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Race, material culture, and the global history of science

Author

James Poskett

University of Warwick

Contact

Address: Department of History, University of Warwick, Humanities Building, University Road, Coventry, CV4 7AL, United Kingdom.

Email: j.poskett@warwick.ac.uk

Abstract

In this article I discuss three major themes raised by reviewers of my book, *Materials of the Mind: Phrenology, Race, and the Global History of Science, 1815–1920* (Chicago, 2019). In turn, I analyse the place of race, material culture, and global history in the writing of histories of science. I also reflect on some of the broader disciplinary and institutional challenges of writing global histories of science today.

Keywords: History of science; race; material culture; global history; phrenology.

1. Introduction

‘One can either debate the possibility of the sociology of scientific knowledge or one can do it.’¹ The historian of science Steven Shapin wrote these words in 1982, in what went on to become one of the most highly cited articles in the discipline. Shapin was expressing his frustration that, despite years of theoretical debate concerning the value or otherwise of writing

sociologically oriented histories of science, there were very few concrete examples of this approach in action, particularly when it came to monographs. It was a very similar frustration concerning the global history of science which motivated me when writing *Materials of the Mind*.

In 2010, Sujit Sivasundaram edited a special issue of the leading history of science journal, *Isis*, setting out the case for a ‘global history of science’.² The special issue was accompanied by a number of articles, some more theoretical, others more empirical, all crucial to my own thinking about these issues.³ When I read this special issue, having recently completed an undergraduate degree at the Department of History and Philosophy of Science at the University of Cambridge, I was excited. Sivasundaram expressed with great clarity a problem that I had only a vague sense of as an undergraduate. Ironically, Shapin’s programme, calling on historians of science to write localised social histories, had by 2010 become far too successful. Intellectual content, everyone agreed, was a product of social context. Article after article, monograph after monograph, solemnly reminded us that science was made in local social settings.⁴ But as Sivasundaram noted in his 2010 article, ‘in focusing on local histories something important has been lost.’⁵ More often than not, these ‘local histories’ turned out to be European or North American case studies. Even when historians of science turned to the wider world, including colonial settings, these were typically neatly demarcated from elsewhere by the bounds of either the nation, colony, or region. ‘The discipline has become fragmented, so that it has become difficult to bridge the gap between European and North American histories of science and a historiography that may be classed as imperial, transnational, or regional,’ argued Sivasundaram back in 2010.⁶

I was utterly convinced that Sivasundaram was right. It seemed to me that what we needed to do was to put this programme into action. Or as Shapin might have put it, to ‘do it’. Yet what happened next was strange. Rather than writing global histories, historians of science

continued to talk about doing it. We talked a lot. *Isis* published a number of special issues, including another in 2015 dedicated to ‘Connecting and Globalizing History of Science, History of Technology, and Economic History’.⁷ Other journals published similar position pieces, with much of the time spent discussing theoretical and methodological issues that were, to my mind, pretty well covered by Sivasundaram’s original contribution.⁸ The global history of science, some authors claimed, sounded like an alright idea on paper, but risked ‘turning away from analyses of power,’ as my now-colleague Sarah Hodges put it. There was a fear that it might lead ‘to scholarship that reproduces rather than critiques globalisation.’⁹ I was often asked during my PhD whether I had read Hodges’s influential article, ‘Global Menace’, from which I quote here, the implication being my attempt to write a global history of science was doomed from the start.

There is nothing wrong with theoretical or methodological discussion. I found much of this work useful when thinking about my own project, and *Materials of the Mind* contains a relatively dense section of theoretical analysis in the introduction, making the case for what I see as the key features of a global history of science. Additionally, many of the special issues I mention above did contain more empirical articles, which put some of the theory into practice. But by and large, the global history of science in the 2010s faced the same problem that the social history of science faced in the 1970s. There were, and still are, very few book-length examples of the global history of science in action. And anyone caught trying to write a global history of science, particularly as a PhD student, will be reminded time and time again that there are good reasons for not doing so. *Materials of Mind* was intended as a corrective to that. I wanted to show that it is viable to write a global history of science as a first book, and that the very valid concerns expressed by scholars such as Hodges could be effectively dealt with.

With all that said, now feels like a good time to look back and reflect on what was successful and what was not. I am extremely grateful, indeed honoured, to have been invited

to take part in this collection of essay reviews by the editors of *Global Intellectual History*. I would also like to thank the four reviewers for their careful reading of my work and their very generous comments, all of which made me think harder about this topic. The reviewers—including a historian of the French Empire, an intellectual historian, a historian of science, and a historian of colonial psychiatry—brought a breadth of expertise which has been an immense help, particularly in drawing out how different sub-disciplines might read my work. In responding, I have divided my thoughts into three sections, which reflect both the themes of *Materials of the Mind* as well as the major points raised by the four reviewers. In turn, these are: race, material culture, and global history.

