

THE HISTORIOGRAPHY OF PSYCHICAL RESEARCH: LESSONS FROM HISTORIES OF THE SCIENCES¹

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Abstract

This paper surveys the different uses to which history has been put, and the different historiographical perspectives adopted, in psychical research and related enterprises since the mid-nineteenth century. It contrasts recent historiographies of the science with those employed from late eighteenth century to the 1960s, and shows how these and other developments in the practice of history have dramatically changed our understanding of the places occupied by psychical research and the ‘occult’ in ‘orthodox’ sciences and wider culture. The second half of this paper outlines some of the key ways in which we can proceed still further in the shift towards better situating psychical research in its contemporary scientific contexts and abandoning rigid and ultimately unhelpful distinctions between ‘science’ and ‘pseudo-science’. I suggest that by deepening our understanding of nineteenth and early twentieth century scientific cultures — their troubles as well as successes — we can better appreciate why psychic phenomena were considered fit topics of scientific research. In conclusion I consider the suggestion that eclecticism is a virtue and necessity in history and suggest that it’s precisely because my discipline, the history of science, is more eclectic than many that it is and will continue to be a fruitful resource for developing our histories of psychical research.

INTRODUCTION

Addressing the Society for Psychical Research in 1913, the French philosopher Henri Bergson argued that the phenomena with which the society occupied itself were “undeniably of the same kind as those which form the subject-matter of natural science” insofar as they promised to be shown to be “subject to laws” and “capable of being repeated indefinitely in time and space” (Bergson, 1913, p. 159). And yet the methods that the SPR was “obliged to follow” had “often no relation with that of any of the sciences of nature”. The SPR’s approach was:

one which stands midway between that of the historian and that of the magistrate. Did the veridical hallucination take place in the past? — You study documents, you criticise them, you write a page of history. Is it a fact of to-day? — You proceed to a kind of judicial enquiry; you examine the witnesses, confront them with one another, and weigh the value of their evidence.

To a certain extent Bergson’s views were justified. The SPR’s most important publications to date, including Gurney, Myers and Podmore (1886), Barrett (1897), and the numerous volumes of the *Proceedings* and *Journal*, amply testified to the society’s preoccupation with the authentication and interpretation of historical documents bearing on the truth or otherwise of psychic phenomena. But many early psychical researchers agreed with the SPR’s first president Henry Sidgwick that they needed ideally to possess observational acumen of an experimental scientist as well as historical and judicial expertise. Only such a multi-talented individual would be able to deal with the three main sources of error that Sidgwick judged to be present in psychical research: “(1) alteration

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of a narrative or tradition, when it is not obtained at first hand; (2) errors in memory, when the narrative is told after a lapse of time; (3) errors in the actual apprehension of the fact, partly through failure to observe material circumstances, partly through the mingling of inference with observation” (Sidgwick, 1889, p. 4).

Sidgwick’s plea for a critical approach to sources owed much to the methods of German historical scholarship practised by his Cambridge colleagues including Lord Acton. It has been tempting to regard the decade after the formation of the SPR as one witnessing the displacement of an older, literary and ‘amateur’ history with a new, ‘scientific’ and ‘professional’ history, but as Collini (1991) has shown it witnessed the continuation of a range of different types of history, from the ‘literary’ to the ‘scientific’. The need to speak of histories (plural) rather than history (singular) is even more warranted today. Since Acton’s day the map of history has become even more complex and much more difficult to characterise as a homogeneous discipline. From the 1950s ‘history’ began fragmenting into numerous chronological sub-disciplines, and thematic groupings, as well as histories informed by particular ideologies, and those distinguished by specific methods (Black & MacRaild, 2000). Alongside this, technological developments such as television, electronic cataloguing, and the internet have caused a rapid growth in the number of ways in which histories are researched and communicated. Whatever their approach, all historians study past human cultures via sources: they seek to make sense of such sources in a variety of contexts, and they share many fundamental tools of research, interpretation and communication. Despite these underlying similarities, history remains a difficult subject to define. Indeed, as Jordanova argues, history remains “inherently an eclectic discipline and the skills it requires are correspondingly diverse” (Jordanova, 2006, p. 171). But eclecticism is not meant as a dirty word here: it means a fruitful pragmatic strategy rather than messiness. To cope with the complexities of the past, historians need to avoid thinking too rigidly and be prepared to deploy a range of analytical and interpretative techniques.

In this paper I will be examining the ways that eclecticism in history and in particular my own field, the history of science, has been, and can continue to be, enormously beneficial to our understanding of the places of psychical research in past cultures. Although the examples on which I draw are taken predominantly from my present research on late-Victorian physical and psychical researches, they serve to illustrate a range of more general analytical approaches and historical questions that I believe are entirely appropriate for other time periods and places. It will become clear that the uses to which I put history differ from the uses that psychical researchers and parapsychologists have made of it or envision for it (see, for example, Alvarado, 1982): what primarily interests me is what historical sources in psychical research tell us about past possibilities in the sciences and cultures rather than the way that they can be used to support theories and research directions in current psychical research. Both types of history have their place in today’s academic world and it is hoped that this paper will form part of an ongoing and fruitful dialogue between historians and psychical researchers.

The following section traces the uses to which history has been put by practitioners and critics of psychical research and related enterprises since the mid-nineteenth century. Different histories, we shall see, have been constructed to serve radically different agendas from legitimating to vanquishing psychical research. The paper then outlines the changes in the historiography of the sciences over the past two centuries, and explores the

reasons why the most recent developments in the history of science and in other branches of history, have proved particularly effective in bringing psychical and ‘occult’ sciences from the margins of historical analysis. The balance of the paper argues that historical approaches informed by recent anthropological, sociological, and geographical studies of the sciences can prove immensely productive in challenging the sterile analytical framework in which psychical research is assumed to be a ‘pseudo-science’ and rigidly demarcated from ‘orthodox’ or ‘mainstream’ sciences. These approaches help us tease out fundamental similarities between psychical research and many of the ‘orthodox’ scientific enterprises in which Victorian pioneers of psychical research were actively involved — including the crucial role of values, interests and ‘non-scientific’ factors in knowledge-making, and the problems of replication, visibility, environment, and trust in experimental research. In conclusion, I suggest that future histories of psychical research need to attend to the details of the ‘orthodox’ science practised by its pioneers, warts and all, because these will help us understand the important place that psychical research could occupy in past scientific cultures.

PSYCHICAL RESEARCHERS AS HISTORIANS

The term ‘histories’ rather than ‘history’ has always been appropriate for psychical research and the so-called ‘occult sciences’ on which its founders drew. Those Victorians who preoccupied themselves with psychic phenomena, including spiritualists, psychical researchers, psychiatrists, clergymen, and stage magicians, agreed that historical sources were important but used them to support radically different views on the reality, nature and provenance of the phenomena. Take, for example, the British spiritualist William Howitt, whose mammoth *History of the Supernatural* regarded the “mass of evidence from every age and people”, from ancient miracles to “Modern Spiritualism”, as proving the reality of “spiritual agencies” which he relished as much-needed weapons in the fight against religious infidelity (Howitt, 1863, vol. 1, p. iv). No such lessons were drawn by Frank Podmore in his equally voluminous *Modern Spiritualism: A History and a Criticism*. This turned history against the spiritualists, concluding that “spiritual influence or occult force” was largely based on “discredited physical phenomena”, legerdemain, and obscure powers of the mind (Podmore, 1902, vol. 2, p. 354). But Podmore’s concluding warning that “contemptuous rejection” of all evidence of psychic phenomena was as dangerous as credulous acceptance contrasted with the far harsher verdict of Ernest Hart who, like many late-Victorian medical practitioners made the history of the occult from Medieval witches and wizards to modern-day spiritualists and thought-readers a woeful story of “follies and deceptions” (Hart, 1892, p. 36). Examples of these different uses of history can be found in more recent literature: compare, for example, the very different verdicts of the pro-spiritualist Bassett (1990), the hyper-sceptical Stenger (1990) and the considerably more balanced Beloff (1993), which assess the extent to which past and more recent cases of psychic phenomena were genuine.

