

VICTORIAN BRAIN

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In April 1878 the first issue of *Brain: A Journal of Neurology* was published. Edited by the eminent psychiatrists J. C. Bucknill and James Crichton-Browne, and by the rising stars in the field of experimental and clinical studies of the brain, David Ferrier and John Hughlings Jackson, it sought to lay claim to a new disciplinary territory: neurology. An index of the journal's self-conscious modernity in its use of this term is perhaps to be found in the fact that nearly a century and a half later it is still a leading journal in the field, and publishing under exactly the same title.¹ Indeed, there are even similarities in format, with clinical case studies accompanied by articles addressing medical issues of the day, such as 'brain forcing' of school children, or effects of alcohol on the brain, in the 1878 volume, matched by short pieces on the Zika virus and Alzheimer's, in recent issues.² Such apparent similarity and continuity of course also masks major shifts. Current authors, for instance, are unlikely to follow the example of J. Milner Fothergill in his 1878 article on 'The Neural and Reflex Disorders of the Heart' who uses various literary illustrations, including the scene in *Jane Eyre* in which Rochester takes Jane's pulse (in order to reassure himself that she will not faint at the sight of blood), to

¹ By contrast, anyone looking for a digital version of the nineteenth-century *Journal of Mental Science* now has to search under *British Journal of Psychiatry*. Although the term neurology has a long history, the OED gives the first usage meaning 'the branch of science that deals with the nervous system' in 1878. Slightly earlier uses according to this definition can be found, but by using this subtitle the editors were situating themselves in the vanguard of medical and experimental science. The *American Journal of Neurology and Psychiatry* was founded a few years later in 1882.

² Clifford Allbutt, 'On Brain Forcing', *Brain* 1:1 (April 1878), 60-78; Robert Lawson, 'On the Symptomology of Alcoholic Brain Disorders', *Brain* 1:2 (July 1878), 182-194; Abelardo Q. C. Araujo, Marcus Tullius T. Silva, Alexandra P. Q. C. Araujo, 'Zika virus-associated neurological disorders', *Brain*, 139:8 (2016), 2122-2130; Oskar Hansson and Gouras Gunnar, 'Brain Activity and Alzheimer's Disease: a complex relationship', 2109-2111.

make his point that emotions affect the circulation of the blood.³ In this example, medical science is confirming the observations of literary authors, and indeed drawing authority from literary precedence. The pages of the current issues of *Brain*, by contrast, are largely impenetrable for a non-medical reader, whilst the use of literary examples in medical writing at large tends to be confined to the field of medical humanities. The balance of power and cultural authority has shifted.

With the enormous recent upsurge of interest in neuroscience, and the accompanying popular assumptions that the neurosciences, in their various forms, hold the keys to understanding all aspects of social, cultural and individual life and behaviour, from social deviancy through to the interpretation of literary texts, it is well to be reminded of the Victorians' similar enthusiasm for interpreting the life of the mind through science.⁴ It was not only in the rarefied reaches of experimental research that such interest pertained. Franz Josef Gall, founder in the 1790s of what was to become, in the hands of his disciples, J. G. Spurzheim and George Combe, the popular phrenological movement, had been primarily interested not in 'bumps' on the head, but the internal functioning of the brain. His firm belief that the brain was the organ of the mind became a central tenet of phrenology, underpinning the populist doctrines of social and self-improvement to be found in the work of Combe, whilst his interest in cerebral localisation, as Robert M. Young has shown, fed through into Ferrier's work on mapping the cerebral cortex, which has in turn proved foundational for current neuroscience.⁵

³ J. Milner Fothergill, 'The Neurosal and Reflex Disorders of the Heart', *Brain* 1:2 (July 1878), 195-209, p. 196.

⁴ In *Neuro: The New Brain Science and the Management of the Mind* (Princeton: Princeton University Press, 2013), Nikolas Rose and Joelle M. Abi-Rached offer an excellent overview of the excessive claims being made, but also a positive analysis of the potential for new flexible understandings of personhood, in relation to the social.

