

Matters of Priority: Herbert Mayo, Charles Bell and Discoveries in the Nervous System

JAMES BRADLEY*

History of Medicine and Life Sciences, History and Philosophy of Science,
School of Historical and Philosophical Studies, University of Melbourne, Australia

Abstract: Between 1822 and the late 1830s a highly personal priority dispute was fought between the celebrated surgeon and anatomist Sir Charles Bell and his ex-student Herbert Mayo. The dispute was over the motor and sensory functions of the Vth and VIIth cranial nerves. Over the course of the 1820s and the 1830s, the competing claims of Bell and Mayo were presented in newspapers, journals, and textbooks. But by the time of Bell's death in 1842, Mayo had been discredited, a seemingly tragic footnote in the history of nervous discovery. And yet, with the benefit of hindsight, Bell's case was at best disingenuous. His success was not due to any intrinsic scientific merit in his argument, but rather his ability to create a narrative that undermined the credibility of Mayo. However, only when Mayo's public performances elided with Bell's descriptions did this ploy succeed. As a result, the dispute illuminates the importance of credibility to the creation of an idealised scientific medical practitioner.

Keywords: Anatomy, Nerves, Discovery, Priority, Performance, Professionalisation

Nerves for Feeling: Sense and Motion in the Nervous System

In 1831, doggerel currently doing the rounds of the Middlesex Hospital was sent to *The Lancet* as evidence of the fractious and venal nature of élite metropolitan medicine. According to the final triplet

... Bell and Mayo rarely meet
On terms of amity complete:–
'The *ffifth*' is the nerve for *feeling*!¹

* SHAPS, Old Quad, University of Melbourne, Victoria 3010, Australia. Email address for correspondence:
jbradley@unimelb.edu.au.

I would like to thank the University of Melbourne for its continued support. Over the years I have received a lot of help and advice from colleagues, particularly Professor Janet McCalman, Dr Roderick Buchanan and Professor Joan McMeeken. I would also like to thank my wife Dr Susan Bradley Smith for her continued support.

¹ 'Bendyshe', 'Thoughts in India on English Medical Politics', *The Lancet*, 16, 396 (1831), 29.

Students were wont to ‘hum’ the ditty in the corridors of the hospital, probably to the annoyance of the two protagonists, Charles Bell and Herbert Mayo. Members of the hospital’s surgical staff, Bell and Mayo were adversaries in an intensely personal priority dispute over the description of the separate motor and sensory functions of Cranial Nerve V and Cranial Nerve VII (hereafter, in the language of the disputants, the fifth, also known as the trigeminal, and the *portio dura*). The fifth nerve possesses both motor and sensory functions. Spreading out from the skull, on each side of the face, its three branches serve the eyes (ophthalmic), the mouth (maxillary) and the jaw (mandibular). Of these the ophthalmic and the maxillary are purely sensory, conveying sensation from around the eye and the mouth back to the central nervous system. The mandibular, however, is a nerve of both motion and sense, with separate roots for each function. The branches of the *portio dura* also convey motor and sensory impulses – although at the time of the Bell–Mayo dispute it was thought to be purely a nerve of motion.

At first sight it might appear strange that such a seemingly small discovery resulted in such a ferocious dispute. No doubt this animosity arose in part from the close and long-standing acquaintance of Bell and Mayo. On further inspection, however, the accurate description of the structure and function of the facial nerves was no minor matter. For it became entwined, in ways that will become apparent, with the Bell–Magendie dispute, which contested priority for the discovery of the separate motor and sensory functions of the anterior and posterior spinal nerves. In an age characterised by a deep interest in sensibility, and where, since the eighteenth century, the nervous system had been implicated in pathologies of body and mind,² the identification of separate efferent and afferent nerve fibres in the spine was placed on a par with Harvey’s discovery of the circulation of the blood.³ Thus the promise of elevated status combined with a scientific legacy may well have spurred the dispute.

Over the course of the 1820s and the 1830s, the competing claims of Bell and Mayo were presented in newspapers, journals and textbooks. But by the time of Bell’s death in 1842, Mayo had been discredited, a seemingly tragic footnote in the history of nervous research. And yet, with the benefit of hindsight, Bell’s case was at best disingenuous.⁴ His success was not due to any intrinsic scientific merit, but rather his ability to create a narrative that undermined the credibility of Mayo. However, only when Mayo’s public

² See, for example, Christopher Lawrence, ‘The nervous system and society in the Scottish enlightenment’, in Barry Barnes & Steven Shapin (eds), *Natural Order: Historical Studies of Scientific Culture* (Beverly Hills, CA: Sage, 1979), 19–40; Janet Oppenheim, *Shattered Nerves: Doctors, Patients and Depression in Victorian England* (London: Oxford University Press, 1991); George S. Rousseau, *Nervous Acts: Essays on Literature, Culture and Sensibility* (Basingstoke: Palgrave Macmillan, 2004); Elizabeth Green Musselman, *Nervous Conditions: Science and the Body Politic in Early Industrial Britain* (Albany, NY: SUNY Press, 2006).

³ William Charles Henry, ‘Report on the Physiology of the Nervous System’, *Report of the Third Meeting of the British Association for the Advancement of Science: Held at Cambridge in 1833* (London: John Murray, 1834), 62, reiterated in William Whewell, *History of the Inductive Sciences from the Earliest to the Present Time* (London: John W. Parker, 1837), vol. 3, 425; Bell and Harvey compared (but only to say that neither would have been granted priority had people read their Galen), Anon., ‘Utility of Classical Knowledge to Medical Men’, *The Lancet*, 40, 1037 (1843), 559–61; latter endorsed by, among others, Paul F. Cranefield, *The Way In and The Way Out: François Magendie, Charles Bell and the Roots of the Spinal Nerves* (Mount Kisco, NY: Futura Publishing, 1974), xii–xiii.

⁴ *Ibid.*, and ‘Introduction’ to Herbert Mayo, *Anatomical and Physiological Commentaries* (Metuchen, NJ: Scarecrow Press, 1975), iv–xi. Cranefield’s judgement of Bell accepted by: Edwin Clarke and L.S. Jacyna, *Nineteenth-Century Origins of Neuroscientific Concepts* (London: University of California Press, 1987), 111, and Gillian Rice, ‘The Bell–Magendie–Walker Controversy’, *Medical History*, 31, 2 (1987), 192.

performances elided with Bell's descriptions did this ploy succeed. As a result, the dispute illuminates the importance of credibility to the creation of an idealised scientific medical practitioner.

Performance, Priority and Professionalisation: Historiographical Perspectives

This essay will not create a theoretical framework for explaining the historiographical significance of priority disputes in medical science. Instead the Bell–Mayo dispute will be used as a lens to focus upon the creation of medical identity in the reform era. However, it is important to acknowledge that the logic of discovery and the significance of controversy – areas with direct relevance to matters of priority – have long been a subject for historians and philosophers of science.⁵ In particular, Alan Gross identified five exegetical rules used by scientific communities to establish priority: 'possibility, novelty, approved method, discovery time and discoverer identity'.⁶ To function effectively the rules require institutions, for example associations and journals, to act as loci for the announcement and discussion of discoveries.

Gross's argument relied primarily upon a single case study: the isolation of the hormone Thyrotropin-Releasing Factor (TRF), which was announced, almost simultaneously, by two independent teams in 1969. The joint award of the 1977 Nobel Prize in Physiology to the leaders of these rival teams, Schally and Guillemin, recognised shared priority in the discovery, despite Guillemin's protestations that Schally's methods were illegitimate. The Nobel committee dismissed his argument, not only resolving the dispute, but also ratifying the competing methods.

The Bell–Mayo dispute was of a different era to that of Schally–Guillemin, but similar mechanisms existed for the application of the rules. Organisations like the Académie Des Sciences and the Royal Society of London published discoveries in their transactions and recognised priority through the award of medals.⁷ The foundation of the British Association for the Advancement of Science (BAAS) in 1831, with annual meetings and reports, provided another platform for the announcement of discoveries and a place for the discussion of claims to priority, as did medical societies, like the Medical and Chirurgical Society of London. The rapid expansion in the number and scope of medical journals furnished yet another avenue for deciding matters of priority.

Nevertheless, as we will see, neither the award of the Royal Society Medal to Bell, nor a report presented to the BAAS on discoveries in the nervous system, settled the dispute in his favour.⁸ Rather, the decisive moment occurred when Alexander Shaw, Bell's brother-in-law, retold Bell's narrative in 1839, seventeen years after the original announcements

⁵ See, for example, Robert K. Merton, 'Priorities in Scientific Discovery: A Chapter in the Sociology of Science', *American Sociological Review*, 22, 6 (1957), 653–9; Augustine Brannigan, 'The Reification of Mendel', *Social Studies of Science*, 9, 4 (1979), 423–54; Gyorgy Markus, 'Why Is There No Hermeneutics of Natural Sciences? Some Preliminary Theses', *Science in Context*, 1, 1 (1987), 5–51; Simon Schaffer, 'Scientific Discoveries and the End of Natural Philosophy', *Social Studies of Science*, 16, 3 (1986), 387–420; Kenneth L. Caneva, "'Discovery" as a Site for the Collective Construction of Scientific Knowledge', *Historical Studies in the Physical and Biological Sciences*, 35, 2 (2005), 175–291.

⁶ Alan G. Gross, 'Do Disputes Over Priority Tell Us Anything About Science?', *Science in Context*, 11, 2 (1998), 161–79.

⁷ Maurice Crosland, *Science Under Control: The French Academy of Sciences 1795–1914* (Cambridge: Cambridge University Press, 2002), 244.

⁸ Henry, *op. cit.* (note 3).

and at a point when a consensus had emerged that Bell and Mayo were co-discoverers.⁹ This retelling, with its unflattering portrayal of Mayo, coincided with events external to the dispute; stasis was shattered and a new consensus coalesced, with Gross's rules of exegesis applied in the light of moral judgements made about the protagonists.

