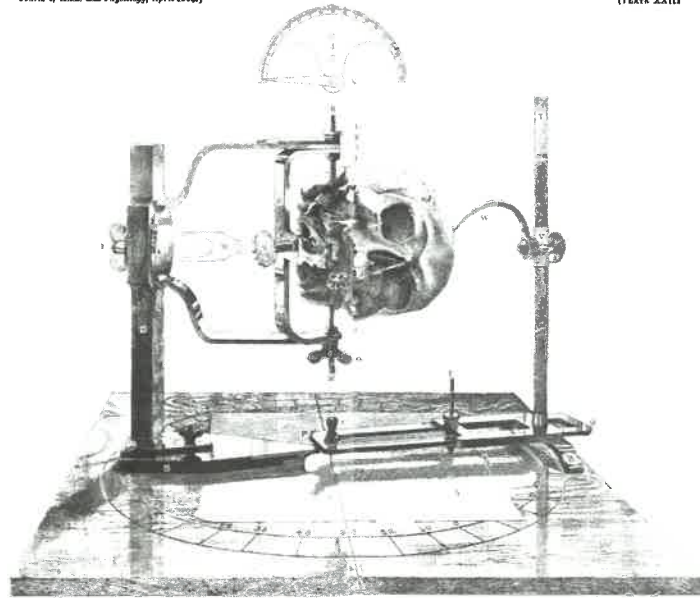


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*Journal of Anat. and Physiology, April 1904.*

(PLATE XXIII)



CRANIOMETER.

Prof. JOSEPH STRAZDORF on John Grattan's Craniometer and Craniometric Methods.

Plate illustration appended to: John Symington, 'John Grattan's craniometer and craniometric methods', *Journal of Anatomy and Physiology*, 38 (1904), 259-274.

## Editorial

This issue we focus on race in the history of science. The first of our four feature articles, by Elise Smith, examines the (un)scientific methods of craniometry. Warwick Anderson then discusses the developments in scholarship on race in the global south. Suman Seth argues that the "science" of race is inextricably intertwined with medicine. Finally, Chris Manias shares his thoughts on how teaching students about the history of science and race can inspire new ways of thinking.

Following these feature articles are our usual assortment of grant reports and reports on new materials for historians of science to explore. Our interviewee this issue is Pratik Chakrabarti.

Thank you to all of our readers who took the time to respond to the Viewpoint Questionnaire. We received many thoughtful suggestions and comments.

Contributions to the next issue should be sent to [viewpoint@bshs.org.uk](mailto:viewpoint@bshs.org.uk) by 15 December 2017.

Alice White, Editor

# Measure for Measure: Craniometry and the "Science" of Race

Elise Smith discusses the history of measuring skulls

When Joseph Barnard Davis (b.1820) died on 19 May, 1881, his peculiar legacy as Britain's most prolific private collector of human skulls was assured. A year earlier, he had sold his hoard of 1539 skulls and 24 skeletons to the Royal College of Surgeons, and the transfer was concluded almost upon his dying day. It had been a matter of some irritation to metropolitan scientists that Davis had squirreled away his collection in his Staffordshire home, preventing them from accessing the 'largest collection of skulls in the world.' It was then a cause for celebration that the skulls would finally be available for racial researchers to study at their leisure in the centre of London.

Details about Davis' acquisitions were comparatively well known to his fellow

craniologists; indeed, he had published two instalments of his catalogue of skulls, *Thesaurus Craniorum*, in 1867 and 1875 respectively. Peppared with small engravings of the more notable human remains, entries were organized into national or tribal categories within broad continental divisions.

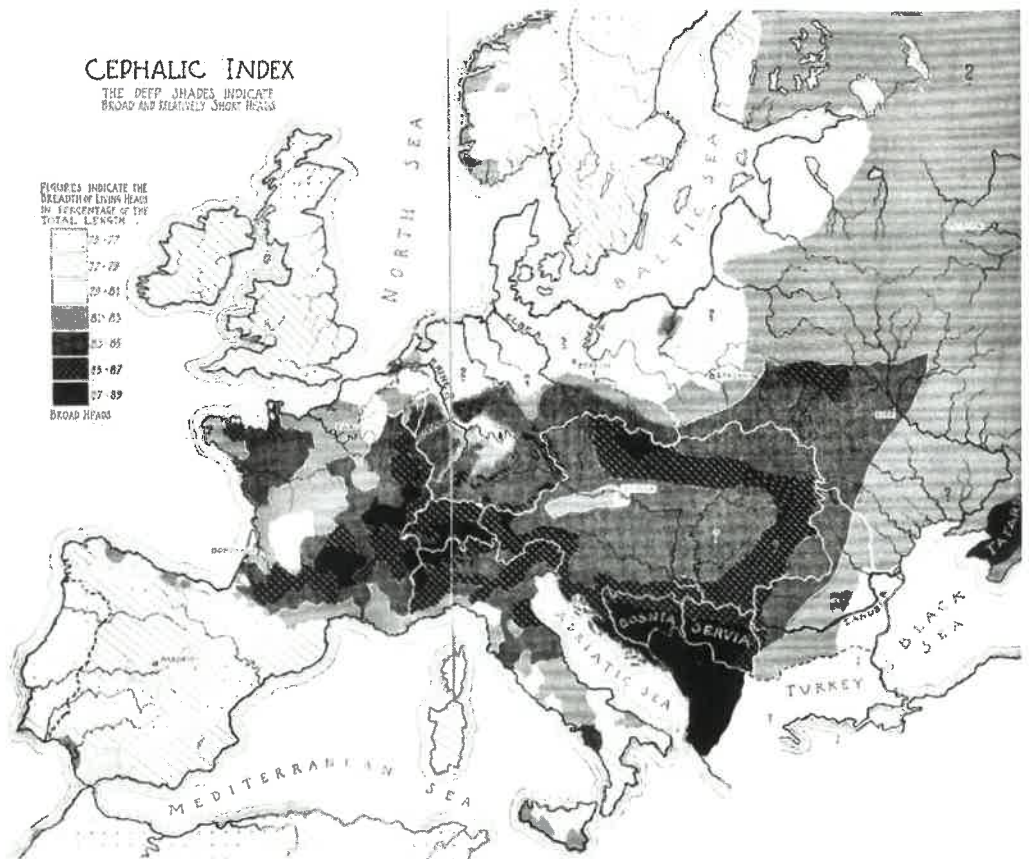
But more crucially, the catalogues contained over 25,000 measurements: for each skull, Davis provided figures for its internal capacity and circumference, the lengths of the fronto-occipital and intermastoid arches, the longitudinal and transverse diameters, the height, length and breadth of its face, and its cephalic index (or height/length ratio of the top of the skull)—all of which he assumed would be crucial data points for other

craniologists to refer to. Davis, like most other nascent physical anthropologists of his era, was an avid craniometrist: measuring skulls was central to their mission of making scientific sense of racial variation. While Davis took more of a personal interest in the pursuit than most—establishing a vast network of collectors to provide him with skulls—his main eccentricity was not so much his desire to measure them but to own them.

Craniometry in the 19<sup>th</sup> century was the paradigmatic expression of racial science: a methodology rather than a discipline in its own right, it entailed the mass gathering of skull measurements in order to identify racial groups anatomically, and then to compare their dimensions quantitatively. In its heyday—roughly the period between 1850 and 1900, craniometrical studies featured prominently in the leading medical, anthropological, and scientific journals of Europe and America. Human skulls from the far-flung corners of the globe were presented at the meetings of scholarly societies, their proportions pored over for signs of “exceptional” or “inferior” development.