2. Race

A number of reviewers, including Alice Conklin, raised the issue of whether phrenology was a racial science or a mental science. Traditionally, these two historiographies, particularly when it came to phrenology, were treated as distinct. On the one hand, as Ian Stewart notes, there were histories of phrenology that treated it as one of the various mental sciences, or broader ‘cultural fads’, of the nineteenth century, such as mesmerism and spiritualism. These histories tended to say very little, if anything, about phrenology as a racial science. One might point here to Shapin’s own classic study of phrenology in early nineteenth-century Edinburgh, which gave a fine-grained analysis of social structures in terms of class, but said nothing about race.¹⁰ On the other hand, there were histories of phrenology which treated it very much as a racial science, grounded in the violence that underpinned the collection of thousands of human skulls. Kim Wagner’s excellent article on the ‘Thugee’ skulls collected by phrenologists from executed colonial subjects in early nineteenth-century India is a good example of this kind of work.¹¹

In *Materials of the Mind*, as Stewart identified, I tried to collapse the distinction between the mental and the racial. ‘Phrenology was both a mental science and a racial science,’ I argued in the introduction.¹² And it wasn’t just that phrenology happened to be both a science of the mind and a science of race. Rather, over the course of the nineteenth century, the distinction between a mental science and a racial science completely broke down. It was no longer possible by 1900 to talk about the mind in a way that did not imply some kind of racial hierarchy or classification. All this, I think, helps explain and foreground much of the important historical work on the racialised nature of twentieth-century mental sciences, such as psychoanalysis and psychiatry, amongst others, that Sloan Mahone has done much to highlight.¹³

Why then did this distinction between mind and race start to break down? A number of reviewers helped identify something that I should have made much more explicit. Mahone in particular noted how ‘phrenology’s openness to amateurs meant that it spread wherever racially deterministic ideas were in play’. Conklin too hints at the importance of ‘humbler folk’ to my history. Indeed, it was the ‘popular’ nature of phrenology—something I chart on a global scale—that helps explain how and why older philosophies of the mind started to become much more powerful, as well as divisive, in the nineteenth century. Similarly, as Stewart notes, the changing nature of European and American imperialism, as well as debates over slavery and abolition, gave ‘a new sense of urgency to old questions’. Ultimately, neither the materialist nor the racial aspects of phrenology were new in a basic intellectual sense. Philosophers throughout the Enlightenment, and before, had discussed the question of whether the mind was material.¹⁴ And the notion of arranging humans into some kind of racial hierarchy certainly predated phrenology.¹⁵ But as I argued in *Materials of the Mind*, intellectual content alone does not determine how an idea is put to use. It was only in the nineteenth century, with the industrialisation of communication, and the development of new audiences for science, all tied

to the growth of European and American imperialism, that it started to become impossible to think of the mind as anything other than a marker of race. Or, as Stewart neatly summarises, ‘Phrenology emerged as part of a globalising process that helped to produce many of the very inequalities for which race science has tried to account ever since’.

My approach to the distinction between mental science and racial science also goes some way to explaining one of the problems raised by a number of reviewers. Both Conklin and Stewart criticised me for not being clear enough about ‘what phrenology was’ and therefore how it ‘shaped “race” as an idea’. Conklin and Stewart also noted that there is a surprising lack of ‘intellectual history’ in *Materials of the Mind*. This is a fair point, and I concede I did not spend as much time as I could on teasing out the intellectual content of phrenology from the outset. However, this was in part a conscious choice. Like many historians of science, I wanted to assume as little as possible about the intellectual content and coherence of the particular scientific discipline I was dealing with. Instead, I hoped to show the sheer variety of ideas and practices that could pass for phrenology during the nineteenth century. My chapter on the publication and reception of Samuel George Morton’s infamous *Crania Americana* (1839) engaged with this most directly, exploring how what counted as ‘phrenological’ was often unclear and contested at the time. The phrenologist George Combe was adamant that *Crania Americana* was a work of phrenology. The ethnologist James Cowles Prichard was adamant it was not. Morton himself sat somewhere in between these two extremes. In the end, I was reluctant to resolve this debate in the present. I didn’t want to decide whether phrenology was indeed a racial science, like ethnology or craniology, or a mental science, like psychiatry or mesmerism. For better or worse, I left that question unanswered. Necessarily, as Stewart notes, this meant I had less to say about the place of phrenology in the intellectual history of race.¹⁶ Instead, I chose to focus on where I thought, and still think, that race is made and is made to matter—through action and practice.¹⁷

