

WAS PHRENOLOGY A REFORM SCIENCE? TOWARDS A NEW GENERALIZATION FOR PHRENOLOGY

John van Wyhe
Cambridge University

Ah, does not every true man feel that he is himself made higher by doing reverence to what is really above him?

Thomas Carlyle, *On heroes, hero-worship, and the heroic in history* (1841), 271.

In this essay I argue that the general characterization of phrenology should not be that phrenology was a reform science, as is a common view today, but that phrenology was a science of personal authority. I will show that the reform science characterization, while perfectly appropriate during some periods of phrenology's history and for some of its advocates, is nevertheless inappropriate for the entirety of phrenology's history or indeed for the majority of phrenologists. On the other hand, one of the more constant elements of phrenology throughout its existence, besides bumps, was the power it gave to its practitioners to speak authoritatively on all things human.

When we encounter the word 'phrenology' it naturally elicits certain images and associations in our brains. Often the familiar icon of a glazed plaster bust with its black lines and rows of names is pictured. Since the late nineteenth century, perhaps the most common association with the head-reading and character-delineating science of phrenology has been 'pseudoscience'. Pseudoscience did, and often still does, evoke the core of meanings commonly associated with phrenology. Roger Cooter, the foremost historian of British phrenology, argued that since the "seventeenth century, the label 'pseudoscience' (or the appropriate synonym) has played an ideologically conservative and morally prescriptive social role",¹ the idea being that those who condemn doctrines as pseudoscience are apophantically eulogizing their own 'correct' science.

More recently, philosophers and historians of science have undertaken the imposing task of overturning the modern view of science as somehow "a universal and value-transcendent touchstone of truth, reason and rationality".² The history of the discredited science of phrenology was a favourite subject for this task. In the 1970s and 1980s a number of sophisticated historians and sociologists of scientific knowledge such as Cooter, Robert M. Young, Steven Shapin, David de Giustino, Terry Parssinen, Angus McLaren and Ian Inkster largely succeeded in revising and reforging a new general understanding of phrenology.³ Phrenology is now appreciated to have been a very widespread cultural phenomenon during intervals from the 1800s to the mid-twentieth century. Historiographical revision included the integration of the history of phrenology within the larger concerns of social, political and economic history of the nineteenth century. More specifically, phrenology was used to demonstrate

that social factors were more relevant, more causal, and more widespread in science than previously allowed. For example, phrenology was used to show that what were once thought to be purely scientific debates could instead be forms of social conflicts. Phrenology, as a well-documented science with no living adherents, was particularly useful for establishing that the use and even some of the particular content of science could be social aims in disguise, or have social interests as their proximate causes. “Phrenology”, as Cooter succinctly wrote, “thus attracted a body of men who, for a variety of cultural, political, and idiosyncratic reasons, wished to utilise phrenology for specific social purposes”.⁴

As is well-known, phrenology was a species of character divination and philosophy of brain function. The oft-repeated tenets of the system were:

- (1) The brain is the organ of the mind.
- (2) The mind is composed of multiple distinct, innate faculties.
- (3) Because they are distinct, each faculty must have a separate seat or “organ” in the brain.
- (4) The size of an organ, other things being equal, is a measure of its power.
- (5) The shape of the brain is determined by the development of the various organs.
- (6) As the skull takes its shape from the brain, the surface of the skull can be read as an accurate index of psychological aptitudes and tendencies.

Today phrenology (at least in academia) is no longer associated primarily with ‘pseudoscience’ but arguably with ‘social reform’ or depicted as a ‘tool for social mobility’. Phrenology is commonly represented as “a reformist movement which presented an alternative view of social change”.⁵ R. M. Young has also written that “phrenology was propagated and well received as a platform for social, educational, and public health reforms”.⁶ The overview of phrenology presented in Nancy Stepan’s *The idea of race* (1982) offers a similar generalization: “as a movement, phrenology in Britain was on the whole reformist rather than conservative.” In popular histories of science, such as James Burke’s *The day the universe changed* (1985), phrenology is also depicted as about the reform of society:

Sometimes an entirely new area of specialisation may be generated by socially desirable goals.... The phrenologists were regarded as dangerous social reformers: they agitated for better treatment of the insane, for education of the working class, criminal law reform, more enlightened colonial policy, improved working conditions in factories, and of course for a change in their own social status.⁷

One needs only to mention phrenology at a conference to hear, as I recently did, “Phrenology? Ah yes, wasn’t phrenology about the reform of society?”

Just as the term ‘pseudoscience’ reflected perhaps more on the interests of the users of that term than on phrenology, the reform science views may be a reflection of the interests and backgrounds of the historians who have created and used them. In fact these historians of science were, in part, seeking to counteract the views of science as naïvely internalist, value-free and exempt from social and cultural factors, which

went along with representations of phrenology as pseudoscience. For these historians, showing that phrenology was entwined with and integral with culture demonstrated the inadequacy for claims that ‘real’ science is objective or neutral and somehow independent from culture. A step further in this direction is the project of showing how sciences are fully ‘embedded’ socially and culturally. At times the histories of sciences like phrenology have been reworked almost as epiphenomena of the real story of social and political history. Sciences were represented as weapons or tools in the larger or more real social game and certainly not something independent of that game. Of course a place in culture as a whole is certainly where sciences belong if a full and sensitive understanding is valued.

This seems a story with a happy ending, so what could be wrong with describing phrenology as “always a moderate reformist doctrine”?⁸ The problem is a perennial objection to amendments of earlier views. The campaign to represent phrenology as reform science goes too far beyond correcting older shortcomings and claims too much efficacy for the new causal forces or too small a role for the previously exaggerated factors. It seems well-established now that all human activity — including science — is part of social life. Scientists, no less than anyone else, are people of a culture with their own social aims and interests. Historians of science are probably unanimous that ‘science’ is only one activity of humans engaged in very many other things, with many possibly conflicting interests and so forth. Science is no longer seen as an inevitable and straightforward reflection of nature but as a body of knowledge created by particular people in a particular social context.

However, there are two main problems with representing ‘phrenology’ as reform science. The first is that we know of very many phrenologists who simply contradict this interpretation. As Alison Winter observed, although “the so-called alternative sciences have long been portrayed as vehicles of protest for individuals outside cultural establishments of one kind or another, it has become clear that they had far more adherents among the so-called scientifically orthodox than we might have once supposed”.⁹

An example of a conservative proposal for phrenology’s application to society came from the Anglican Rev. Henry Wintle (1770?–1850) of Somerton, Oxford, a correspondent to the Tory *Gentleman’s magazine*. Wintle recommended the science of phrenology as a means of arranging the heads of Britain so as to keep everyone in their proper social place.¹⁰ The polymath William Whewell, later master of Trinity College Cambridge and one of the major players in the British Association for the Advancement of Science, was a subscriber to the *Phrenological journal*.¹¹ There were other élites such as Sir George Steuart Mackenzie, FRSE (1799), FRS (1815), or Richard Whately, Drummond Professor of Political Economy at Oxford (1829–31) and Archbishop of Dublin (1831–53), who were some of phrenology’s most outspoken devotees, yet they were not altogether orthodox in their other pursuits either.