To some extent this interplay of morality and discovery accords with Shapin's thesis that credibility is critical to the acceptance of scientists' claims to truth.¹⁰ But while issues of credibility permeated the Bell–Mayo dispute, the content of the discovery was stable and uncontested – the ganglionic branch of the mandibular nerve universally recognised as a sensory nerve, no matter whether it were Bell or Mayo who was credited with the insight. The dispute had, therefore, a minimal impact upon the content of knowledge. Where, however, it speaks loudest to historiography is in its revelations of the importance of credibility in medical science, which in turn allows a greater conception of the interweaving of ethics, behaviour, identity and the process of professionalisation.

Here we enter the dramaturgical domain of performance recently explored by Brown.¹¹ Influenced by Harley Warner, Brown expanded the former's vision of medical identities made in therapeutic contexts (surgeries, operating theatres, hospital wards), to encompass other areas of medical life.¹² In particular, he maintained that professionalisation was not simply the product of 'structural, institutional and economic change' (the favoured explanations of an older historiography), but was wrought from new identities that found their expression in an expansive range of medical performances.¹³ Brown's approach emphasised how ideas made action and action ideas, specifically how an older style of eclectic medical gentility swiftly gave way, in the early nineteenth century, to performances of medical-scientific expertise. Thus professionalisation was underwritten and reinforced by identities that emerge from these performances, and was not necessarily the product of the classic drivers of professionalisation – economics and status.¹⁴

What follows seeks to illuminate these issues, first by introducing the protagonists, describing their personal circumstances and the ties that bound one to the other. Next the competing literary performances of Bell and Mayo will be explored. Here the focus is upon the creation of narratives of priority, which combined detailed scientific argument

⁹ Alexander Shaw, *Narratives of the Discoveries of Sir Charles Bell in the Nervous System* (London: Orme, Brown, Green, and Longman, 1839).

¹⁰ See in particular Steven Shapin, *A Social History of Truth: Civility and Science in Seventeenth-Century England* (London: University of Chicago Press, 1994), which argues that experimental science appropriated the civil values of gentlemanliness to mediate disputes and establish truth claims. His, 'Cordelia's Love: Credibility and the Social Studies of Science', *Perspectives on Science*, 3, 3 (1995), 255–75 expands upon these ideas, as does *The Scientific Life: A Moral History of a Late Modern Vocation* (London: University of Chicago Press, 2008). Shapin's thesis has been questioned by, among others, Moti Feingold, review of *A Social History of Truth*, *Isis*, 87, 1 (1996), 131–9 and John A. Schuster and Alan B.H. Taylor, 'Blind Trust: The Gentlemanly Origins of Experimental Science', *Social Studies of Science*, 27, 3 (1997), 503–36.

¹¹ Michael Brown, *Performing Medicine: Medical Culture and Identity in Provincial England, c. 1760–1850* (Manchester: Manchester University Press, 2011).

¹² John Harley Warner, *The Therapeutic Perspective: Medical Practice, Knowledge and Identity in America, 1820–1885* (Cambridge, MA: Harvard University Press, 1986).

¹³ Brown, *op. cit.* (note 11), 6.

¹⁴ Typified by J. Parry and N. Parry, *The Rise of the Medical Profession* (London: Croom Helm, 1977). For an overview of the concept of professionalisation and its use in the history of medicine, see John C. Burnham, *How the Idea of Profession Changed the Writing of Medical History*, *Medical History Supplement*, No. 18 (London: Wellcome Institute for the History of Medicine, 1998).

with accusations of unethical behaviour. Then the consensus that emerged around the notion of co-discovery will be analysed, before finally investigating the collapse of Mayo's reputation and, with it, his credibility.

Bell and Mayo: Brief Lives

Charles Bell is now best known for the palsy that bears his name,¹⁵ but during his lifetime he was a celebrated, although occasionally controversial, figure. By any measure his career was outstanding, reflected in the award of some of the highest honours of the day, including the Royal Society Medal (1829) and a knighthood (1831). Bell was born and raised in Fountainbridge, Edinburgh, the son of an impoverished Episcopalian clergyman. His eldest brother was the renowned, if testy, surgeon John Bell. Having studied medicine at the University of Edinburgh, and qualified through the city's College of Surgeons, Charles's fortunes were tied to those of John, who became embroiled in a struggle with James Gregory over stolen body parts and clinical teaching at the Royal Infirmary.¹⁶ The controversy may have barred Bell from achieving a hospital appointment in Edinburgh, precipitating his move south. Once in London, like many who followed this well-worn path, he initially struggled in the crowded medical marketplace.¹⁷ He was slow to establish either a private practice or a large roll of apprentices and students. In 1812, however, his marriage brought a dowry substantial enough to invest in the Great Windmill Street School. Command of London's most prestigious private anatomy school probably contributed to his election in 1814 as a surgeon to the Middlesex Hospital. At the same time the school provided him with the facilities to expand his anatomical and physiological enquiries. With John Shaw, his devoted brother-in-law, at his side, his research increasingly took a neurological turn, which yielded a series of papers presented to the Royal Society in the early 1820s.¹⁸ These and the works that followed consolidated his fame, and laid the foundation for his claim to have identified the separate motor and sensory functions of both the facial and spinal nerves.

Through the 1820s and 1830s, Bell was lauded as one of London's finest anatomists and surgeons. On the foundation of the London University he was appointed a professor, although his tenure was brief: he resigned in 1830 after a rancorous dispute with the notorious Granville Sharp Pattison.¹⁹ Discord also marked his relations with his peers at

¹⁵ Unless otherwise stated the biographical details for Bell are taken from L.S. Jacyna, 'Bell, Sir Charles (1774–1842)', *Oxford Dictionary of National Biography* (Oxford: Oxford University Press, 2004); online ed., January 2008. <http://www.oxforddnb.com/view/article/1999> (accessed 4 January 2012).

¹⁶ For the dispute between John Bell and James Gregory see Guenter B. Risse, *New Medical Challenges During the Scottish Enlightenment* (Amsterdam: Rodopi, 2005), 50–1.

¹⁷ For market conditions in surgical practice see Anne Digby, *Making a Medical Living: Doctors and Patients in the English Market for Medicine, 1720–1911* (Cambridge: Cambridge University Press, 1994), 107–8.

¹⁸ Charles Bell, 'On the Nerves; Giving An Account of Some Experiments on their Structure and Functions, Which Lead to a New Arrangement of the System', *Philosophical Transactions of the Royal Society of London*, 111 (1821), 398–424; 'Of the Nerves which Associate the Muscles of the Chest, in the Actions of Breathing, Speaking and Expression. Being a Continuation of the Paper on the Structure and Functions of the Nerves', *Philosophical Transactions of the Royal Society of London*, 112 (1822), 284–312; 'On the Motions of the Eye, in Illustration of the Muscles and Nerves of the Orbit', *Philosophical Transactions of the Royal Society of London*, 113 (1823), 166–86; 'Second Part of the Paper on the Nerves of the Orbit', *Philosophical Transactions of the Royal Society of London*, 113 (1823), 289–307.

¹⁹ F.L.M. Pattison, *Granville Sharp Pattison: Anatomist and Antagonist, 1791–1851* (Edinburgh: Canongate, 1987), 151–61.

the Middlesex, hardly surprising, given that Bell and Mayo presided over warring factions amongst staff and students.²⁰ Exhausted by the struggle of London life, and moved by nostalgia for the city of his youth, he was coaxed back to the University of Edinburgh in 1835. It was not a fortuitous move. His declining roll of students failed to bestow an income commensurate with his reputation and, despite being well connected in Edinburgh society, his private practice was paltry. On his death in 1842, he left his wife in straightened circumstances, only ameliorated when the Peel government awarded her a pension of £1000 in honour of her husband's discoveries.

Herbert Mayo was some twenty years' Bell's junior.²¹ He was from a medical family: his father, John, had been a physician to the Middlesex Hospital; his elder brother, Thomas, eventually became a President of the Royal College of Physicians. Commencing his studies as a house pupil of Bell's, he passed his examination for the English College of Surgeons before studying for an MD at Leiden. Returning to London, he established his own private anatomy school in Berwick Street, Soho, where he remained until 1826, when he succeeded Bell at Great Windmill Street. In 1827 he was elected unopposed to the assistant surgeon's position at the Middlesex following John Shaw's death. Four years later he became the first lecturer of Anatomy and Physiology at the newly founded King's College. Through much of the 1820s and the early 1830s, he established a reputation as a physiologist, notably with his two volumes of *Anatomical and Physiological Commentaries* (1822 and 1823)²² where he first presented the discoveries that would be contested by Bell. Among many other works, his *On The Outlines of Human Physiology* (1827) was highly respected and went through several editions.²³

Mayo, however, gained a dubious reputation. A willing antagonist of Bell's at the Middlesex, political intrigue followed Mayo beyond the walls of the hospital. His lofty position within the metropolitan scientific community, particularly his role within the physiology section of the Royal Society, occasioned Marshall Hall's belief that Mayo had been instrumental in the rejection of his papers; while questions about Mayo's personal integrity arose from his part in the Robert Lee affair.²⁴ Ambition combined with political misjudgement was an Achilles' heel that would affect Mayo's social and scientific standing. Ultimately these factors, amplified by chronic ill health, forced him to resign his metropolitan posts one-by-one, and he died in 1852, an ailing resident physician at a German hydropathic, clinging to the hope that his *On the Truths Contained in Popular Superstitions* would prove to be the next *Vestiges of Creation*.²⁵

²⁰ 1833's election for a new assistant surgeon had Alexander Shaw as Bell's candidate, whilst Tuson was Mayo's. Tuson's victory was followed by claims of corruption. See Anon., 'Middlesex Hospital', *The Lancet*, 19, 497 (1833), 764; Anon. 'Late Election at the Middlesex Hospital', *The Lancet*, 19, 499 (1833), 832.

²¹ Unless otherwise stated, details of Mayo's life are taken from Paul F. Cranefield, 'Mayo, Herbert (1796–1852)', *Oxford Dictionary of National Biography* (Oxford: Oxford University Press, 2004) <http://www.oxforddnb.com/view/article/18458> (accessed 26 May 2011).

