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Fragile Balance: Human Mediums and Technical Media in Oliver Lodge's Presidential Address of 1891

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Abstract

In this paper we discuss the work of the Victorian physicist and radio pioneer Oliver Lodge (1851–1940) in the context of what we call the *mediumistic trial* of the long 19th century. We are focusing on a short moment in the early 1890s when Lodge's radio experiments were part of a common expansion into physical and psychical research. By rigorously applying David Bloor's heuristic "principle of symmetry", we demonstrate how Oliver Lodge lived in a world of systems-building and Empire-building that enabled him to categorize human mediums, electromagnetic entities and technical media as parts of an indeterminate but unified field of experimental settings. Though this historical moment was to become a unique tipping point in the initial convergence and later divergence of physical and psychical research, it reveals some general aspects of the *mediumistic trial* in the long 19th century, namely the existence of a common interface between religious and secularist positions and aspirations.

Keywords

Oliver Lodge, 19th Century, Mediumistic Trial, Science and Religion, Relationship between Human Mediums and Technical Media, History of Psychical Research and Parapsychology



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*Am Schönsten ist das Gleichgewicht,
kurz bevor's zusammenbricht.*
(Fischli/Weiss)

It is familiar that a thought may be excited in the brain of another person, transferred thither from our brain, by pulling a suitable trigger; by liberating energy in the form of sound, for instance, or by the mechanical act of writing, or in other ways. A pre-arranged code called language, and a material medium of communication, are the recognised methods. May there not also be an immaterial (perhaps an ethereal) medium of communication? Is it possible that an idea can be transferred from one person to another by a process such as we have not yet grown accustomed to, and know practically nothing about? In this case I have evidence. I assert that I have seen it done; and am perfectly convinced of the fact. Many others are satisfied of the truth of it too. Why must we speak of it with bated breath, as of a thing of which we are ashamed? What right have we to be ashamed of a truth?¹

This is a quotation from Oliver Lodge's Presidential Address to the mathematical and physical science section at the meeting of the British Association for the Advancement of Science in Cardiff in 1891. Oliver Lodge, who became convinced of the existence of thought transference after several experiments conducted by himself and others,² was born in 1851 and died in 1940. He was a famous and honoured British physicist and inventor, and is regarded as one of the pioneers of wireless radio signal development and loudspeaker technology. He worked as a professor of physics in Liverpool, became the first principal of the newly founded University of Birmingham in 1900, and was an active Fabian socialist. He is described as “a deep thinker and great popularizer of physics in one person.”³ He published more than thirty books and more than one thousand

¹ Oliver Lodge, “Presidential Address to Section A. Mathematical and Physical Science,” in *Report of the Sixty-first Meeting of the British Association for Advancement of Science Held at Cardiff in August 1891* (London: John Murray, 1892), 555.

² Oliver Lodge, “An Account of Some Experiments in Thought Transference,” *Proceedings of the Society for Psychical Research* 2 (1884): 189–200.

³ Peter Rowlands, “Oliver Lodge’s Subliminal Influence” (presentation at the workshop “Civic Science: Oliver Lodge, Physics, and the Modern University,” University of Birmingham, November 9, 2013).

articles and letters, held thirty-one patents, and—along the way—had twelve children.⁴

He was one of the scientists who changed the face of physics by following the program of the Scottish physicist James Clerk Maxwell (who died in 1879) and his view of the world as consisting of electromagnetic waves which can be correlated and linked to each other.⁵ Maxwell's ideas offered great promises for understanding and handling the physical world and yet were accompanied by many open questions and uncertainties. Lodge was promoting the idea of the ether as the ultimate medium in which electromagnetic waves are assumed to spread. In 1894 he demonstrated the transmission of radio signals in a public lecture. He improved the “coherer,” a detector for radio waves, and obtained a patent for tuning radio frequencies that he later sold to Marconi's “Wireless Telegraph & Signal Company,” which today is commonly regarded as the most influential synthesizer of radio technology.⁶

Much historical work has been done to show how science and religion were not only antithetical to one another, but were in fact also deeply connected and in many ways reconciled in Britain during the Victorian era through to the early twentieth century.⁷ Lodge was just one prominent physicist for whom

⁴ Theodore Besterman, *A Bibliography of Sir Oliver Lodge F.R.S.* (Oxford: Oxford University Press, 1933); Stathis Arapostathis and Graeme Gooday, *Patently Contestable: Electrical Technologies and Inventor Identities on Trial in Britain* (Cambridge: MIT Press, 2013).