As with any architects of troubled scientific enterprises, early psychical researchers turned to history as a legitimating strategy (Jardine, 1991, pp. 121–145). The invention of founding fathers and noble genealogies was an important but often controversial procedure, as the case of Michael Faraday strikingly illustrates. As one of the leading natural philosophers of the nineteenth century, Faraday was a powerful authority to invoke in support of a range of scientific, religious and intellectual views (see, for

example, Cantor, 1996). This meant that, especially after his death in 1867, different Victorians invented different Faradays to suit their particular purposes. When, in 1871, the British chemist William Crookes published evidence of a capricious “psychic force” (Crookes, 1871a), he was immediately attacked by the veteran physiologist William Benjamin Carpenter for being a poor experimentalist *and* a bad historian. Carpenter charged that Crookes was “entirely ignorant of the previous history of the subject, and had not even acquainted himself with the mode in which Professor Faraday had demonstrated the real nature of Table-turning” (Carpenter, 1871, p. 308). As Winter (1998, pp. 269–305) explains, Faraday was in many quarters a potent name to invoke against spiritualism primarily owing to his 1853 demonstration that the motive force of table-turning arose from the unconscious muscular action of the table-turners themselves, not from disembodied spirits (Faraday, 1853). Had Crookes been a better historian, Carpenter implied, and had he familiarised himself with Faraday’s and his own work on spiritualism and mesmerism, then he would have understood how to devise better tests of the alleged forces exerted by mediums and been better protected against self-deception, mediumistic trickery and the other dangers in this area of research.

Crookes vehemently denied historical ignorance. He boasted that as a youth he had discussed with Faraday himself the very machine that the illustrious savant had constructed to indicate the subtle forces exerted by table-turners. Crookes’s claim that he knew Faraday better than his critic was meant to give extra force to his different view of Faraday’s significance to the history of spiritualism. What mattered was that Faraday judged table-turning and later manifestations of spiritualism worthy of investigation at all, not that he consequently considered them scientifically unpromising. Introducing his second published paper on experiments on D. D. Home’s “psychic force”, he insisted: “That [spiritualism] is a legitimate subject for scientific inquiry scarcely needs assertion. Faraday himself did not consider it beneath his dignity to examine similar phenomena” and if “circumstances had not prevented Faraday from meeting Mr. Home, I have no doubt he would have witnessed phenomena similar to those I am about to describe” (Crookes, 1871b, p. 475). Crookes’s campaign to turn history against Carpenter continued by subtler means. He subsequently (Crookes, 1877) commissioned the naturalist and spiritualist Alfred Russel Wallace to review for his own widely-circulated periodical, the *Quarterly Journal of Science*, of Carpenter’s (1877) *Mesmerism, Spiritualism, &c, Historically and Scientifically Considered*, which was largely a restatement of the arguments that the physiologist had been levelling against the theories and explanations of mesmerists and spiritualists. What the naturalist and spiritualist found particularly objectionable was that Carpenter’s book had omitted a litany of historical details which put “disputed theories” and “new truths” in a much more favourable light. In concluding his long and blistering tirade, Wallace implied that Carpenter had breached the code of “literary morality” and had “put forth, under the guise of impartial history, a one-sided and erroneous account of a disputed question” (Wallace, 1877, p. 414).

Despite Crookes’s efforts Faraday remained a difficult choice of icon for psychical researchers. Crookes’s fellow physicist-psychical researcher Oliver Lodge thought that while Faraday’s writings showed the “spirit which gave birth to the S.P.R.” (Lodge, 1906, p. 466) his judgement went “slightly astray” on the question of spiritualism, and it was to much older and less obviously ‘scientific’ savants that he turned for appropriate ancestors of psychical research. His favourite candidate was the sixteenth century English

statesman and philosopher Francis Bacon. For Lodge the spirit of hostility towards late-Victorian psychical research was no different from that which thwarted “science” three hundred years earlier and it took figures such as Bacon to vanquish the idea that science was “an unholy prying into the secrets of Nature” (Lodge, 1903a, p. 4). Lodge’s latter-day Bacon was his close friend and colleague F. W. H. Myers. In a somewhat incestuous review in the journal *Nature* of Myers’s posthumous *Human Personality and its Survival of Bodily Death* (1903), he sought to reassure an audience traditionally circumspect about psychical research that “[m]en not professionally scientific have had a profound influence on scientific progress before now” (Lodge, 1903b, p. 145) and had no doubt that Myers’s book would have the same effect on the development of the psychical sciences as *Novum Organum* — the second and most important part of Bacon’s major treatise on scientific methodology (Bacon, 1620) — had produced on the physical sciences. If Lodge thought Myers a latter-day Bacon, then William Fletcher Barrett thought the SPR was a latter-day early Royal Society. Despairing what he perceived to be the scientific establishment’s continuing opposition to psychical research, Barrett insisted that several early Fellows of that leading scientific organisation, such as Robert Boyle and Joseph Glanvill, were “true psychical researchers” because they did not hesitate to consider the dowsing-rod, demons, and poltergeists fit topics of scientific enquiry (Barrett, 1924, p. 277).

HISTORIES OF THE SCIENCES AND PSYCHICAL RESEARCH

Lodge’s and Barrett’s histories are significant not only as examples of the way histories were used to raise the status of troubled sciences but as challenges to the then dominant historiography of the sciences. In emphasising the ‘occult’ forays of founding fathers of the sciences they, along with several other early twentieth century scientists, were challenging a progressivist view of the history of the sciences which, as Golinski (1998), Bowler and Morus (2005) and others have reminded us, had been widely-accepted since the late eighteenth century and which would prevail among most historians of science until the 1960s.

When, in the late eighteenth century Enlightenment, the earliest systematic histories of the sciences were penned, the sciences were widely regarded as sources of objective and value-free knowledge of the natural world and the basis of intellectual, technological, social, moral, and cultural progress. For the scientific practitioners who were chiefly responsible for such histories, the sciences of the present could be legitimated by appeal to a certain vision of the history of science which, unlike histories of politics, showed clearly the triumph of human reason over superstition, priestly dogmatism, and other supposed hindrances to progress. Enlightenment histories of progress partly informed what the twentieth century historian Herbert Butterfield (1973) pejoratively termed the ‘Whig’ approaches of Thomas Babington Macaulay and other Victorian historians in which the past was judged in terms of the present and British history was seen as the story of the inevitable victory of the very liberal and Protestant values that the historians themselves sought to promulgate.

Butterfield’s work illustrates that by the early twentieth century Whig and more generally present-centred approaches to that more traditional historical topic of politics were increasingly unpopular in academia, but the same approaches in histories of the sciences survived a good deal longer inside and outside academia, not least because of the persistence of the view that the sciences were inherently progressive and as

enterprises dealing with ‘objective nature’ their history had to be unlike those dealing with human societies. With rare exceptions, ‘occult’, ‘marginal’ or ‘heterodox’ sciences fared poorly in these narratives of scientific winners and losers: they were either concealed, marginalised or openly criticised because they were thought to be irrational, foolish, and altogether irrelevant to the progress of science (see, for example, Merz, 1896–1914, Sedgwick & Tyler, 1917). Typically, they were seen to have generated false knowledge because they were corrupted by values and interests — unlike true scientific knowledge, which was held to be objective and independent of social, economic, metaphysical and other ‘interests’. A rare exception is Dampier (1929) which, despite sharing the customary hostile attitude to alchemy, magic and other occult sciences, was not unsympathetic to the SPR, a society to which the author briefly belonged and whose “careful work” had in his opinion not yet produced “results of scientific value” (pp. 369–70).