²² Herbert Mayo, *Anatomical and Physiological Commentaries*, No. 1 (London: Thomas and George Underwood, 1822) & No. 2 (London: Thomas and George Underwood, 1823).

²³ Herbert Mayo, *Outlines of Human Physiology* (London: Burgess and Hill, 1827). For reception, see *London Medical and Physical Journal*, 52, 338 (1827), 345–57; *Edinburgh Medical and Surgical Journal*, 42, 120 (1834), 202–16.

²⁴ Diana E. Manuel, *Marshall Hall (1790–1857): Science and Medicine in Early Victorian Society* (Amsterdam: Rodopi, 1996), 196–7; Robert Lee, *Memoirs on the Ganglia and Nerves of the Uterus* (London: John Churchill, 1849), 5–7.

²⁵ University College Archives, Middlesex Hospital School, Minutes of Meetings, vol. 1, September 1835–April 1842, 54–56: 58, and vol. 2, 2 April 1842–June 1841 [no page numbers] 3 June 1842, 10 June 1842, 8 September 1842, 18 November 1842; Herbert Mayo, *On The Truths Contained in Popular Superstitions*

Bell and Mayo held similar metaphysical beliefs (both were followers of Paley) and occupied social positions that were comparably genteel (for surgeons).²⁶ They were far removed from, indeed were in active opposition to, Desmond's radical under-class of medical practitioners, who challenged the authority of the London élite.²⁷ Thomas Wakley, editor of the *The Lancet*, identified both as 'Hole and Corner' men and as 'voracious bats', members of the corrupt and nepotistic band who dominated the London hospitals and the Royal Colleges.²⁸ Bell's discoveries certainly bought him credit with the radicals, with whom he stood as a representative of the British anatomical tradition, but like Mayo he was far from immune to the barbs of the radical press.²⁹ This was not, then, a dispute fired by distinct social interests or divergent world-views. It was a battle between two similarly placed individuals for the legacy of being identified as the discoverer of the motor and sensory functions of the facial nerves.

The Facial Nerves: A Dispute in the Making

Bell's posthumous reputation was principally founded upon the identification of the separate motor and sensory roots of the spinal nerves, now acknowledged as the discovery of the French physiologist François Magendie. Between coming to London in the early years of the nineteenth century and 1822 Bell *did* make several discoveries in the nervous system. None of these, however, were of the separate motor and sensory functions of the facial or, for that matter, the spinal nerves. *The Idea of A New Anatomy of the Brain* (privately published in 1811) did not, as Bell and some later advocates would claim, reveal the separate functions of the spinal nerves, rather that the anterior root was connected with the cerebrum and thus the mind, while the posterior root was connected to the cerebellum and controlled the body's vegetative functions.³⁰ Here there were no afferent or efferent nerves; each conveyed motor and sensory impulses through a single fibre. His Royal Society papers (1821–2) on the facial nerves, announced the discovery of the 'respiratory' nerves – an irregular system 'super-added' to the 'regular' nerves – but again not the separate functions of spinal or facial nerves.³¹

(Edinburgh: Blackwood, 1849); Mayo's hopes for *On the Truths*, letter to Blackwoods, 18 November 1848, Blackwood Papers, National Library of Scotland, mss 4079, ff.289.

²⁶ Charles Bell, *The Hand. Its Mechanism and Vital Endowments as Evincing Design* (London: William Pickering, 1843), and, co-edited with Lord Brougham, *Paley's Natural Philosophy with Illustrative Notes, by Henry Lord Brougham and Sir Charles Bell*, 2 vols (London: Charles Knight, 1836); Mayo, *op. cit.* (note 23), 2–3; Herbert Mayo, *An Introductory Lecture to the Medical Classes in King's College* (London: Burgess and Hill, 1834), 7; Herbert Mayo, *Philosophy of Living* (London: John W. Parker, 1837), 146.

²⁷ Adrian Desmond, *The Politics of Evolution: Morphology, Medicine, and Reform in Medical London* (London: Chicago University Press, 1992), 10–3.

²⁸ Anon., 'Preface, Advertisement, Address, and a Rare Whack at the Voracious Bats', *The Lancet*, 17, 422 (1831), 7, 11 (Bell), 16 (Mayo); Anon., 'More Hole in Corner Doings', *The Lancet*, 4, 87 (1825), 232–3 (Bell).

²⁹ Bell portrayed as Sir Pertinax Macsychophant waltzing with the 'old lady' (the senior surgeon Joberns from the Middlesex), Anon., 'Professional Masquerade', *The Lancet*, 4, 84 (1825), 146; more damningly, Anon., "'Spicimin" of "Lictiring" – Theory Without Practice', *The Lancet*, 13, 337 (1830), 664; Bell criticised for his Paleyite leanings *The Lancet*, 19, 478 (1832), 154.

³⁰ Charles Bell, *The Idea of a New Anatomy of the Brain* (Edinburgh: 1811), 5–6: 22–3. The Shaw brothers were coy about the discovery announced in the *Idea* – 'so far back as 1811, this gentleman [Bell] had composed an Essay on the Brain, in which he treated of the functions of the roots of the nerves in question', wrote Shaw, *op. cit.* (note 9), 15, hinting but not saying the discovery was announced in the *Idea*.

³¹ Bell pursued a programme typical of romantic biology, directed towards unity of plan and hierarchy of development: the spinal and the fifth nerves were regular nerves possessed by all vital organisms (unity of plan); while the 7th was super-added to complex organisms – the more complex the organism the more complex the network of super-added nerves (hierarchy of development); see Clarke and Jacyna, *op. cit.* (note 4), 38–46.

Speculation about the separate functions dated back to Galen. Like most of those involved in uncovering the physiology of the nervous system, Bell and Shaw publicly conjectured about these matters.³² Certainly they had vaguely realised that the *portio dura* was a motor nerve (although they were more concerned with its qualities as a super-added respiratory nerve). They had also discovered that the fifth was responsible for both motion and sensibility. But their experiments were poorly designed and they were unable to distinguish the motor from the sensory branches. In contrast, Mayo's initial observations and conclusions were unambiguous, and his experimental design more thorough. His *Commentaries* of August 1822 clearly described the separate motor and sensory filaments of the mandibular branch, the sensory functions of the other branches of the fifth, and the motor functions of the *portio dura*.³³ At the same time, he lambasted Bell for the incompleteness of his experiments and the 'delusion' of the 'respiratory nerves', which, according to Mayo, did 'not differ in any important respect, as a class, from those, with which he contrasts them.'³⁴

The publication of Mayo's *Commentaries* did not, however, signal the start of the priority dispute. Instead, there was controversy in the form of two competing accounts of the structure and function of the facial nerves: Mayo's motor and sensory nerves of the face and jaw; and, Bell's division of regular and irregular nerves. As one early reviewer of the dispute commented, he wished 'to give the evidence on either side'. In other words, there were two sides advocating two distinct theories. Describing Bell's hypothesis as the 'Great Windmill Street doctrine' reinforced the point.³⁵ Initially, even Bell and Shaw considered the discoveries to be dissimilar. In October 1822, Shaw accused Mayo of disloyalty for attempting to overturn 'the great discoveries [of the respiratory nerves] made by his master'.³⁶

Coincidentally Mayo's first commentary appeared almost simultaneously with Magendie's announcement that he had identified the separate motor and sensory nerves of the spine – news that triggered the Bell–Magendie dispute.³⁷ The extent to which the two disputes became entangled has not been properly recognised.³⁸ Before Magendie's declaration, Bell had only described a single experiment, which dated from 1811, on the spinal nerves.³⁹ Thus, any claim over Magendie required a foundation built from experiments upon other nerves. Fortunately for Bell, the discovery of the 'respiratory' nerves had involved exploring the fifth and the *portio dura*. Between himself and Shaw, several papers were in the public realm that documented these investigations.⁴⁰

³² John Shaw, 'On Partial Paralysis', *Medico-Chirurgical Transactions*, 12, 1 (1822), 146–9, was the closest Bell got to discovering the separate functions of the spinal nerves. A close reading of the text reveals he failed to identify whether the posterior nerve was a nerve of sensation only.

³³ Mayo, *Anatomical and Physiological Commentaries*, No. 1, *op. cit.* (note 22), 112.

³⁴ *Ibid.*, 114.

³⁵ See Anon., 'Anatomical and Physiological Commentaries. By Herbert Mayo', *The London Medical and Physical Journal*, 48, 285 (1822), 439.

³⁶ John Shaw, 'An Account of Some Experiments on the Nerves; by M. Magendie with Some Observations', *The London Medical and Physical Journal*, 48, 284 (1822), 351.

³⁷ François Magendie, 'Experiences sur les Fonctions des Racines des Nerfs Rachidiens', *Journal de Physiologie Expérimentale et de Pathologie*, 2 (1822), 276–9.

³⁸ Rice, *op. cit.* (note 4), fails to mention Mayo; Cranefield, *op. cit.* (note 3) understands the two disputes were related, but fails to explain the real nature of the connection.

³⁹ Bell, *op. cit.* (note 30), 22–3.

⁴⁰ Bell, *op. cit.* (note 18); Shaw, *op. cit.* (note 32) and John Shaw, 'On the Effects Produced on the Human Countenance, by Paralysis of the Different Systems of Facial Nerves', *Quarterly Journal of Science, Literature and the Arts*, 13, 25 (April 1822), 120–35.