Medical museums procured hundreds—and sometimes thousands—of skulls to enable this research, and scientific instrument companies designed and sold specialized craniometric tools, from bespoke calipers to elaborate sliding rulers. Its practitioners were embedded in academic institutions, and the curriculum of most major medical schools included instruction in craniometric methodology. Students at Cambridge in the 1880s, for example, could attend lectures on ‘The Race Types of the Human Skull,’ delivered by the Professor of Anatomy, Alexander Macalister (who supervised the University’s purchase of over ten thousand skulls). Craniometry might now be considered an archetypal pseudo-science, but it was fully legitimized and institutionalized as a ‘scientific’ methodology in its own time, and counted amongst its practitioners a raft of prominent scientists, including the Darwinian biologist Thomas Henry Huxley and Paul Broca, the pioneering neurologist.

Craniometry was favoured as an ‘objective’ approach to the study of race because it merged two scientific traditions: comparative anatomy and measurement. Whereas physiognomists and phrenologists had tried to gain legiti-

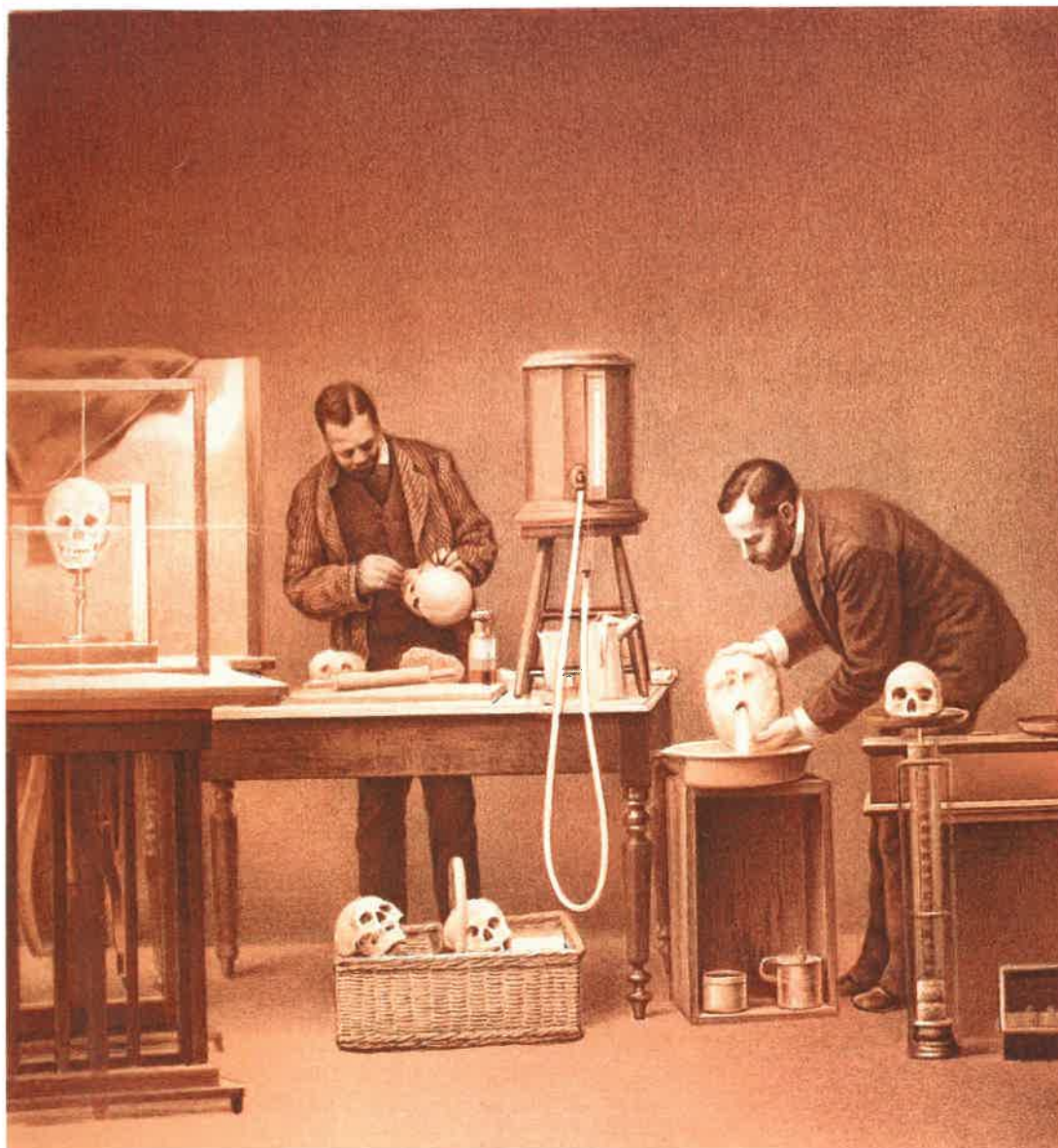


macy for their arguments that the head could be “read” for information about character, their approach was qualitative rather than quantitative and never gained much traction amongst scientific elites. By focusing almost exclusively on measurement and comparison, craniometrists were careful to ally themselves to scientific traditions with long roots: they could claim to be the heirs of eminent naturalists such as Johannes Blumenbach and Georges Cuvier—both of whom had consolidated the study of racial difference at the start of the 19<sup>th</sup> century.

The quantitative approach, meanwhile, drew on the Humboldtian ideal of understanding nature through numbers: the truth about human variation would be revealed through the meticulous collection and analysis of cranial measurements. While it was generally accepted that cranial shape varied amongst population groups, Alexander Humboldt himself was deeply impressed by the work of the American craniologist, Samuel George Morton, who was one of the first to employ numbers to express these differences. Morton’s *Crania Americana* of 1839 was praised as ‘remarkable’ due to the ‘numerical detail of the relations of organic conformation’ it contained. Indeed, when ‘craniometry’ was described in the 1911 edition of the *Encyclopaedia Britannica*, it was cited as the means by which anthropology could lay claim to

being a ‘branch of modern science,’ due to its reliance on that hallmark of scientific inquiry: ‘precise measurement.’

For its pretensions to objectivity, however, craniometry was elevated in importance because it served some very subjective ideas about the meaning of human difference. The idea that human types were analogous to the subspecies of plants or animals, and could be similarly classified according to clear structural variations motivated the entire enterprise, but the premise was flawed from the beginning. While modern statistical studies have shown there is invariably more variation within types than between them, the 19<sup>th</sup> century belief in distinct human “races” encouraged a reductive approach that boiled down vast data sets into unrepresentative “average” types. Equally, for a field of study predicated on the supposed neutrality of measurements, there was almost no consensus over which measurements were the most important, how they should be recorded, or the manner in which they should be used as a basis for racial classification. The cephalic index, or length-breadth ratio of the skull, was commonly used to differentiate between “long-headed” and “round-headed” races, but several international congresses had to be held in order to standardize the various measurements that distinguished each intermediary category in the size/



Above: *Ascertaining capacity of cranial cavity by means of water, 1885. Image in the public domain.*

Left: *"The races of Europe: a sociological study" by William Z. Ripley. Image courtesy of Wellcome Collection.*

shape spectrum.