⁵ Bruce J. Hunt, *The Maxwellians* (Ithaca: Cornell University Press, 2005).

⁶ Concerning the controversy cp. Arapostathis and Gooday, *Patently Contestable*; and Peter Rowlands and J. Patrick Wilson, ed., *Oliver Lodge and the Invention of Radio* (Liverpool: PD Publications, 1994).

⁷ See for example Peter J. Bowler, *Reconciling Science and Religion: The Debate in Early-Twentieth-Century Britain* (Chicago: University of Chicago Press, 2001); Anthony Enns, “Psychic Radio: Sound Technologies, Ether Bodies, and Vibrations of the Soul,” *The Senses and Society* 3/2 (2008): 137–152; Roger Luckhurst, *The Invention of Telepathy: 1870–1901* (Oxford/New York: Oxford University Press, 2002); Iwan Rhys Morus, *When Physics Became King* (Chicago: University of Chicago Press, 2005); Richard Noakes, “Haunted Thoughts of the Careful Experimentalist: Psychical Research and the Troubles of Experimental Physics,” *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences* 48/A (2014): 46–56; Richard Noakes, “The ‘World of the Infinitely Little’: Connecting Physical and Psychical Realities circa 1900,” *Studies in the History and Philosophy of Science* 39/3 (2008): 323–333; Richard Noakes, “The Historiography of Psychical Research: Lessons from Histories of the Sciences,” *Journal of the Society for Psychical Research* 72/2 (2008): 65–85; Richard Noakes, “Ethers, Religion, and Politics in Late-Victorian Physics: Beyond the Wynne Thesis,”

Christianity and physics had never been a contradiction. If we follow the historical sources and testimonials from the 1880s and early 1890s as closely as possible, we find that up to a certain point—at least up to Oliver Lodge’s research on radio technology and his ether experiments—a select number of British physicists had legitimate hopes for a common expansion of psychical research and physical research into and within one common all-pervading “ether.”

In this paper we highlight a specific moment in Lodge’s biography and show how Lodge treated human mediums and technical media symmetrically. This symmetrical moment is obscured in even some of the best historical writings on Oliver Lodge by mixing quotations from the 1880s and early 1890s with later testimonials, especially from his own later autobiographical writings or his later discussions of psychical research.⁸ In this paper, we will counteract this non-chronological approach by quoting extensively from one moment in time and discarding all later evidence. Our aim is to describe Lodge’s world of the early 1890s as indeterministically as possible, by bracketing what in later years was consolidated as “fact” or attacked as “illusion” (e.g. concerning ether), either by himself or by others.⁹ We assume this to be the only possible way to demonstrate that his radio experiments were part of a unified expansion into physical and psychical research, and to explain—or to ponder—why immediately after his path-breaking success in improving radio technology, Lodge turned to renewed experimentation in psychical research.¹⁰ In doing so, we will contribute to the

History of Science 43 (2005): 415–455; Janet Oppenheim, *The Other World: Spiritualism and Psychical Research in England 1850–1914* (Cambridge/New York: Cambridge University Press, 1985); Courtenay Green Raia, “From Ether Theory to Ether Theology: Oliver Lodge and the Physics of Immortality,” *Journal for the History of the Behavioural Sciences* 43 (2007): 18–43; John D. Root, “Science, Religion, and Psychical Research: The Monistic Thought of Sir Oliver Lodge,” *Harvard Theological Review* 71 (1978): 245–263; David B. Wilson, “The Thought of Late Victorian Physicists: Oliver Lodge’s Ethereal Body,” *Victorian Studies* 15 (1971/72): 29–48.