While unsympathetic portrayals of ‘marginal’ sciences continue in popular scientific works and school science textbooks, they have been largely rejected by modern historians of science owing to dramatic changes in the historiography of the sciences in the last forty years. Historians of science continued using ‘Whig’ approaches until the 1960s when they began to assimilate the insights of the American historian and philosopher of science Thomas Kuhn (1962) and other radical philosophical works which offered the most potent challenge to the idea that science was a steady ascent to the objective truth about the natural world. For Kuhn, the history of science could be divided into a succession of distinct and discontinuous “paradigms” — the theories, techniques, and puzzles considered acceptable in science in a given period — and that objective comparisons between paradigms were impossible. Crucially, Kuhn argued that what was true and rational in one paradigm was false and irrational in another. One of the most important interpretations of Kuhn’s work was made by a group of Edinburgh-based sociologists of science who in the 1970s explored the construction of scientific knowledge irrespective of whether they were true or false and explained such knowledge in terms of the same human interests and values that informed any other form of knowledge (Barnes, 1974; Bloor, 1976). The controversial insistence of this ‘Edinburgh School’ of scholars, that scientific knowledge was socially determined and therefore subject to sociological analysis, built partly on Marxist views of science, and echoed the claims of much postmodern philosophy and history, but it infuriated most scientists who maintained that their enterprises were epistemologically privileged and resulted in disinterested objective knowledge. Although historians of science criticised the models of scientific activity proposed by Kuhn and his interpreters, they recognised the profound historiographical implications of this work (Barnes & Shapin, 1979; Golinski, 1998; Shapin & Schaffer, 1985). Science had to be seen as a social activity and past scientific models and theories had to be understood in their historical contexts, irrespective of whether they subsequently proved to be erroneous. Historians of science have since become highly sensitive to the strangeness of past scientific cultures and seek to understand, for example, why in the late seventeenth century it was possible for natural philosophy to be entangled with alchemy, Biblical scholarship and mysticism, or why in the early and mid-nineteenth century phrenology and mesmerism were possible sciences of the mind and body.

Of all post-war developments in the historiography of the sciences, none proved more sympathetic towards the occult than revisionist studies of early modern natural philosophy. Debus (1965), Dobbs (1975), Yates (1964) and other works showed the debt of the empirical and analytical methods developed by iconic figures of the ‘Scientific Revolution’ to the Renaissance revival of ancient texts on Hermeticism, alchemy, and natural magic. As Mauskopf (1990) argued, this “rehabilitative” goal was later extended to later manifestations of ‘marginal’ sciences including studies showing the entanglements of eighteenth century electrical practices and animal magnetism, Romantic era sciences and *Naturphilosophie*, and of early nineteenth century psychology and phrenology. Making a place for psychical research in late nineteenth and twentieth century sciences has proved more difficult partly because of a lingering suspicion that ‘modern’ forms of occultism were either irrelevant to ‘modern’ scientific enterprises or was difficult to regard as a serious scientific pursuit. Unsurprisingly, in the 1960s, ‘70s and ‘80s, the most innovative approaches to the history of psychical research came not from historians of the sciences, but from intellectual, cultural and social historians, and psychical researchers themselves. Barrow (1986), Braude (1989), Cerullo (1982), Gauld (1968), Moore (1977), Oppenheim (1985), Owen (1989), and Turner (1974) took refreshingly historicist approaches, largely eschewing the question of whether particular views were ultimately justified and which linked the rise of interest in spiritualism and the invention of psychical research to broader themes and concerns long recognised by historians, from religious doubt, political radicalism and abolitionism, to Darwinism, feminism and imperialism. Since the 1990s the entanglements of psychical and occult sciences with other aspects of past cultures has been further explored with revisionist studies of modern esotericism (see Faivre, 1994; Faivre & Needleman, 1992; Godwin 1994), and with works by cultural and literary historians such as Harvey (2007), Luckhurst (2002), Owen (2004), Royle (1990), Thurschwell (2001), Treitel (2004), and Warner (2006), which make it very difficult to interpret the diverse facets of modernism without recognising their engagement with the very questions of self and other that are raised so acutely by psychical research. These analyses have made it possible for spiritualism, mesmerism, Theosophy, and psychical research to enter what might be called ‘mainstream’ studies of the history and literature of the nineteenth and twentieth centuries. A welcome sign of our intellectual times is that Hoppen (1998), one of the volumes of the *New Oxford History of England*, devotes an entire page to these subjects — something that would have been difficult, if not impossible, in the standard history textbooks of a few decades ago.

Given the strides that historians of early modern natural philosophy have made towards rehabilitating occult practices, it is not surprising that two scholars with expertise in this area should have produced one of the most significant moves forward in the historiography of modern psychic sciences. Mauskopf and McVaugh (1980) was more than just another history of early and mid-twentieth century parapsychology, but a rewarding attempt to understand parapsychology in the revisionist way that historians of science were then beginning to analyse other scientific disciplines. They examined parapsychology as one of the “social, institutional, and cultural” forms of science rather than “merely ‘science’ as an abstract set of theories and techniques” (p. xi). Significantly, the authors took the “subject matter and conclusions seriously” and did not allow the “elusive” status of parapsychology to affect their analysis (p. xiii): unlike so many

teleological accounts of parapsychology, they do not assume that the science was destined from the start to remain marginal and problematic. Indeed, they tried and, in my view, largely succeeded in treating parapsychology like “*any* speciality beginning to develop out of a natural scientific background” which meant exploring the role of such factors as institutional structures, training, funding, and audiences in the building of new sciences (p. xiv).

A NEW HISTORIOGRAPHY OF PSYCHICAL RESEARCH

Mauskopf and McVaugh (1980) is the first of many steps that I believe needs to be taken towards a more contextualist history of the origins and development of psychical research. This approach needs to look much closer at how this new science developed out of a “natural-scientific background” and thus will complement the range of excellent historical studies of the religious, political and social contexts that made psychical research desirable and possible (Cerullo, 1982; Gauld, 1968; Moore, 1977; and Turner, 1974). I want to suggest that it should avoid the assumption that the natural sciences can be regarded as *unproblematic* background to psychical research. Many of the natural scientific enterprises in which leading psychical researchers cultivated their experimental, conceptual, and rhetorical skills did indeed prove highly successful, but during the early phases of such enterprises — the very periods in which psychical researchers pursued them — they were often difficult to prosecute and shrouded in controversy. A properly contextual analysis will be sensitive to the nuances of working in the sciences, warts and all, because when navigating the troubled waters of psychical research scientific practitioners often drew on experiences of the exciting possibilities and intractable puzzles, the successful and failed experiments, the skilled and incompetent practitioners, the powerful and temperamental instruments, and the agreements and controversies.