While the hope was that craniometry would help to establish clear racial groupings, offer definitive evidence on whether certain races were more evolved than others (through comparisons with the skulls of apes and early hominids), and answer questions relating to human migration patterns, the actual practice of measuring skulls was almost entirely directionless. The mass desecration of graves throughout the world, and the removal of human remains from their home territories to the scientific centres of Europe and America, were ultimately accomplished to feed a branch of anthropology that was almost entirely self-referential. Skulls were measured and re-measured, and the average craniometrical paper was content to

rely upon tables of figures devoid of any commentary. Occasionally, the smaller cranial capacity of one group would be cited to argue for its lower level of civilization or invariable extinction, but these connections were generally only sought to bolster existing prejudices (for example, against the Aboriginal population of Australia or the Indian tribes of the United States, both of whom were thought to be "vanishing" in the 19<sup>th</sup> century). Paul Broca inadvertently made this point in 1861 when he suggested that the value of craniometric measurement in determining intelligence could only be established if was found in races whose superior mental capacity was *already known*.

Ultimately, the obsessive gathering of skull measurements began to strike

anthropologists as too aimless an exercise to justify. After nearly a half-century of work, few meaningful results had emerged, and new statistical method suggested that there the correlation between brain size and intelligence was unfounded. Equally, Franz Boas' work on immigrants to the United States in the early 20<sup>th</sup> century showed that cranial size changed between generations in response to dietary and environmental stimuli. Far from being an immutable indicator of racial type, skull measurements turned out to be unreliable at best (with the caveat that certain indices are still used by forensic scientists and physical anthropologists to generalise about the origins of human remains).

Yet that "race" would eventually be seen as a biologically meaningless category could be predicted from the inability of craniometrists to draw any definitive conclusions about the endless variety of skulls they measured.

Craniometry thus slowly receded in importance as racial research fell out of favour in the 20<sup>th</sup> century. The vast collections of skulls acquired in Europe and America remain its chief legacy, and certain remains are now being repatriated. Others never will be:

much of Barnard Davis' skull collection was destroyed when the Royal College of Surgeons was bombed in the Second World War, and his catalogues remain the only evidence of these human remains were ever transplanted to Britain to be measured in a failed and biased bid to transform anthropology into a "science of man."



# Racing on Southern Currents

**Warwick Anderson** on the history and historiography of race in the global south.

I seem to have drifted into critical studies of racial thought about the same time I was drifting out of medical practice and into the history of science. I recall a strong undertow pulling me along, its cause unknown to this day.

Knowing I was looking for a compelling M.A. thesis topic, R.W. Home, the first (and as it happened, the last) professor of history and philosophy of science at the University of Melbourne told me about the Australian Institute of Tropical Medicine, set up in the early-20<sup>th</sup> century to determine physiologically and bacteriologically whether a working white race could be settled in the new nation's tropical north. It was the middle

of the 1980s, long after the demise of the White Australia Policy, but during a time of rising concern among sections of the community about Aboriginal assertions of sovereignty and fears of non-white immigration. Having been on the margins of antiracist agitation, I found the proposed research appealing—a means, so it seemed, of revealing collusion between medical science and racist nationalism. It is sobering to think how the casual suggestion of a thesis topic can determine a lifetime research trajectory and a whole scholarly career.

But the thesis was never completed as I moved to the United States to do my Ph.D. at the University of Pennsylvania.

Since no one in America was interested in the sciences of whiteness in Australia, I wrote my dissertation on racial dimensions of tropical medicine in the colonial Philippines, which became my second book, *Colonial Pathologies* (2006).

When I returned to Melbourne in 1995 I again encountered national limitations on the ambit of history of science—this time no one in Australia was interested in American biomedical science in the Philippines. So I resumed study of scientific ideas about white racial adaptation to the Australian continent, which resulted in my first book, *The Cultivation of Whiteness* (2002).

Pre-adapted to identity politics, for

better or worse, I didn't want to join the throng writing about the racialization of Aboriginal Australians and Asians—rather, I thought I should study critically my own folk and how they made themselves naturally white in a strange place. *Cultivation of Whiteness* elicited considerable controversy, which these days we might reframe as “impact”, somewhat euphemistically. At a public meeting in Melbourne, the leader of a fascist group called Australia First denounced me as a “race traitor”. The vice-chancellor of the University of Adelaide offered a public apology for the “barbaric” experiments conducted by its scientists on Aborigines in the central deserts in the 1930s, which it seems I had revealed—though evidently he had not read the book. Thus I was caught up in a minor skirmish in what was known as the “history wars” in Australia. The controversy impressed on me the contemporary relevance, even necessity, of the history of science.

For some fifteen years now, I've been waiting for an historian of science to address the cultivation of whiteness in another settler society: the United States. Around 2002, a colleague at Berkeley assured me over dinner that the U.S., unlike Australia, had never developed a “positive” science of whiteness—I think I dropped my fork. Surely it is timely now, after what happened at Charlottesville, to conduct a critical historical assessment of how being “white” came to seem natural, or at least unmarked, in the Americas?

The choice of a national focus for *Cultivation of Whiteness* may have appeared odd, even a bit retrograde, for an author prattling on about postcolonialism and the “globalisation” of science in other venues. But it served my purposes because I wanted to demonstrate that Australia was a place in which knowledge about human difference and “race” was actively produced, not just absorbed from elsewhere and copied or mimicked. It frustrated me that so much of our “southern” intellectual history is still based on facile diffusionist models. Not surprisingly, a reviewer for *Isis* complained that I hadn't really addressed racial thought because I refused to examine closely the influence of North Atlantic savants, the true possessors, apparently, of thoughtfulness.

Far more challenging was the exchange after a lecture I gave in Rio de Janeiro in 2010. I was recapitulating some of my older studies of attempts to rationalise the biological absorption of mixed-race Aboriginal Australians (or “half-castes”) into proletarian whiteness in the 1930s, and additionally, describing the scientific planning for racial amalgamation of

Pakeha and Maori in adjacent Aotearoa New Zealand during the same period. My audience in Rio was puzzled. ‘You are talking about Anglo settler societies’, someone said, ‘yet these are Latin race formations’. She noted the similarities of Australian and Argentinian racial thought, and sharing of racial assumption and even metaphor between Aotearoa New Zealand and Mexico. How intriguing, I thought.

On the long flight back to Sydney, skirting the South Pole, I pondered the comparative study of racial conceptions and formations across the southern hemisphere, or even more provocatively, across the Global South. Could one discern some general southern-hemisphere distinctiveness in racial thought, or at least regional gradations in racial sensibilities and practices? What do we really know about southern currents in race science?

And so a chance conversation in Rio stimulated an application for a Laureate Fellowship of the Australian Research Council. Meant chiefly for scientists with large-scale research projects, these fellowships had not previously gone to any historians. I successfully proposed a critical historical inquiry into patterns of racial thought across settler societies of the southern hemisphere, a study comparative in method and style, transnational and inter-colonial in scope. I claimed that human biology might look quite different when viewed from southern perspectives. This would mean, in effect, “provincialising” North Atlantic race science. It seemed a goal worth working toward. ‘Although white privilege would be maintained in the Global South’, I wrote, ‘its conceptual framework, institutional structure, and perceptual boundary often varied’. I was interested less in tracing the global “colour line” than in uncovering the global colour palette.

