Industrial kimberlite diamond mining in the Kono District, Sierra Leone. Despite existing local knowledge, discovery of diamonds in Sierra Leone has been incorrectly credited to British geologists since the 1930s

Decolonising UK Earth Science

Rebecca Williams, Keely Mills and Anya Lawrence reflect on the recent Decolonising UK Earth Science workshop and how examining our past can shape the future of geoscience

THE FOUNDATIONS of a subject shape the way in which knowledge is created and who is allowed to generate and access this knowledge. The historical roots of modern, western geology lie in early colonial principles; reflecting Europe's colonial expansion throughout the 18th to 20th centuries (Rogers et al., 2022). In the UK, many institutions, including the Geological Society, British Geological Survey (BGS), and several universities, came to prominence during a time when geological exploration for resource extraction was a powerful tool in colonial expansion. The Arts and Humanities and Natural Environment Research Councils (AHRC and NERC) project '*Decolonising UK Earth Science pedagogy – from the hidden histories of our geological institutions to inclusive curricula*' (which ran from January 2022 until October 2023; ukri.org) aimed to collaboratively explore how the foundations of Earth science were built and how this legacy creates modern-day inequity in our discipline. In this context, decolonisation involves an examination of the limitations, biases, and omissions within Earth science curricula, with the aim of creating a more inclusive and just education system. By decolonising Earth science curricula (what we teach) and pedagogy (how we teach), we can work toward dismantling inequity.

In September 2023, the Decolonising UK Earth Science team (www.decolearthsci.com) held a workshop to share insights from the project and invite others to share their experiences. Held at the BGS in Keyworth, Nottingham, the diverse range of speakers included decolonial scholars, historians, and Earth scientists. There were 50 registrants, from the UK and 14 other countries, spanning academia, industry, and the museum sector, including the Society, NERC, BGS, and Royal Geographical Society with the Institute of British Geographers.

Decolonising the curriculum

In a 2020 study, Marín-Spiotta and colleagues argued that any action to increase equity, diversity, and inclusion needs to start with an examination of the historical roots of contemporary exclusion and to specifically acknowledge the colonial past of the discipline. Momentum has been growing over the concept of decolonisation in the UK, with recent calls from scholars, student groups, and activists to decolonise our institutions and curricula. Decolonisation within the geosciences is a wide and growing field; with clear links to many fundamental areas of geoscience, such as mineral exploration, resource extraction, fossil collecting, and geological naming conventions. Partly due to the wide scope of the subject, many Earth scientists are unsure of what decolonisation means for the geosciences.

The 2022 update to the UK

Quality Assurance Agency's Subject Benchmark Statement for Earth Sciences, Environmental Sciences, and Environmental Studies urged these degrees to pay "due regard to decolonising the curriculum, including challenging conceptual frameworks and dismantling subject practices that perpetuate inequities", while the Society's degree accreditation asks that graduates have "global perspectives on the historical development of the geosciences and how these influence the modern discipline". Although there is a documented diversity crisis in Earth science in UK Higher Education (Dowey et al., 2021), Earth scientists of various underrepresented and intersecting identities have always existed; their histories have just been hidden.

Workshop discussions

At the workshop, Steven Rogers (Keele University) placed 'decolonising the curriculum' into the context of geoscience (for full discussion, see Rogers et al., 2022). Decolonising the curriculum is a concept concerned with epistemology (how knowledge was and is produced) and why we include or exclude certain knowledge within our discipline. Knowledge is powerful; excluding certain groups from creating or obtaining knowledge can leave them powerless, thus creating power imbalances that are perpetuated. Decolonising the curriculum is a complicated and varied concept, which is often misconstrued. It does not seek to ban certain works or authors, vilify past individuals, or erase the past. It is also not about looking to diversify for the sake of diversity – decolonising the curriculum is not an extended reading list!