It might be objected that a few exceptions such as these are irrelevant to characterizing phrenology as a reformist doctrine. Furthermore, a very long list of reformer phrenologists in the UK, USA and Germany could easily be compiled. Nevertheless,

reform is inappropriate for a representation of ‘phrenology’ generally. Phrenology, we must remember, refers to a diverse set of behaviours, ideas, and iconography, from the urbane originator of the science Dr Franz Joseph Gall of the 1790s, through to the practical pier-side bump-reading practitioners of the 1940s. If the word ‘phrenology’ can be used for such diverse individuals over so much time, then the nineteenth-century reform trends that accompanied phrenology from the late 1820s through the 1840s seem less important and integral to phrenology itself.

In addition to so-called establishment élites and non-reformers interested in phrenology, there is also the *vast majority* of active phrenologists in the nineteenth and twentieth centuries to consider. These individuals, the so-called practical phrenologists or popular bump readers, have remained little investigated by historians.¹² We know that for-profit and often itinerant phrenologists were abroad in Britain as early as 1816 and from the 1830s in the USA and continued to practise until after the Second World War.¹³ Cooter’s impressive biobibliography of British phrenology contains hundreds of entries for “practical” and “consulting” phrenologists, even though these men and woman usually left less material for posterity than the élite theoretical, scientific and reforming phrenologists.¹⁴ Practical phrenologists used the science to woo audiences into a sense of the wisdom and skill of the phrenologist, so as to earn money through character delineations, selling books and charts, and lecture performances. Rather than seeking to reform morals or society, by and large the majority of phrenologists who ever plied the trade sought to convince audiences that a phrenologist was someone worthy of attention — someone who spoke authoritatively about human nature. This was often in a context in which other wonders, such as spiritualism, mesmerism, astrology and mysticisms, competed for attention (and money).

For example, in 1840 the popular London phrenologist Cornelius Donovan (*c.* 1820–72) founded the London School of Phrenology (later the London Phrenological Institute) in the Strand (and later on, Trafalgar Square). In the same year he also became a member of the Phrenological Association. Donovan was a practical phrenologist in that he spent most of his phrenological effort in itinerant lecturing and reading heads for a fee. He made plaster casts and offered courses of nine private lectures for 3 guineas, 5 guineas for two persons taking the lessons together, and 6 guineas for three persons. He lectured throughout England, especially in the South-east and the Midlands, and also in Scotland and Ireland. In 1843 he gave a course of four lectures in Leicester. In 1849 he debated phrenology with the evangelical Congregationalist clergyman Brewin Grant in Birmingham. Unlike his competitor, the practical phrenologist James De Ville, Donovan was an educated man if we are to judge from the extensive literary references and quotations from scientific and classical works that pervade his writings. He published occasional articles in the *Phrenological journal*, typically on the delineation of a famous criminal’s head. His main work was a small book entitled *A handbook of phrenology* (1870). Most of the phrenology practised by Donovan was the usual British fare — 36 faculties, sentiments and rhetoric borrowed from the Combes. Although he copied illustrations from later editions of Combe’s *Constitution of man* (1828), Donovan’s phrenology

was not simply a copy of the leading phrenologists' works. He saw phrenology as a sub-department of physiognomy and he practised it accordingly. In addition to surveying the general shape and especially the size and circumference of a head to start with, Donovan would also attend to the folds of the ears and the shape of the hands to determine the constitutional disposition to various ailments. Following these general assessments, he practised his own art of head manipulation in which he felt the organs of the head in a particular order and manner with his hands. Unusually, Donovan's book provided illustrations on this art of manipulation. Contrary to the usual historical interpretations, he made no references to altering or reforming society, education or religion. There is no evidence that he was a reformer. Instead he stressed the need for the use of phrenology in deriving knowledge about the characteristics of oneself and especially others. He left a number of pupils to carry on his practical phrenological works, including his son Henry Cornelius Donovan (b. 1846), who acquired the London practice, and Ebenezer Eve.

Despite the great diversity of the individuals who espoused phrenology throughout the last two centuries, some things were shared by all or most of them and it is this that justifies our calling them phrenologists. This leads to the second problem with phrenology as reform science. If there was a *general* essence, use, or point to phrenology, it was not the reform of society or, as Adrian Desmond put it following the work of Shapin, as an anti-Establishment "rank-breaker" science.¹⁵ Instead there was a more basic use of phrenology of which the reform of government and society is only one of many applications. Just as phrenology was always about reading numbered character-determining brain bumps and busts with the familiar markings, so too phrenology was always about epistemological certainty.

From its beginnings in the organological theories of the Viennese physician Franz Joseph Gall, phrenology was described as a *science* which brought certainty where before there was only speculation or conjecture.¹⁶ In a sense, phrenology was one of many fusions between Enlightenment naturalistic traditions of scientific certainty and the new territory of the human mind, about which it was possible to make positive pronouncements. The advocates of phrenology, from the Germans Gall and Spurzheim, to the Scot Combes, the American Fowlers, and the British Phrenological Association disbanded in the 1960s, and all and sundry in between, believed ardently that phrenology worked. That is, they believed that by virtue of this science of mind, what they said about the aptitudes, psychology and behaviour of their fellow humans was more certain and therefore more important than those who were without "the most important scientific discovery ever made".¹⁷ Even one of the last phrenologists to make serious scientific pretensions, Bernard Hollander (1864–1934), wrote that "those in authority and position" should not rest "until they have put beyond all doubt the truth of [phrenology]".¹⁸ In the 1960s a phrenologist wrote to R. M. Young, "the only reason that I may appear enthusiastic is because day by day I find constant confirmation of it".¹⁹ The certainty and authority claimed by phrenologists remained central to phrenology from the 1790s to the mid-twentieth century and was shared by phrenologists of differing social and political persuasions.

It is for these reasons that I think we should associate phrenology with epistemological status and a brash belief in the phrenological practitioner's authority to pronounce on the causes of human behaviour and psychological abilities, rather than the social and political leanings or the social uses phrenology was put to by a minority of elite phrenologists during the second quarter of the nineteenth century alone.

CAN A DOCTRINE BE ABOUT CERTAINTY AND AUTHORITY?