Another major theme of *Materials of the Mind* is the place of non-European peoples, including those who were colonised and enslaved, in the history of racial science. As John Lidwell-Durnin noted, I wanted to show the agency of non-European actors in this history, but without losing sight of the ways in which phrenology ‘served the racist and oppressive goals of empire’. Mahone too noted how enthusiasm for phrenology could be ‘both extra-European and non-white’. In the end, the way I dealt with this theme was again through a focus on practice, action, and use rather than ideas alone. The basic phrenological ideas promoted by slaveholders, abolitionists, African Americans, and West Indian phrenologists were not radically different, but the uses and political acts that went with these ideas were often diametrically opposed. Another way that I approached this theme was through a close analysis of different kinds of agency, as well as the limits placed on that agency. There turned out to be a really broad range of ways in which colonised and enslaved peoples shaped, reworked, and contested phrenological understandings of race and mind. In my chapter on skull collecting, for example, I used the work of historical anthropologists to show how existing indigenous notions of identity, alongside cultural practices surrounding death, shaped phrenological ideas about Inuit, Kandyian, and Egyptian character. Later in the book, in my chapter on letter writing, I discussed how African American writers selectively adopted and critiqued phrenological understandings of race. And in the chapter on periodicals, I explored how Bengali medical students turned phrenology against both the colonial state and conservative Hinduism as part of a broader vision for the reform of world society.

Of the four reviewers, Conklin argued that this approach was not really novel as I seemed to think. She highlighted the work of a number of earlier scholars, such as Bruce Hall, who had already charted the development of racial ideas beyond European thinkers.¹⁸ Conklin is right. There has been a great deal of work over the past decade or so on the development of racial thought beyond Europe, including in Latin America, China, Turkey, and India, amongst

other contexts.¹⁹ I would still argue, however, that this kind of approach has not been taken up in earnest by historians of science, although there are of course a number of exceptions.²⁰ It is only very recently, with the work of scholars like Britt Rusert, who Conklin cites, that historians of racial science have started to engage seriously and consistently with the agency of non-European, colonised, and enslaved peoples.²¹ And historians of science do bring something particular to this historiography. Much of the existing history of race beyond European contexts is written in the mode of intellectual history, with little attention, if any, to practice or action. There is also still a tendency to write these histories within closed national, colonial, or regional contexts. Historians of science are therefore in a good position to build on this earlier work, which recognises the place of race outside of Europe, by combining it with some of the core tools of our own discipline, such as a focus on material culture, practice, and circulation. For my own part, since writing *Materials of the Mind* I have learned a lot from the work of scholars including Projit Bihari Mukharji, Elise Burton, and Sebastián Gil-Riaño, amongst others.²² Ultimately, whilst this kind of approach might not be new to a historian of empire like Conklin, it is relatively novel for most historians of science, and I believe there is still much to be gained by greater attention to it.

3. Material culture

Most of the reviewers appreciated my focus on material culture, which of course, as the title suggests, was at the heart of *Materials of the Mind*. Particularly when dealing with a science that itself professed to be materialist, I thought it was important to take seriously the material world in which phrenologists lived. I deliberately adopted an expansive definition of what constituted material culture, studying letters, books and photographs alongside museum objects such as skulls and plaster casts. This was to get away from the unhelpful idea, perpetuated by much of the existing work on material culture, that the ‘material’ is located only within museum

collections. Instead, I argued, ‘material culture should be treated as a continuum’.²³ In fact, I tend to think in terms of a ‘material world’—incorporating infrastructure, environment, and labour, as well as non-museum objects—rather than just ‘material culture’, which tends to be confined to the museum.²⁴

As my earlier discussion of race indicates, my focus on materiality was also part of an attempt to ground what could very easily have been a purely intellectual history in the real world of action. This in turn was my way of addressing the concerns of scholars like Hodges who worried that global histories of science would ignore the place of power. By concentrating on objects—how they were made, who owned them, who had access to them, where they moved, and who controlled that movement—I tried to show not only the presence of inequalities of power, but also how these power differentials developed and manifested themselves in practice. At the beginning of the book, I highlighted these differences in power in material terms by contrasting the lives of a Barbadian phrenologist named W. D. Maxwell, who was descended from enslaved Africans, and George Combe, the wealthy Edinburgh lawyer who did more than anyone to promote phrenology on the world stage. As a number of reviewers noted, and as I concluded the book by arguing, the globalising world of nineteenth-century empire and capitalism produced the very power relations that phrenologists like Combe sought to analyse and, ultimately, naturalise. Maxwell, although promoting the same ideas as Combe, spent much of his life struggling against these inequalities, particularly the racial inequalities which characterised the post-emancipation Atlantic.²⁵

The place of power in this history is highlighted throughout Mahone’s essay review. I found her discussion of the relationship between material culture, violence, and memory particularly illuminating. Drawing on her expertise in the history of colonial medicine, Mahone pushed these themes much further than I did in *Materials of the Mind*. Mahone’s starting point is a reflection on the disconnect between the enduring nature of the material artefacts associated

with phrenology and the meanings associated with them. Today, you can buy a reproduction phrenological bust for a few pounds on the internet. They pop up, as Stewart also noted, in all kinds of contemporary popular culture—from sitcoms and cartoons to Hollywood blockbusters and celebrity biographies. Then there are the actual historical sources—the collections of skulls, the antique busts, the thousands of letters held at the National Library of Scotland, the hundreds of thousands of phrenological books printed during the nineteenth century sitting on library shelves in institutions across the world. Once you start looking, it can sometimes feel hard to escape the material culture of phrenology.