The proposition that psychical research developed out of a “natural scientific background” carries with it the misleading implication that the natural sciences *remained* in the background of psychical research. But during some of their most intense periods of psychic investigation, many scientific practitioners had their natural scientific researches very much in the *foreground*. In some cases psychical and natural researches overlapped temporally and spatially: consider Crookes’s domestic laboratories in the 1870s that saw simultaneous attempts to investigate and interrelate the repulsive effect of radiation on bodies *in vacuo*, D. D. Home’s abilities to exert forces at a distance, and Karl von Reichenbach’s ‘od’ force (Crookes, 1871a; 1871b; 1875; Noakes, 2002); or take the hospital ward at Le Havre where, in the late 1880s, the French professor of philosophy Pierre Janet hypnotised hysterical patients at a distance and studied automatism and used both researches in the formulation of his revolutionary concepts of psychological automatisms, subconscious behaviour and split personality (Janet, 1889); or take the physical laboratory of University College Liverpool in the mid-1890s, in which Oliver Lodge and his technician Benjamin Davies explored the mechanical forces that appeared to be causing telekinetic phenomena and which might be exerted by rapidly moving matter on the ether of space (Davies, 1916; Lodge, 1893a). These are only the more striking of many cases that prompt us to question the rigid boundaries that so many historians have drawn between psychical and other sciences, and which challenge the crass view that scientists were ‘scientific’ when pursuing physical research and ‘pseudo-scientific’ or ‘non-scientific’ when conducting psychical research.

Recent studies of nineteenth century sciences have made it particularly difficult to sustain these distinctions. The puzzles of abnormal psychology and human evolution and the possibilities of the physics of electricity, energy, matter and ether gave value to the evidence for psychic phenomena. Crabtree (1993), Ellenberger (1970), Gauld (1992), and Winter (1998) emphasise the debt of psychiatry and psychoanalysis to nineteenth century studies of animal magnetism, mesmerism and hypnotism; Kottler (1974), Turner (1974) and Fichman (2004) explain that it was the difficulty of explaining human morality in terms of the natural selection mechanism of biological evolution that prompted Alfred Russel Wallace to suppose that human evolution had been guided by the kinds of spiritual agencies manifested in séances; and Noakes (2005, 2008), and Wilson (1971) show that it was partly the ability of physicists successfully to measure and manipulate the electrical fluid, the invisible ether of space and the microscopic constituents of matter that made some of them confident that they could devise plausible physical theories of telepathy and powerful physical tests of materialisations. These studies suggest not only specific connections between natural and psychical researches but illustrate the more general need to be sensitive to the complexity, strangeness, and in many instances, the controversial nature of 'orthodox' sciences that are so often contrasted with the 'heterodox' and troubled science of psychical research. This need to problematise forms of past scientific activity previously taken to be straightforward further helps us move away from Whig and more generally present-centred historiography and owes much to anthropological and sociological studies of the sciences made since the 1970s. If, as Jordanova (2006) argues, history is strengthened by a pragmatic use of an eclectic range of interpretative resources, then one of the most eclectic of all sub-branches of history, the history of science, is arguably one of the strongest precisely because it has drawn so liberally on neighbouring disciplines to devise fruitful new ways of looking at the pasts of the sciences.

The historiographical developments made possible by this interdisciplinary cross-fertilisation have arisen from three important claims arising from science and technology studies, which suggest searching questions that we can ask when confronting primary historical materials relating to the sciences (Golinski, 1998; Jasanoff, Markle, Petersen & Pinch, 1994). First, it is more accurate to speak of the sciences (plural) than science (singular) because this better captures the fact that the supposedly homogeneous and monolithic thing called 'science' comprises a range of very different enterprises from ornithology and experimental psychology to spectroscopy and pathology, each with its heterogeneous array of personnel, skills, publications, training programmes, theories, concepts, workplaces, and material artefacts. An examination of the map of the sciences for a given period shows that some sciences were more secure than others (contrast celestial mechanics and experimental psychology in the mid-nineteenth century) and that occult and psychical sciences were certainly not alone in being seen as 'marginal'. Comparing maps of the sciences from different periods also highlights the changing intellectual position of sciences: some (such as natural theology and spiritualism) were considered in the early and mid-nineteenth century be linked to more established sciences (astronomy and psychology) but have now largely moved off the map of the sciences; other enterprises have disappeared into other sciences (for example mesmerism was reinvented as part of psychoanalysis and psychiatry); and some emerged as disciplines in their own right (e.g. spectro-chemical analysis of starlight became the cornerstone of astrophysics).

This geographical-chronological analysis makes it very difficult to speak of a single unchanging scientific enterprise against which to define and lambast psychical research, spiritualism and mesmerism. It forces us to reject such terms such as ‘pseudo-science’ and ‘marginal science’ as obvious or inherent descriptors of psychical research and to develop a more critical historical perspective: a major task faced by the historian, I want to suggest, is not to understand why anyone ever took psychical research and ancestral enterprises seriously, but to understand how and why it came to be demarcated from other scientific practices as ‘pseudo-scientific’. As an *emergent* attribute, ‘pseudo-science’ cannot also provide the explanation of why, for example, mesmerism and spiritualism, suffered the fates that they did and below we shall see that this demarcation process depended more on social, cultural, political and other ‘non-scientific’ factors as scientific factors (Bauer, 2001; Cooter, 1980, 1984; Gieryn, 1999; Hess, 1993; Mauskopf, 1990).

The second historiographical lesson from sociology and anthropology is to treat consensus and agreement, rather than dissent and disagreement, as the *explanandum*. Scientists are not naturally less inclined to disagree than other human beings and therefore it is legitimate to understand how they come to agree with each other about the natural world. One important consequence of this model of scientific work is that it forces us to reconsider the claim that psychical research is deviant because it does not enjoy much consensus over facts or methods. Many of the disagreements that have dogged psychical research are common to all sciences and what historians need to do is to understand why it has not commanded the consensus enjoyed by other sciences. As sociologists of science showed from the 1970s, past and present controversies in the sciences furnish key insights into the workings of the sciences that are otherwise hidden from view. More than at any other time, controversies reveal the inherently social character of doing science and making scientific knowledge. For example, analysis in Collins (1985) of such cases as late-twentieth century gravity wave detectors and in Collins and Pinch (1982) of Uri Geller’s paranormal metal bending reveals that rival experimenters disagree on what counts as the ‘right result’ and the best experiment. Neither ‘objective reality’ nor ‘experts’ can be invoked to close the matter because both factors are in dispute. To close controversies and persuade others of the credibility of their version of ‘objective reality’, scientists have necessarily to mobilise more than just measurements, instruments, and theories, but the literary, financial, institutional, political and other ‘non-scientific’ aspects of their culture. As David Gooding succinctly puts it, scientists’ abilities to explain and control nature “depends as much on their mastery of culture as upon their study of nature” (Gooding, 1985, p. 37).

There are manifold reasons why this lesson matters to historical analysis of psychical research. It prompts us to question the extent to which scientific views commanded the assent that historians have supposed. It has been a persistent oversight of historians to speak of a coherent Victorian scientific worldview to which psychical research was a reaction and which makes psychical research look especially retrograde. But was there a consensus on this worldview? Did all nineteenth century scientists subscribe to the view, widely ascribed to T. H. Huxley, John Tyndall and other ‘scientific naturalists’ that the entire physical cosmos, including life and mind, could be reduced to the laws of matter and motion? As Barton (1985), Desmond (1994), Lightman (1987), Smith (1990) and Wilson (1987) explain, this mechanistic, materialistic, and deterministic cosmology does

not accurately characterise the views of the ‘scientific naturalists’ and was widely attacked by many of the most distinguished figures in Victorian science. Much as they despised ‘borderland’ topics such as spiritualism, physicists such as William Thomson (Lord Kelvin), James Clerk Maxwell, George Gabriel Stokes, and Peter Guthrie Tait were far *more* exasperated by, and spoke out more frequently against, those who sought to rid the cosmos of Divine agency and spiritual meaning. For Tait the “pernicious nonsense” of materialism was far more dangerous than the “harmless folly” of spiritualism because it threatened the moral and social fabric of Victorian Britain (Tait, 1876, p. 25). Indeed, it is partly because they shared hostility to the perceived greater threat of materialism that the relationship between Tait and Balfour Stewart, the Third Baron Rayleigh and Kelvin, and Crookes and Stokes, remained close and cordial despite differences over spiritualism.