Possessing sensory filaments that ran through ganglia, which the single motor fibre bypassed, the fifth bore a structural similarity to the spinal nerves.⁴¹ To have accurately distinguished the ganglion-less mandibular motor nerve from the ganglionated sensory nerves was to have anticipated the discovery of the separate functions of the spinal nerves.⁴² So while Bell lacked direct evidence to claim Magendie's discovery, he was provided with an indirect route through the experiments upon the facial nerves. But because neither he nor Shaw had accurately described which branch conveyed what impulse, this inconclusive evidence had to be remoulded before it could form the basis of a viable claim over Mayo.⁴³

Nearly a year after the communications of Mayo and Magendie, and some months after Shaw had entered the fray on behalf of Bell, Bell finally spoke for himself. In June 1823, he presented the newly minted version of his 'respiratory' theory in the 'Second Part of the Paper on the Nerves of the Orbit'. Here, for the first time he accurately described the structure and functions of the facial nerves, including those of the fifth and the *portio dura*,⁴⁴ with a clarity that was previously lacking. He entrenched his discoveries a year later in *An Exposition of the Natural System of the Nerves of the Human Body*, which republished his earlier papers in rewritten form. As subsequent commentators have shown, this involved a significant reworking of vital points to create the illusion of discovery.⁴⁵ Thus, what had commenced as a scientific dispute, with conflicting interpretations of the anatomy and physiology of the facial nerves, had been transformed into a priority dispute.

Deceit, Betrayal and Bad Science: Making Narratives of Priority

Performances come in many guises. Most commonly we think of visible behaviour – the presentation of the self in the public domain. But narratives, too, are performances, concocted for rhetorical effect. Such were the narratives of priority central to the prosecution of the Bell–Mayo dispute. These demanded trust in the narrator's account. But where Mayo initially focused upon scientific argument alone, those who spoke for Bell introduced moral concerns into their narrative, insisting that the dispute was the product of an unprincipled attempt to deprive Bell of what rightfully belonged to him. Only in the 1830s did Mayo change tack, and counter-attack Bell with accusations of impropriety.

Bell left the prosecution of the dispute to his beloved brothers-in-law, first John Shaw, and then, after John's death in 1827, Alexander. Both worked tirelessly to create and

⁴¹ Like the spinal nerves the sensory filament passed through a ganglion that was bypassed by the smaller motor branch.

⁴² A fact acknowledged by Mayo in *Anatomical and Physiological Commentaries*, No. 2, *op. cit.* (note 22), 9–10.

⁴³ What may be inferred from Charles Bell, 'On the Nerves', *op. cit.* (note 18) is that the *portio dura* was a nerve of motion, while the facial part of the fifth was a nerve of both sensation and motion. However, nowhere does he identify which branches of the fifth were motor and which sensory.

⁴⁴ Bell, 'Second Part of the Paper', *op. cit.* (note 18), 289–307.

⁴⁵ Charles Bell, *An Exposition of the Natural System of the Nerves of the Human Body* (London: A. & R. Spottiswoode, 1824). The first observer to draw attention to Bell's revisions was Anon. [Andrew Walker], *Documents and Dates of Modern Discoveries in the Nervous System* (London: John Churchill, 1839), 85–6. 'It has always been taken for granted that it is by Walker', Cranefield comments in his 'Introduction' to the facsimile of Anon., *Documents and Dates* (Metuchen, NJ: Scarecrow, 1973), iii; Austin Flint, 'Historical Considerations Concerning the Properties of the Roots of the Spinal Nerves', *The Quarterly Journal of Psychological Medicine and Jurisprudence*, 2, 4 (1868), 644–9 provided a more detailed analysis than Walker, including a table of the changes, concluding these: 'make it evident that most of Sir Charles Bell's definite knowledge regarding the seat of motion and sensation in the nervous system was acquired after the first publication in the *Philosophical Transactions*'.

then enforce Bell's narrative, writing articles and correspondence for the medical press while contributing testimony appended to Bell's pamphlets and books. Alexander was particularly watchful. It merely required a mention of Mayo as discoverer or co-discoverer, for a stinging response to be fired back to the offending journal.⁴⁶ For the remainder of his life, Alexander was Bell's watchdog, a vigilant guard of the memory of the great man and his discoveries.⁴⁷

The brothers were assiduous in developing a detailed chronology that listed the minutiae of dates and documents, piecing together fragmentary evidence into a narrative to argue that the separate roots of the spinal nerves had been discovered before 1811 and the distinct motor and sensory functions of the facial nerves prior to 1822. This approach built a scientific argument for priority, to which were added allusions to the ethical transgressions of their rivals. Magendie, for example, was accused of having appropriated Bell's experimental method, or of merely conducting the experiments to promote the physiological enterprise.⁴⁸ The alleged theft of Bell's method suggested ungentlemanly conduct on the part of the French physiologist, but further than that neither brother would go. Their strategy for Mayo was, however, decidedly personal, endeavouring to reveal the depths of his untrustworthiness.

As early as October 1822, Mayo was portrayed as 'insidious', an individual 'who, it will scarcely be believed, was for some years under Mr Bell's roof' as a house pupil.⁴⁹ Once priority became the issue, the charge of petty treason metamorphosed into wholesale intellectual theft. Alexander rehearsed the argument in 1829, before presenting it in fuller form ten years later. In 1829, he reiterated the tale of Mayo's pupilage, suggesting that this was the scene of the crime;⁵⁰ while in 1839, he put forward several possibilities, artfully vague but powerfully suggestive. Aside from Mayo's pupilage, the following, often mutually exclusive, scenarios were suggested: Mayo as a maker of Bell's preparations;⁵¹ connections with unidentified Great Windmill Street students;⁵² active observance of Bell's and Shaw's dissections;⁵³ and finally, through an informer, Caesar Hawkins, who had assisted John in many of the experiments of the early 1820s before defecting to Mayo.⁵⁴ This last, in retrospect so tantalising, was cautiously stated – perhaps the risk of accusing Hawkins of treachery was too great.⁵⁵

⁴⁶ Alexander Shaw, 'Nervous System', *The London Medical Gazette*, 3, 77 (1829), 801–4, which was a response to S.D. Broughton, 'Nervous System', *The London Medical Gazette*, 3, 75 (1829), 729–31, and Herbert Mayo, 'Nervous System', *The London Medical Gazette*, 3, 76 (1829), 768, thanking Broughton for his comments.

⁴⁷ Alexander Shaw's last word was 'Reprint of the "Idea of a New Anatomy of the Brain," with Letters, &c', *Journal of Anatomy and Physiology*, 3, 1 (1868), 147–82.

⁴⁸ John Shaw, 'Remarks on M. Magendie's Late Experiments Upon the Nerves', *The London Medical and Physical Journal* 52, 306 (August 1824), especially 95–6; Shaw, *op. cit.* (note 36), 344.

⁴⁹ Shaw, *op. cit.* (note 36), 351.

⁵⁰ Alexander Shaw, 'Mr Shaw in Reply to Mr Mayo', *The London Medical Gazette*, 4, 75 (1829), 12.

⁵¹ Shaw, *op. cit.* (note 9), 23, 150, 218.

⁵² *Ibid.*, 217–18.

⁵³ *Ibid.*, 87–8. John Shaw, *A Manual for the Student of Anatomy* (Troy, NY: J. Disturnell, 1825), 274 [U.S. reprint of Shaw's 1821 *Manual*]: Mayo had purchased a dead elephant from the Exeter Change, and had allowed John Shaw and Bell to examine the dissection, not *vice-versa*.

⁵⁴ Shaw, *op. cit.* (note 9), 114.

⁵⁵ While duelling among medical men was occasionally threatened but rarely practised, recourse to the civil courts was also an option. Thomas Wakley, as editor of *The Lancet*, had a record of involvement in both. Bransby Cooper sued the journal over a report of a botched operation and was awarded £100 damages, see Thomas Wakley, *A Report of the Trial Cooper v. Wakley for an Alleged Libel* (London: *The Lancet*, 1829); then in 1837 Wakley challenged Cooper to a duel after Cooper had called him 'a dealer in abuse' and accused him of 'gross ignorance of pathology and practical surgery', see in particular Samuel Cooper, 'The Bayonet Wound Case',

Alexander was a master of presenting a descending scale of accusation, typified by a subtle drift from the certain to the subjunctive. ‘Mr Mayo had numerous successive opportunities of being acquainted with the experiments’, claimed Shaw, ‘and probably witnessed them’; then, retreating further still, ‘at least must have known the high importance attached to them.’⁵⁶ It was a method repeated elsewhere.⁵⁷ However, without the subtle transformation of Bell’s original papers, which created the illusion that the separate functions of the facial nerves had been an integral part of discovering the ‘respiratory’ nerves, this vigorous interplay of scientific explanation, rhetoric and moral indictment was unworkable. It was a tactic fraught with risk. To succeed it required the audience to rely solely upon Bell’s *Exposition* rather than the original papers. Nevertheless it appeared to work: with the possible exception of Mayo, who in 1833 hinted that the reader should ‘read . . . Bell’s *first* essay, printed in the *Philosophical Transactions* for 1821’, the changes went unnoticed until the late 1830s.⁵⁸

Shaw had placed Mayo in a difficult position: he had, indeed, been one of Bell’s house pupils, probably between 1812 and 1815; as such he *would* have listened attentively to his master’s lectures, *observed* many of the dissections and the rarer vivisections, and *aided* in the creation of preparations to illustrate Bell’s system.⁵⁹ The very vagueness of the other accusations made them difficult to counter, while Hawkins’s long-term association with Mayo was a matter of record.⁶⁰ Thus Mayo was vulnerable to allegations of gross moral turpitude, although he resisted the temptation to refute the charge of theft until 1840, by which time it was too late. Rather he appeared to believe that it was enough simply to repeat his case, hoping his peers might, as he urged in 1833, go back to the original articles.

Unlike Bell’s narrative, Mayo’s did not achieve stability until the 1830s, due to his refusal to acknowledge that he was engaged in a matter of priority. He stubbornly maintained that his dispute with Bell was a controversy over the structure of the facial nerves. And well he might: his *Commentaries* of 1822 and 1823 provided clear statements of discovery that arose from dissatisfaction with Bell’s methods. As we have seen, he also presented substantially different findings to his old teacher – a story to which he returned in 1827 and 1829.⁶¹ From Mayo’s standpoint the charge of intellectual theft was a *non sequitur*. Instead there were facts (Mayo’s motor and sensory facial nerves) competing with a fiction (Bell’s super-added respiratory nerves). Furthermore, until the early 1830s, either he failed to notice Bell’s modifications in *Exposition*, or he chose to ignore them, holding dear to his original position that readers need only compare his work with Bell’s to see that they described different phenomena.