Five years on, at the end of the fellowship, we can look back on a very productive period of research, with numerous monographs and articles, and post-doctoral fellows from the programme now



Previous page: White Australian scientist and Aboriginal man in central desert of Australia, 1930s. Courtesy of the National Library of Australia, Cecil John Hackett papers, MS 9580. Above: Masasa and Warwick Anderson, Okapa, eastern highlands of New Guinea. Photograph: Thomas P. Strong.

dispersed to posts at Penn, Lisbon, Flinders, and even Sydney. The University of Hawaii Press will soon publish our edited collection on racial futures in the Pacific; Berghahn is bringing out our comparative essays on racial formations in the Portuguese-speaking world; and the *Journal of Southeast Asian Studies* has dedicated a special issue to racializations in that region. Other edited collections are in preparation. I'm finishing my historical study of scientific inquiries into race mixing, or human hybridity, in the Pacific, Australasia, the Caribbean, and the Maghreb. Of course, the comparative research project turned out rather piecemeal and fragmentary, focusing more than we anticipated on the Pacific, Latin America and Australasia. But it was never going to be comprehensive. As it happened, the research programme functioned more like a sampling device or a search engine, locating and displaying various ingenious and slippery forms of racial thought in southern societies.

We need to understand our own particular racisms, especially the more enigmatic ones, so we know what to watch out for and guard against—and so we can better train the next generation of historians of science to betray racial codes, artfully.

# “Race-Science” and “Race-Medicine”

Suman Seth argues that doctors shaped the science of race.

In May 2003, the National Human Genome centre at Howard University held a workshop in Washington DC. The topic for the workshop and a subsequent special issue of the journal *Nature Genetics* in 2004 was ‘Human Genome Variation and Race’. Of specific concern for participants, according to Francis Collins, Director of the National Human Genome Research Institute, were ‘connections among race, ethnicity, genetics, and health.’

Referencing the special issue in an opinion piece written for the *New York Times*, Armand Marie Leroi, an evolutionary developmental biologist at Imperial College, London, made clear that something of a sea-change was underway in research on human racial variation. What had once been seen as orthodoxy—that race was a biologically meaningless category because the variation within any one putative race was larger than that



The “Doctors’ Trial” at Nuremberg, 1946–1947. Image in the public domain.

between any two races—was coming under question. Previously depicted as a fictive social construct, as an ‘indication of the power of socioeconomically based ideology’ by the well-known geneticist and evolutionary biologist, Richard Lewontin, the idea of race was, according to Leroi, acquiring a new reality. As with the researchers at Howard, Leroi drew particular attention to the utility of racial categorization in studies of health and medicine: ‘Different races,’ he claimed, ‘are prone to different diseases’ and some drugs appeared to exhibit racially varying actions.

Many natural and social scientists, among them others working on the rela-

tionships between “race” and health, have questioned both Leroi’s premises and his conclusions, but there is no denying the fact that his claims have proved prescient. Arguments concerning the racial specificity of both diseases and treatments have rapidly expanded in number in the last decade.

Yet it would be wrong to see contemporary claims connecting medicine and “race” as novel developments: such connections are of very long standing. One of the oldest lengthy tracts on human physical variation we possess is a work attributed to the 4<sup>th</sup> century BC physician, Hippocrates. In *Airs, Waters, and Places*, Hippocrates argued that the elements of his title, which vary from region to region, produce different kinds of people, with characteristically different medical afflictions. Those who lived in cities exposed to cold winds were ‘well braced and slender,’ while those accustomed to warm winds were flabby. The former suffered typically from pleurisies and ‘suppurations in the lungs,’ while the latter were prone to dysentery and chronic winter fevers. Such Hippocratic understandings of the relationships between peoples, places, and illnesses would remain common well into the 19<sup>th</sup> century.

Of course, much hangs in this discussion on what is meant by the term “race.” Today, the word is deployed in at least two different contexts. Students in my undergraduate classes tend to regard both the statements ‘Indo-Australians eat disgusting food and have no table manners’ and ‘Indo-Australians possess smaller brains and hence are less intelligent’ as racist, although the former might better be termed ethnic bigotry (or ‘cultural racism’ for some), while the latter is more accurately described as racist in the sense that it involves claims about biological and (possibly) heritable traits. I have been more concerned, in my own research, with the latter kind of somatic differences, although I am aware that it is sometimes difficult—both then and now—to distinguish ethnic bigotry from what is sometimes termed physical racism.

For many modern historians, the defini-

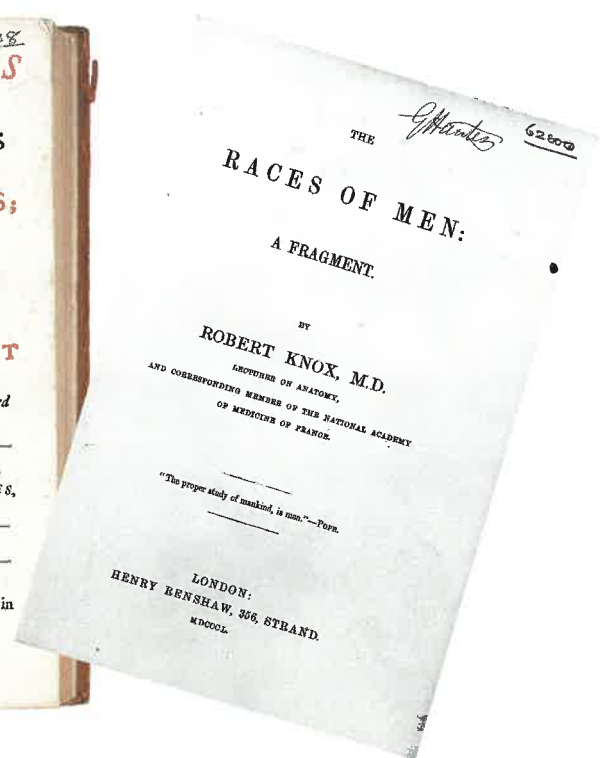
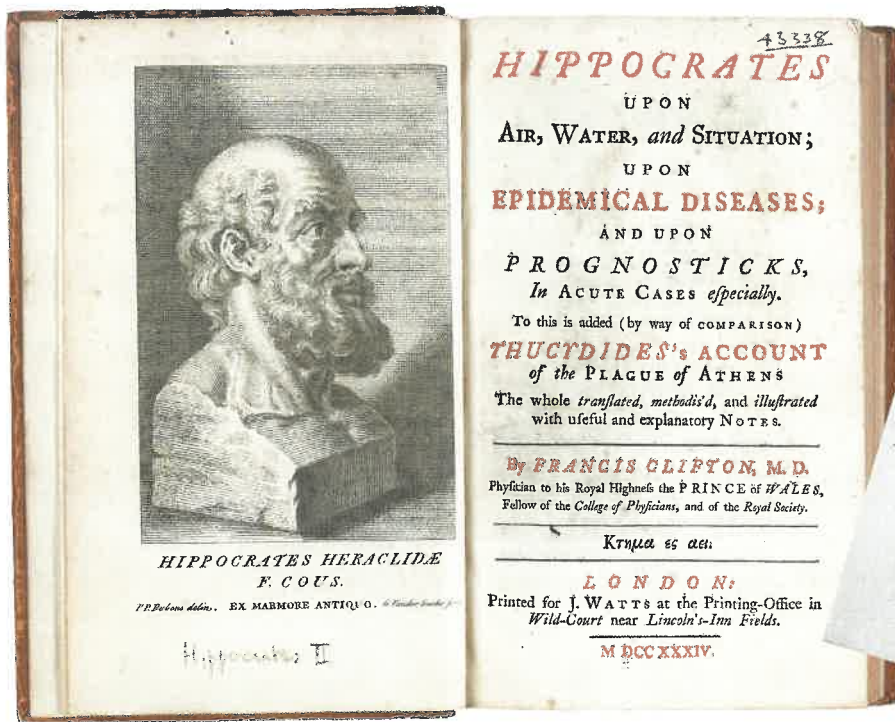
tion of race and racism is bound up with attempts to explain the horrific genocides of the 20<sup>th</sup> century, and in particular the Holocaust. What was the history of the ideas that led to the Final Solution? Here historians have pointed to three claims: that races are effectively static over long periods of time (racial fixity); that racial traits are passed on from generation to generation (heritability); and that physical traits (skull size, or brain shape, for example) determine—or at least condition—moral, intellectual, and behavioural traits (biological determinism).