By appreciating the once controversial character of natural scientific and technological enterprises we are in a much better position to understand the rhetoric developed by scientific practitioners to persuade colleagues that they could be trusted to speak reliably about psychic phenomena. When, in August 1871, the Scottish anatomist Allen Thomson launched a scathing public attack on scientific supporters of spiritualism, the prominent electrical engineer and spiritualist Cromwell Varley (1871) expressed incredulity that scientific practitioners could readily accept his own researches on the “unusual phenomena” of globular lightning and Crookes’s work on the spectroscopic detection of the new chemical element thallium and yet distrust them when it came to “phenomena not more startling” than spectra or lightning but called psychic. As far as Varley was concerned, there were plenty of phenomena in physics and electrical engineering which could be doubted for the same reasons that the existence of psychic phenomena was questioned. Ball lightning and other forms of electrical discharge, chemical spectra, and the intelligence sent through transatlantic cables were capricious, frequently hard to detect, and often difficult to distinguish from subjective impressions, spurious signals and other interferences; and yet Varley, Crookes, Lodge and other physicists involved in psychical research enjoyed considerable scientific status because of their abilities to successfully detect and manipulate such phenomena and in general to distinguish fact from fancy in these areas of physical research. It was precisely because submarine telegraphy had in its early years been dogged by a welter of technical problems and public scepticism, and because he had subsequently helped turn it into a electrical communications system on which people could rely, that Varley believed his “proofs” of the controversial system of spiritual telegraphy could also be trusted.

Crookes and the Fourth Baron Rayleigh (Robert John Strutt) made similar appeals to the past and present uncertainties of physics when weighing into twentieth century disputes over psychic phenomena. Early in the 1900s Crookes (1909) responded in private to a recent attack on the achievements of psychical research written by the veteran astronomer and former president of the American SPR Simon Newcomb. Crookes objected to Newcomb’s implied argument that since phantasms and other psychic phenomena had been witnessed by only a few observers then such phenomena were more likely to be due to known causes such as hallucination. For Crookes, this argument also threatened one of the most successful new sciences of the nineteenth century: spectroscopy. “There are some people so constituted that nothing psychic will take place in their presence”, he explained, “Prof. Sidgwick was one. In spite of repeated trials he

never witnessed anything. I myself have often tried to see beyond the [very faint] H line in the solar spectrum, but have failed. Am I to say that others with sharper eyes who say they can see beyond that line are suffering under an hallucination?" Crookes's argument makes most sense when seen in the context of the troubled early history of spectroscopy. As one of the most energetic of the Victorian practitioners of the technique, Crookes sparked and witnessed numerous controversies over the existence and interpretation of the lines seen when analysing the light of terrestrial and celestial bodies (see, for example, James, 1988), and was acutely aware of the past and continuing epistemological problems posed by this now-successful tool of chemical discovery. Just as astronomers such as Newcomb had learned to place trust in trained observers who could see spectral lines invisible to others, so, Crookes insisted, he also had to trust those respectable persons who testified in the SPR's publications to psychic phenomena unseen by most people. The lack of objectivity of some phenomena in physics was one reason why, some twenty-two years later, Rayleigh (1932) took exception to a criticism of psychical research methods. Discussing his investigations of Rudi Schneider with Theodore Besterman, he challenged Besterman's view that "none but objective records could really establish anything, either in psychical matters or in physical research generally" on the grounds that there were at least two phenomena in physics — light and cathode rays — that were "believed in and established" long before they could be photographed or made to actuate a self-recording instrument. Again, Rayleigh's argument makes particular sense when we consider that he, like Crookes and Lodge, spent much of the late-nineteenth and early twentieth century grappling with the experimental problems of producing and interpreting cathode rays and other phenomena of electrical discharge.

The focus on explaining consensus, and on scientific knowledge as a social achievement, also helps us move away from the jaundiced view that psychical research was a troubled enterprise because its claims to knowledge were tarnished by 'interests' and 'values'. Closer historical analysis of primary sources shows how much interests and values mattered in other sciences, including those considered firmly 'orthodox' and 'hard'. Studies such as Hunt (1997), Schaffer (1992) and Smith (1998) demonstrate that we cannot understand why those monuments of classical physics — thermodynamics and electromagnetic field theory — developed in the way they did in Britain without considering the wider historical contexts of industrialisation, imperial politics, and Presbyterian religion. Field theory developed faster in Britain than elsewhere because its empire was held together with submarine telegraphs whose efficient working depended on reliable theories of electrical energy flow; models of heat dissipation seemed more plausible and valuable to their architects because they were consistent with certain theologies of nature and helped raise the economic productivity of Britain's steam-powered industries. On this basis, psychical research no longer looks like a special case of a 'bad science' corrupted by non-scientific values. Rather, psychical research looks more like physics and indeed, many other established nineteenth-century sciences whose protagonists recognised and articulated the religious and social interpretations of their enterprises. It is no surprise that the Victorian worlds of thermodynamics and electromagnetic field theory should have produced physicists such as Balfour Stewart and Oliver Lodge, who saw psychical research as a more obvious way of using experimental research to buttress religious, political and other non-scientific values.

Sociological and anthropological analysis of controversies also helps considerably in addressing the question of why psychical research has remained an ‘elusive science’. The answer certainly cannot be that it’s because psychic phenomena do not exist or because experiments have been done so badly, because what counts as the ‘right result’ and ‘good experiment’ has been and still is in question. We have to explore other, ‘non-scientific’ factors as well. The difficulty that the likes of Barrett, Crookes and Lodge faced in persuading scientific colleagues that their psychical investigations were credible arose less from obvious ‘scientific’ reasons such as decisive counter-experiments as from decisions based on cultural, political, moral, and religious factors. Stokes, for instance, refused to participate in a scientific committee to investigate Crookes’s psychic force researches simply because he had “heard too much of the tricks of Spiritualists” (Stokes, 1871, p. 482), while his fervent evangelical Anglicanism informed his dislike of Barrett’s “speculations about the state of disembodied spirits” and proposition that the “natural faculties” could be used to answer questions about the afterlife (Stokes, 1880). Equally ‘unscientific’ were Kelvin, whose hostility to “borderland” researches stemmed not from first-hand experience but from the assumption that “nearly everything in hypnotism and clairvoyance is imposture and the rest bad observation” (Thomson, 1893, p. 17), and the physicist George Carey Foster, whose dim view of his former student Lodge’s claims about physical manifestations in séances was based on his firm belief that the “whole progress of physics” — something to which he had devoted his entire career — was “based on the assumption that these things do *not* happen” (Foster, 1894).