⁸ Oliver Lodge. “Address by the President”. *Proceedings of the Society for Psychical Research* 17 (1902): 37-57; Oliver Lodge, *The Survival of Man. A Study in Unrecognised Human Faculty* (London: Methuen & Co, 1909); Oliver Lodge, *Past Years* (London: Hodder and Stoughton Ltd., 1931).

⁹ Our paper is more of a literary exercise focusing on well-known scholarly evidence, than an effort in providing new sources. We hope to pursue this perspective in a more technical investigation of Lodge’s experimental culture in the early 1890s. - Our general assessment of the Victorian intersection of physics and emerging psychical research follows the pioneering writings of Richard Noakes.

¹⁰ Lodge, Oliver. “Experience of Unusual Physical Phenomena Occurring in the Presence of an Entranced Person (Eusapia Palladino).” *Journal of the Society for Psychical Research* 6 (1894): 306–336.

symmetrical perspective on Oliver Lodge which Richard Noakes¹¹ started to apply, and we will provide an understanding of Lodge's approach against the background of the great and public mediumistic controversy of the nineteenth century in which human mediums and technical media were closely intertwined.¹² We will also demonstrate that the territory of symmetrical expansion—into the electromagnetic fields of both physical ether and psychical research—was meant to be territorial in a quite literal, i.e. geographical sense, linked with the professional aspirations of empire-building. To us, it seems to be more than mere coincidence that psychical research was developed at the peak of imperialism by nearly exclusively male, white, upper class (and upper middle class) gentlemen, that is, by representatives of the ruling elite of world domination in science, diplomacy, the army or the stock exchange.¹³ The later history of psychical research and its successors (in "parapsychology") has both clouded and inherited this elitist and imperial origin, as it has occupied a far more marginal position than in the 1880s and 1890s, when psychical research was designed by leading psychologists, physicists and engineers in the centers of scientific and political power. The elitist ambition has stayed with parapsychology ever since: to be or to become the 'obligatory passage point'¹⁴ for all scientific evidence concerning miraculous, mediumistic or 'paranormal' phenomena. The current discipline of parapsychology, surviving at the margins of academia, still clings to the proud

¹¹ Richard Noakes, "The Historiography of Psychical Research: Lessons from Histories of the Sciences," *Journal of the Society for Psychical Research* 72/2 (2008): 65–85

¹² Our symmetrical perspective intends to modify approaches which divide Lodge's work into physical research and psychical research as two more or less unconnected aspects of his research and thus pick out only one of these "aspects" as a central theme. In his reconstruction of Lodge's time in Liverpool Peter Rowlands, for example, left "the details of [Lodge's] biography and interests in psychic research . . . to other authors" such as his biographer W.P. Jolly or Lodge himself (Rowlands, Peter, *Oliver Lodge and the Liverpool Physical Society*, Liverpool: Liverpool University Press, 1990, iii). Also a collection on Lodge's influence on the invention of radio technology (Peter Rowlands and Patrick Wilson, *Oliver Lodge and the Invention of Radio*) does not pay much attention to his psychical research. Conversely, Christopher G. Parks focuses only on "Oliver Lodge and the Paranormal" (M.Sc.-Thesis, Liverpool University, 1993). Similarly, most presentations at a conference on "Oliver Lodge, Science, and Spiritualism" organized by the Oliver Lodge Research Network in London in 2014 focused mainly on either his physical or his psychical research—with the exception of Richard Noakes.

¹³ Morazé, Charles. *The Triumph of the Middle Classes: A Study of European Values in the Nineteenth Century*. London: Weidenfeld and Nicolson, 1966 [orig.1957].

moment of its origin during which it expanded into and actively shaped the as-yet unregulated riverbed of emerging psychology and, via Lodge and others, was part of rapidly changing physics.