There are and have been countless systems of character reading and counselling in all times and cultures. Phrenology was the way it was because high-status sciences were evolving which early phrenologists tried to take advantage of. The pronouncements of the phrenologist were said to be true because they were scientific facts drawn from an unerring, constant Nature. Phrenology is therefore not unique in being an ostensible touchstone of truth doctrine whose advocates used it to increase their personal status and authority.²⁰ The history of science is dotted with such touchstone of truth doctrines. John Henry describes the seventeenth-century mechanical philosophy, as distinguished from the traditional scholastic philosophies, as fulfilling this role. The new philosophy was based upon the purported certainties of geometrical reasoning. "To be a natural philosopher, after all, was to be in possession of a key to answer all questions about the physical world."²¹ Steven Shapin observed: "From Gilbert and Bacon to Descartes and Boyle, the new philosophers of nature and their cultural allies avowed the supremacy of direct individual experience or intuition over trusting the authority of previous writers. Natural knowledge, properly so called, was founded in the evidence of nature or of individual reason, not in the say-so of traditionally trusted sources."²² Peter Dear, in another recent overview of the history of early modern science, writes: "The famous 'method', which Descartes published ... represented an attempt to ground all of his ideas in the various sciences on a foundation of certainty."²³ Descartes's ambitious scheme was to supplant the authoritative Aristotle in the schools of Europe.²⁴

Closer in time and relevance to phrenology is the famous X Club, which has been called "the most powerful coterie in late-Victorian science".²⁵ It was once received wisdom in the history of science that the X Club was devoted to, among other things like secularization and naturalism, promoting science professionalization. More recently however Adrian Desmond has concluded, following the important work of Ruth Barton, that the X Club was not about professionalization of British science; instead, "[The X Club] was about status and emolument for the Xs themselves".²⁶ The philosopher of science David Hull likewise sees sciences as the product of the interplay between individuals cooperating and striving for credit.²⁷

Mesmerism was another doctrine that owed much of its proliferation to the authority it was able to help fashion. As Alison Winter has argued, mesmerism created authority in two main ways.²⁸ A mesmerist could affect the vital influences of others, and the mesmerized state itself could provide special status or power to the mesmerized. Mesmerism was about affecting or controlling others. Phrenology was

knowing about others or revealing their secrets. Hence phrenology's authoritative role was epistemological. Phrenology provided the authority of a scientific seer to the phrenologist not only during trances, nor in a restricted environment such as the anatomy theatre, but everywhere. In every company and in every social situation the phrenologist had the opportunity to make 'observations' — to confirm the truth of phrenology on and to those around him, rendering those of both higher and lower social status into objects of a new scale of phrenological classification.

A SCIENCE OF FAITH

Phrenology was also a type of faith that was labelled 'science'. The most stressed aspect of phrenology was its verity. Phrenology was not generally a research programme. Phrenologists did not conduct experiments to determine if the phrenological organs were accurately identified. A search for new cerebral organs was not a significant part of phrenology. The details of phrenology were all taken on faith from existing practitioners/believers buttressed by a belief that confirmative observations meant the faith was justified and scientific. Contradictory findings were explained away or ignored. The point was, phrenologists were not out to find the truth — they already had it. After all, as the *Phrenological journal* boasted: "phrenological ... is another word for natural", and "whatever is natural is just to the same extent and in the same degree phrenological".²⁹ In fact, every use of phrenology was a use of faith. Every time one diagnosed a head one relied on the faith that it was true that this particular bump housed its faculty. The authority and certitude that scientific 'facts' had acquired in the early nineteenth century was becoming more and more familiar to lay audiences. We see this in the growth of scientific societies or in the more than two dozen provincial disciplinary societies devoted to natural knowledge such as natural history or botany, as well as journals and the flood of popular science literature.³⁰ Phrenology combined belief in observational certainty with faith in the phrenological localizations handed down by early practitioners. Therefore phrenologists could make sweeping generalizations while remaining confident in the empirical nature of their knowledge.

Of course I do not mean to imply that other sciences do not contain or use faith, but that phrenology was mostly so and that that faith was in the certitude of phrenological knowledge of human nature. Benevolence was always under that particular bit of skull and what phrenology dictated about it was true and could not be contradicted. Observations had rendered it "established" for all time.³¹ The phrenologists' democratic-sounding pleas for empiricism and public observation to prove their science have been interpreted as reason to equate phrenologist with reformer, as if phrenologists were out to undermine elite authority and democratize science for all.³² Hence Cooter's observation: "As its findings were visible, so its theory and practice were easy to grasp. Thus the defence of phrenology was always inseparably a defence of the rights of 'the people' against the rule of privileged groups."³³ Similarly Shapin argued that the phrenologists' appeals to the availability of phrenological observation

to all was a symptom of the phrenologists' "social programme, and was in itself a proposition of great social significance".³⁴

The emphasis on observation was not just a means of criticising elite philosophers in Edinburgh.³⁵ The practice began with Gall many years before phrenology came to Scotland and continued throughout phrenology's existence.³⁶ Phrenologists insisted that observation and knowledge were available to everyone only insofar as these claims justified their own participation in otherwise specialist subject matter, and when critics pointed to discrepancies in phrenology, or when disreputable mountebanks used head reading to make fast money, contradictory arguments appeared. Then phrenologizing depended on intimate familiarity with the details of the science or individual skill in reading the organs correctly.³⁷ This feature was highlighted by the well-connected physician and physiologist Peter Mark Roget (1779–1869), now remembered as the author of the thesaurus that bears his name, in his entry in the *Encyclopaedia Britannica*.³⁸ Roget claimed to examine phrenology only for its physiological and anatomical merit, self-consciously avoiding the more 'irrational' forms of criticism, an approach that signalled his standing above such impassioned diatribes. Roget coolly concluded that phrenology was unfounded and the claims of its proponents exaggerated. Roget observed that the phrenologists turned tails to suit their needs so that they could proclaim "that the evidence of their science are palpable and demonstrative, that the field of nature is open to all inquiries ... [and] when such judgement is against them, they can turn round, and allege that in order to arrive at the truth a peculiar discretion and tact" and long experience are necessary.³⁹ The common denominator was always that the phrenologist should be recognized as a man of scientific authority.