The final historiographical lesson from the sociology and anthropology of sciences returns us to the theme of geography. Historians of science are now increasingly interested in the spatial as well as the temporal characteristics of the sciences (Livingstone, 2003; Naylor, 2005). They are no longer just interested in when discoveries were made and how sciences developed in time, but the significance of the physical and intellectual spaces where scientific knowledge is made, displayed and utilised, and why scientific claims made in one location came to be accepted elsewhere and regarded as true everywhere. Naturally, this approach draws attention to the role of replication, particularly whether the replication of one experiment takes place elsewhere and when it does, what counts as a replication, and how this becomes constitutive of scientific knowledge. Spatial questions are particularly appropriate in the history of psychical research because a frequent criticism of the science has been that its experimental results are difficult to reproduce outside the principal sites of psychical enquiry. The problem was well expressed by the editor of the *English Mechanic* who, in 1872, attacked spiritualists for not preferring “a free and unfavoured platform for the exhibition of spiritualistic phenomena” (“Remarks”, 1872, p. 455). As far as he was concerned the truth in the matter could not depend on “drawn curtains and darkened rooms” and was not “temporary and evanescent like a will-o’-the-wisp, but bright and enduring as the sun”. It was to avoid this suspicious dependency of psychic ‘facts’ on particular types of space that Crookes was so keen in late 1869 to show “experimentally” the results of the spiritualistic investigations he had made during domestic séances in the premier Victorian site of public scientific display: the Royal Institution of Great Britain (Medhurst, Goldney & Barrington, 1972, pp. 233–234).

One of the reasons why many nineteenth century scientists tolerated the spatial contingencies of spiritualistic phenomena was because they had encountered similar

problems in their natural scientific researches. Many of the controversies in which they were involved (for instance, those over the radiometer, electrical discharge, and spectro-chemical analysis) arose from the fact that effects or results that they had produced within one location proved difficult to reproduce elsewhere by other practitioners. A considerable number of the researches on which they devoted their energies involved delicate instruments that were highly sensitive to changes in environmental conditions and which needed careful handling. It was to this often taxing aspect of the experimental life that Barrett (1894, p. 585) appealed when he defended the suspiciously dark conditions of spiritualist séances:

We should get no results if our photographic plates were exposed to the light of the room simultaneously with the luminous image formed by the lens. In every physical process we have to guard against disturbing causes. If, for example, Professor S. P. Langley, of Washington, in the delicate experiments he is now conducting — exploring the ultra red radiation of the sun — had allowed the thermal radiation of himself or his assistants to fall on his sensitive thermoscope, his results would have been confused and unintelligible. We know that similar confused results are obtained in psychical research, especially by those who fancy the sole function of a scientific investigator is to play the part of a scientific detective.

The ability of scientists to successfully overcome problems of physical and intellectual geography in their natural scientific work made them supremely confident in making forays into psychical research. Varley's famous use of electrical apparatus to test whether the medium Florence Cook masqueraded as her materialised spirit form 'Katie King' owed much to the fact that he had successfully used the same apparatus in a variety of locations to gauge the integrity of submarine telegraph cables (Noakes, 1999). Lodge's boasts of the early 1890s that physicists had the authority to lead investigations into that "borderland of physics and psychology" (Lodge, 1892, p. 553), psychical research, and that an ether-based physics, rather than a purely mechanical one, would enable physicists to "annex vital or mental processes" (Lodge, 1893b, p. 862), including psychic phenomena, has to be seen in the context of his and other Victorian physicists' contemporary proclamation that they had, despite many struggles, developed an ethereal theory of electricity which they believed enabled fields inside and outside of physics to be "annexed to Electricity, which has thus become an imperial science" (Lodge, 1889, p. 307).

CONCLUSION

In concluding his Myers Memorial lecture in 1930 Oliver Lodge explained that one of the difficulties of psychical research was assessing the extent to which information given by professed spirits of the dead was trustworthy. The problems of interpreting the messages of 'controls' seemed to be similar to the problems of wireless telegraphy and history. Messages needed to be read if they were made by a traveller in an exotic new land whose only means of communication was via a telegraph whose receiving instrument, the automatist, "may have a difficulty in understanding and transmitting, and who sometimes perhaps, like the scribes who reproduced ancient manuscripts, may insert glosses and interpretations of their own" (Lodge, 1930, p. 42). Judgement as to "authenticity and validity" was as important in evaluating the intelligence of "Higher

Powers” as it was in assessing the historical credibility of the Scriptures and the veracity of radio signals from the other side of the Atlantic.

Lodge’s conclusion highlighted the virtues of eclecticism in psychical research and in that sense he echoed the views of Sidgwick which I quoted at the outset of this paper. Just as pioneering psychical researchers considered the most fruitful approach to their subject to be one involving the skills of the psychologist, psychiatrist, philologist, historian, physicist, stage magician, and detective, so I have suggested that the most fruitful historical analysis of psychical research must draw on the insights of a range of academic fields. Historians of science, who in my view have the most to contribute to histories of psychical research, have been and need to be especially eclectic. The skills they require to interpret scientific papers, notebooks, instruments, letters and other source materials depend on training in history *and* in the sciences — something which cuts across the supposed ‘two cultures’ divide (Snow, 1993). In many ways, the distinct training systems for historians and scientists has meant that scientists have tended to write histories that fail to meet the standards of professional historians, and that professional historians are usually poor scientists and, more worrying for the present discussion, have usually underestimated the importance of the sciences in their histories. Fortunately, however, the situation is changing and an increasing number of ‘mainstream’ historians are engaging with the work of historians of science, partly because such work teases out the intimate links between science and imperialism, race and other themes with which they have long been preoccupied. But the concession to familiar historical themes does not necessarily mean that historians need to compromise on their understanding of intellectual and scientific issues. The historian who does so risks facing the same kinds of criticism levelled at many ‘postmodern’ anthropologists, sociologists and philosophers of science during the so-called ‘science wars’ of the 1990s (see Labinger & Collins, 2001). Their argument that the sciences did not lead to objective knowledge sparked fierce reaction from professional scientists and many anti-relativist philosophers of science who accused their assailants of misunderstanding scientific theories and practices and of poor scholarship in general. Owing to the controversial nature of their subject, historians of psychical research need to be especially careful that they understand the scientific work of the figures on whom they work as well as make judicious use of the range of interpretative resources open to all historians. But attending to the details of past scientific cultures should not be done as an intervention in the ‘science wars’ but for the more constructive reason that it can genuinely help us move forward the debate on the past and present relationships between psychical research, other sciences, and general culture. This may well lead more historians to ask not why so many nineteenth century scientists got involved in psychical research, but given the nature of the sciences of the period why didn’t more do so? Frederic Myers once described the business of historians of science as producing long tales of “discovery and achievement” (Gurney, Myers & Podmore, 1886, p. xi). This paper has suggested that these tales need to be complex stories about human actors, and that this is precisely how we can better situate psychical research in our pasts.

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REFERENCES

- Alvarado, C. (1982). Historical perspectives in parapsychology: some practical considerations. *JSPR 51*, 265–271.
- Bacon, F. (1620). *Instauratio magna*. London: John Bill.
- Barnes, B. (1974). *Sociological Knowledge and Sociological Theory*. London: Routledge and Kegan Paul.
- Barnes, B. and Shapin, S. (Eds.) (1979). *Natural Order: Historical Studies of Scientific Culture*. Beverly Hills, CA: Sage Publications.
- Barrett, W. (1894). Science and spiritualism. *Light 14*, 539–540, 559–561, 571–572, 583–585, 595–597.
- Barrett, W. (1897). *On the So-Called Divining-Rod, or Virgula Divina: A Scientific and Historical Research as to the Existence and Practical Value of a Peculiar Human Faculty*. London: Kegan Paul, Trench and Trübner.
- Barrett, W. (1924). Some reminiscences of fifty years of psychical research. *PSPR 34*, 275–297.
- Barrow, L. (1986). *Independent Spirits: Spiritualism and the English Plebeians 1850–1910*. London: Routledge.
- Barton, R. (1987). John Tyndall, pantheist: a rereading of the Belfast address. *Osiris 3*, 111–134.
- Bassett, J. (1990). *100 Years of National Spiritualism*. London: The Spiritualists' National Union.
- Bauer, H. (2001). *Science or Pseudoscience: Magnetic Healing, Psychic Phenomena and Other Heterodoxies*. Urbana, Illinois: University of Illinois Press.
- Beloff, J. (1993). *Parapsychology: A Concise History*. London: Athlone Press.
- Bergson, H. (1913). Presidential address. *PSPR 26*, 157–175.
- Black, J. and MacRaid, D. (2000). *Studying History*. London: Palgrave.
- Bloor, D. (1974). *Knowledge and Social Imagery*. London: Routledge and Kegan Paul.
- Bowler, P. and Morus, I. (2005). *Making Modern Science: A Historical Survey*. Chicago: Chicago University Press.