In his Presidential Address of 1891, three years before he demonstrated the transmission of radio signals, Lodge first speaks about the progress of physics in the last year, including the progress of technical media, and then turns to future research. He advocates a general professionalization of scientific research and suggests the erection of a National Physical Observatory to bring together professional researchers and enthusiastic amateurs. He considers the construction of the laboratory to be a national task in competition with other nations, explaining that a nation's leading position in science results in its leading position in the world:

Paris has long had one form of such an institution, in the Conservatoire des Arts et Métiers, and has been able to impose the metric system on the civilised world in consequence . . . Berlin is now starting a similar or a more ambitious scheme for a permanent National Physical Institute. Is it not time that England, who in physical science, I venture to think, may in some sort claim a leading place, should be thinking of starting the same movement?¹⁵

He continues to remind his audience of a tradition of free science:

Our ancestors fought hard and suffered much for the privilege of free and open inquiry, for the right of conducting investigation untrammelled by prejudice and foregone conclusions, and they were ready to examine into any phenomenon which presented itself.¹⁶

He knows about the controversial character of psychical research, but in the name of free and unprejudiced research he states that it would be regrettable to be too close-minded to inquire into unknown regions.

I myself think that the ordinary processes of observation and experiment are establishing the existence of such a region; that in

¹⁴ Michel Callon, "Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St. Brieuc Bay," in *Power, Action and Belief: A new Sociology of Knowledge?* ed. John Law (London: Routledge, 1986).

¹⁵ Lodge, "Presidential Address" [1891], 550.

¹⁶ Lodge, "Presidential Address" [1891], 552.

fact they have already established the truth of some phenomena not at present contemplated by science, and to which the orthodox man shuts his ears. For instance, there is the question whether it has or has not been established by direct experiment that a method of communication exists between mind and mind irrespective of the ordinary channels of consciousness and the known organs of sense, and if so, what is the process? It can hardly be through some unknown sense organ, but it may be by some direct physical influence on the ether, or it may be in some still more subtle manner. Of the process I as yet know nothing. Further investigation is wanted.¹⁷

He describes the field of this research as

the borderland of physics and psychology. I might call it the connection between life and energy; or the connection between mind and matter. It is an intermediate region, bounded on the north by psychology, on the south by physics, on the east by physiology, and on the west by pathology and medicine . . . The whole region seems to be inhabited mainly by savages, many of them, so far as we can judge from a distance, given to gross superstition. It may, for all I know, have been hastily traversed and rudely surveyed by a few clear-eyed travellers; but their legends concerning it are not very credible, certainly are not believed.¹⁸

Lodge conceives this field to be traditionally dominated by metaphysicians, but he anticipates a watershed moment for physicists:

I say it has been left to them long enough. They have explored it usually with insufficient equipment. The physical knowledge of the great philosophers has been necessarily scanty; and though the ideas which we owe to their genius may ultimately be of the greatest service to us as physicists, still their methods are not our methods. They may be said to have floated a balloon over the region with a looking-glass attached, in which they have caught queer and fragmentary glimpses. They may have seen more than we give them credit for, but they appear to have guessed far more than they saw.

¹⁷ Lodge, "Presidential Address" [1891], 552.

¹⁸ Lodge, "Presidential Address" [1891], 553.

Our method is different. We prefer to creep slowly from our base of physical knowledge, to engineer carefully as we go, establishing forts, making roads, and thoroughly exploring the country; making a progress very slow, but very lasting. The psychologists from their side may meet us. I hope they will; but one or other of us ought to begin.¹⁹

Thus Oliver Lodge compares the task of psychical research and of building up a physical laboratory to the infrastructural setting up of a colony, i.e. to empire-building. The savages he mentions are both a metaphor for unknown and uncivilized forces of nature, which are of both physics and metaphysics, but they are also quite literal and real, i.e. people with a potential for altered states of consciousness in the colonies as well as in regions to be colonized at home. Their place in the scientific order is where physicists and psychologists shall meet, like troops meeting in the middle of uncharted territory. Words spoken in 1891, a few years after the Berlin conference that decided the fate of African colonies:

A vulnerable spot on our side seems to be the connection between life and energy. The conservation of energy has been so long established as to have become a commonplace. The relation of life to energy is not understood. Life is not energy, and the death of an animal affects the amount of energy no whit; yet a live animal exerts control over energy which a dead one cannot. Life is a guiding or directing principle, disturbing to the physical world but not yet given a place in the scheme of physics. The transfer of energy is accounted for by the performance of work; the guidance of energy needs no work, but demands force only. What is force? and how can living beings exert it in the way they do?²⁰

This passage alludes to a “psychic force” that has to be investigated:

It may be held that such investigations are not physical and do not concern us. We cannot tell without trying; and as the results are physical, or at least have a physical side, it seems reasonable to assume that the process by which they are produced is a proper subject for physical inquiry. I believe that there is something in this region which does concern us as physicists. It may concern other sciences too. It must indeed concern biology; but with that I have

¹⁹ Lodge, “Presidential Address” [1891], 553.