Phrenologists following Spurzheim sometimes used reform language because it was also useful to attract new recruits. Calls to reform education, criminal punishment, government, free trade and society were commonplace in the 1820s and 1830s. But not all talk of reform was sincere or effective. It need not reflect the thoughts of a social reformer. Phrenologists never acted coherently in party political affairs.⁴⁰

THE CERTAINTY OF PHRENOLOGY

What we loosely call 'phrenology' evolved considerably from the 1790s to the 1960s. From its inception Gall's system was about certainty. "Nature", Gall wrote to a prospective lecture organizer, was his "sole authority", which allowed Gall to triumph over his opponents through the greater epistemological power of his natural knowledge.⁴¹ Gall adamantly repeated in his writings that his system swept away the old speculation about mind and so conferred certainty where metaphysics produced only confusion. That is, Gall claimed greater certainty for his science because of the association he made between it and an irrefragable touchstone of truth. As Gall recalled his medical student days,

We had much said to us about the functions of the muscles, the viscera, etc., but nothing respecting the functions of the brain and its various parts. I recalled my

early observations, and immediately suspected, what I was not long in reducing to certainty, that the difference in the form of heads is occasioned by the difference in the form of the brains.⁴²

The period in which Gall was in public the most, when he most frequently presented his system and received the most praise and criticism, was during his great lecture tour of more than forty European cities between 1805 and 1807.⁴³ During this time Gall and his system or *Schädellehre* were all the rage. Gall lectured at universities, courts and castles, and had debates with eminent scientific men across northern Europe. It is tempting to conclude that Gall sought to promote and diffuse his new science. But this would be misleading. Gall repeatedly told his audiences that his system was too difficult for them to try. When Gall left Germany in 1807 and settled in Paris, no disciples remained in Germany to sustain Gall's doctrine. It died out when Gall, the only practitioner, departed. The Amsterdam newspaper *De Ster* reported in 1806 that Gall did not approve of any of the pamphlets by others about his system because Gall wished to be the only exponent of his system.⁴⁴

If we suppose that Gall sought only *scientific* status or to spread his doctrine, his tour could be considered of questionable success. If, however, we consider what it did for Gall's social and intellectual status and authority, then it was a dazzling success, which is how Gall himself regarded it. Throughout his tour, Gall moved in élite circles, not only aristocratic, bureaucratic and clerical, but also cultural and scientific.⁴⁵

The crucial point for Gall was convincing his audiences. He tried to convince them that he had discovered an important new science by virtue of which he was a unique authority on human nature. In this endeavour all means were legitimate. "Generally I have arranged my lectures so that they have a great interest for everyone."⁴⁶ It worked. Gall was, for a time, one of the most famous men in Europe. He made a fortune, and by his own account, was immensely satisfied.⁴⁷

It was the attempt of Gall's former dissectionist Johann Gaspar Spurzheim (1776–1832), from 1814 to reproduce in Britain the success Gall had achieved in Europe, that allowed phrenology to become a socially significant phenomenon. At first Spurzheim called phrenology "the physiognomical system of Drs Gall and Spurzheim". Spurzheim told his British audiences and readers that the aim of the system he was espousing was "the knowledge of human nature".⁴⁸ According to Spurzheim, human nature was still largely a mystery. There were some basic reasons for this lamentable state of knowledge. One was that Man was generally treated as a being distinct from the rest of Nature, which was false.⁴⁹ Another was that there were so many conflicting opinions. How could one know which to believe and which to reject? The answer lay in the physiognomical system. By considering Man naturally, and by following the methods of physical science, one could expect consensus. Spurzheim claimed that the physiognomical system contained all of these elements, which previous philosophies lacked. Thus the long-sought-for certainty about human nature, morals and mental philosophy was dawning. The main point of the system was not any changes that would be entailed by its new revelations of Man's true

needs and capacities, but the *certainty* of the knowledge of Man.⁵⁰ Gall's system was *the* science of human nature — the greatest of sciences; it would conquer where philosophers and theorists had struggled in vain for centuries. Hence it should be of interest to everyone, as Spurzheim declared: “it is impossible to find any object of greater importance than this, or of more durable interest.”⁵¹

The prevailing explanation of Spurzheim's aims is that he was “primarily interested in the applications of phrenology to the reform of society and morals.”⁵² I think the evidence points elsewhere. Spurzheim's main aims were rather fame and wealth rather than the reform of society.⁵³ Although Spurzheim boasted that all must be “different from what it has hitherto been”, and denigrated the “uselessness of the proceedings of our predecessors” (as his British disciples too would later boast), Spurzheim had no specific plans for change or reform.⁵⁴ His language of reform was a hollow bid for recognition. Spurzheim was never involved in social reforms, founded no schools or asylums, and took no part in political life in Britain, Germany, France or the USA.⁵⁵ Grand prognoses of change made exciting reading with reform bills on the political horizon, but there was nothing behind them, clearly not the “vast programme for the re-distribution of rights, privileges and priorities within British society” that Steven Shapin inferred from the phrenologists' overblown rhetoric.⁵⁶ The older interpretation was supported by Spurzheim's rhetoric that one of the benefits of the establishment of his certain science of Man would be a more rational organization of society. However, rhetoric of change was only one of many techniques Spurzheim employed to emphasize the sweeping power and relevance of the system *he* was expounding. Writing and lecturing on phrenology provided Spurzheim's primary income. When his lectures were banned in 1825, he moved from Paris to London. Even Gall wrote a friend that Spurzheim “has made the whole thing more of a money maker than a pure search for the truth”.⁵⁷

Through phrenology, according to Spurzheim, one could quickly and easily step to the forefront of scientific status.⁵⁸ Hence phrenology, that “great Limbo of vanity” as the editor of the *Edinburgh review* and staunch anti-phrenologist Francis Jeffrey called it, tended to draw particularly arrogant men as its main advocates.⁵⁹ And so phrenology, as Gall's system before it, was a science of certainty. It conferred certain truth and knowledge on its possessors. These powers of firm and certain knowledge could, of course, be applied to major intellectual and political debates of the time, be it reform of parliament, social reform, education, or repeal of the Corn Laws, or they could be used simply to demand respect at a social gathering.

In the *Transactions of the Phrenological Society* (established in 1824), the first publication devoted to phrenology, the essential advantage of the science was described by George Combe (1788–1858) as an epistemological certainty.⁶⁰ Here a careful reading reveals the place the reform of society held for phrenologists in the early 1820s. First of all, the “system of truth” (phrenology) conferred epistemological certainty on those who believed in and practised it.⁶¹ Subsidiary to this *Leitmotif* was the fact that phrenology would bring clarity to the philosophy of Man.

Phrenology, by presenting to observation a corporeal organ, by means of which

a particular faculty manifests itself, will tend considerably to do away with the airiness and shadowy uncertainty which at present attend this branch of metaphysical science ... and by this mode of philosophizing, any point which has once been fixed, will not be liable to be again shaken loose and subjected anew to uncertainty and doubt.⁶²

Here we might be tempted to conclude that phrenology was only a method employed by certain men in Edinburgh to undermine elite university philosophers. However, this interpretation is rendered problematic by the fact that the university philosophers themselves, such as Thomas Reid and Dugald Stewart, did not agree on this question. So, on this point at least, it was not a question of phrenology versus elite philosophers of mind.