Within geoscience, effectively decolonising the curriculum requires an exploration of the history of our subject in the context of ethics and social justice and recognising other knowledge systems. Alongside interrogating the bias of knowledge production in the Global North, considering global perspectives and indigenous knowledge will deepen geological understanding. Through challenging unethical practices, such as 'parachute science' (whereby science is conducted by researchers from another country with little local involvement) and illegal specimen extraction, we can teach students about land law and →

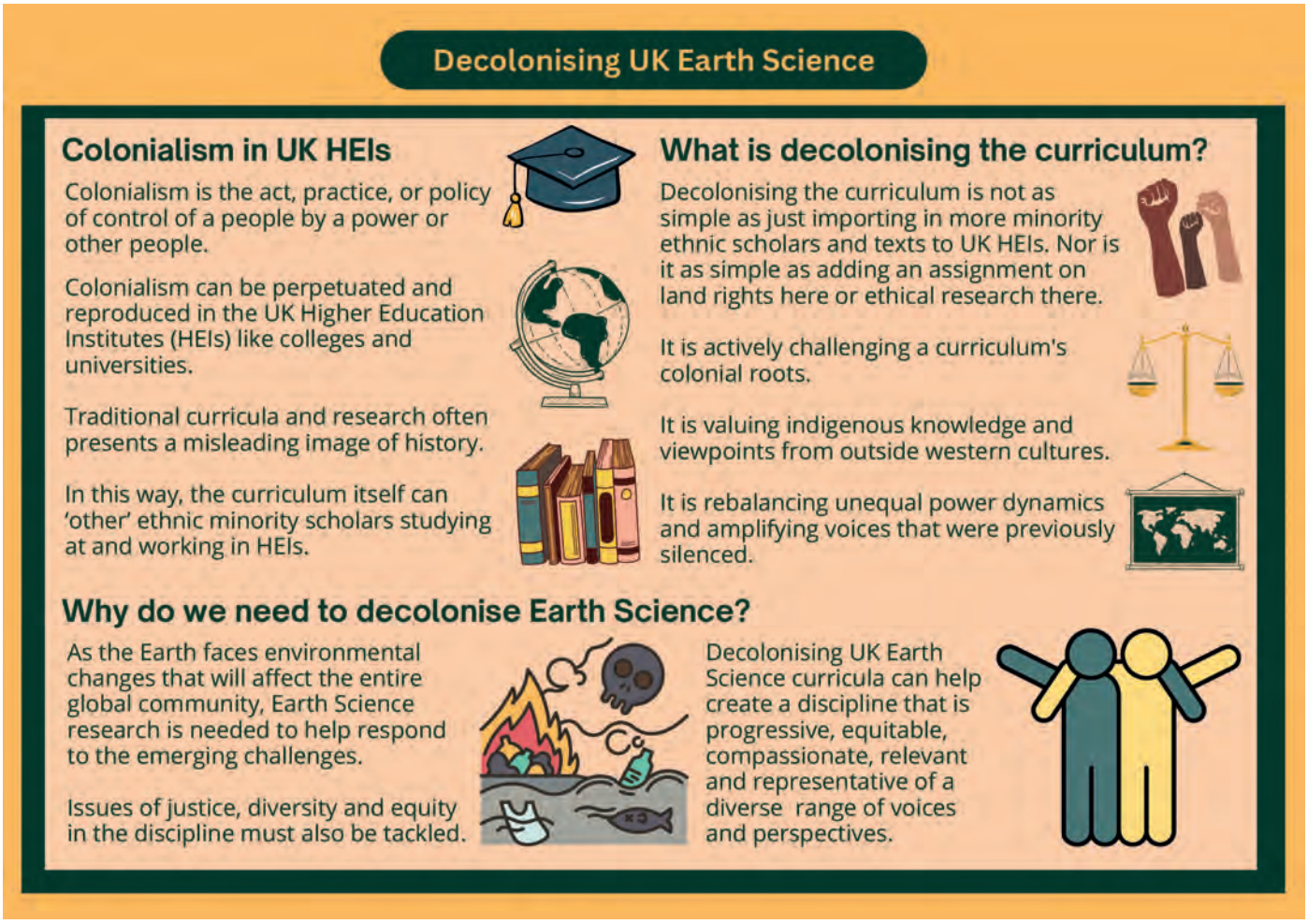

Figure 1: Infographic, which is an excerpt from one of the free educational resources available on the Decolonising UK Earth Science website, aimed at helping Earth science programmes introduce the topic of decolonisation. *(Credit: Anya Lawrence and the Decolonising UK Earth Science project)*

how concepts of land ownership differ. Exploring the historical economic drivers for resource extraction could also train our future geoscientists in responsible, sustainable extraction. As we seek to understand climate change through Earth's history, we can consider how climate change is not apolitical and address it as a social justice and colonial issue. Anya Lawrence (University of Hull) shared open educational resources (produced by the Decolonising UK Earth Science project) aimed at helping Earth science programmes introduce these topics (Fig. 1).