²⁰ Lodge, “Presidential Address” [1891], 553.

nothing to do. Biologists have their region, we have ours, and there is no need for us to hang back from an investigation because they do. Our own science, of Physics or Natural Philosophy in its widest sense, is the King of the Sciences, and it is for us to lead, not to follow.²¹

Oliver Lodge's interest in psychical research can be better understood against the background of the mediumistic controversy during the nineteenth century which was about testing and explaining the abilities and potentials of human mediums as well as technical media, and determining how they are related. Ever since the nineteenth century, mediumism has remained controversial and has been situated in an undefined "middle ground" between religious and secular aspirations. The testing of mediumism—the mediumistic trial as we put it—thus becomes comprehensible only through the realization of incompatible stakes and positions. The crucial point of debate remained the question of how to locate and categorize the medium's agency.²² As our first quotation of Lodge shows, both technical media and human mediums are treated by Lodge as having similar potentials to make invisible things visible, to make absent things present, and to enable communication over more or less long distances. Thus the function of technical media and human mediums may refer to the same theoretical problems:

It is familiar that a thought may be excited in the brain of another person, transferred thither from our brain, by pulling a suitable trigger; by liberating energy in the form of sound, for instance, or by the mechanical act of writing, or in other ways. A pre-arranged code called language, and a material medium of communication, are the recognised methods. May there not also be an immaterial (perhaps an ethereal) medium of communication? Is it possible that an idea can be transferred from one person to another by a process

²¹ Lodge, "Presidential Address" [1891], 555.

²² See Erhard Schüttpelz, "Trance Mediums and New Media. The Heritage of a European Term," in *Trance Mediums and New Media. Spirit Possession in the Age of Technical Reproduction*, ed. Heike Behrend, Anja Dreschke, and Martin Zillinger (New York: Fordham University Press, 2015); Erhard Schüttpelz and Ehler Voss, "In jeder Beziehung ebenso wirksam. Die mediumistische Kontroverse im langen 19. Jahrhundert," in *Theorien der Passivität*, ed. Kathrin Busch and Helmut Draxler (Munich: Wilhelm Fink, 2013); Ehler Voss, "A Sprout of Doubt. The Debate on the Medium's Agency in Mediumism, Media Studies, and Anthropology," in *Religion, Tradition and the Popular in Asia and Europe*, ed. Judith Schlehe and Evamaria Müller (Bielefeld: transcript, 2014).

such as we have not yet grown accustomed to, and know practically nothing about? In this case I have evidence.²³

Thus both the potentials of technical media and human mediums should be investigated scientifically, and brains or individual minds and physical instruments could both be investigated as electromagnetic fields with the potential for communication. Since Lodge was a scientific systems-builder, in fact one of the most potent systems-builders of the physics of his time and of the British Empire, he could not but contemplate on possibilities to institutionalize this research.

Lodge's approach is not an individual accomplishment, but part of a collective enterprise of three generations of physicists. The last generation, to which Lodge belonged, was trained in Maxwellian theory and technical research and tried to unfold the concepts of the ether. This field of research was continuously expanding in the 1880s and 1890s, offering vast new possibilities concerning theory, experiment, and empire.²⁴ New technical instruments and physical standards were invented. Originally, physical instruments and measurements appeared in delicate and fragile arrangements, and their entities were first detected like a "hunch," and were stabilized or verified through personal technical skills that often took a decade or longer to be taught and standardized. In this field of permanently appearing new possibilities Lodge was one of the central systems-builders—as technical and theoretical educationalist, popularizer, and scientific manager. The common scientific, political, and infrastructural background of this Maxwellian generation of physicists was the consolidation of a new technical medium: telegraphy as a powerful and worldwide system of communication, the laboratories of telegraphy as a central institution of the empire, their experimental training as both the financial and scientific bottleneck of physics. Lodge and his friends were part of vast personal networks of scientific supporters with an anti-materialistic attitude who were thus well-disposed to religion and spiritualism.