Yet despite this, or indeed, as Mahone argues, because of this, the more sinister aspects of the history of phrenology are quickly forgotten. This is not something I had really reflected on in great detail until I read Mahone's review. The history of phrenology, she argues, is in fact a story of how a science absolutely grounded in the world of racialised and colonial violence nonetheless came to be thought of as 'a benign intellectual game'. The tendency to treat phrenology as just another a parlour game, a Victorian fad, or a bit of kitsch design, is part of a long history of the 'concealment of violence', Mahone suggests. *Materials of the Mind* therefore works to 're-entangle' phrenological material culture with that history of violence, to show how the parlour game and the power relations were in fact produced together. A good example of this, I think, is the use of phrenological evidence in court cases surrounding the Fugitive Slave Act of 1850 in the United States. In this instance, the classic phrenological parlour game of guessing someone's character whilst blindfolded was actually repeated in front of a courtroom. The leading American phrenologist Lorenzo Fowler was called as witness to a court case in New York in 1851 and asked, whilst blindfolded, to decide if a man named John Bolding 'had any African blood in him'. If the answer was yes, then Bolding could be tried under the Fugitive Slave Act and therefore forcibly returned to enslavement. In the courtroom, Fowler compared Bolding's head to a number of plaster casts and skulls he had brought along,

including one of a Native American. Suddenly, both the parlour game and the material culture associated with phrenology start to look a lot less amusing.²⁶

Mahone's review also features a really incisive discussion of the history and politics of repatriation and display. As she notes, we seem to be at a moment in which public attitudes are changing. The Pitt Rivers Museum in Oxford recently decided to remove from display its collection of *tsantas*, or 'shrunken heads'.²⁷ Similarly, in Philadelphia, the Pennsylvania Museum is planning to remove from display many of the skulls collected by Samuel George Morton, a number of which belonged to enslaved people.²⁸ And in 2019, the Anatomical Museum at the University of Edinburgh agreed to repatriate nine skulls from its phrenological collection to the Vedda people, an indigenous group in Sri Lanka.²⁹

It is tempting to see all this as a direct response to recent political movements, such as Black Lives Matter or Rhodes Must Fall. That is true to an extent, but these recent acts of repatriation are part of a much longer—and incomplete—history of decolonisation. The history of the phrenological collection in Edinburgh provides a good example of this. Over seventy years ago, on 9 February 1948, the Anatomical Museum at the University of Edinburgh returned the skull of Keppetipola, a Kandyan chief, to Sri Lanka. The return of the skull (a 'national relic' according to the *Ceylon Observer*), occurred just a few days after Sri Lankan independence, and had been arranged by the British government. Keppetipola had been executed in 1818 for taking part in a 'rebellion' against British rule, and his skull was subsequently sent to the Edinburgh phrenologists. Then, over a hundred years later, and as Nira Wickramasinghe argues, Keppetipola's skull was returned as part of the political process of decolonisation. His skull served two purposes. For the independent Sri Lankan government, it served the purpose of nation-building, and particularly in incorporating the Kandyan people into the Sinhalese Buddhist majority. For the British, the return of Keppetipola's skull was seen

as a ‘gift’ bestowed on the former colony, ‘a symbolic redemption for past sacrileges’, as Wickramasinghe puts it.³⁰

The history of repatriation therefore goes back much further than current media commentary suggests. This example also goes to show that repatriation could serve multiple overlapping political purposes. For the British, the return of human remains, and other museum artefacts—which had in fact been going on since the early 1930s—was part of an attempt to portray decolonisation as an act of benevolence. As Wickramasinghe argues, this was used as a mechanism to evade more awkward questions regarding violence, responsibility, and reparation.³¹ Recognising this longer history can help us better understand the politics of repatriation in the present.

Rather than thinking of the present as unique, I therefore believe we should instead think in terms of a series of ‘moments of repatriation’, each with their own particular politics. To give another example from the Edinburgh collection: in the late 1980s and early 1990s, a number of skulls held at the Anatomical Museum at the University of Edinburgh were returned to Aboriginal Australian communities. These included the skull of Kannabi Byugal, an Aboriginal Australian man who was murdered by British troops near Wollongong in 1816, and who later proved an object of fascination amongst phrenologists in Edinburgh. The return of Kannabi Byugal’s skull in 1991, which only came after years of campaigning by Aboriginal Australian people themselves, was part of the slow process in which the Australian government began to recognise the violence and legacies of colonialism. However, much like the earlier examples from the 1940s, the return of these skulls—for both the British and the Australian governments—seemed to provide a way to sidestep more pressing questions of responsibility and reparation, beyond the allocation of a small parcel of land on which to bury the dead (and in some cases, even this was denied).³²