⁵ Robert M. Young, *Mind, Brain and Adaptation in the Nineteenth-Century: Cerebral Localization and its Biological Context from Gall to Ferrier* (Oxford: Oxford University Press, 1970). For a discussion of the social ramifications of phrenology as a social movement, see Roger Cooter, *The Cultural Meaning of Popular Science: Phrenology and the Organisation of Consent in Nineteenth-Century Britain* (Cambridge: Cambridge University Press, 1984). George Combe's most popular work, *The Constitution of Man in Relation to External Objects* (1828), was one of the best sellers of the nineteenth century, selling an extraordinary 350,000 copies in this period.

A similar trajectory can be traced in the development of a rather different movement, that of Mesmerism, which also dates back to the late eighteenth century, and the theories of animal magnetism of Franz Mesmer. Although the ‘mesmeric mania’ reached its height in the 1850s, one can trace, as with phrenology, a dual track of influence, on medical science, with the development of theories of hypnotism, and of states of trance, and in popular culture more generally, with late-century interest in unconscious states, and the power of ‘mesmeric’ influence of one mind on another.⁶ Spiritualism of course added to this potent mix from the 1850s, attracting not only those interested in the occult, but also eminent figures in the worlds of science from Cromwell Varley (engineer with the transatlantic cable), physicists William Crookes and Oliver Lodge, and the eminent psychologist, William James.⁷

It is important not to rewrite history, and to superimpose on the nineteenth century our categories of science and ‘pseudoscience’. Although areas such as mesmerism and spiritualism were much contested at the time, there were no sharp divisions between science, medicine, and these more popular fields. Developments in technology, such as the telegraph, and telephone, the phonograph and the photograph, with their capacity to overturn the boundaries of space and time, and the functioning of the senses, also had a profound effect on conceptions of the mind and brain.⁸ In contemporary culture, the parallel between computer networks and neural pathways has become a tired cliché; in the nineteenth century, as Laura Otis and others have noted, the equivalent

⁶ See Alison Winter, *Mesmerized: Powers of Mind in Victorian Britain* (Chicago: University of Chicago Press, 1998).

⁷ See Richard Noakes, ‘The Sciences of Spiritualism in Victorian Britain: Possibilities and Problems’, in T. Kontou and S. Willburn eds. *The Ashgate Companion to Nineteenth-Century Spiritualism and the Occult* (Farnham: Ashgate, 2012), 25-54; Pamela Thurschwell, *Literature, Technology and Magical Thinking, 1880-1920* (Cambridge: Cambridge University Press, 2001); Roger Luckhurst, *The Invention of Telepathy* (Oxford: Oxford University Press, 2002); Hilary Grimes, *The Late Victorian Gothic: Mental Science, the Uncanny and Scenes of Writing* (Farnham: Ashgate, 2011).

⁸ For some of the formative discussions of these intersections see Mark Seltzer, *Bodies and Machines* (New York: Routledge, 1992), and Tim Armstrong, *Modernism and the Body: A Cultural Study* (Cambridge: Cambridge University Press, 1998).

parallel was that of the telegraph and bodily nerves.⁹ No discussion of modernity, it seems, was complete, without reference to the branching nerves of the telegraph network, which, in quickening the pace of communication, resulted in the frayed nerves of city residents. Metaphors spread quickly across different fields, with medical discussion of the brain, for example, drawing on the emerging language and practices of photography. Thus Silas Weir Mitchell (of rest cure fame), writing on 'Some of the Lessons of Neurotomy' in the first volume of *Brain*, noted the excellent 'opportunities for study afforded by civil war' (all those injured brains), before explaining the processes of the diffusion of pain as 'due to what I might call, using a photographer's phrase, a *sensitizing* of the related ganglionic cells'.¹⁰ In this period of rapid social, scientific and technological development, interchange between fields happened constantly, both consciously, as in the above example, and unthinkingly, as writers reached for appropriate language to address new concepts.