Observation was one of the foundation stones of phrenological certainty. As Combe wrote in the “Preliminary dissertation on the progress and application of phrenology”:

The degree of conviction resulting from observations ... repeated on a great variety of individuals, and in every diversity of circumstances, far surpasses that which can be produced by perusal of the most minute and authentic details of cases observed by others. By contemplating phenomena as they actually exist, the mind forms a judgment concerning the real nature of their relation to each other, with higher degree of certainty and satisfaction.⁶³

Only on pages 52–53 of the “Preliminary dissertation” is it mentioned that society could be better arranged if phrenology were accepted as true. It is not my point to deny that many phrenologists wished to change society. However, I think we need to restore this point to its proper place within the culture of phrenology, as one of a number of subsidiary reasons why phrenology was considered important or useful.

Another founding declaration of the Edinburgh phrenologists was the unsigned “Introductory statement” that commenced the *Phrenological journal*, the main organ for the phrenologists of Britain until 1847.⁶⁴ On the first page the editors stated that they wished to “make our motives and our objects perfectly understood ... [since] very few individuals indeed have yet formed an adequate conception of the real nature, the cogent evidence, and the vast importance of phrenology”. What was this vast importance? Was it the light phrenology threw on how society ought really to be arranged? Alas, no. This “system [which is] near its certain destination of being deemed the most important discovery of modern times” had as its “object” “scientific truth”.⁶⁵ In this introductory statement at least, “scientific truth” meant that questions long debated were to be considered soluble by the advocates of phrenology. More particularly, phrenology was useful in overcoming the derision and counter-arguments of sceptics at social gatherings.⁶⁶ Here the social muscle of phrenology was first flexed. After all, as the writers added: “Mr Abernethy, of high medical renown, has, in a tract on the subject, in 1821, borne his testimony to the beauty and certainty of *the philosophy* of mind, to which the phrenologists have been led.”⁶⁷ In this introductory statement there was no difference of social class between phrenologists and their critics. The

phrenologists were described as “men of philosophical habits” or “inquiring men”.⁶⁸ In the final paragraph we read that if there were a difference between phrenologists and their critics it was likely to be age, not social class or status.⁶⁹

These were not merely enthusiastic early statements that do not reflect what phrenologists generally believed. In 1832 T. I. M. Forster, the man who coined the word ‘phrenology’ for this system in 1815, wished to call “the attention of the [British Association for the Advancement of Science] to ... perhaps the highest department of human science, viz. *the foundation of certitude in the perceptions of the mind, and on the nature of axioms* [i.e. phrenology]”.⁷⁰ George Combe tirelessly advocated essentially the same point. “A fierce and universal conflict of opinions is maintained on many important subjects connected with mind, which cannot be satisfactorily settled till the true philosophy of man shall be discovered and understood.”⁷¹ “If, therefore, Phrenology could introduce into the philosophy of mind even a portion of the certainty and precision which attend physical investigations, it would confer no small benefit on this interesting department of science; and ... it is fully competent to do so.”⁷² It was fully competent to do so, in Combe’s view, because it possessed “an irresistible authority”.⁷³ Since this was the case, phrenology was “one of the most valuable discoveries that ever graced the annals of philosophy”.⁷⁴ Dr William Gregory, Fellow of the Royal Society of Edinburgh and of the Royal College of Physicians of Edinburgh, recommended phrenology in 1836 because it offered certain knowledge of character.

I have studied the science of Phrenology, and have the firm conviction that, in the hands of properly qualified observers, this science affords the means of ascertaining with certainty the natural dispositions and talents of such individuals as possess healthy brains.... I have also had very frequent opportunities of witnessing the facility and certainty with which character is discriminated by practised phrenologists in the case of living persons. It would be superfluous to point out the advantage of such a power, especially in the case of convicts.⁷⁵

In France too phrenologists such as Joseph Vimont (1795–1857) proclaimed that phrenology was important because of the certainty of its facts.⁷⁶

In America also, phrenology was billed as valuable and useful because it provided certain knowledge of human nature. The Fowler family was foremost in this. The practical phrenologist Lorenzo Niles Fowler (1811–96) told the readers of his countless practical phrenology works that phrenology was absolutely true because “the facts are self-evident”.⁷⁷

The phrenological phenomena are uniform, throughout the whole human family, and throughout the whole animal kingdom. The whole world is challenged not only to produce a single important exception, but also to examine the facts in the case. This uniformity proves the existence of certain phrenological laws which govern these phenomena. Phrenology, then, is consistent in theory, and susceptible of physical demonstration, by an appeal to nature, and to facts.⁷⁸

Lorenzo's brother, Orson Squire Fowler (1809–87), also represented phrenology as true of necessity and therefore the pronouncements of its practitioners were commensurably valid.⁷⁹ This certainty translated into the authority of the phrenologist to pronounce on the answers to questions such as which career or spouse to pursue, because the phrenologist, like the “mariner with his compass to direct his ship over the boundless ocean”, had “the compass of the mind, by which they could direct with unerring certainty, the steps from childhood to youth, from youth to manhood”.⁸⁰ The prominent American Christian phrenologist Rev. George Sumner Weaver (1818–1908) declared that phrenology was the key to “unlock the golden treasure-house” of mental science and “confer upon every man, every woman, the priceless boon of [self] knowledge”.⁸¹ Even in the early twentieth century the psychologist and critic of cerebral localization Shepherd Ivory Franz observed that phrenology was distinguished from other forms of psychology by “a definiteness to diagnosis”.⁸²

By virtue of the unquestionable truth and accuracy of phrenological knowledge about human beings, the possessors of this knowledge could use it as an argumentative weight to throw onto the side of whatever endeavours they pursued. The middle-class reformers studied by Cooter and others are one example of this. Cooter observed that phrenology provided “what all who seek to morally reform society require in the face of their opponents, an ultimate touchstone of truth — a touchstone, moreover, that, in stemming from nature, could be held to be uncorrupted by the culture and customs nurtured arbitrarily by the traditional retainers of power”.⁸³ Similarly, E. P. Thompson argued that phrenological Owenites used phrenology as “the last and conclusive link” in their chains of arguments on behalf of a rationalized secular society.⁸⁴

Christian phrenologists in Britain and America often used phrenology as additional weight to prove the existence of God. Phrenological organs such as Veneration or Wonder possessed the innate functions to worship a deity and feel awe at the thought of a creator.⁸⁵ Calvinists felt vindicated by the phrenological faculties for greed and desire that confirmed human depravity.