But one aspect of Mayo’s approach was ever-present: he could barely contain his disdain for Bell the scientist. What is most surprising about the first number of the *Commentaries*,

⁵⁶ Second to Mr Cooper, *The London Medical Gazette*, 21, 524 (1837), 474–8, which detailed the accusations and the relatively amicable resolution.

⁵⁷ Shaw, *op. cit.* (note 9), 110.

⁵⁸ *Ibid.*, 85–6.

⁵⁹ Herbert Mayo, *Outlines of Human Physiology*, 3rd edn (London: Burgess and Hill, 1833), 190.

⁶⁰ Herbert Mayo, *The Nervous System and its Functions* (London: John W. Parker, 1842), 37.

⁶¹ Mayo, *Anatomical and Physiological Commentaries*, No. 1, *op. cit.* (note 22), 6; Everard Home, ‘On the Influence of Nerves and Ganglion in Producing Animal Heat’ *Philosophical Transactions of the Royal Society of London*, 115 (1825), 259; Herbert Mayo, ‘On the Use of the Bile’, *London Medical and Physical Journal*, 56, 332 (1826), 340; Anon. [‘A Perpetual Pupil’], ‘Neglect of the Lecturers at the School in Windmill-Street’, *The Lancet*, 14, 362 (1830), 752.

⁶² Mayo, *op. cit.* (note 23), 240; Herbert Mayo, *Outlines of Human Physiology*, 2nd edn (London: Burgess and Hill, 1829), 262–3.

given that a few months before John Shaw had referred to him as ‘my friend’,⁶² is his clearly voiced contempt. ‘Unsound theory . . . prejudicial to the interests of science’ was the first of many epithets of Bell’s incompetence, to which Mayo added a lack of experimental rigour.⁶³ His most scathing remarks were reserved for his conclusion, where he pondered ‘whether there exist in the whole of Mr Bell’s essay, after the deduction of his controvertible statements, more than one correct inference.’ And that inference, Mayo sardonically quipped, had ‘occurred to Dr Blair’ at the beginning of the eighteenth century.⁶⁴ When a reviewer of *Commentaries* cautioned that the dispute should be conducted ‘with that spirit of moderation and candour which befits members of a liberal profession’, he was undoubtedly thinking of Mayo’s forthrightness, which transgressed the boundary between gentlemanly and ungentlemanly behaviour.⁶⁵

As the realisation dawned upon Mayo that he must fight for priority rather than dispute the structure and function of the facial nerves, he branded Bell a plagiarist. ‘In all his subsequent writings on this subject’, Mayo complained, ‘Bell . . . has substituted for his original opinions my conclusions, I regret to say without acknowledging the source from whence he derived them.’⁶⁶ Morality was now central to his story: Bell not Mayo was the thief. He repeated the accusation several times, notably in 1834 when comparing Bell’s theft with a poor musical performance: ‘his best parts are the appropriated thoughts of others, which gives a falsetto quality to his performance, that captivates the vulgar, but displeases the correct ear.’⁶⁷ Sarcastic and urbane, it was an unseemly assault, even by the rambunctious standards of the medical press of the day, on an elder statesman of the profession – a poor performance on Mayo’s part, particularly as there was little in Bell’s public behaviour that might corroborate these accusations. The spokesmen for Bell were altogether more effective. Shaw’s *Narrative* of 1839 was a particularly masterful performance that combined altered texts and selective quotation with moral indignation. Furthermore, there can be little doubt that Mayo’s increasingly erratic behaviour lent weight to Shaw’s accusations.

Judging Priority: Manufacturing Consensus

By 1840 a consensus had formed around the notion that it was Bell, rather than Mayo, who had identified the separate functions of the facial nerves, a discovery that was presumed to have been made sometime before June 1821. How and when Mayo’s claim was dismissed is deeply revealing. From the awards showered upon Bell it would be easy to assume that he had consolidated his claim between 1829 and 1831. In 1829 he was presented with the Royal Society Gold Medal for his discoveries; whilst in 1831, he was inducted into the Royal Order of Guelph, alongside other luminaries like the Astronomer-Royal John Herschel. And yet neither accolade provided the imprimatur of priority. The Royal Society had the hallmarks of a moribund Establishment organisation, and was under concerted attack not only from reformers on the outside but from within its own ranks. Furthermore, Bell’s knighthood might be interpreted as an act of political patronage grounded in the closed world of the Edinburgh old boys’ network, nothing short of Bell’s old school friend

⁶² Shaw, *op. cit.* (note 53), 274.

⁶³ Mayo, *Anatomical and Physiological Commentaries*, No. 1 *op. cit.* (note 22), 112–13.

⁶⁴ *Ibid.*, 120.

⁶⁵ Anon., *op. cit.* (note 35), 440.

⁶⁶ Mayo, *op. cit.* (note 58), 192.

⁶⁷ Herbert Mayo, ‘On Bellingeri’s Claims as a Physiologist’, *The London Medical Gazette*, 15, 364 (1834), 271.

Lord Brougham rewarding his 'ain folk'.⁶⁸ Despite the status conferred by these awards, Bell did not achieve sole priority until later.

In the early years of the dispute, whilst Bell had his backers, many others supported Mayo. Often they were mentioned as co-discoverers. Thus Guthrie in his Hunterian Oration of 1830 commented 'the greatest improvements that have taken place in this country have been effected by Mr Bell, and my excellent colleague, and professor of anatomy, Mr Mayo.'⁶⁹ In the 3rd Report of the BAAS (1833), the somewhat muddled physician Henry noted that to Bell was the glory of the discovery of the separate roots of the spinal nerves, but in the matter of the facial nerves, 'Mr Herbert Mayo . . . pursued their course with singular precision, and has thus been enabled to correct some errors of details in the system of Sir Charles Bell', later adding that the discovery was entirely Mayo's.⁷⁰ The surgeon Samuel Solly observed 'that a portion of the fifth pair of nerves . . . we know to be a nerve of sensation from the beautiful experiments of Mayo and Sir Charles Bell'.⁷¹ Marshall Hall, retrospectively celebrated as the greatest of the British nerve physiologists, commented in 1835 that 'Bell's work is replete with the most spirited descriptions of the paralysis of the *fifth* and of the *seventh* pairs of nerves',⁷² yet in 1838 he placed Mayo more or less on a par with Bell.⁷³ Whewell was initially favourable to Mayo's claim, before modifying his views to co-discovery after a highly unfavourable review.⁷⁴ Bell's priority was, however, attacked on some fronts. Prior to his appointment to the Chair of Surgery at Edinburgh, a printed letter was distributed to the Town Council of Edinburgh, which claimed that Bell had plagiarised Bellingeri. 'I should be truly sorry,' the anonymous 'ELECTOR' cautioned, 'were the Town Council, by any inadvertence, made the patrons of imposture instead of genius.'⁷⁵

By the late 1830s the spoils were shared by Mayo and Bell, whether they liked it or not: as one reviewer noted in 1838, while Bell had demonstrated that single filaments did not carry both motor and sensory impulses, Mayo had perfected the discovery in regards to the facial nerves.⁷⁶ Then, in 1839, Shaw's *Narrative* dramatically dissolved the consensus. This was a time of grave reputational danger for Bell. Since 1834, the maverick anatomist Alexander Walker had been pressing his priority in the discovery of the spinal nerves: in 1809 he had speculatively identified the anterior root as sensory and the posterior as motor (the opposite of Magendie's findings); he may have learned about the wider dispute from Henry's report to the BAAS; certainly in 1834 he launched a one-man crusade against Bell. Initially Walker accused Bell of plagiarising his work; but by 1839,

⁶⁸ For corruption in the Royal Society see Manuel, *op. cit.* (note 24), 158–61; also Anon., 'The Royal Society', *The Lancet* 15, 379 (1830), 338, where, commenting upon the election of the Duke of Sussex to the presidency, an editorial announced 'The Society is rotten to the core'.

⁶⁹ Anon., 'Royal College of Surgeons: Hunterian Oration Delivered by Mr Guthrie', *The Lancet*, 13, 338 (1830), 695.

⁷⁰ Henry, *op. cit.* (note 3), 62–3: 88–9.

⁷¹ Samuel Solly, *The Human Brain: Its Configuration, Structure, Development, and Physiology* (London: Longman, Rees, Orme, Brown, Green, and Longman, 1836), 154.

⁷² Marshall Hall, *Lectures on the Nervous System and Its Diseases* (Philadelphia: Carey & Hart, 1835), 121–2.

⁷³ Marshall Hall, 'Lectures on the Theory and Practice of Medicine', *The Lancet*, 29, 753 (1838), 651–7.

⁷⁴ Whewell, *op. cit.* (note 3), 425; Anon., 'Review of *History of the Inductive Sciences, from the Earliest to the present Times*', *Edinburgh Review*, 66, 133 (1837), 149–50; See, for modified view, William Whewell, *History of the Inductive Sciences from the Earliest to the Present Time*, 3rd edn, vol. 2 (New York: Appleton and company, 1859), 464.

⁷⁵ Printed letter to the Right Hon. The Lord Provost, the Magistrates, and Town-Council of Edinburgh, dated 3rd December 1835, University of Edinburgh Special Collections, Attics. 80. P. 12 / 53–.