The belief that thoughts and feelings could be traced to physical processes within the body also lay behind the development of physiological psychology in the Victorian era. Building on earlier associationist psychology, the physiological psychology developed by figures such as Alexander Bain, William Carpenter, Herbert Spencer, and G. H. Lewes, from the 1850s onwards, opened up new ways of thinking about the dreams, and unconscious movements of the mind which had so fascinated the Romantics, and led through to new conceptions of selfhood.¹¹ Whilst Carpenter tended to cling to belief in an organising Will, for example, Lewes questioned the idea of a directing self. The idea

⁹ Laura Otis, *Networking: Communication with Bodies and Machines in the Nineteenth Century* (Ann Arbor: University of Michigan Press, 2011).

¹⁰ S. Weir Mitchell, 'Some of the Lessons of Neurotomy', *Brain* 1:3 (Oct. 1878), 287-303, pp. 287, 289.

¹¹ For work in this area see Roger Smith, *Between Mind and Nature: a History of Psychology* (London: Reaktion, 2013); *Inhibition: History and Meaning in the Sciences of Mind and Brain* (Berkeley: University of California Press, 1992); Rick Rylance, *Victorian Psychology and British Culture, 1850-1880* (Oxford: Oxford University Press, 2000). *Embodied Selves: An Anthology of Psychological Texts, 1830-1890* (Oxford: Oxford University Press, 1998), edited by Jenny Bourne Taylor and myself, offers introductions to the primary areas of discussion in relation to mind, body and identity, including areas such as the unconscious and dreams, sexuality, and degeneration, together with selections from key primary texts.

of a 'Thinking Principle' directing operations could not be maintained, he argued, since it was merely the result of manifold activities; consciousness 'is not an agent, but a symptom'.¹² In anticipation of modernist ideas of streams of consciousness, his favourite image of the mind was that of a lake, with multiple streams entering at different levels, and mingling beneath the surface.¹³ Recent ecological ideas, addressed by Anna West in this volume, that look at human life as only part of a wider ecological pattern, dissolving distinctions between trees, animals and people, were also foreshadowed in the arguments of Lewes and Spencer that mind could only be understood as a constant process of interaction between the whole organism and a physical and social medium.¹⁴

Physiological psychology introduced a whole new vocabulary of reflex and automatic actions, and of streams, channels and currents in the mind which fed through into the broader culture of the time in multiple ways; mingling, for example, with mesmeric ideas, and notions of automatic action taken up in late Victorian fiction (as explored here by Kristie Schlauff). With the rise of evolutionary psychology from the 1860s, following Darwin's publication of the *Origin*, notions of inherited memory, were accentuated, significantly altering the various conceptions of human mind and brain, and giving birth to late-century fictions, from *Jekyll and Hyde* onwards, of the 'beast' within.¹⁵

All the diverse ways of thinking about the brain and mind, I have outlined, were interlinked at various levels, with patterns of connection

¹² G. H. Lewes, *Problems of Life and Mind. Third Series*, 2 vols. (London: Trübner, 1877), I, 363.

¹³ G. H. Lewes, *Problems of Life and Mind. First Series: The Foundation of a Creed*, 2 vols. (London: Trübner, 1874-75), I, 150n.

¹⁴ See G. H. Lewes, 'Spiritualism and Materialism', *Fortnightly Review*, 19 n.s. (1876), 479-93, 707-19, p. 715. For a discussion of these ideas, particularly as they were developed by George Eliot, see my own work, *George Eliot and Nineteenth-Century Science* (Cambridge: Cambridge University Press, 1984), and Rylance, *Victorian Psychology*. For work on Wilkie Collins, see Jenny Bourne Taylor, *In the Secret Theatre of Home: Wilkie Collins, Sensation Narrative, and Nineteenth-Century Psychology* (London: Routledge, 1988). More recently, Vanessa Ryan has also addressed these concepts in *Thinking without Thinking in the Victorian Novel* (Baltimore: Johns Hopkins Press, 2012).