The certain truth of phrenology was naturally an essential point for professional phrenologists, those who made a living by lecturing or writing on phrenology or performing phrenological delineations. The preface to a self-advertizing pamphlet by the mid-nineteenth-century practical phrenologist H. Lundie is a typical illustration of the connection between phrenology's authority and the urgency with which the public was advised to consult a phrenologist (in this case Lundie himself). Lundie, making no reference to reforming society, argued that all the decisions of life should be guided by the authoritative knowledge of the phrenologist:

... by far the greatest number of those evils attendant on frail humanity, would be avoided [if] at every turn of life we should consult this infallible oracle [phrenology]. If about to marry, Phrenology will point out to us the characters, dispositions, and tempers of those with whom we are about to be united for life. Have we sons and daughters — and do we wish them to learn those trades, callings, and professions best suited to their various organisations? If so, Phrenology will point out to us their various capabilities, and prevent that cruel disappointment

which is to be met with in every day's occurrences; and, if we are desirous of knowing the true characters of clerks, shopmen, domestics, masters, &c, Phrenology will teach us to read it in the various shapes and developments of the human head. Does it not then become the bounden duty of parents to have the heads of their children examined...?⁸⁶

CONCLUSION

I have argued that phrenology was not, essentially, about reform but about “irresistible authority”.⁸⁷ Phrenology was used as an alternative or supplementary foundation for intellectual and epistemological authority. This was so not just to further the aims of reformist groups. Phrenology, as a new science with “lofty pretensions”, was a highly competitive option to supplement one's status and authority in the way that membership in a gentlemanly club or geological society could be.⁸⁸ Of course I do not mean that phrenology was *only* about authority and certainty. Phrenology's inspiration for non-phrenologists in particular is probably irrelevant to this view, especially for those non-phrenologists whom it inspired to think in new ways, such as those who took care of the insane and investigators of the brain.

This essay has aimed at a particularly intractable target, our general understanding of ‘phrenology’ as a science with “reformist pretensions”.⁸⁹ In one sense there is no such thing as ‘our general understanding’, it is a short cut for similarities in many modern representations of phrenology. The case presented here is therefore particularly vulnerable since it can always be asserted that no one really holds this general view, that it is only a straw man. Similarly, it would not be difficult to contradict the general view as I have represented it, with the citation of isolated passages from previous historians of phrenology where they characterize phrenology otherwise. But these will not do. The general tenor of the large body of historiography referred to here is unmistakable. The cumulative effects of this literature have been to constrain the possible understandings a reader can create regarding phrenology. As Seymour Mauskopf has written:

The historiography of phrenology has exhibited what is perhaps the clearest and most coherent development of any literature on marginal science, moving over time from a rehabilitative effort initially couched in terms of the contribution of phrenology to neuro-anatomical development, to a much more social and relativistic orientation. In so doing, this literature has reflected the more general shifts of interest and orientation in history of science over the past forty years.⁹⁰

Nevertheless, it should be clear that the foregoing discussion is not intended to falsify the writings of social historians of phrenology who argued that many phrenologists used their science to justify demands for greater social participation, political, educational, and other reforms, and so forth. Cooter, for example, knew perfectly well that phrenologists were not merely reformers. Social reform was only one of the consequences seen to follow from the establishment of phrenological certainty about

human nature. Instead, my aim is the general characterization held by historians of science today about phrenology.

I hope this disquisition has demonstrated that phrenology was used to create personal authority through certain knowledge, or one might even say *positive* knowledge — just as August Comte wished to establish a positive science of human sociology based on certain natural facts and saw fit to borrow from Gall’s version of positive psychology. Philosophers had long been envious of the epistemological certainty that adhered to the pronouncements of men of science, as when Thomas Reid, the leading figure in the Scottish ‘common sense’ school, hoped that philosophers of mind would “produce a system of the power and operations of the human mind no less certain than those of optics or astronomy”.⁹¹ If we must use generalizations for things like phrenology, it seems more appropriate to say that phrenology was about authority.

ACKNOWLEDGEMENTS

I am grateful to Ayako Sakurai for provocative discussions and Aileen Fyfe, Adrian Desmond, Jim Secord, Rob Iliffe and two anonymous referees for feedback on earlier versions of this paper. I am also grateful to the National University of Singapore for funding part of my research.

REFERENCES

1. Roger Cooter, “The conservatism of ‘pseudoscience’”, in Patrick Grim (ed.), *Philosophy of science and the occult* (New York, 1982), 130–43, pp. 130–1.
2. *Ibid.*, 130. See also: Roger Cooter, “Deploying ‘pseudoscience’: Then and now”, in M. Hanen, M. Osler and R. G. Weyant (eds), *Science, pseudoscience and society* (Waterloo, Ont., 1980), 237–72.
3. Cooter, *op. cit.* (ref. 2); Roger Cooter, “Phrenology and British alienists, c. 1825–1845”, *Medical history*, xx (1976), 1–21, 135–51, reprinted in Andrew Scull (ed.), *Madhouses, mad-doctors, and madmen: The social history of psychiatry in the Victorian era* (Philadelphia, 1981), 58–109; *idem*, “Phrenology: The provocation of progress”, *History of science*, xiv (1976), 211–34; *idem*, *op. cit.* (ref. 1); *idem*, “The politics of brain: Phrenology in Birmingham”, *Society for the Social History of Medicine bulletin*, no. 32 (1983), 34–36; *idem*, *Phrenology in the British Isles: An annotated, historical bibliography and index* (Metuchen, N.J., and London, 1989); *idem*, *The cultural meaning of popular science: Phrenology and the organization of consent in nineteenth-century Britain* (Cambridge, 1984); R. M. Young, *Mind, brain and adaptation in the nineteenth century: Cerebral localization and its biological context from Gall to Ferrier* (Oxford, 1970, 1990); Steven Shapin, “Homo phrenologicus: Anthropological perspectives on an historical problem”, in B. S. Barnes and Steven Shapin (eds), *Natural order: Historical studies of scientific culture* (Beverly Hills, 1979), 41–71; *idem*, “Phrenological knowledge and the social structure of early nineteenth-century Edinburgh”, *Annals of science*, xxxii (1975), 219–43; *idem*, “The politics of observation: Cerebral anatomy and social interests in the Edinburgh phrenology disputes”, in *On the margins of science: The social construction of rejected knowledge* (Sociological Review Monograph, 27; University of Keele, 1979), 139–78; David de Giustino, “Reforming the commonwealth of thieves: British phrenologists and Australia”, *Victorian studies*, xv (1972), 439–62; *idem*, *Conquest of mind: Phrenology and Victorian social thought* (Totowa, 1975); T. Parssinen, “Popular science and society: The phrenology movement in early Victorian Britain”, *Journal of social history*, viii