While one finds traces of such ideas earlier, their emergence in full form and in relation to one another may be observed first in the late 18<sup>th</sup> and 19<sup>th</sup> centuries, which has led some scholars to argue that race itself is a product of the modern age. Others insist that one may find racist or “proto-racist” ideas much earlier.

These criteria have often emerged from studies of the history of natural historical approaches to race: what Nancy Stepan termed “race-science.” A rather simpler and more general formulation emerges from work on the history not of racial anatomies, but of racial pathologies: race-medicine. What is distinctive about modern theories of race, I would argue, is their insistence on physical (and usually heritable) differences as a cause of other differences (whether medical, intellectual, behavioural, or other). Hence, returning to the example I used above, the idea that Indo-Australians have weaker intellects because—as a racial group—they have smaller brains. Or, to take a less facetious example, the claim that it is somatic differences between African-Americans and Americans of European descent that explains the greater prevalence of sickle-cell anemia in the former population.

One does not find such causal claims, for the most part, in the classical, late antique, or medieval periods. Thus, while one certainly finds examples of colour prejudice in medieval manuscripts—where devils, for example, are depicted with black skin—the causal claim is precisely the inverse of that found in the 19<sup>th</sup> century. Where 19<sup>th</sup> century racists claimed that Africans were wicked because they were black, the logic of medieval colour prejudice is largely symbolic, insisting that devils are black because they are wicked.

Medicine provides a particularly powerful area for exploring this difference in causal argumentation. Again, Hippocrates provides a salient example, for while he does, indeed, discuss the physical features of peoples found in certain places, along with their characteristic diseases,



Left: Title page from *Airs, Waters and Situations*, from a copy printed in 1734. Image courtesy of Wellcome Collection. Right: Title page from *The Races of Men*. Image in the public domain.

cultural traits, and political orderings, he does not derive the last three from the first. That is, "race" is not the cause of culture or politics. Rather, all elements are supposed to be caused (or, at least shaped) by climate, broadly construed, and diet.

In the examples Leroi invokes, racial differences lead to differences in disease susceptibility; within the Hippocratic tradition, anatomical differences and differences in disease susceptibility are both due to the same underlying causes: airs, waters, and places (as well as habits or customs). If one can, then, write histories of race in a rather loose sense well before the 1700s, one must do so with an awareness that race began to do vastly more work as a concept and as a causal mechanism from the 18<sup>th</sup> century onward.

There is another, and perhaps more critical reason to pay attention to the history of race-medicine, however. In the age of colonialism, beginning with the 'discovery' of the New World by Europeans, if we would like to see race in action, we should look not to philosophical debates in the colonial metropole, but to engagements in the colonies themselves. Those who wrote naturalistic accounts of the physical characteristics of the different peoples they encountered outside Europe were almost all trained in medicine and brought this training to bear

on their observations. And if we wish to understand relationships between the day-to-day practices of slavery and naturalistic knowledge, we are best served in looking at medicine and the roles that physicians, surgeons, and midwives played in the support and sometimes critique of the slave trade.

Were we to look at the end of the 18<sup>th</sup> and the first half of the 19<sup>th</sup> centuries, we would immediately note that almost all the most prominent 'race-scientists' were trained in medicine. James Cowles Pritchard, for example, who was the leading British ethnologist for much of the first half of the 19<sup>th</sup> century, was a Bristol physician. Robert Knox, whose *The Races of Men* (1850) epitomized the new fixist, post-Pritchardian race-science, was an anatomist who left Edinburgh several years after his involvement in the Burke and Hare body-snatching scandal. From the 1860s to the 1940s, both the eugenics and racial hygiene movements were quite explicitly modelled on programmes for public health. The close involvement of doctors with Nazi social policy and medical experimentation became clear to the world when a number were convicted and executed after the Nuremberg trials.

There is a long history behind the fact that, in today's debates, it is medicine that is at the forefront of what might be considered the resurgence (in force) of

scientific race theories. It would be well, for those working in biomedical fields today, if more attention were paid to this long history.

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## Further Reading

- Patrinos, Ari. "Race' and the Human Genome." *Nature Genetics* 36 (2004): S1-S2.
- Leroi, Armand Marie. "A Family Tree in Every Gene." *The New York Times*, March 14, 2005.
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- Hannah Franziska. *Race: The Origins of an Idea, 1760-1850*. Bristol, England: Thoemmes Press, 1996.
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# Teaching the History of Racial Thinking: Some Reflections

Chris Manias shares thoughts on what can be learned from teaching the history of European thinking about racial and cultural differences

For the past five years I've been running a third-year undergraduate course on the history of European thinking about racial and cultural difference, first at the University of Manchester and currently at King's College London. With the quite long title of 'Defining Race and Culture: Understanding Human Difference from the Enlightenment to Genetics,' this looks at continuities and shifts in intellectual, scientific and public debates on human difference across the modern period. We move from Enlightenment racial typologies and theories of "progress," to the sharpening racial discourses of the mid-19<sup>th</sup> century, to the impact of late-19<sup>th</sup> century nationalism and colonialism, to the shift to more pluralistic understandings of culture and the "repudiation of race" in the 20<sup>th</sup> century, and finally the more recent impact of large-scale migration from former colonies and scientific developments like genetics. In this piece, I'm going to talk about my experiences in teaching this course, and the way that it has changed over the past few years.

A large part of the rationale for the course is that thinking about 'race' does not occur in isolation, and connects with many different ways of understanding difference and categorizing human groups, as well as structures of political and cultural authority. As this is a final-year course, students come with their own interests and prior knowledge, and so the topic of race acts allows them to link material they have studied in different modules, and follow interests that they have wanted to study but never had the chance to. To allow this, I keep the chronology and geography of the course

as wide as possible, and work individual student projects into different weeks. At both Manchester and KCL the course has also been attached to a dissertation component, and students have conducted really interesting research projects, including African-American art in the 1920s, depictions of the population of Mysore in late-19<sup>th</sup> century British travel accounts, and the role of race in British sitcoms in the 1970s. As well as producing great work, I've also often fed back material and sources used in student dissertations into the course itself, and so the course has continued to develop over the years.

A module like this does still need to be quite selective in the material that it covers. In my own research, I've been very influenced by Ann Stoler's argument that when we 'take such high profile racists as Gobineau, Madison Grant, and Vacher Lapogue as exemplars of racial reasoning, we miss the force field in which racial discourses have thrived. Focus on such extreme figures dissuades questioning the nuanced ways in which *Homo europeus* was discursively constructed, culturally maintained and secured' (Stoler, 1997). So, many of these 'usual suspects' in the history of racism are omitted from the core primary source reading



A still from the 1970s television show *Love Thy Neighbour* by Thames Television.