¹⁵ On ideas of inherited memory, see Laura Otis, *Organic Memory: History and the Body in the late nineteenth and early twentieth centuries* (Lincoln: University of Nebraska Press, 1994).

spreading well beyond immediate fields. When *Brain* was set up in 1878 it was as a complement to *Mind: A Quarterly Review of Psychology and Philosophy*, inaugurated by Alexander Bain in 1876, with his disciple, George Croom Robertson (Professor of Mental Philosophy and Logic at University College, London), as editor. Like *Brain*, *Mind* is still going strong, but it has quietly dropped 'Psychology' from its sub-title, and now boasts solely of its philosophical credentials.¹⁶ At the time of founding, however, it was driven by a desire to demonstrate, in Croom Robertson's words, 'the scientific standing of psychology', and hence to overcome the doubts of all those who thought that the domain of the mind should remain one of subjective enquiry.¹⁷ The aims were nothing if not ambitious. To quote from the prospectus:

Psychology, while drawing its fundamental data from subjective consciousness, will be understood in the widest sense, as covering all related lines of objective inquiry. Due prominence will be given to the physiological investigation of Nerve-structures. At the same time, Language and all other natural expressions or products of mind, Insanity and all other abnormal mental phases, the Manners and Customs of Races as evincing their mental nature, mind as exhibited in Animals generally – much of what is meant by Anthropology and all that is meant by Comparative Psychology – will come within the scope of the Review.¹⁸

The speed and tumble of ideas and fields is breath taking, but gives a strong sense of the ways in which all these areas, from the study of nerves through to that of race, language, and animal psychology, were deemed to be deeply interwoven. In addition, Croom Robertson throws in for good measure, psychology of education, logic, aesthetics and ethics, and the history of philosophy.

Although the agenda might appear incoherent from a twenty-first century perspective, it gave expression to the unifying impulse, to be found in Herbert Spencer's *Synthetic Philosophy*, or G. H. Lewes'

¹⁶ See the journals home page, <http://mind.oxfordjournals.org/>.

¹⁷ G. Croom Robertson, 'Prefatory Words', *Mind: A Quarterly Review of Psychology and Philosophy* 1:1 (Jan. 1876), 1-6, p. 3.

¹⁸ The Prospectus is bound in at the back of the first volume in the online version. The ground is covered at greater length in the 'Prefatory Words'.

'Problems of Life and Mind', which set study of the physiological structures of body and mind at the heart of social, psychological and cultural understanding. Not surprisingly, given this agenda, there was considerable overlap between *Mind* and *Brain* in terms of subject matter and contributors. Thus in the first volume of *Mind*, Croom Robertson reviewed very favourably Hughlings Jackson's 'On the Localisation of Movements in the Brain', and, as an editor of *Brain*, Hughlings Jackson contributed to its first volume his seminal article on 'On Affections of Speech from Disease of the Brain'.¹⁹ G. H. Lewes, for his part, contributed 'What is Sensation' to the first volume of *Mind*, and 'Motor Feelings and the Muscular Sense' to the first issue of *Brain* (the latter, one of his final articles, as he died later that year).²⁰ Although there were differences in orientation, and *Brain* was far more focused in its mission, the two journals were united in their attempts to explore the physiological basis of mental processes.