⁷⁶ Anon., 'The Discoveries of Sir Charles Bell', *The London Medical Gazette*, 21, 531 (1838), 737–8.

when he anonymously published *Documents and Dates*, Walker also argued the cases of both Mayo and Magendie. The ground had shifted once he had compared Bell's *Exposition* with the earlier Royal Society papers, and had identified the changes made to the originals. 'These surreptitious additions,' wrote Walker, 'by giving a false appearance of anticipation, unjustly tend to deprive Messrs. Magendie and Mayo of their unquestionable priority on some most important points.'⁷⁷

Whether Shaw's *Narrative* was a response to *Documents and Dates*, or whether their proximate publication was merely coincidence, is conjectural. What is not conjectural is that for the first time Bell's transformed texts were placed in public view; not only that, the works of Walker, Bell and Alexander Shaw were reviewed side-by-side. And yet, despite Walker's revelations, the response to Shaw's *Narrative* was unequivocal: his account was believed and thus priority was effectively wrested from Mayo. Significantly, the *Narrative* did not deign to deal with Walker's accusations – perhaps his lack of scientific credibility meant he could be ignored. Instead Shaw dwelt almost obsessively upon the actions of Mayo, one chapter alone reserved for the sins of Magendie.⁷⁸

On 25 April 1840, *The Lancet* published the first of a two-part review of four books: Shaw's *Narrative*; Walker's works of 1834 and 1839; and Mayo's *Outlines of Physiology* (fourth edition), which contained a few short passage reasserting his right to priority.⁷⁹ It was a typical response to the *Narrative*. The reviewer created a convoluted argument in favour of Bell, admitting that the separate functions could only be inferred from his pre-1822 publications, but placing trust in the credibility of John Shaw who 'simply' professed 'to record the discoveries of . . . Bell' with no hint of self-interest.⁸⁰ Walker's revelations of Bell's textual massage went unmentioned. The reviewer deferred the final task of 'summarily' disposing of 'Magendie and his accomplice [Mayo]' for a future issue. Then on 30 May he resumed. Magendie's August 1822 announcement, retrospectively described as a model of concision,⁸¹ was dismissed as 'written in a very confused manner'.⁸² But for Mayo he reserved his fury. Announcing that his duty was 'to detect and expose those who would pilfer the property of others, and clothe their own nakedness in the glory of some friend or master, who, Judas-like, they have sought to kiss and betray',⁸³ he exposed Mayo as a traitor, who had sequestered Bell's discoveries for his own aggrandisement. 'In the mind of every honest man', the reviewer continued, 'it will remain graven as a proceeding that is surpassed in character and quality only by that which has latterly placed in juxtaposition the names of Home and Hunter.'⁸⁴ Strong words; Sir Everard Home had not only purloined and plagiarised his father-in-law's papers, he had destroyed them in an act that scandalised the profession and discredited the Royal College of Surgeons, who had been entrusted as the guardian of Hunter's bequest.⁸⁵

⁷⁷ Anon. [Walker], *op. cit.* (note 45), 85.

⁷⁸ Shaw, *op. cit.* (note 9), 155–87.

⁷⁹ Mayo's claim to priority in the facial nerves, *Outlines of Human Physiology*, 4th edn (London: Henry Renshaw and John Churchill, 1837), assertion of his priority in facial nerves 173–4: 251–8, assertion of Magendie priority, 249.

⁸⁰ Anon., 'Discoveries in the Physiology of the Nervous System', *The Lancet*, 34, 869 (1840), 166–70.

⁸¹ Craneheld, *op. cit.* (note 3), 11, describes the piece as 'short and brilliant'.

⁸² Anon., 'Review of Discoveries in the Nervous System', *The Lancet*, 34, 874 (1840), 343.

⁸³ *Ibid.*, 342.

⁸⁴ *Ibid.*, 346.

⁸⁵ Home's actions were discussed by Warburton's parliamentary select committee on medical education and more widely in the medical press.

The Lancet was not alone in being convinced by the *Narrative*. *The Spectator* referred to Mayo as ‘grand anatomiste, grand voleur’.⁸⁶ In a review that awarded Bell priority, *The British and Foreign Medical Review*’s equivocality is an illustration of how hard it had become for Mayo to maintain his claim. The reviewer, the distinguished physician W.B. Carpenter, placed character at the centre of priority disputes: ‘what save a purely selfish motive’, he asked rhetorically, induces a man ‘to raise himself upon the reputation of another?’⁸⁷ Carpenter then unstintingly recounted the events of the dispute, relying principally upon Walker’s *Documents and Dates*. Unlike the *The Lancet* he was fully attentive to Walker’s accusations against Bell, and accepted their substance. Walker had, for example, reprinted in its entirety Bell’s 1811 pamphlet. Having compared this with Shaw’s use of the same source, he was satisfied that Shaw had quoted selectively and inaccurately. ‘These extracts *do not give a fair view* of ... [Bell’s] essay’, he remarked.⁸⁸ Carpenter also affirmed Walker’s account of Bell’s retrospective revisions of his *Philosophical Transactions* paper of 1821, which, he added, ‘certainly has the appearance of underhand dealing’.⁸⁹ Yet still he managed to uphold Bell’s priority by accepting the sketchy testimony of John Shaw, which he believed established that Bell had made his discoveries prior to the 1821 paper.⁹⁰ Mayo, on the other hand, was not the beneficiary of such latitude. Early in the review, Carpenter noted that Shaw ‘very justly’ reprobated Mayo ‘for his attempts to strip ... Bell of all the merit of priority, in favour of M. Magendie, when he could substantiate no claim for himself’ (emphasis added).⁹¹ In other words Mayo, motivated by jealousy, had backed Magendie’s claim once his own had been dismissed. Later Carpenter repeated without challenge the full allegations of Mayo’s personal betrayal and duplicity.⁹²

Mayo attempted to defend himself against these charges, including a letter to *The Spectator* reprinted in *The Medical Times*.⁹³ But it was to no avail. For much of this period he suffered from chronic ill health.⁹⁴ It was not until 1842 that he restated his case in *The Nervous System and its Functions*. Here, in an autobiographical aside, he accepted that he had been Bell’s ‘familiar’ pupil between 1812–15, after which period ‘I was not in the way of knowing, nor did I know, anything whatever of the nature of Sir Charles Bell’s researches, except through his published writings.’⁹⁵ But by now Mayo appeared to lack the strength or the will to engage with the dispute. The rheumatism that forced him to resign from the Middlesex drove him to the water cure in Germany. Furthermore, his household had disintegrated, his wife abandoning him, although whether for the loving

⁸⁶ Herbert Mayo, ‘Herbert Mayo and The Spectator’, *The Medical Times*, 1, 2 (1839), 14.

⁸⁷ Anon. [W.B. Carpenter], ‘Claims of Bell, Magendie, Mayo, &c.’, *British and Foreign Medical Review*, 9, 17 (1840), 99. Carpenter’s attributed authorship of the review in W. B. Carpenter, *Nature and Man: Essays Scientific and Philosophical with Introductory Memoir by J.E. Carpenter* (New York: Appleton, 1889), 467–83.

⁸⁸ Anon., *op. cit.* (note 87), 122.

⁸⁹ *Ibid.*, 133, emphasis in original.

⁹⁰ By 1882 Carpenter had shifted his position, fully acknowledging Magendie’s priority. His reassessment did not include Mayo. William B. Carpenter, ‘Sir Charles Bell and Physiological Experiment’, *Popular Science Monthly*, 21 (1882), 178–85.

⁹¹ Anon., *op. cit.* (note 87), 97.

⁹² *Ibid.*, 135.

⁹³ Mayo, *op. cit.* (note 86), 14.

⁹⁴ Mayo gave a detailed account of his ill health in, *The Cold Water Cure, its Use and Misuse Examined* (London: Henry Renshaw, 1845), 59–72.

⁹⁵ Mayo, *op. cit.* (note 59), 37.

embrace of the barrister James Lonsdale (the son of Mayo's portrait painter), or out of sheer exasperation, is unknown.⁹⁶

As we have seen, Mayo's professional betrayal was ancient history, dating back to John Shaw's first attack of October 1822. It had been repeated several times, most recently in 1829 when a bad-tempered exchange of letters found its way into the *London Medical Gazette*. Mayo had patronised Alexander Shaw about his age. Stung, Shaw furiously paraded the story of treachery, but to no effect.⁹⁷ How was it, then, that Mayo's betrayal was of no consequence in 1829 but of great concern in 1839, particularly when at this later date Bell's behaviour had been revealed as questionable? Had Shaw, in the interim, gained in credibility? It seems unlikely: in 1839, he remained an assistant surgeon at the Middlesex; more importantly, he had published little besides his interventions on Bell's behalf.⁹⁸ Another possibility lies in the cursory telling of the story in 1829 compared with the more detailed version of 1839; put simply, the *Narrative* appeared to provide more and better evidence. However, the substance of the accusation remained unchanged, while the use of the subjunctive mood in the *Narrative* ought to have alerted the readers, schooled, as many were, in rhetoric, to its inherent vagueness. The most convincing explanation for the *Narrative*'s success lies in a comparison of the reputations of Bell and Mayo. For while Bell's had remained remarkably strong, by 1839 Mayo's was in tatters, his credibility with it – to the extent that Walker's revelations of Bell's transformations had no bearing whatsoever upon the outcome of the dispute.

Credibility and Conduct in Medical Life

The deterioration of Mayo's stock of credibility was a play in two acts, neither of which related directly to the dispute. First came the political debacle of his application for a chair at University College whilst still a professor at King's; second, were his controversial literary productions in support of mesmerism. It is hard to judge which counted most against him. In 1836, Mayo had asked for and been given the vacant Chair of Surgery at King's College, a position he added to the Chair of Pathology. However, when, shortly afterwards, Quain resigned from the Chair of Anatomy at University College, Mayo promptly applied. There was a general feeling that his behaviour was disloyal and deceitful, turning his back on an institution, which had served him well, once a better prospect appeared. 'We ask, is this creditable', bemoaned the *Medical Gazette*, 'is it decent, in the eyes of the profession and the public?' Mayo's 'pitiful and ridiculous' actions were to no avail.⁹⁹ As the *Gazette* predicted, he got nothing at Gower Street and was forced to resign from King's.¹⁰⁰ If the *Gazette* ultimately forgave Mayo, describing him as 'an

⁹⁶ Mayo's portrait is, according to the Wellcome Trust archives, by James Lonsdale. In the Census of 1841 Mayo listed as living at 19 George St, Hanover Square, Mayfair, while his wife Jessica is listed as head of the household at Wellington Rd (St John's Wood), along with the children. In 1851, when Mayo is in Germany, Jessica is listed as Head of Household at 17 Harewood Square, again with the children. Another household is at the same address with James J. Lonsdale as head. *The Annual Register or a View of the History and Politics of the Year 1853* (London: F. & J. Rivington, 1854), 181, notes their wedding at St. Marylebone Church on 1 January 1853, shortly after Mayo's death.