- (1974), 1–20; Angus McLaren, “Phrenology: Medium and message”, *Journal of modern history*, xlvii (1974), 86–97; Ian Inkster, “Culture, institutions and urbanity: The itinerant science lecturer in Sheffield 1790–1850”, in S. Pollard and C. Holmes (eds), *Essays in the economic and social history of South Yorkshire* (Sheffield, 1976), 218–32.
4. Cooter, *op. cit.* (ref. 3, 1976), 66. Cooter’s approach has been critiqued in David Stack, “William Lovett and the National Association for the Political and Social Improvement of the People”, *The historical journal*, xliii (1999), 1027–50.
 5. J. Morrell and A. Thackray, *Gentlemen of science: Early years of the British Association for the Advancement of Science* (Oxford, 1981), 278.
 6. R. M. Young, *Darwin’s metaphor: Nature’s place in Victorian culture* (Cambridge, 1985), 69.
 7. Nancy Stepan, *The idea of race in science: Great Britain 1800–1960* (London, 1982), 20; James Burke, *The day the universe changed* (London, 1985), 320.
 8. Adrian Desmond, *The politics of evolution: Morphology, medicine, and reform in radical London* (London, 1989), 174.
 9. Alison Winter, “Orthodoxies and heterodoxies in the life sciences”, in Bernard Lightman (ed.), *Victorian science in context* (Chicago and London, 1997), 24–50, p. 31. Cooter, *op. cit.* (ref. 3, 1984), 317, notes 16 and 17, provides a list of seventeen members of Royal Societies and academics who were also firm phrenologists at one time or another; G. Cantor, “A critique of Shapin’s social interpretation of the Edinburgh phrenology debate”, *Annals of science*, xxxiii (1975), 245–56, p. 248 lists further exceptions to the generalization, *viz.* “Hon. D. Gordon Hallyburton, or W. C. Trevelyan (son of Sir John Trevelyan, fifth Baronet)”; to this could be added John Fletcher (1791–1836), MD, FRCS Edin., and Thomas Ignatius Maria Forster (1789–1860), Fellow of the Linnean Society, London, FRAS, etc.
 10. [Henry Wintle,] “On the advantages of phrenology”, *Gentleman’s magazine*, 1824, 301–3. See Wintle, *A general judgement* (Oxford, 1818), and [Henry Wintle], “Danger of mistaken liberality”, *Gentleman’s magazine*, 1824, 399–400.
 11. The first ten volumes of the *Phrenological journal* in the Cambridge University Library are from Whewell’s personal library. He was introduced to the science by his friend Thomas Forster but was probably never a firm believer.
 12. Exceptions are Madeleine Stern, *Phrenological Fowlers* (Norman, 1971); John Davies, *Phrenology: Fad and science* (New Haven, 1955), esp. p. 33. When dealing with American phrenology, which had very little high-brow phrenology to speak of, histories of the subject are likely to focus more directly on the practical phrenologists.
 13. Cooter, *op. cit.* (ref. 3, 1989), p. ix.
 14. Cooter, *op. cit.* (ref. 3, 1989).
 15. Desmond, *op. cit.* (ref. 8), 174. See also Adrian Desmond and James Moore, *Darwin* (London, 1992): “Phrenology was a fashionable anti-establishment science among Edinburgh’s traders, pressing for more political power”, p. 32.
 16. See John van Wyhe, “The authority of human nature: The *Schädellehre* of Franz Joseph Gall”, *The British journal for the history of science*, xxxv (2002), 17–42.
 17. H. C. Watson, *Statistics of phrenology: Being a sketch of the progress and present state of that science in the British Islands* (London, 1836), 5.
 18. Bernard Hollander, *Scientific phrenology: Being a practical mental science and guide to human character, an illustrated text-book* (London, 1902), 303.
 19. Quoted in Young, *op. cit.* (ref. 3, 1990), 44.
 20. On the ubiquity of status and authority seeking see Donald Brown, *Human universals* (New York and London, 1991).
 21. John Henry, *The scientific revolution and the origins of modern science* (London, 1997), 56. See

- also *ibid.*, 4, 58.
22. Steven Shapin, *A social history of truth: Civility and science in seventeenth-century England* (Chicago and London, 1994), 16.
 23. Peter Dear, *Revolutionizing the sciences: European knowledge and its ambitions, 1500–1700* (London, 2001), 82.
 24. *Ibid.*, 83.
 25. James Moore, “Theodicy and society: The crisis of the intelligentsia”, in Bernard Lightman and Frank Turner (eds), *Victorian faith in crisis: Essays on continuity and change in nineteenth-century religious belief* (Basingstoke, 1990), 153–86, p. 172.
 26. Adrian Desmond, “Redefining the X axis: ‘Professionals’, ‘amateurs’, and the making of mid-Victorian biology. A progress report”, *Journal of the history of biology*, xxxiv (2001), 3–50, p. 12. See also Ruth Barton, “An influential set of chaps: The X-Club and Royal Society politics 1864–85”, *The British journal for the history of science*, xxiii (1990), 53–81.
 27. David Hull, *Science as a process: An evolutionary account of the social and conceptual development of science* (Chicago, 1988); *idem*, *Science and selection: Essays on biological evolution and the philosophy of science* (Cambridge, 2001).
 28. Alison Winter, *Mesmerized: Powers of mind in Victorian Britain* (Chicago, 1998).
 29. Anon., “Introductory statement”, *Phrenological journal*, 1823, pp. iii–xxxii, p. xxi; see also p. 94.
 30. Arnold Thackray, “Natural knowledge in cultural context: The Manchester model”, *American historical review*, lxxix (1974), 672–709; these figures from *The yearbook of scientific and learned societies of Great Britain and Ireland*, 1844.
 31. See George Combe, *System of phrenology* (Edinburgh, 1825), or *idem*, *Elements of phrenology* (Edinburgh, 1824).
 32. Logie Barrow, *Independent spirits* (London, 1986), 159, argues that there is no necessary relationship between democratic epistemology and empiricist method.
 33. Cooter, *op. cit.* (ref. 3, 1984), 72.
 34. Shapin, *op. cit.* (ref. 3, 1979), 146.
 35. Shapin, *op. cit.* (ref. 3, 1975).
 36. van Wyhe, *op. cit.* (ref. 16). See Hollander, *op. cit.* (ref. 18), 293, 298.
 37. George Combe, *Outlines of phrenology* (Edinburgh, 1824), 25.
 38. Peter Mark Roget, “Cranioscopy”, *Encyclopaedia Britannica*, Supplement to the 4th, 5th, and 6th edns (1824), iii, 419–37 (republished as Roget, *Treatises on physiology and phrenology*, i (Edinburgh, 1838)); and 7th edn (1842) (as “Phrenology”), xvii, 454–73.
 39. *Ibid.*, 85. Replied to in [Watson], “Phrenology and the *Encyclopaedia Britannica*; or the deliberate obstruction of truth”, *Phrenological journal*, xii (1839), 278–82; reprinted as H. C. Watson, *Strictures on anti-phrenology, in two letters to Macvey Napier, Esq. and M. Roget, M.D.: Being an exposure of the article called “Phrenology,” recently published in the Encyclopaedia Britannica* (London, 1838).
 40. de Giustino, *op. cit.* (ref. 3, 1975).
 41. F. J. Gall to R. Meier, 3 March 1806, transl. and reprinted in “Correspondence of Dr. Gall”, *Phrenological journal*, xix (1846), 36–42, p. 40.
 42. F. J. Gall, *On the functions of the brain and of each of its parts: with observations on the possibility of determining the instincts, propensities, and talents, or the moral and intellectual dispositions of men and animals, by the configuration of the brain and head*, transl. by Winslow Lewis, Jr (6 vols, Boston, 1835), i, 59. See also G. A. L. Fossati, “Gall”, *Nouvelle biographie générale*, xix (Paris, 1857), 271–83, p. 275.
 43. van Wyhe, *op. cit.* (ref. 16).