(although do get mentioned extensively in the more contextual setups to individual sessions).

Instead, the focus tends to be on more ambiguous sources, which mixed together ideas of biological and cultural difference. Enlightenment stadial theory, representations of Polynesia by 19<sup>th</sup>-century travel-writers, Darwin's complex ideas on race and evolution in the *Descent of Man*, and developmental theories in early-20<sup>th</sup> century palaeo-anthropology all make an appearance, and generate a great deal of debate. This helps to encourage the students to think about how biological and cultural thinking interacted, and pervaded a range of different historical agendas and arguments beyond the more obvious issues of scientific racism.

Managing emotive material is obviously a big issue when dealing with these themes and topics. In the first session, we have a discussion on 'seminar rules,' which involves deciding as a group how we deal with challenging material, and what we do if the discussion gets onto offensive or troubling territory. A particularly impor-



“They were a boy and girl, slender and graceful.”

THE  
O R I G I N  
OF THE  
DISTINCTION OF RANKS;  
OR,  
AN INQUIRY INTO THE CIRCUMSTANCES  
WHICH GIVE RISE TO  
INFLUENCE AND AUTHORITY  
IN THE  
DIFFERENT MEMBERS OF SOCIETY.  
By JOHN MILLAR, Esq.  
PROFESSOR OF LAW, IN THE UNIVERSITY OF GLASGOW.  
B A S I L:  
Printed and fold by J. J. TOWNSEN.

Left: An illustration from the novel *Typee* by Herman Melville, 1892.

Above; Title page from John Millar's *The Origin of the Distinction of Ranks*, 1781.

Both images in the public domain.

tant issue here is language and terminology: how do we use (and recognize) disparaging historical terms like ‘Hottentot’ or ‘Eskimo’ (which will feature prominently in many of the primary sources), and should we use current terms in our discussions instead? I have very definite ideas about this in my own work, but in the context of the seminar group I think it is essential to give the students ownership over this and similar questions – and this also sets up an initial discussion about the importance of language, group definition, and the fluidity of many of these terms and categories.

Even over five years of teaching this course, I’ve noticed major differences in how students have engaged with the material. The increased prominence of race in current political and social debate is a major issue, particularly the sharpening of discourse on migration and ‘cultural’ difference, and the presentation of harder ideas of heredity and ancestry in popular science and the media.

Teaching the course last year, after a break of a couple of years, I expected

there were going to be big changes in how students engaged with the material, but was quite surprised in how it manifested. The students were quite comfortable with talking about the history of ‘racism,’ as this is something they had encountered since first-year undergraduate studies and were highly aware of it as something with tremendous current resonance. In some respects, the arbitrary nature of historical racial typologies seemed very familiar to them, and the idea that racial categories are social constructs was an idea they had come across before, or intuitively got hold of quite easily.

What actually seemed to get them more disturbed or thoughtful was thinking about the prevalence of other ways of categorizing and demarcating peoples, which could be just as restrictive as more explicitly ‘racial’ or biological ones. So the persistence of ideas of social evolution as a way of creating hierarchies of groups, or how many very old racial and cultural stereotypes have seen something of a resurgence in popular presentations of

population genetics and neuroscience, generated a great deal of discussion. The idea that exclusion and categorization of human groups is not just about 19<sup>th</sup>-century skull measurers or late-20<sup>th</sup> century anti-migration campaigners, but has much deeper roots and wider entrenchment, became an important and quite consistent point.

In the initial seminars, after going through some of the more contextual reading, some take-home points emerged which guided discussion of the whole course. “Race” is never something that exists in a vacuum. It is always connected with other important categories of difference – whether these be based on language, gender, class, political status, citizenship, culture, sexuality, and so on. And secondly, that it is not just something presented by people we can easily dismiss as “historical racists” or “men [sic] of their times.” Categorizations and

markings of people as “others” are done and maintained through a variety of different markers, and for a wide range of different purposes — and that accounts for much of their intractability, pervasiveness, and longevity.



In der That lässt sich auf theoretischem Wege zeigen, dass diese Annahme vollständig ansprechen würde um die Entwicklung der Hybriden in den einzelnen Generationen zu erklären, wenn man zugleich voraussetzen dürfte, dass die verschiedenen Arten von Keim- und Pollenzellen an der Hybride durchschnittlich in gleicher Anzahl gebildet werden.

Um diese Voraussetzungen auf experimentellem Wege einer Prüfung zu unterziehen, wurden folgende Versuche ausgewählt: Zwei Formen, welche in der Gestalt der Samen und in der Färbung des Albumens constant verschieden waren, wurden durch Befruchtung verbunden.

Werden die differirenden Merkmale wieder mit *A, B, a, b* bezeichnet, so war:

<i>AB</i> Samenpflanze,	<i>ab</i> Pollenpflanze.
<i>A</i> Gestalt rund,	<i>a</i> Gestalt kantig.
<i>B</i> Albumen gelb,	<i>b</i> Albumen grün.

Die künstlich befruchteten Samen wurden sammt mehreren Samen der beiden Stammpflanzen angebaut, und davon die kräftigsten Exemplare für die wechselseitige Kreuzung bestimmt. Befruchtet wurde:

1.	Die Hybride	mit dem	Pollen	von	<i>AB</i> .
2.	Die Hybride	„	„	„	<i>ab</i> .
3.	<i>AB</i>	„	„	„	der Hybride.
4.	<i>ab</i>	„	„	„	der Hybride.

Für jeden von diesen 4 Versuchen wurden an 3 Pflanzen sämtliche Blüten befruchtet. War die obige Annahme richtig, so mussten sich an den Hybriden Keim- und Pollenzellen von den Formen *AB, Ab, aB, ab* entwickeln, und es wurden verbunden:

1.	Die Keimzellen	<i>AB, Ab, aB, ab</i>	mit den Pollenzellen	<i>AB</i> .
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It is indeed possible to assume that the different species quantity on average of

In order to put the following trials to different with respect to conjoined through fertilization if the differing traits

<i>AB</i> seed plant
<i>A</i> round shape
<i>B</i> yellow albumen

The artificially fertilized seeds from the two pairs destined for reciprocal

1.	the hybrid
2.	the hybrid
3.	<i>AB</i>
4.	<i>ab</i>

For each of these fertilized. If the above of the forms *AB, Ab, aB, ab* conjoined:

1.	The germ cells	<i>AB</i>
2.	„	<i>AB</i>
3.	„	<i>AB</i>

den in den einzelnen Generationen zu erklären, wenn man zugleich voraussetzen dürfte, dass die verschiedenen Arten von Keim- und Pollenzellen an der Hybride durchschnittlich in gleicher Anzahl gebildet werden.

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4.	<i>ab</i>	„	„	„	der Hybride.

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1.	Die Keimzellen	<i>AB, Ab, aB, ab</i>	mit den Pollenzellen	<i>AB</i> .
2.	„	<i>AB, Ab, aB, ab</i>	„	<i>ab</i> .
3.	„	<i>AB</i>	„	<i>AB, Ab, aB, ab</i> .
4.	„	<i>ab</i>	„	<i>AB, Ab, aB, ab</i> .

