes and livelihoods have been disrupted through their production and use. A framework for doing so needs to be created as carefully as the one used to record human stories around existing settler colonial collections. The postcolonial

timing of our contemporary acquisitions will necessitate a different approach, and facilitate the production of a richer narrative from the beginning. The Science and Technology Department could look to NMS colleagues working with historic and contemporary ethnographic collections to learn best practice in this area,¹⁸ as well as beyond our institution to others decolonizing mineral and industrial collections. The work taking place at Manchester Museum (Gelsthorpe 2021) and Leeds Industrial Museum provide just two of many examples.¹⁹

Conclusion

Preliminary provenance research has shown that minerals within the Science and Technology collection are intrinsically linked to colonial activity. Furthermore, gaps in the museum records, and a lack of examination or revision of documentation since the point of collection, have resulted in our information systems reinforcing and perpetuating the attitudes that structured the Great and International Exhibitions of 1851 and 1862. These are recognized as shows of British dominance and tools for constructing an Imperial British identity. These shortcomings must be addressed because our data shapes staff and audience knowledge, and limits the information available to source communities. While a more extensive study of our documentation is required to learn the full extent and nature of these gaps, the case studies suggest an obvious lack of context, particularly concerning the people and labour that led to these minerals being in our collection. Research more readily reveals the stories of the Scottish men who were involved in the former colonial countries than it does the stories of source communities and local workers, although the papers relating to DELCO demonstrate that hidden histories can be uncovered, and should be recorded to create fuller and nuanced narratives.

Conducting research to fill these gaps retroactively will be a massive and methodical undertaking that ought to be prioritized by the institutional decolonization plan. Findings must be made public as quickly and transparently as possible and discussion should be encouraged. Part of the research should involve the identification of the descendants of source communities with whom work should be shared. Our intention is to form partnerships with these communities in order to enhance historical records belonging to both parties in the most sensitive and appropriate ways, going beyond simply acknowledging a lack of information.

Studying a collection of industrial minerals has the potential to add a different dimension to the growing body of work concerning the provenance and decolonization of natural history mineral collections. Moreover, violent and exploitative extraction of resources continues to structure our present global order (Giblin et al. 2019: 471). Yet we believe that we have an opportunity to use our role in creating a record of contemporary material culture to confront current injustices, record nuanced narratives, inspire discussion and action among our audiences, and perhaps most of all, remediate current injustices.

Notes

- ¹ Geraldine Kendall Adams, 'Black Lives Matter: One Year On', The Museums Association 2021. <https://www.museumsassociation.org/museums-journal/analysis/2021/05/black-lives-matter-protests-one-year-on/>, accessed 8 July 2024.
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- ³ National Museum Scotland, 'Colonial Histories and Legacies in our Museums', National Museum Scotland 2024. <https://www.nms.ac.uk/collections/colonial-histories-and-legacies/>, accessed 22 September 2023.
- ⁴ International Committee for Collecting, 'Decolonizing as a Verb', International Committee for Collecting 2020. <https://comcol.mini.icom.museum/special-projects/decolonizing-as-a-verb/>, accessed 15 January 2024.
- ⁵ Sumya Kassim, 'The Museum will not be Decolonized', Media Diversified 2017. <https://mediadiversified.org/2017/11/15/the-museum-will-not-be-decolonised/>, accessed 11

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- 6 The Museum Association 'Collections, Part Two', The Museums Association (n.d.). <https://www.museumsassociation.org/campaigns/decolonising-museums/supporting-decolonisation-in-museums/collections-1/>, accessed 28 September 2023.
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