Whilst stressing the interconnected nature of so many of these different forms of approach to questions of mind and brain, I would not wish to suggest there was unanimity of views, or indeed any lack of opposition. The first issue of *Brain*, for example, carried a mocking review by J. C. Bucknill of *Darwinism tested by Language* by the medic Frederick Bateman. Opening with a laudatory preface from the Dean of Norwich Cathedral, the work launched a ferocious attack on both Darwinian theory and the work of Broca and Ferrier in their attempts to locate the seat of language in the brain. Language, Bateman insisted, against Darwin, was a *distinctive* attribute of man, and the Faculty of Speech was 'immaterial' in form, and not traceable to any physiological feature.²¹ Yet,

¹⁹ G. Croom Robertson, 'Critical Notice: *Clinical and Physiological Researches on the Nervous System. No. 1. On the Localisation of Movements in the Brain*', *Mind* 1:1, (Jan 1876), 125-27; J. Hughlings Jackson, 'On Affections of Speech from Disease of the Brain', *Brain* 1:3 (Oct 1878), 304-330.

²⁰ G. H. Lewes, 'What is Sensation?' *Mind* 1:2 (April 1876), 157-61; 'Motor Feelings and the Muscular Sense', *Brain* 1:1 (April 1878), 14-28.

²¹ J. C. Bucknill, 'Critical Digests and Notices of Books: *Darwinism tested by Language*. By Frederick Bateman, M.D. With a Preface by Edward Meyrick Goulburn, D.D., Dean of Norwich', *Brain* 1:1 (April 1878), 108-113, p. 110. Bateman had originally been a supporter of Broca, but had shifted considerably in his orientation as his own work on aphasia developed. For further details on Bateman, and the debates about language

for all the opposition to Darwinian thought, and what was seen as a new materialism in approaches to the mind, from religious and other quarters, there were, nonetheless, points of inter-relation between quite diverse positions. The Society for Psychical Research, for example, famously brought together the practices of experimental science (and eminent scientists themselves) with the wilder reaches of idealist and spiritualist thought. There were more subtle connections too. As with today, when the language and concepts of neuroscience penetrate virtually every page of today's press, scepticism and even outright hostility do not provide immunity to the gradual shifts in language and culture. For the Victorians, whatever their individual positions on evolution or materialism might have been, when reading about the latest sensational case of double consciousness, or advertisements for 'brain food' which would help nourish the overstretched brain of the city worker, they were similarly participating in a culture which placed new emphasis, not on the immaterial mind, but on its decisively material partner, the brain.

In this issue of *Victorian Network* we bring together five essays exploring very different aspects of these questions in relation to the literature of the period, as well as reviews of recent works in the area. In 'Lucid Daydreaming: Experience and Pathology in Charlotte Brontë', Timothy Gao issues a welcome caution against too ready an assumption that writers merely absorbed and assimilated contemporary medical or scientific views. By focusing on individual responses, as expressed in letters and other sources as well as fictional writing, one can glean a far more nuanced picture, capturing resistance, contention, and creative reworkings. Taking Southey's famous advice to Brontë, to leave off her daydreams, and her ambitions to be a writer, he explores Brontë's own highly positive valuations of the power of daydreams, pitting individual experience against the medical orthodoxies of the period. In an interesting twist, he notes that Southey's advice to Brontë mirrored his own responses to the Luddite rebellions of 1812, an argument that opens out into a reading of *Shirley* which explores parallels between working-

and evolution, see Gregory Radick, *The Simian Tongue: The Long Debate about Animal Language* (Chicago: University of Chicago Press, 2007), 55-64.

class radicalism and female day-dream. Whilst recognising the difficulties of uncovering the private, subjective experiences of the past, Gao ends with a plea to scholars to turn from an overwhelming focus on the pathological, to look more closely at the quotidian, undramatic, and non-pathological states of mind which shaped individuals' experiences of personal agency.

In 'Two Brains and a Tree: Defining the Material Bases for Delusion and Reality in *The Woodlanders*', Anna West explores the work of an author who, unlike Brontë, directly engaged with the scientific and medical thought of the time.