Aus jedem von diesen Versuchen konnten dann nur folgende Formen hervorgehen:

1. *AB, Ab, aB, aBb.*
2. *AaBb, Aab, aBb, ab.*
3. *AB, Ab, aB, AaBb.*
4. *AaBb, Aab, aBb, ab.*

# BSHS Translations: Mendel

In a letter to *The Times* ('Mendel's lost views', Fri July 14<sup>th</sup>), Professor David A Jones (Emeritus Professor of Botany, University of Florida) regretted that he and his fellow 'old-timer geneticists' would forever be in the dark as to Gregor Mendel's true opinion on natural selection since the executors of Mendel's estate had failed to retain any of his papers after his death that might have shed light on this important question.

The best they could do, according to Professor Jones, was to make certain inferences from the fact that Mendel 'was brilliant enough to include in his two research papers cross-references to Darwin's work'.

But perhaps Professor Jones should not despair just yet. For although Mendel's famous 1865 paper on hybridisation in pea plants is today hailed as being the foundation stone of modern genetics, several historians of science have argued that his reference to the challenge of discovering 'a generally valid law for the formation and development of hybrids' on the opening page was actually a declaration of his intention to uncover mathematical laws describing the formation of new species.

According to this interpretation, were Mendel to be somehow magically transported from the tranquility of his 19<sup>th</sup> century monastery garden and brought to the early 21<sup>st</sup> century, he would no doubt be flattered, but also bewildered to find that our modern biology textbooks laud him instead as the founding father of genetics when it may well have been the case that his real aim was to uncover the mechanism by which new species emerge through evolution.

Whether Mendel thought that this mechanism was indeed natural selection may still be up for debate, but perhaps the new translation of Mendel's classic paper by British Society for the History of Science may offer insights into this subject that will give Professor Jones and his fellow 'old-timer geneticists' new cause for hope.

## BSHS Mendel Translation

Gregor Mendel's seminal publication, *Versuche über Pflanzen-Hybriden (Experiments on Plant Hybrids)* appeared in 1866, and is regarded as one of the founding documents of genetics.

Dr Staffan Müller-Wille (University of Exeter), Dr Kersten Hall (University of Leeds), and site designer Michel Durinx worked to create an online translation of this text. The translation serves as a resource to make up one's own mind about how best to translate Mendel rather than a definitive translation. You can find it, plus an introduction and rationale, on the BSHS website here:

[bshs.org.uk/bshs-translations/mendel](http://bshs.org.uk/bshs-translations/mendel)

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# Conference Reports

## Provincial Collectors/Global Opportunities Workshop

5 May, University of Aberdeen



On 5 May the University of Aberdeen hosted a one-day workshop bringing together historians of science, empire and colleagues in museum studies to examine how study of the global trajectories of objects and individuals enrich our understandings of 'provincial' science and its local cultures.

The geographic networks that the workshop examined linked the Amazon to Aberdeen; the Andes, Australia and the Caribbean to England; and the Antarctica to Belfast. Diarmid Finnegan (Queen's University Belfast) began the workshop discussing, 'Francis Crozier's Penguin: An Object History of Maritime and Museum Science'. Dr Finnegan argued that emperor penguins were a totem object for the Ross Antarctic expedition; for example, the penguin was presented as a 'threat' and as a stand-in for indigenous people. When donated to the Belfast Museum by Crozier, however, this immature emperor penguin mattered most

because of the standing of its donor, the expedition's second in command.

Next I presented a paper entitled "Matamata Turtles, Palm Specimens and Poisoned Arrows: Object Circulation and the Career of Prof. James Trail" arguing that the objects which James Trail donated to the University of Aberdeen, from his 1870s survey of the Amazon River, were part of a network of object circulation which also delivered letters, newspapers, subscriptions to *Nature* and Bass's Pale Ale to the 'remote' Amazon. Moreover at that time, the Amazon was both highly multi-cultural and also the object of fierce international rivalry.

Dr Helen Cowie (University of York) ended the morning with her paper, 'From Woolly Wonder to Wonder Wool: The Alpaca in 19<sup>th</sup>-Century Britain', which furthered the theme of overlapping commercial, imperial and scientific networks. Examining efforts at alpaca acclimatisation within the British Empire, Dr Cowie's

presentation brought together local boosters in Saltaire, seeking to benefit their textile industry, and failed efforts to introduce the alpaca to Australia. While this history of alpacas in the British Empire has echoes of the stories of cinchona and rubber, animal husbandry brought additional complications to the efforts of these local entrepreneurs.

During the lunch break, speakers and workshop attendees had the opportunity to visit the King's Museum exhibition, 'Aberdonians in the Americas: Adventurers and Migrants from Mexico to Paraguay' and the university's Cruickshank Botanic Garden. In the afternoon, Dr Jim Endersby (University of Sussex) presented 'The Tangled Web: Collecting and Compliance' in which he discussed the networks of William Colenso, in New Zealand, who collected for William and Joseph Hooker. Colenso's correspondence offers a window onto the negotiations over authority, local knowledge and the naming of plants which were part of the power dynamics bound up in global collecting networks. As the person on site, Colenso had an advantage which he sought to use to assert his own authority.

Dr Anne Secord ended the day discussing another complex relationship between a powerful metropolitan patron and a 'provincial' collector in 'A Lancashire artisan abroad: George Caley as Joseph Banks's collector'. Once hired by Banks to collect for him in New South Wales, Caley used his Lancashire-based methodology, of botanical collecting over the seasons on the same ground, while also seeking out aboriginal knowledge and names.

The workshop closed with an open discussion drawing together the day's themes. Thus, this workshop contributed to a history of scientific networks and exchanges, through 'following' objects, animals and individuals, in a manner that was attentive to the transformations, changes, misunderstandings and multiple layers of meanings that these exchanges create.



## Gut Feeling: Digestive Health in 19<sup>th</sup>-Century Culture

26-27 May, University of Aberdeen

This multi-disciplinary, international workshop was held at the University of Aberdeen on 26–27 May 2017 in association with the University's Centre for History and Philosophy of Science, Technology and Medicine.

The twenty participants came from Australia, France, Norway the UK, and the US, and included postgraduate students, early- and mid-career researchers, established scholars, and a range of medical practitioners and clinical researchers. There was no plenary lecture as the event aimed to foster a close-knit, collaborative environment in which an intellectually ambitious yet highly focused programme of talks could act as a springboard for further work on the topic. Five panels were held over the two days, examining digestion in relation to politics; medical history; emotions and spirituality; literature, and metaphor.

Speakers focussed on digestive health in Australian, American, French, German, Italian and Norwegian history. Several key concepts ran through the papers, including the essential connections between body and mind; the complex relationships between civilization and health; and intersections between digestion and gender, identity, colonialism, political control, and ecology.

Some of the issues discussed included the importance of distinguishing between literal and metaphorical digestion, and the problems which arise when the distinction is unclear; the negotiation between digestion and other cognate

topics including hunger, consumption, and appetite; and the possibility of extending the inquiry into other directions including non-human digestion, post 19<sup>th</sup>-century perceptions, and digestion in eastern cultures. Delegate engagement was very high, and a network on this area of research will shortly be established. There was a strong sense that key forgotten concepts in the understanding of digestive health in this period could usefully be reconsidered by today's medical community, such as the focus on an interconnected body (demonstrated in diagnoses of 'neurasthenia gastrica'), or the strong emphasis on 'the balanced body' in bestselling health manuals.

One of the aims of the network will be to articulate the valuable insights gained by studying the history of digestion and to engage in meaningful discussion with practitioners in this area including gastroenterologists and neurogastroenterologists. Plans are also currently underway to publish a volume of essays based on the conference papers.