For me, thinking in terms of ‘moments of repatriation’ helps make sense of two major points raised by Mahone. First, as Mahone notes, ‘we seem to be surrounded by skulls’. Indeed, despite the examples above, the vast majority of human remains collected during the age of empire have not been repatriated. The Anatomical Museum at the University of Edinburgh still contains literally hundreds of skulls, including those of Native Americans, Inuit peoples, and enslaved Africans. Repatriation, it seems, only ever occurs around particular political issues and at particular moments. Rather than a comprehensive attempt to decolonise a collection, institutions tend only to respond to individual requests, often corresponding to the national political issue of the day. As Jeremiah Garsha argues, what we need are universal policies on repatriation in order to reduce the onus on individuals. We also need policies which apply globally, rather than nationally.³³ This is one of the reasons I think writing histories of skull collecting that cross national, regional, and imperial borders is so important. Second, repatriation has not historically led to meaningful structural change when it comes to reparations and the legacies of empire. Instead, we are stuck with this succession of disconnected (and often forgotten) ‘moments of repatriation’. In some cases—as with the return of the skull of Keppetipola in the 1940s—repatriation was presented by colonial and former colonial powers as an alternative to more structural forms of justice. In part, this is a consequence of the very process of ‘distancing’ that Mahone identifies. Human remains held in European and American collections, despite what should be obvious, have somehow become separated from the histories of violence, colonialism, and racism that they were originally embedded within. As Mahone argues, the work of historians of human remains—and material culture more generally—is to ‘re-entangle’ museum objects with that past.

4. Global History

The last major theme raised by all four reviewers of *Materials of the Mind* concerned global history. In the introduction of my book, I spent some time setting out exactly what I thought it meant to write a global history of science, in part to pre-empt the kind of criticism articulated by scholars such as Hodges. Some of my points were quite general, and I think would apply to any work that wanted to call itself a global history. For example, I said that global histories of science needed to track movements ‘across national, regional, and imperial borders’.³⁴ Most histories of science are still written within the bounds of a particular nation, area, or empire. For intellectual and political reasons, including those set out by Sivasundaram in 2010, I wanted to move beyond this. I also said that I wanted to incorporate the perspectives and agency of non-European peoples, hence my concern with the writings and practices of West Indian, African American, Bengali, and Chinese phrenologists, amongst others. As Conklin noted, neither of these claims are particularly radical in an abstract sense, although putting both into practice is still a rarity.

I also made a claim that was slightly more targeted towards the history of science, and for me, much more fundamental:

I argue that historians of science need to study the relationship between the global as an analytic category and the global as an actors’ category.... My claim is that these two things are connected. How the sciences conceptualize the world is closely related to how the sciences are communicated.³⁵

Having presented my work at a number of seminars, and read a range of reviews, this is the part that people either seem to get immediately or not at all—there isn’t much middle ground. It is also the part that is the most relevant to readers of *Global Intellectual History*, so worth exploring in a bit more detail.

Broadly, as I set out in the conclusion of my book, I wanted to bridge the gap between two different ways of writing global history which are usually treated as distinct. On the one hand, we have global histories of connection. In these works the global is an analytic (or *etic*) category in which the historian is an outsider looking in (or from above) at a globally connected world. Some of this scholarship is grounded in material culture, as with the work of my colleagues Maxine Berg, Anne Gerritsen, and Giorgio Riello, and some is grounded in the broader history of economies, institutions, and politics as with the work of Christopher Bayly, Jürgen Osterhammel, and Sven Beckert.³⁶ I think this is probably what most people think of when they hear the term ‘global history’, institutionalised as it is through journals like the *Journal of Global History*.³⁷

On the other hand, we have global intellectual histories. Here, the global sometimes features as an analytic category as well. The spread of ideas is charted across national, regional, or imperial borders from the perspective of the historian (an outsider). But in the best works of global intellectual history, the global itself becomes the object of analysis. It becomes an actors’ (or *emic*) category. In this case, the historian tries to understand what the global meant for people in the past; they try and uncover the various changing meanings of the ‘global’ from the perspective of an insider within past cultures. Samuel Moyn and Andrew Sartori suggested this back in their influential 2013 volume: ‘A global intellectual history might study the emergence of a consciousness of and conceptions of the global scale as itself a problem of intellectual history... the global as a native or actor’s category’.³⁸ A number of recent works, mainly focused on the late nineteenth and early twentieth century, have taken up this approach, including Vanessa Ogle’s *The Global Transformation of Time* (2015) and Or Rosenboim’s *The Emergence of Globalism* (2017), both of which analyse the development of different ways of conceptualising the ‘global’ in the past.³⁹ However, these histories, whilst charting the emergence of the global as an actors’ category, tend to neglect the material and the practical.

Global intellectual history, as a field, is still dominated by the history of ideas, rather than a history of material culture, practice, and action.