Hardy, she reminds us, transcribed a passage from G. H. Lewes into his literary notebook, on mental processes as functions of the physical, as well as passages from Henry Maudsley on the physical basis of all perceptions and illusions. As the structure of *The Woodlanders* suggests, however, this again was no simple process of assimilation: experimental science is represented by the dilettante Fitzpiers, in his desire to acquire rights to Grammer Oliver's brain, whilst John South, in his 'delusion' about the tree which might kill him, represents a very different model of knowing and understanding the world (but one that also has a base in the psychology of the era). The sense of empathy for the surrounding animate and inanimate world which West tracks in Hardy's fiction, is one that resonates strongly with contemporary eco-criticism, and, as she concludes, 'the rational urgency of not cutting down trees'.

One of the most interesting areas in current critical work is that of sound studies, and in "'The Apotheosis of Voice': Mesmerism as Mechanisation in George Du Maurier's *Trilby*' Kristie Schlauraff draws on this rich material to read *Trilby* in relation both to mesmerism and Victorian sound technology. Although mesmerism had no scientific credibility by the 1890s, as Schlauraff points out, it could function as a convenient metaphor for the new forms of communication facilitated by the phonograph or telephone. As 'singing machine' Trilby enacts the separation of voice from selfhood inaugurated by the phonograph, whilst also creating communities, or networks, of listeners. Sound reproduction technologies, like mesmerism, Schlauraff suggests, 'reshaped spatial and temporal limitations'. Yet it is important to note Trilby's own exclusion

from the networks her voice creates, and the gendered power dynamics involved.

Patricia Beesley's work, 'Female Transcendence: Charles Howard Hinton and Hyperspace Fiction' takes us, literally, into another dimension, with Hinton's attempts to imagine both a world of the fourth dimension, and radical new possibilities for women. Where Du Maurier highlights the dangers of reducing woman to a machine, Hinton imagines her attaining a state of transcendence, released from the epistemological constraints of nineteenth-century conceptions of womanhood. Far from the materialist realm of physiological nerves and brain, Hinton enters the idealised world of the mind, using mathematics to unlock new imaginative possibilities. As with William James' spiritualist vision of a superhuman life, a universe in which we are like cats and dogs in a library, seeing but not understanding, Hinton imagines a hyperspace, open to those who can adopt new modes of vision. Hinton was the son of the physician James, whose conversion to radical views of sexuality, later on in his career, never quite tallied with his earlier published work. For Charles, a noted mathematician, the idealised spaces of non-Euclidian geometry held open the possibilities of a new utopian world.

Our final essay, by Kimberly Cox, takes us back, with a bump, to decisively dystopian visions, and the beast within. 'The Hand and the Mind, the Man and the Monster', draws attention to the close relation between the human brain and hand in Victorian thought. Human development, she demonstrates, was closely correlated with the use of the hand, and hands became key indicators of both racial and class identity. We are used to ideas of phrenological readings of the skull, but here we are introduced to phrenological guides to the hand, to be scrutinised for sensitivity of touch, refined shape, and delicacy of skin. Cox draws on this material to offer readings of the 'monstrous hand' in *Dr Moreau*, *Dracula*, and *She*, and the crossing of the human/animal border which the monstrous hand denotes.

As the range and scholarly depth of these essays suggests, the topic of the Victorian Brain is a significant one, opening up into unexpected areas which reveal the extent of the culture's engagement with ideas of the physiological processes of the mind. In our own culture, neuroscience

is in the ascendant, often drowning out alternative voices. In the Victorian age, by contrast, there was excitement and contestation, as writers from across the disciplines explored the implications of the new theories, from cerebral localisation through to the unseen universe of spiritualism. The possibilities of scientific understanding of the mind, as Croom Robertson's prospectus indicated, seemed almost limitless. With the development of new paradigmatic frameworks in recent criticism, whether of eco-criticism or sound studies, Victorian models of embodied life, which break down divisions between self and other, internal and external, take on new meanings and immediacy.

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