Funding for this event was gratefully received from the British Society for the History of Science; the British Society for Literature and Science; the Society for the Study of French History; the Society for French Studies; the University of Aberdeen School of Language, Literature, Music and Visual Culture; and the British Academy.

# London 1600-1800: Communities of Natural Knowledge and Artificial Practice

16-17 June, Dana Research Centre, Science Museum



This workshop, supported by the BSHS, was held at the Science Museum's Dana Research Centre on 16-17 June. It was designed to be an agenda-setting and launch event for the three-year Leverhulme Trust-funded project, "Metropolitan Science: Places, Objects and Cultures of Practice and Knowledge in London, 1600-1800", based at the University of Kent.

This project is in partnership with the Science Museum, where curators are developing a new gallery based on its early modern scientific instrument collections, opening in 2019. These are broadly conceived projects that share an ambition to use and develop research on particular spaces, and on visual and material culture, to explore the varied and changing knowledge and practice cultures of 17<sup>th</sup>- and 18<sup>th</sup>-century London.

The programme was brought together by Jim Bennett (Curator Emeritus at the Science Museum) in his role as Consultant to the research project. His aim was to establish the current state of research

on corporations, institutions and less formalised cultures of practice in early modern London, a place that had many vibrant knowledge-producing bodies but no university.

An impressive group of senior and early career scholars were invited to draw from their research and/or existing literature to address particular institutions and communities. Each had just 10-20 minutes, allowing many (though by no means all!) groups to be introduced, and at least some discussion. Over the two days there were 31 short papers, with 40 speakers, chairs or discussants, and a further 34 attendees. In addition, Celina Fox supplied a usefully macroscopic view of London networks in a lecture at the end of the first day.

Jim had suggested a fruitful set of questions that speakers might use to frame their talks, which became known as "Jim's Challenge". They considered whether, and to what extent, their institution or group was a repository of shared knowledge and skill. If so, they explored how this was maintained and developed. The groups'

identity – in relation to knowledge production, other communities and London – were addressed, and whether or how they sought to be distinct or promote change. The answers, naturally, were often "yes, no, and maybe", reflecting the range of commercial or learned, traditional or new, competitive and yet collaborative, and flexible and overlapping communities explored, but each was fascinating in its analysis.

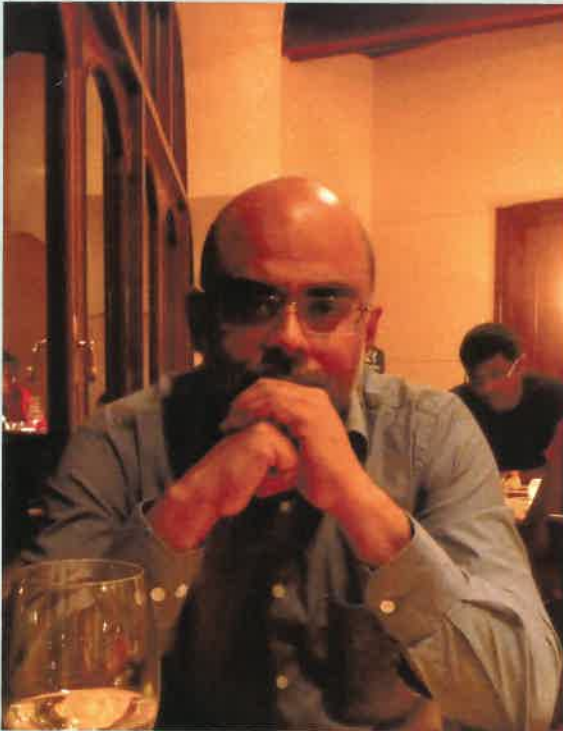
The programme had sessions on informal Cultures of Practice (including instrument and publishing trades), Trading Companies (including the East India Company), Livery Companies (from the established Goldsmiths' to the novel Companies associated with instrument making), Offices of State (e.g. Excise, Ordnance, Navy and Royal Observatory), Medical Institutions and Cultures,

Workshops and Laboratories, and a range of "New Spaces", from coffee houses and collections to the new learned societies.

Overall the workshop demonstrated the variety of London practical and learned life, and yet also an encouraging sense of the institutional overlaps that the project can explore, and of the development of London as a location for scientific endeavour. It was an energising opportunity to gather together an impressive range of scholars, curators and archivists working in related areas. We are hugely grateful to the speakers, and hope the event was as useful and stimulating for them as it was for the project team.

The full programme is available on the project's blog

[metsci.wordpress.com/2017/05/03/open-workshop-programme/](https://metsci.wordpress.com/2017/05/03/open-workshop-programme/)



## The Viewpoint Interview

**Pratik Chakrabarti** is Chair in History of Science, Technology & Medicine at the Centre for the History of Science, Technology and Medicine, University of Manchester.

**Who or what first turned you towards the history of science?**

My uncle Dr Abhijit Mukherjee. An exceptionally erudite and reassuringly irreverent and inspiring scholar, who sadly died a few years back. His own work was on the history of the Calcutta Botanical Garden and how it shaped British imperialism in India. I am currently converting his thesis into a book, tentatively called, *A Garden and an Empire*.

**What's your best dinner-table history of science story?**

Narrating Rudyard Kipling's short story, *The Mark of the Beast*, a haunting, scary but touching story about a British soldier in India turning into a savage beast, after being cursed by an Ape-God. Probably not ideal for a dinner-time conversation!

**Which historical person would you most like to meet?**

Hugh Falconer, as he travelled across the remote Himalayas, collecting fossils and tracing an ancient landscape.

**What has been your best career moment?**

When I received an email from Mark Harrison in 2002 saying that I had got a four year postdoc in Oxford. I had been doing odd jobs for two years since finishing my PhD in India and was living in a slum in Delhi.

**And worst?**

Seeing my graduate students struggle to get academic jobs.

**What are your favourite history of science books?**

The first history of science book I read as an undergraduate student was Kuhn's *Copernican Revolution* and it has stayed with me since. Ashis Nandy's *Alternative Sciences* was very instructive in my early days as a researcher and I should mention the brilliant Shiv Visvanathan and his *A Carnival for Science*, in the same breath.

**If you did not work in the history of science, what other career might you choose?**

A designer or a carpenter.

**What would you do to strengthen the history of science as a discipline?**

I think it is important that historians of science continue to ask questions that scientists do not ask, contemplate or even appreciate. They need to continue to play with science.

**How do you see the future shape of the history of science?**

As one that truly embraces global scholarship, those works that are conceived, written and published in the global south.

**Would you like to suggest an interviewee?**

Email us and tell us who we should speak to!  
viewpoint@bshs.org.uk

## The British Journal for the History of Science

Forthcoming papers include:

- Roos, 'Taking Newton on tour: the scientific travels of Martin Folkes, 1733–1735'
- Rabinovitch, 'A learned artisan debates the system of the world: Le Clerc versus Mallemant de Messange'
- Ducheyne, 'Pieter van Musschenbroek on laws of nature'
- Grossman, 'John Dalton and the Origin of the Atomic Theory: Reassessing the Influence of Bryan Higgins'
- Eddy, 'The politics of cognition: liberalism and the evolutionary origins of Victorian education'
- Myelnikov, 'Cuts and the cutting edge: British science funding and the making of animal biotechnology in 1980s Edinburgh'



[www.bshs.org.uk/publications/bjhs](http://www.bshs.org.uk/publications/bjhs)

## Viewpoint: the Magazine of the BSHS

### Contributions

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