My argument in *Materials of the Mind* was that these two approaches to global history needed to be brought together. In doing so, we can start to uncover how changing patterns of global material connection (the analytic) explain how and why conceptions of the global have changed over time (the actors'). This interplay between analytic (*etic*) and actors' (*emic*) is to my mind at the heart of much good history writing, but has only recently been taken up by global historians.⁴⁰ For historians of science it is especially important as the subject of our work is a field which claims a special kind of globalism. Modern science is universal; it works everywhere. That is supposed to be what makes modern science special. A variety of other intellectual forms, some political, others religious, also make claims to universality. We might think of Christianity or Liberalism. However, unlike Christianity, or even Liberalism, modern science's claim to universality passes almost unnoticed and largely unchallenged today. This is precisely why we need a global history of science. We need to explain how the idea that science works everywhere—an idea that even at start of the nineteenth century was not a given—became unquestionable. The explanation does not lie, as earlier historians of science tended to assume, within closed local or national contexts. The explanation lies in the changing nature of global material connections and disconnections.⁴¹

Having clarified my thinking on global history, I am now in a better position to respond to one of the major points raised by the reviewers. Both Conklin and Stewart pick me up on presenting a 'primarily Anglophone' world. This is accurate. Most of my sources were in English, although I also had substantial sections of the book drawing on French sources, and smaller sections engaging with Portuguese, Bengali, and Chinese sources. Partly this was a consequence of my own linguistic expertise, or lack thereof. I also wanted to show how other

kinds of source, such as objects, as well as methodologies, such as historical anthropology, could form the basis of a global history of science.

As both Conklin and Stewart note, there is no problem per se with this Anglophone bias, even for a global history. What was more of a problem, particularly for Conklin, was my lack of explicit engagement with it. She is right, and her review helped me think through some of the points I only touched upon in *Materials of the Mind*. I could and should have turned the dominance of the English language into a point of discussion, one that combined the analytic and actors' categories I discussed above. Why did phrenology, which after all was a science originally promoted in German and French, become so closely associated with English? I never answered that question directly. Other historians of science, particularly Michael Gordin, have done much to chart the emergence of English as a global scientific language.⁴² This was mainly a phenomenon of the twentieth century, although, as Conklin and others spotted, we see a version of it in the nineteenth century. The promotion of English as a language of instruction was closely tied to the expansion of British and American imperialism and capitalism. As Conklin hinted at, the very communication networks I tracked in *Materials of the Mind* thus explain the Anglophone nature of phrenology. As Lidwell-Durnin also pointed out, the expansion of this Anglophone scientific world then increased the 'demand for translation', hence the variety of other languages in which phrenology appeared.

Indeed, as I make clear in my book, phrenology was written about and discussed in many other languages. However, in these cases, phrenologists often used the vernacular to demarcate the bounds of the local and the global—the particular and the universal. This is something I wrote briefly about when discussing the different uses of English and Bengali amongst the members of the Calcutta Phrenological Society in the 1840s and 1850s. In this chapter, I approached the issue of the universality and locality of language from an actors' perspective. For the Bengali phrenologists, living under British colonial rule, English was a

language of universal science. It was also a language of world politics, as the Bengali phrenologists started to imagine themselves as part of a global reform movement. However, these same phrenologists found a use for vernacular Bengali, which they explicitly imagined as a language for local political and intellectual debate, such as when dealing with the reform of Hinduism or the relationship between phrenology and existing Indian forms of knowledge. As I concluded in *Materials of the Mind*, ‘the Bengali phrenologists imagined works like *Manatatva Sarsangraha* as part of a local movement for the development of vernacular science. In contrast, they imagined the *Pamphleteer* as part of a national and global movement conducted in English.’⁴³

5. Conclusion

I would like to thank the four reviewers again for their essays, each of which helped me think afresh about what I was trying to do in *Materials of the Mind*. In concluding, I want to highlight some of the challenges facing the global history of science today. As I suggested earlier, one of the reasons I wrote *Materials of the Mind* was simply to show that it was possible. That a book-length global history of science was something that could be done; that you didn’t have to wait until the end of your career, or perhaps indefinitely, to give it a go; and that whilst there are serious methodological and theoretical challenges in writing such a book, these don’t mean you shouldn’t attempt it. From the reviews, and from Stewart’s very kind comment that he found the book ‘a model for writing histories on a global scale’, I think I achieved this basic aim.

But as much as I would like it, one book is not going to change a discipline. There are still major institutional and disciplinary hurdles facing the global history of science as a field, something I had not fully appreciated when starting out. Funding is a serious problem. In Britain, it would now be hard to get PhD or postdoctoral funding to do a project like this. This

is partly because there is so little funding to go about, but also because more and more of that funding is tied to narrowly defined projects. For those applying for PhD funding, reviewers tend to see global history as ‘too ambitious’, something that is reinforced by the bureaucratic and competitive nature of the funding process itself. I was lucky, in that my funding came from my Cambridge college, which gave me much greater freedom to explore global history than many postgraduate students now enjoy. In the United States, the problem is slightly different. Whilst there is much more funding available, tied to particular private institutions, the dominance of area studies programmes makes it exceptionally hard for postgraduate students to get funding to write a global history of science. Again, questions of competence and scope, which are in reality more about gatekeeping, tend to shoot down global history projects before they begin. Similar problems concerning the relationship between national academic cultures and sources of funding are mirrored elsewhere in the world.