44. L. M. [writing on 20 May 1806], *De Ster*, xxxviii (issue of 6 June 1806).
45. van Wyhe, *op. cit.* (ref. 16).
46. *Ibid.*
47. Max Neuburger, "Briefe Galls an Andreas und Nannette Streicher", *Archiv für Geschichte der Medizin*, x (1917), 3–70.
48. J. G. Spurzheim, *The physiognomical system of Drs. Gall and Spurzheim* (London, 1815), 1; and *idem*, *Outlines of the physiognomical system of Drs. Gall and Spurzheim* (London, 1815), 16.
49. Spurzheim, *op. cit.* (ref. 48, 1815a), 8.
50. *Ibid.*, 93.
51. *Ibid.*, 10.
52. Cooter, *op. cit.* (ref. 3, 1984), 7. See also de Giustino, *op. cit.* (ref. 3, 1975), 15.
53. See John van Wyhe, *Phrenology and the origins of Victorian scientific naturalism* (Aldershot, 2004).
54. Spurzheim, *op. cit.* (ref. 48, 1815a), 206.
55. Guido Groß, "Die Phrenologie des Dr. Johann Kaspar Spurzheim aus Longuich (1776–1832)", *Kurtrierisches Jahrbuch*, xvii (1977), 35–52.
56. Shapin, *op. cit.* (ref. 3, 1979), 145.
57. Gall to Streicher, 7 Aug. 1826, in Neuburger, *op. cit.* (ref. 47), 44–45.
58. Spurzheim, *op. cit.* (ref. 48, 1815a).
59. Francis Jeffrey, "A system of phrenology", *Edinburgh review*, xlv (issue of Sept. 1826), 253–318, p. 254. See F. Egerton, *Hewett Cottrell Watson: Victorian plant ecologist and evolutionist* (Aldershot, 2003).
60. George Combe, "Preliminary dissertation on the progress and application of phrenology", *Transactions of the Phrenological Society*, 1824, 1–62; see especially pp. 26–47.
61. *Ibid.*, 26.
62. *Ibid.*, 38–39.
63. *Ibid.*, 59.
64. *Op. cit.* (ref. 29).
65. *Ibid.*, pp. xxx, xiv.
66. See the lengthy description in *ibid.*, pp. x–xi.
67. *Ibid.*, p. vi.
68. *Ibid.*, p. v.
69. *Ibid.*, p. xxxi.
70. Forster to C. G. B. Daubeny, 9 May 1832, quoted in Morrell and Thackray, *op. cit.* (ref. 5), 277, emphasis in the original.
71. George Combe, *Elements of phrenology*, 2nd edn (Edinburgh, 1825), 203. Boyd Hilton, *Age of atonement* (Oxford, 1988), 195, cites an interesting passage where Combe maintains phrenology to be the proper basis of moral authority because, unlike the supernatural, a natural basis allowed certainty.
72. George Combe, *System of phrenology*, 5th edn (Edinburgh, 1853), i, 61.
73. George Combe, *Constitution of man* (Edinburgh, 1847), 57.
74. Combe, *op. cit.* (ref. 72), ii, 421.
75. Gregory to Lord Glenelg, 1 April 1836, quoted in Combe, *op. cit.* (ref. 72), i, 43–44.
76. Joseph Vimont, *Traité de phrénologie humaine et comparé* (2 vols, Paris and London, 1832–36).
77. L. N. Fowler, *Synopsis of phrenology and physiology* (Boston, 1846), 3.
78. *Ibid.*, 18–19.

79. O. S. Fowler, *The practical phrenologist, and recorder and delineator of the character and talents ...: A compendium of phreno-organic science* (Boston, 1869), 1.
80. Quoted in Stern, *op. cit.* (ref. 12), 38.
81. G. S. Weaver, *Lectures on mental science according to the philosophy of phrenology. Delivered before the Anthropological Society of the Western Liberal Institute of Marietta, Ohio, in the autumn of 1851* (New York, 1852), 16, 36.
82. S. I. Franz, "New phrenology", *Science*, xxxv (1912), 321–8, p. 323.
83. Cooter, *op. cit.* (ref. 3, 1984), 123.
84. Quoted *ibid.*, 242–3.
85. See [Bridges,] "On the sentiment of veneration", *Phrenological journal*, 1825/6, 1–26; J. Epps, *Horae phrenologicae* (London, 1829; 2nd edn, London, 1834); *idem*, "Extracts from a lecture on the organ of veneration, delivered at Windsor, May 1837", *Christian physician and anthropological magazine*, ii (1837), 325–31; anon., "Phrenology inculcated in the pulpit, by the Rev. Henry Ward Beecher", *Zoist*, xiii (1855), 282–4.
86. H. Lundie, *The phrenological mirror; or, Delineation book* (Leeds, 1844), n.p.
87. Combe, *op. cit.* (ref. 73), 57.
88. Jeffrey, *op. cit.* (ref. 59), 254.
89. Desmond, *op. cit.* (ref. 8), 322.
90. S. H. Mauskopf, "Marginal science", in R. C. Olby, G. N. Cantor, J. R. R. Christie, and M. J. S. Hodge (eds), *Companion to the history of modern science* (London, 1996), 869–85.
91. Reid, *Essays on the intellectual powers of man* (1785), quoted in Thomas Dixon, "From passions and affections to emotions: A case-study in Christian and scientific psychologies 1714–1903", Ph.D. thesis, Cambridge University, 1999.