- Braude, A. (1989). *Radical Spirits: Spiritualism and Women's Rights in Nineteenth-Century America*. Boston: Beacon Press.
- Butterfield, H. (1973). *The Whig Interpretation of History*. Harmondsworth: Pelican Books.
- Cantor, G. (1996). The scientist as hero: public images of Michael Faraday. In Shortland, M. and Yeo, R. (Eds) *Telling Lives in Science: Essays on Scientific Biography (171–193)*. Cambridge: Cambridge University Press.
- Carpenter, W. (1871). Spiritualism and its recent converts. *Quarterly Review* 131, 301–353.
- Carpenter, W. (1877). *Mesmerism, Spiritualism, &c, Historically and Scientifically Considered*. London: Longmans, Green and Co.
- Cerullo, J. (1982). *The Secularisation of the Soul: Psychical Research in Modern Britain*. Philadelphia: Institute for the Study of Human Issues.
- Collini, S. (1991). *Public Moralists: Political Thought and Intellectual Life in Britain 1850–1930*. Oxford: Oxford University Press.
- Collins, H. (1985). *Changing Order: Replication and Induction in Scientific Practice*. London: Sage Publications.
- Collins, H. and Pinch, T. J. (1982). *Frames of Meaning: The Social Construction of Extraordinary Science*. London: Routledge and Kegan Paul.
- Cooter, R. (1980). Deploying 'pseudo-science' then and now'. In Hanen, M., Osler, M. and Weyant, R. G. (Eds), *Science, Pseudo-Science and Society (237–272)*, Waterloo, Ontario: Wilfrid Laurier University Press.
- Cooter, R. (1984). *The Cultural Meaning of Popular Science: Phrenology and the Organisation of Consent in Nineteenth-Century Britain*. Cambridge: Cambridge University Press.
- Crabtree, A. (1993). *From Mesmer to Freud: Magnetic Sleep and the Roots of Psychological Healing*. New Haven: Yale University Press.
- Crookes, W. (1871a). Experimental investigation of a new force. *Quarterly Journal of Science* 1, 339–349.
- Crookes, W. (1871b). Some further experiments on psychic force. *Quarterly Journal of Science* 1, 471–493.
- Crookes, W. (1871c). Mr. Crookes's "Psychic Force". *The Echo*, 10 November, p. 2.
- Crookes, W. (1871d). *Psychic Force and Modern Spiritualism: A Reply to the "Quarterly Review" and Other Critics*. London: Longmans, Green and Co.
- Crookes, W. (1875). On repulsion resulting from radiation. Part II. *Philosophical transactions of the Royal Society of London* 165, 519–547.
- Crookes, W. (1877). Letter to A. R. Wallace, 24 May. British Library, Add. 46439, f. 139b.
- Crookes, W. (1909). Typescript letter to Oliver Lodge circa 1909, Oliver Lodge Papers, Society for Psychical Research Archive, Cambridge University Library, SPR.MS.35/366.
- Dampier, W. C. (1929). *A History of Science and its Relations with Philosophy and Religion*. Cambridge: Cambridge University Press.
- Davies, B. (1916). Experiments on levitation. *Light* 36, 186–187, 194–195, 202–203.
- Debus, A. (1965). *The English Paracelsians*. London: Oldbourne.
- Dobbs, B. J. (1975). *The Foundations of Newton's Alchemy, or "The Hunting of the Greene Lyon"*. Cambridge: Cambridge University Press.
- Desmond, A. (1994). *Huxley: The Devil's Disciple*. Harmondsworth: Michael Joseph.
- Ellenberger, H. F. (1970). *The Discovery of the Unconscious: The History and Evolution of Dynamic Psychiatry*. London: Allen Lane.

- Faivre, A. (1994). *Access to Western Esotericism*. Albany, New York: State University of New York Press.
- Faivre, A. and Needleman, J. (Eds.) (1992). *Modern Esoteric Spirituality*. London: SCM Press.
- Faraday, M. (1853). On Table-turning. *The Times*, 30 June, p. 8.
- Fichman, M. (2004). *An Elusive Victorian: The Evolution of Alfred Russel Wallace*. Chicago: Chicago University Press.
- Foster, G. (1894). Letter to Oliver J. Lodge, 25 October 1894, Oliver Lodge Papers, University College London Archive, MS. Add.89.
- Gauld, A. (1968). *The Founders of Psychological Research*. London: Routledge.
- Gauld, A. (1992). *A History of Hypnotism*. Cambridge: Cambridge University Press.
- Gieryn, T. (1999). *Cultural Boundaries of Science: Credibility on the Line*. Chicago: Chicago University Press.
- Golinski, J. (1998). *Making Natural Knowledge: Constructivism and the History of Science*. Cambridge: Cambridge University Press.
- Godwin, J. (1994). *The Theosophical Enlightenment*. Albany, New York: State University of New York Press.
- Gooding, D. (1985). What is the history of science? *History Today* 35, 36–39.
- Gurney, E., Myers, F. W. H., and Podmore, F. (1886). *Phantasms of the Living* (Vols. 1-2). London: Trübner and Co.
- Hart, E. (1892). Hypnotism and humbug. *Nineteenth Century* 31, 24–37.
- Harvey, J. (2007). *Photography and Spirit*. London: Reaktion Books.
- Hess, D. J. (1993). *Science in the New Age: The Paranormal, Its Defenders and Debunkers and American Culture*. Madison, Wisconsin: The University of Wisconsin Press.
- Hoppen, K. T. (1998). *The Mid-Victorian Generation*. Oxford: Oxford University Press.
- Howitt, W. (1863). *The History of the Supernatural* (Vols. 1-2). Boston: J. B. Lippincott and Co.
- Hunt, B. (1997). Doing science in a global empire: cable telegraphy and electrical physics in Victorian Britain. In Lightman, B. (Ed.), *Victorian Science in Context* (312–333). Chicago: Chicago University Press.
- James, F. (1988). The practical problems of ‘new’ experimental science: spectro-chemistry and the search for hitherto unknown chemical elements in Britain 1860–1869. *British Journal for the History of Science* 21, 181–194.
- Janet, P. (1889). *L’automatisme psychologique: essai de psychologie expérimentale sur les formes inférieures de l’activité humaine*. Paris: Félix Alcan.
- Jardine, N. (1991). *The Scenes of Inquiry: On the Reality of Questions in the Sciences*. Oxford: Clarendon Press.
- Jasanoff, S., Markle, G., Petersen, J., and Pinch, T. (Eds.) (1994). *Handbook of Science and Technology Studies*. Beverly Hills, CA: Sage Publications.
- Jordanova, L. (2006). *History in Practice*. London: Hodder and Arnold.
- Kottler, M. (1972). Alfred Russel Wallace, the origin of man, and spiritualism’, *Isis* 65, 145–192.
- Kuhn, T. (1962). *The Structure of Scientific Revolutions*. Chicago: Chicago University Press.
- Labinger, J., and Collins, H. (Eds.) (2001). *The One Culture? A Conversation About Science*. Chicago: Chicago University Press.
- Lightman, B. (1987). *The Origins of Agnosticism: Victorian Unbelief and the Limits of Knowledge*. Baltimore: The Johns Hopkins University Press.