Beyond funding, there are also problems with how the history of science is taught. Introductory history of science courses are still organised around a Eurocentric narrative. Whilst in the 1950s this was explicit, it is now more often implicit, which in some ways makes it harder to tackle. This matters for the discipline as these are the courses those applying for jobs will be asked to teach. Once again, training in global history, or even just the history of the world beyond Europe and the United States, tends to be undervalued, as does the expertise of those working in institutions outside of the Global North. In order to address this problem, historians of science need to work together to develop new ways of teaching the subject.⁴⁴ This work will need to take place within specialist history of science departments, but we should also be working with our colleagues in the wider historical profession. As I have argued elsewhere, the teaching and research of the history of science, including its global history, needs to be integrated into traditional history departments as well as existing specialist centres.⁴⁵

Alongside new courses, we need new survey texts, ones that can be used to teach the global history of science to undergraduates without having to rely on specialist monographs or journal articles.⁴⁶ This is something I am currently working on, and indeed where I think much of the future effort of historians of science should be directed.⁴⁷ As ever, there are a number of disciplinary and institutional barriers. As a discipline, our obsession with the localised case study means that broader accounts tend to be undervalued, even in comparison with other historical sub-disciplines.⁴⁸ And within certain academic cultures, particularly in North America, surveys tend to count for less when it comes to career progression. Nonetheless, without new surveys we cannot hope to move beyond the Eurocentric narratives that are built into the very foundation of the discipline of the history of science.

The global history of science raises profound questions about the nature of the discipline. There is still much to debate, both from a theoretical and methodological perspective, and I hope that this article has given the reader a sense of where I stand on a number of issues. However, there is also a value in putting theory into practice, and that is ultimately where my future interests lie. After all, one can either debate the possibility of the global history of science, or one can do it.

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Notes

¹ Shapin, “History of Science and its Sociological Reconstructions,” 157.

² Sivasundaram, “Introduction,” 95–7.

³ Sivasundaram, “Sciences and the Global,” Elshakry, “When Science Became Western,” Tilley, “Global Histories, Vernacular Science, and African Genealogies,” Kapila, “The Enchantment of Science in India,” and Safier, “Global Knowledge on the Move”.

⁴ The problem of ‘local contexts’ in the history of science was also noted in Secord, “Knowledge in Transit,” 658–9 and Galison, “Ten Problems in the History and Philosophy of Science,” 112–22. (See particularly ‘Problem 1: What is Context?’ and ‘Problems 7 and 8: Locality and Globality’.)

⁵ Sivasundaram, “Introduction,” 96.

⁶ Sivasundaram, “Introduction,” 96.

⁷ Focus Section edited by Karel Davids on “Bridging Concepts: Connecting and Globalizing History of Science, History of Technology, and Economic History” published in *Isis* 106, no. 4 (2015).

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- ⁸ Some key contributions include Raj, “Beyond Postcolonialism... and Postpositivism.” Fan, “The Global Turn in the History of Science,” Nappi, “The Global and Beyond,” and Roberts, “Situating Science in Global History”.
- ⁹ Hodges, “Global Menace,” 719–20. Fan, “The Global Turn”, shared similar concerns.
- ¹⁰ Shapin, “Phrenological Knowledge”.
- ¹¹ Wagner, “Confessions of a Skull”. See also Bank, “Of ‘Native Skulls’ and ‘Noble Caucasians’: Phrenology in Colonial South Africa,” and Branson, “Phrenology and the Science of Race in Antebellum America”.
- ¹² Poskett, *Materials of the Mind*, 13.
- ¹³ Mahone and Vaughan, eds., *Psychiatry and Empire*. See also, Linstrum, *Ruling Minds* and McCulloch, *Colonial Psychiatry and the ‘African Mind’*.
- ¹⁴ For an overview, see Wolfe, “Materialism”.
- ¹⁵ Kidd, *The Forging of Races* and Stuurman, “François Bernier and the Invention of Racial Classification”.
- ¹⁶ In his review, Ian Stewart notes that William Frédéric Edwards died in 1842. This was prior to the receipt of a copy of Samuel George Morton’s *Crania Americana* (1839) in 1844 by the Société Ethnologique de Paris. My mention of Edwards as a reader on p.113 was therefore in error, and I am grateful for Stewart for pointing this out. However, my broader argument still stands. Edwards’s friend, the co-founder and secretary of the Société Ethnologique de Paris, Charles Imbert des Mottelettes, replied to Morton on 9 April 1844. In this letter, he says that *Crania Americana* “was already known to us but our library did not have a copy”. He goes on to say that “your name... is not foreign to those who cultivate the science of ethnology”, implying that both Morton and his book were well known in Paris prior to 1844. Furthermore, my point was not that *Crania Americana* was taken up as a work of phrenology in Paris, but rather the opposite: that it could be read within the tradition of ethnology, quite apart from the very active phrenological scene in the city. See, Charles Imbert des Mottelettes to Samuel George Morton, 9 April 1844, MS7388, Series I, Morton Papers, Library Company of Philadelphia, United States of America. (Translation my own.)
- ¹⁷ For the importance of approaching the history of racial science through material culture, practice, and performance see Qureshi, *Peoples on Parade*, 1–12 and Delbourgo, “The Newtonian Slave Body”.
- ¹⁸ Hall, *A History of Race in Muslim West Africa*.
- ¹⁹ For example, Ergin, ‘*Is the Turk a White Man?*’, Dikötter, *The Discourse of Race in Modern China*, Graham, ed., *The Idea of Race in Latin America*, Jaffrelot, “The Ideas of the Hindu Race”.
- ²⁰ Much of this centred on the history of eugenics, see Bashford and Levine, eds., *The Oxford Handbook of the History of Eugenics* and Stepan, ‘*The Hour of Eugenics*’. For a broader account, see Stepan and Gilman, “Appropriating the Idioms of Science”.
- ²¹ Rusert, *Fugitive Science*.
- ²² Burton, *Genetic Crossroads*, Mukharji, “The Bengali Pharaoh,” and Gil-Riaño, “Relocating Anti-Racist Science”.
- ²³ Poskett, *Materials of the Mind*, 17.
- ²⁴ Poskett, *Materials of the Mind*, 8.
- ²⁵ Poskett, *Materials of the Mind*, 15–17.
- ²⁶ Poskett, *Materials of the Mind*, 76.