⁹⁷ Mayo, *op. cit.* (note 46), 838; Alexander Shaw, 'Mr Shaw in Reply to Mr Mayo', *The London Medical Gazette*, 4, 79 (1829), 12–14.

⁹⁸ Rare exceptions include, Alexander Shaw, 'On the Affection of the Muscles of Respiration', *The London Medical Gazette*, 13, 318 (1832), 'On the Influence of Rickets upon the Growth of the Skeleton', *The London Medical Gazette*, 16, 384 (1835), 45–9.

⁹⁹ Anon., 'The Medical Session: School Arrangements', *The London Medical Gazette*, 18, 453 (1836), 742.

¹⁰⁰ Anon., 'Medical Professorships: London University', *The London Medical Gazette*, 18, 454 (1836), 782.

unlucky politician',¹⁰¹ *The Lancet* could not resist the opportunity of traducing one of its natural enemies. He became the subject of one of James Wardrop's anonymously authored 'Intercepted Letters', a device used to satirise London's medical élite.¹⁰² The 'Intercepted Letter' was in two parts. The first, written in Mayo's voice, was a satire, which sought approbation from a notional friend. The second was what appears, for the first and only time in Wardrop's series, to be a real intercepted letter: a reproduction of Mayo's letter of application. Readers had already been primed by reports in *The Lancet* and other medical journals; now the London medical world had full view of Mayo's vaunted ambition and the depth of his self-regard: 'I trust that what I have said of myself will be imputed, not to over-weening self-esteem, but to my strong anxiety so to state that which I think I possess', read his application. The fictional commentary underlined the brazen quality of his conceit. 'Pray look at this letter and tell me if it be not the very thing', boasts the fictional Mayo. 'In fact, I feel remarkably sure of the chair'.¹⁰³

Mayo's involvement in mesmerism undermined his credibility further. Thanks to Winter there is little need to retrace the saga of Elliotson and the O'Keys.¹⁰⁴ Mayo's part in the affair does, however, require elaboration. According to Winter Mayo had invited Baron Dupotet, the French proselytiser of Animal Magnetism, to perform his experiments at the Middlesex Hospital. Objections among the hospital staff put an end to this and the centre of mesmeric attention shifted to University College where the Baron collaborated with Elliotson.¹⁰⁵ By 1838 Elliotson's experiments were the talk of the town. The great, the good and the merely intrigued flocked to the College to witness the performances. So vast was the interest that the Physiological Committee of the Royal Society, of which Mayo was member, attended sessions to witness animal magnetism in action, and adjudge its scientific and medical merit.¹⁰⁶ Mayo, however, was impelled to abandon his impartiality, and instead described the experiments in a series of increasingly effusive letters to the *Medical Gazette*. By August, an over-excited communication claimed mesmerism proved the existence of a soul separate from the physical workings of brain and body.¹⁰⁷ Mayo's final word, in a letter of late August, was his most unfortunate literary performance to date. He had lent mesmerism, in a phrase which would rapidly return to haunt him, 'his fostering offices', and had thus rescued it from its origins in 'imposture and roguery'. He then proposed a new term for the phenomenon, which reinforced the freedom won it by Mayo. 'Exoneurism', he stated, 'clothed [Mesmerism] . . . in a dress in which its proper parent [medicine] need no longer be ashamed to own it.' 'I have finally contrived for it', he concluded, 'something like a philosophic appellation.'¹⁰⁸

¹⁰¹ Anon., 'Changes in the Medical Schools', *The London Medical Gazette*, 18 (1836), 956.

¹⁰² The 'Intercepted Letter' series appeared first in *The Lancet*, 20, 509 (1833), 762–3 and ran regularly until 1837.

¹⁰³ Anon. [James Wardrop], 'Intercepted Letters' ['Mr Mayo's Letter, Verbatim'], *The Lancet*, 26, 279 (1836), 727–8.

¹⁰⁴ See Alison Winter, *Mesmerized: The Powers of Mind in Victorian Britain* (London: University of Chicago Press, 1998), 33–59.

¹⁰⁵ *Ibid.*, 46. Unfortunately, these events have not been corroborated, particularly Mayo's invitation to Dupotet.

¹⁰⁶ Anon., 'University College Hospital', *The Lancet* 30, 769 (1838), 283. For further activities of the committee, see Winter, *op. cit.* (note 104), 51.

¹⁰⁷ Mayo's letters were published in the: *The London Medical Gazette*, 22 (1837–1838), 21 April 1838, 146–50; 28 April, 197–200; 5 May, 250–2; 16 June, 490–8; 11 August 1838, 771–5. In this last, 774–5, Mayo imagined a mesmeric state where the mind was freed from the body and 'with the character of spirituality, is freed from the restraints of time'.

¹⁰⁸ Herbert Mayo, 'New Name Proposed for Mesmerism', *The London Medical Gazette*, 22, 560 (1838), 849.

His timing was appalling. The final letter followed two accounts that were explicitly critical of mesmerism. A week later Wakley's celebrated debunking of Elliotson appeared, confirming the growing scepticism of the profession at large.¹⁰⁹ Both Elliotson and Mayo looked foolish. *The Lancet*, however, singled out Mayo for ridicule. 'Reader! Reader! the [sic] following letters are from the pen of a hospital surgeon of London, a lecturer on anatomy and the author of an elaborate work on physiology', the editorial crowed in introducing a compilation of the *Gazette* letters.¹¹⁰ Later the same journal scripted a short farce starring Mayo, satirising the poverty of his magnetic performances: 'Enter, Mr Herbert Mayo, properly habited, the infant, Mesmerism, in his arms. "I have now completed the fostering offices towards Mesmerism"'.¹¹¹ The *Gazette* itself was scarcely less damning, although considerably less facetious. While fully supporting *The Lancet*'s conclusions about mesmerism, it felt Mayo was unfairly singled out: 'He [Wakley] endeavours to create "a diversion" in Dr Elliotson's favour by turning the laugh against Mr Mayo.' 'For ourselves,' the *Gazette* concluded, 'we really cannot venture an opinion as to which of these gentlemen appears in the more ludicrous position'.¹¹² Most of the medical journals, followed *The Lancet*'s excoriation of Mayo, epitomised by the *Medico-Chirurgical Review*'s aspersion 'that Dupotet and Elliotson . . . secretly curse the hours when Mr Mayo "lent his fostering offices" towards Mesmerism'.¹¹³

To some degree, political perspectives shaped the hostility aroused by Mayo.¹¹⁴ *The Lancet* and the *Medico-Chirurgical Review* were, by their very nature, more likely to promote the materialist position that Mayo, and many of the London hospital surgeons, sought to deny. For the radicals, Mayo's immaterialism was, therefore, added to his want of judgement in other areas. *The Gazette*, however, was usually sympathetic to those whom *The Lancet* attacked, and it is here that we can see the absolute failure of Mayo's performances, and the depths to which his reputation had sunk. It should be remembered that as scientific mesmerism unravelled under Elliotson's command, he stood accused of ceding control to his patients and therefore was responsible for undermining the legitimacy of medical practitioners.¹¹⁵ Mayo, therefore, not only looked foolish, but had been a principal party in damaging the authority of scientific medicine.

The shambolic state of Mayo's character was in stark contrast to that of Bell's. Certainly, as we have seen, the combination of the latter's position within metropolitan medicine and his Paleyite beliefs made him a target for the reformers' ridicule, while the events that surrounded his resignation from the University of London had been a cause for criticism.¹¹⁶ But such things could be reduced to politics, not credibility. More importantly, despite his Established beliefs, his championing of a comparative anatomy that rejected the

¹⁰⁹ William Cooke, 'Mesmerism. Report of a Visit to University College Hospital; With Remarks on the Animal Magnetism There Exhibited', *The London Medical Gazette*, 22, 560 (1838), 842–5; Edward Wooldridge, 'Experiments at University College Hospital' [editor headed the pages with the pejorative headline: 'Fallacy of Dr Elliotson's Experiments'], *The London Medical Gazette*, 22, 560 (1838), 845–9 (Wooldridge was one of Elliotson's students). Anon., "'Animal Magnetism"; or, "Mesmerism." Experiments Performed on Elizabeth and Jane O'Key, at the House of Mr Wakley, Bedford-Square, in August, 1838', *The Lancet*, 30, 783 (1838), 805–11.

¹¹⁰ Anon., "'Further Observations on Mesmerism"', *The Lancet*, 30, 783 (1838), 811. Unsurprisingly, the final observations (814) were drawn from Mayo's last letter to the *Gazette*, *op. cit.* (note 108).

¹¹¹ Anon., 'Suggestions for a New Farce', *The Lancet*, 30, 785 (1838), 876–7.

¹¹² Anon., 'Progress of Animal Magnetism', *The London Medical Gazette*, 22, 562 (1838), 951.

¹¹³ Anon., 'Animal Magnetism', *The Medico-Chirurgical Review* 29, 58 (1838), 637.

¹¹⁴ Desmond, *op. cit.* (note 27), 14–16.

¹¹⁵ For the problems of scientific legitimacy and mesmerism see Winter, *op. cit.* (note 104), 63–78 and 93–6.

¹¹⁶ Anon., 'Mr C. Bell', *The Lancet*, 15, 379 (1830), 338.

vivisectional excesses of physiology appealed to a broad cross-section of the profession, including those who would otherwise have chastised him for his privileged position. What is most recollected of Bell's 'Second Part of the Paper on the Nerves of the Orbit' is not his claim to priority in the separate functions of the facial nerves, but his rallying call for English anatomical dissection of dead subjects over the vivisection of French experimental physiology. 'Let physiologists of that country borrow from us, and follow up our opinions by experiments', he thundered, 'but let us continue to build that structure which has been commenced in the labours of the MONROS and HUNTERS.'¹¹⁷ Physiology, he maintained, relied principally upon undirected vivisection, while comparative anatomy required detailed observation combined with inductive method. At the same time, he insisted, vivisection was morally corrosive, an opinion that fortuitously coincided with a rising tide of popular disquiet.