- Livingstone, D. (2003). *Putting Science in its Place: Geographies of Scientific Knowledge*. Chicago: Chicago University Press.
- Lodge, O. (1889). *Modern Views of Electricity*. London: Macmillan and Co.
- Lodge, O. (1892). Address. In *Report of the Sixty-First Meeting of the British Association for the Advancement of Science*, 547–557. London: John Murray.
- Lodge, O. (1893a). Aberration problems: a discussion concerning the motion of the ether near the Earth, and concerning the connection between ether and gross matter; with some new experiments. *Philosophical Transactions of the Royal Society 184A*, 724–804.
- Lodge, O. (1893b). The interstellar ether. *Fortnightly Review* 53, 856–862.
- Lodge, O. (1903a). Presidential address. *PSPR* 18, 1–21.
- Lodge, O. (1903b). A scheme of vital faculty. *Nature* 68, 145–147.
- Lodge, O. (1906). On the scientific attitude to marvels. *Fortnightly Review* 79, 460–474.
- Lodge, O. (1930). *Conviction of Survival: Two Discourses in Memory of F. W. H. Myers*. London: Methuen & Co.
- Luckhurst, R. (2002). *The Invention of Telepathy 1870–1901*. Oxford: Oxford University Press.
- Mauskopf, S and McVaugh, M. (1980). *The Elusive Science: Origins of Experimental Psychical Research*. Baltimore: The Johns Hopkins University Press.
- Mauskopf, S. (1990). Marginal sciences. In Olby, R., Cantor, G., Christie, J. and Hodge, M. (Eds.). *Companion to the History of Modern Science (869–885)*. London: Routledge and Kegan Paul.
- Medhurst, R.G, Goldney, K.M., and Barrington, M.R. (1972). *Crookes and the Spirit World*. London: Souvenir Press.
- Merz, J. T. (1896–1914). *A History of European Thought in the Nineteenth Century* (Vols. 1-4). Edinburgh and London: Blackwood & Sons.
- Moore, R. L. (1977). *In Search of White Crows: Spiritualism, Parapsychology, and American Culture*. New York: Oxford University Press.
- Myers, F. W. H. (1903). *Human Personality and its Survival of Bodily Death* (Vols. 1-2). London: Longmans, Green and Co.
- Naylor, S. (2005). Introduction: historical geographies of science — places, contexts, cartographies. *British Journal for the History of Science* 38, 1–12.
- Newcomb, S. (1909). Modern occultism. *Nineteenth Century* 65, 126–139.
- Noakes, R. (1999). Telegraphy is an occult art: Cromwell Fleetwood Varley and the diffusion of electricity to the other world. *British Journal for the History of Science* 32, 421–459.
- Noakes, R. (2002). ‘Instruments to lay hold of spirits’: technologizing the bodies of Victorian spiritualism. In Morus, I. (Ed.) *Bodies/Machines (125-163)*. London: Berg.
- Noakes, R. (2005). Ethers, religion and politics in late-Victorian physics: beyond the Wynne thesis. *History of Science* 43, 415–455.
- Noakes, R. (2008). The ‘world of the infinitely little’: connecting physical and psychical realities in Britain c.1900. *Studies in History and Philosophy of Science*, in press.
- Oppenheim, J. (1985). *The Other World: Spiritualism and Psychical Research in England, 1850–1914*. Cambridge: Cambridge University Press.
- Owen, A. (1989). *The Darkened Room: Women, Power and Spiritualism in Victorian England*. London: Virago.
- Owen, A. (2004). *The Place of Enchantment: British Occultism and the Culture of the Modern*. Chicago: Chicago University Press.

- Podmore, F. (1902). *Modern Spiritualism: A History and a Criticism* (Vols. 1-2). London: Methuen & Co.
- Rayleigh, Lord (1932). Letter to Theodore Besterman, 19 September 1932, British Library, Add MS. 57729.
- “Remarks” (1872). *English Mechanic and the World of Science*, 19 January, 455.
- Royle, N. (1990) *Telepathy and Literature: Essays on the Reading Mind*. Oxford: Blackwell.
- Schaffer, S. (1992). Late Victorian metrology and its instrumentation: ‘a manufactory of Ohms’. In Bud, R. and Cozzens, S. E. (Eds), *Invisible Connections: Instruments, Institutions, and Science* (23–56). Bellingham, Wash.: SPIE Optical Engineering Press.
- Sedgwick, W. T. and Tyler, H. W. (1917). *A Short History of Science*. London: Macmillan and Co.
- Shapin, S. and Schaffer, S. (1985). *Leviathan and the Air-Pump: Hobbes, Boyle and the Experimental Life*. Princeton: Princeton University Press.
- Sidgwick, H. (1889) The canons of evidence in psychical research. *PSPR* 6, 1–6.
- Smith, C. (1998). *The Science of Energy: A Cultural History of Energy Physics in Victorian Britain*. London: The Athlone Press.
- Snow, C. P. (1993). *The Two Cultures*. Cambridge: Cambridge University Press.
- Stead, W. T. (1893). The response to the appeal. *Borderland* 1, 10–23.
- Stenger, V. (1990). *Physics and Psychics: The Search for a World Beyond the Senses*. Buffalo, New York: Prometheus Books.
- Stokes, G. (1871). Report on Mr. Crookes’s paper. In Crookes (1871d), 481–482.
- Stokes, G. (1880). Letter to W. F. Barrett, 11 September 1880, Barrett Papers, Royal Society Library, MS. 377, f.127.
- Tait, P. G. (1876). *Lectures on Some Recent Advances in Physical Science*. London: Macmillan and Co.
- Thomson, W. (1893). Letter to W. T. Stead in Stead (1893), 17.
- Thurschwell, P. (2001) *Literature, Science and Magical Thinking, 1880–1920*. Cambridge: Cambridge University Press.
- Treitel, C. (2004). *A Science for the Soul: Occultism and the Genesis of the German Modern*. Baltimore: The Johns Hopkins University Press.
- Turner, F. (1974). *Between Science and Religion: The Reaction to Scientific Naturalism in Late-Victorian England*. New Haven: Yale University Press.
- Varley, C. F. (1871). Mr. Varley and Professor Allen Thomson. *Spiritualist* 1, 194.
- Wallace, A. R. (1877). Review of Carpenter (1877). *Quarterly Journal of Science* 7 (1877), 391–416.
- Warner, M. (2006). *Phantasmagoria: Spirit Visions, Metaphors, and Media into the Twenty-First Century*. Oxford: Oxford University Press.
- Wilson, D. B. (1971). The thought of late Victorian physicists: Oliver Lodge’s ‘etheral body’. *Victorian Studies* 15, 29–45.
- Wilson, D. B. (1987). *Kelvin and Stokes: A Comparative Study in Victorian Physics*. Bristol: Adam Hilger, 1987.
- Winter, A. (1998). *Mesmerised: Powers of Mind in Victorian Britain*. Chicago: Chicago University Press.
- Yates, F. (1964). *Giordano Bruno and the Hermetic Tradition*. London: Routledge.