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- ²⁷ “Shrunken Heads Removed From Pitt Rivers Museum Display,” BBC News, accessed February 2, 2021, <https://www.bbc.co.uk/news/uk-england-oxfordshire-54121151>
- ²⁸ Johnny Diaz, “Penn Museum to Relocate Skull Collection of Enslaved People,” New York Times, accessed February 2, 2021, <https://www.nytimes.com/2020/07/27/us/Penn-museum-slavery-skulls-Morton-cranial.html>
- ²⁹ “University of Edinburgh Returns Nine Skulls to Sri Lankan Tribe,” BBC News, accessed February 2, 2021, <https://www.bbc.co.uk/news/uk-scotland-edinburgh-east-fife-50516316>
- ³⁰ Wickramasinghe, “The Return of Keppetipola’s Cranium,” PE85–PE92.
- ³¹ Wickramasinghe, “The Return of Keppetipola’s Cranium,” P91–P92.
- ³² Turnbull, “International Repatriations,” 11–14.
- ³³ Garsha, “Repatriating Histories”.
- ³⁴ Poskett, *Materials of the Mind*, 3.
- ³⁵ Poskett, *Materials of the Mind*, 3.
- ³⁶ Berg, “In Pursuit of Luxury,” Gerritsen and Riello, eds., *The Global Lives of Things*, Bayly, *The Birth of the Modern World*, Osterhammel, *The Transformation of the World*, and Beckert, *Empire of Cotton*.
- ³⁷ See also, Berg, ed., *Writing the History of the Global*.
- ³⁸ Moyn and Sartori, “Approaches to Global Intellectual History,” 16–17.
- ³⁹ Ogle, *The Global Transformation of Time* and Rosenboim, *The Emergence of Globalism*.
- ⁴⁰ On the importance of this distinction for the history of science, see Jardine, “Etics and Emics”. For similar moves in social and cultural history, see Joyce, “What Is the Social in Social History?,” and Mandler, “The Problem with Cultural History”.
- ⁴¹ For a discussion of the problem of universality in the sciences, see Ophir and Shapin, “The Place of Knowledge”, Shapin, “Placing the View from Nowhere,” Livingstone, *Putting Science in Its Place*, 1–16, and Poskett, *Materials of the Mind*, 249–52.
- ⁴² Gordin, *Scientific Babel*.
- ⁴³ Poskett, *Materials of the Mind*, 190. In this section, my work shares something in common with Asseraf, *Electric News in Colonial Algeria* which, as Alice Conklin notes, gives a much more comprehensive account of how language could be used to mediate different conceptions of the ‘global’ in the context of empire.
- ⁴⁴ See, for example, Delbourgo, “The Knowing World,” as well as the work of the Science Beyond the West Working Group at the Department of History and Sociology of Science, University of Pennsylvania, amongst others.
- ⁴⁵ On the importance of integrating research and teaching in the history of science into traditional history departments, see Poskett, “Science in History”. It is noteworthy that James Delbourgo teaches within a history department, although he also taught a slightly different version of a global history of science course, with different framing, at the Department of the History of Science at Harvard University, see, Delbourgo, “The Knowing World,” 378.
- ⁴⁶ A problem also identified by Delbourgo, “The Knowing World,” 379–80.
- ⁴⁷ See my forthcoming, Poskett, *Horizons*, as well as Slotten, Numbers, and Livingstone, eds., *The Cambridge History of Science: Modern Science in National, Transnational, and Global Context*.

⁴⁸ See Shapin, “Hyperprofessionalism”.