The reaction against vivisection was catalysed by the visit to London of Magendie in 1824, when he had demonstrated his experimental techniques to packed audiences of medical men. The radical Irish M.P. Richard Martin, a tireless campaigner on behalf of animals, had damned the resulting displays, graphically describing Magendie's barbarity to a shocked House of Commons. According to Martin, Magendie had crucified 'a lady's grey-hound' upon a wooden board, before opening up the beast's face to slice the nerves – cries of 'shame' and 'great disgust' were noted by *Hansard*. In Martin's single-handed campaign to pass legislation against bear-baiting and other forms of cruelty to animals, Magendie unwittingly bore the brunt of the desire to curtail the excesses of what has been termed 'Frankenstein science'.¹¹⁸

Despite Bell's use of vivisection, he carefully distanced himself from the practice, and his biographers would underscore his disquiet at having to confirm his anatomical inferences by live experiment. From the first paper he read to the Royal Society in 1821, Bell sharply distinguished the anatomical from the physiological method. Anatomy was inductive and resulted in hypothesis formation; live experimentation was only to be used as a final step: 'having taken all the assistance that the knowledge of the human structure and comparative anatomy afford', and sparingly at that.¹¹⁹ In 1824 he forcefully reiterated the point, highlighting the cruelty of French physiology, where 'experiments without number and without mercy have been made on living animals' – a theme to which he would return in future years.¹²⁰

These ethical statements were part of the foundation upon which Bell's character was built. Here he presented himself (and was represented by others) as being neither cruel nor indifferent; indeed, he was a man of sensibility. Life, in his hands was neither destroyed wantonly nor wastefully, unlike the barbarous physiologists whose laboratories were the charnel houses of science. The upright Bell was waging war, no less, against the cruelty and materialism of French physiology, which threatened all that Bell valued most: the God

¹¹⁷ Bell, 'Second Part of the Paper', *op. cit.* (note 18), 307.

¹¹⁸ R.D. French, *Antivivisection and Medical Science in the Victorian Era* (Princeton, NJ: Princeton University Press, 1975); Diana Manuel, 'Marshall Hall (1790–1857): vivisection and the development of experimental physiology', in Nicolaas A. Rupke (ed), *Vivisection in Historical Perspective* (London: Routledge, 1990), 78–104; Anita Guerrini, *Experimenting with Humans and Animals: From Galen to Animal Rights* (Baltimore, MD: Johns Hopkins University Press, 2003), 70–8. Martin's accusations against Magendie in *Hansard*, House of Commons Debate 24 February 1825, vol. 12 cc657-61, *Hansard* 1803–2005.

¹¹⁹ Bell, 'On the Nerves', *op. cit.* (note 18), 412; see also, Bell, 'Of the Nerves which Associate the Muscles of the Chest', *op. cit.* (note 15), 291–2, and 'On the Motions of the Eye', *op. cit.* (note 15), 174–5.

¹²⁰ Bell, *op. cit.* (note 45), 2–3.

of Paley, the Established Church and the British way of doing science. There is no doubt, as well, that Bell was deeply disturbed by vivisection – his love of animals, particularly donkeys, or ‘cuddies’ as he called them, was well known;¹²¹ his personal correspondence full of heartfelt distress at the prospect of the experiments he needed to undertake to prove his hypotheses.¹²² Bell’s ability to distance himself from the brutality of his experiments allowed him to maintain his image as a man of feeling. But more than that, his rejection of vivisection in favour of anatomy had an appeal beyond the ranks of Establishment surgeons. Many teachers in the private anatomy schools – the Methodists and the Unitarian theists – were as uncomfortable with live experimentation as the Anglican Bell. They too preferred the methods of comparative anatomy to those of French physiology.¹²³ In these circumstances a discovery made principally by anatomy was infinitely preferable to one ensuing from vivisection.

Mayo, on the other hand, had initially stated that physiological experimentation, however cruel or distasteful, was the only means of discovering the dynamic workings of the body. ‘The best sentiments of humanity revolt against’ vivisection, he said. But just as the equally repugnant anatomical dissection was essential for understanding the structure of the body’s parts, without live experiments ‘the uses of parts would be known by conjecture only.’ As a defence, he invoked Harvey’s discovery of the blood’s circulation.¹²⁴ Strikingly, after 1827, he fell silent on the issue. Each new edition of *Outlines of Human Physiology*, building upon the last, grew in length and detail, adding new descriptions of often-graphic experiments. It was as if he felt no need to excuse the cruelties of vivisection. Yet again, Mayo’s performances were out of kilter with the quotidian, so unlike those of Bell.

Science, Performance and Priority in the Era of Medical Reform

On any level, the performances of Bell were of a different stamp to Mayo, who appeared out of step with the emerging moral and scientific code of the medical profession. Retrospectively Mayo may have been a first-rate scientist, as Cranefield claimed,¹²⁵ but his ability to manage his public persona undermined this quality. At every level his character intervened. Wardrop portrayed a man who was not only cock-sure but also deluded. With mesmerism Mayo was fated to give a failed performance within a failed performance: Wakley debunked Elliotson’s mesmeric pretensions of the healer controlling the patients; at the same time, Mayo’s over-excited textual interventions, were open to ridicule as naïve and deeply speculative – an assault upon the foundations of legitimate medical science.

Bell by contrast managed his presentation of self with a skill matched only by his artistic ability – avoiding scandal, deferring the work of maintaining his position to others, he quietly controlled the course of his claims. Even his avowed stance against vivisection, the sincerity of which should not be gainsaid, highlighted his probity: not only did the materialists of the private anatomy schools hold similar views about the cruelty of vivisection, they also adhered to Bell’s favoured methods of comparative anatomy over

¹²¹ Anon., *Letters of Sir Charles Bell*, (London: John Murray, 1870), 265. Cuddie is Scots for donkey.

¹²² *Ibid.*, 274. There is a constant tension in Bell’s work between his use of vivisection while denying its efficacy. Shaw’s 1822 article, *op. cit.* (note 36), 344, juxtaposes Magendie’s physiological with Bell’s anatomical method, and yet later describes the vivisections undertaken by Bell.

¹²³ Desmond, *op. cit.* (note 27), 190–2.

¹²⁴ Mayo defended vivisection in *op. cit.* (note 23), 6–7.

¹²⁵ Cranefield, ‘Introduction’, *op. cit.* (note 3), vii.

physiology. At the same time, for the wider public, the discovery of the separate functions of the spinal nerves was easily clothed in patriotic garb, allowing the portrayal of Bell as an upright British medical scientist.

But the dispute produced other effects: a whole world of discourse emerges in this process of history making that terminated in Bell's triumph, including tropes of discovery and priority that increasingly became the *lingua franca* of science and medicine. Bell came, for a short while, to represent scientific genius battling against a hostile world, his biographies underlining a set of binaries: triumph over adversity; truth over falsehood; integrity over dishonesty; new reform over old corruption; ethical English anatomy over brutal French physiology; and, reason over irrationality.¹²⁶ Bell stood for these qualities, even, at times, for the radical *Lancet*, despite the fact he was a member of London's élite and a Paleyite to boot.¹²⁷ Mayo stood as Bell's dark shadow. Found wanting in credibility, his claims to authority were denigrated and his assertion of priority denied; the radical critique of medicine's social structure could find a full expression in his figure. His failed performances were his ultimate testimony, enshrined for posterity in a set of obituaries that signally failed to say nothing but good about the dead, until posthumously rescued from ignominy by the good offices of Cranefield.¹²⁸

A study of the Bell–Mayo dispute, then, adds nuance to the story masterfully told by Desmond in the *Politics of Evolution*, which paints so vivid a picture of the fractured world of London medicine in the Pre-Darwinian era.¹²⁹ But, while the divisions he outlines between the immaterial elite and the material radicals were real, an exploration of performance and credibility provides another perspective on the nature of medical politics beyond philosophical anatomy and transmutation. Like other controversies in the medical world of the early-to-mid nineteenth century,¹³⁰ this matter of priority erupted into matters of character, and was tightly bound to the professionalisation of medicine. As Brown has rightly identified, professionalisation was more than a legal or economic process, requiring the remoulding of medical identity and the performances that expressed them. The new forms of medico-scientific identity demanded behaviours that transcended social position or religious persuasion. To be a member of the profession was to profess its practices and values: disinterestedness; self-sacrifice; moral probity; proper association with fellow professionals; and a commitment not only to the cure of disease and the welfare of patients, but also to the development of scientific medicine. Failure in any of one of these performances might have a significant impact upon the individual credibility of medical practitioners, which Mayo found to his professional and personal cost.

¹²⁶ These qualities were elaborated in Anon., 'Sir Charles Bell', *Quarterly Review*, 72, 143 (1843), 192–231.

¹²⁷ See for example, Anon. 'Lancet Gallery of Medical Portraits. Sir Charles Bell', *The Lancet*, 20, 523 (1833), 756–61.

¹²⁸ Anon., 'Herbert Mayo', *Medical Times and Gazette*, 5, 113 (1852), 226; Anon., 'Medical Intelligence', *Provincial Medical and Surgical Journal* 16, 18 (1852), 464–5; Anon., 'Medical News', *The Lancet*, 60, 1513 (1852), 207; Anon., 'Herbert Mayo', *The London Journal of Medicine* 4, 46 (1852), 875; Robert Druitt quoted in Charles Herbert Mayo, *A Genealogical Account of the Mayo and Elton Families* (London: C. Whittingham, 1882), 109–16, which formed the basis for Herbert's entry in the *Dictionary of National Biography*.

¹²⁹ Desmond, *op. cit.* (note 27).

¹³⁰ For example, the discoveries of Marshall Hall, or Robert Lee's battles with the Royal Society during the 1840s; Manuel, *op. cit.* (note 24) and 'Robert Lee, the uterine nervous system and a wrangle at the Royal Society 1839–1849', *Journal of the Royal Society of Medicine* 94, 12 (2001), 645–7.