During a reflection session, panellists brought together their various approaches and aspirations for decolonising the curricula in their institutions. We heard from M. Satish Kumar (Queen's University Belfast), whose scholarship is grounded in colonial, postcolonial, and decolonial geographies; Natasha Dowey (Sheffield Hallam University) and Steven Rogers, Earth scientists who have adopted a decolonial approach within their own programmes; and Cassius Morrison (University College London), a palaeontology PhD student. A key theme of the discussion was that of decolonising the curriculum being a reflective process, and not a quick fix or a tick-box exercise. Other disciplines, such as geography, have been considering this concept for much longer than the geosciences and there are important insights to be learned from them. There is a rich literature exploring the links between geography, colonisation, and decolonisation, which has led to a reimagining of the discipline as one with dismantled power structures, fostering more hopeful geographies (Clayton & Kumar, 2019) where we go beyond including diverse voices to reimagining the discipline from diverse perspectives (Radcliffe, 2017). However, geography also reminds us that decolonisation should be radical, committing to anti-racism and taking apart colonial structures and practice to "establish a more progressive discipline" (Esson et al., 2017). The discussion highlighted two important

methods: the co-creation of material with students, which can enrich teaching for both students and teaching staff, and the opening of access to those who have been traditionally excluded from the discipline.

Historical perspectives

During Britain's industrialisation, British geologists were celebrated for their pioneering work and credited with the discovery of economically significant minerals in Africa. Munira Raji (University of Hull, now Plymouth) explored this history, revealing how archival research shows that many of these mineral resources were already used and mined locally and that local knowledge underpinned these resource 'discoveries'. Still, history has omitted the contributions of the Africans involved in these mineral discoveries and the existence of any indigenous geological knowledge. Furthermore, following 'discovery' by colonial powers, local use of these resources often ceased. For example, after the British geologist, Major John D. Pollet, reported the discovery of diamonds in Sierra Leone in 1930, digging for minerals by native Sierra Leoneans was made illegal by the colonial government of Sierra Leone. The government granted exclusive mining rights to the Sierra Leone Selection Trust, a subsidiary of the British-owned Consolidated African Selection Trust (Zack-Williams, 1982; Wilson, 2013). Munira Raji proposed that it is time to change the narrative from one of discovery to one of exploitation.

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Understanding the past practices of Earth scientists can be key to improving how we behave in the future. Jenni Barclay (University of East Anglia; now University of Bristol) presented findings from the Curating Crises project (https://curatingcrises.omeka.net), which uses the example of volcanic crises in the Eastern Caribbean to explore UK colonial influences on the circulation of geological knowledge. Nick Evans (University of Hull) also argued that debates surrounding the decolonisation of Earth science need to expand their attention to geology beyond 1945, and not be confined to the Imperial era, since the role of geologists in the process of decolonisation post-World War II has received scant scholarly attention. As geoscientists, by reckoning with the colonial legacy of our past and its continued perpetuation, we can seek to normalise working with local knowledge, outside the boundaries of (Western) Earth science. In turn, this could lead to more ethical, equitable, interdisciplinary work, better preparing geoscientists for current global challenges. Keely Mills (BGS) discussed how the BGS is implementing these principles in their policies and ways of working.

Moving forwards

Reckoning with the history and present-day practices of Earth science was challenging, at times uncomfortable. But it also opened a positive discussion of how we can envisage the future of our discipline. Geology has been an important aspect in all global societies and will continue to be in the future. Many communities and cultures, past and present, have deep connections to geological locations, to fossils or minerals. Anjana Khatwa (Wessex Museums) closed the workshop by exploring the myriad ways that people connect to geology and the origins of our relationship with rock, in all its forms. There is much to learn from these connections, and they should give us pause for thought in geological teaching, research, exploration, and exploitation. Then too perhaps we can reimagine a more hopeful, inclusive Earth science discipline.

If these topics interest you, we are building a Decolonising UK Earth Science community. For links to our Discord server, social media, website, and free educational resources, visit: https://linktr.ee/decolearthsci

FURTHER READING
A full list of further reading is available at geoscientist.online.

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