So why was psychical research in the 1880s pursued as a scientific project by scientists such as Lodge and his friends, with the explicit goal to become the "obligatory passage point" for all scientific findings in the investigations of—mostly female—mediums by (white, middle and upper class male) scholars? Apart from telegraphy, one common background of this third generation of

²³ Lodge, "Presidential Address" [1891], 555.

²⁴ Bruce J. Hunt, *The Maxwellians* (Ithaca: Cornell University Press, 2005); Richard Noakes, "The Historiography of Psychical Research: Lessons from Histories of the Sciences," *Journal of the Society for Psychical Research* 72/2 (2008): 65–85.

physicists was the question of which kind of cosmology would result from the complete manifestation of a Maxwellian ether. An important summary of speculation on the consequences of ether cosmology can be found in the book *Unseen Universe; or, Physical Speculations on a Future State* by the Scottish physicists Balfour Stewart and Peter Guthrie Tait, a best-seller published in 1875. It is the luminiferous medium ether which enables the conciliation of Christianity and science:

Now, is it not natural to imagine that a universe of this nature, which we have reason to think exists, and is connected by bonds of energy with the visible universe, is also capable of receiving energy from it? Whether is it more likely that by far the larger portion of the high-class energy of the universe is travelling outward into space with immense velocity, or that it is gradually transferred into an invisible order of things? May we not regard ether or the medium as not merely a bridge between one portion of the visible universe and another, but also as a bridge between one order of things and another, forming as it were a species of cement, in virtue of which the various orders of the universe are welded together and made one? In fine, what we generally call ether may not be a mere medium, but a medium plus the invisible order of things, so that when the motions of the visible universe are transferred into ether, part of them are conveyed as by a bridge into the invisible universe, and are then made use of or stored up. Nay, is it even necessary to retain the conception of a bridge? May we not at once say that when energy is carried from matter into ether it is carried from the visible into the invisible; and that when it is carried from ether to matter it is carried from the invisible into the visible?²⁵

The assumptions of this book were not binding for anyone, but they did provide a useful source of inspiration, or a matrix, if one would have liked to correlate different ideas of the ether as well as technical media and human mediums. Each physicist was able to combine parts of the questions and speculations concerning telepathy, ether, waves, survival after death, communication with the dead or eternal and temporal states in a different way and test them in experimental settings. This is what Lodge did in the period of his radio experiments. Simultaneously, as he worked on radio transmission, he arranged an experiment

²⁵ Balfour Stewart and Peter Guthrie Tait, *The Unseen Universe: or, Physical Speculations on a Future State* (London: Macmillan, 1875), 147.

to prove the existence and resistance of ether, and he worked on the improvement of testing thought-transference. All these experiments, as we have demonstrated, follow from a unified idea and even terminology of the “medium.”

Psychical research under the wing of physics did not arise from the belief in the objectivity of self-writing instruments. Instead, self-writing instruments were treated with skepticism—both in physics and in psychical research done by physicists. The physicists of Lodge’s generation and training knew very well that instruments as well as researchers had (and have) to be tested, mistrusted and continuously calibrated to yield reliable results. In fact, the largest amounts of resources and time were (and still are) invested into the training and testing of researchers as well as of instruments. And it seems that the same basic research attitude was designed for psychical research. Due to decades of anticipating unstable physical results and entities, the physicists expected the same fragility and observer-dependency from the mediums in psychical research. It was not the trust in self-writing machines, but the mistrust and the critique of self-writing concepts that characterized psychical research in the 1880s.

Lodge’s development in the 1890s is a case in point. For him, his radio experiment had both the potential of a new media technique and promised a possible breakthrough in foundational research. Immediately after his radio innovation, Lodge intensified his research on thought-transference, telekinesis, and his work with trance mediums. Marconi instead took the existing techniques and developed and prototyped them as fast as he could, to be sold as a new imperialist media technique for governmental and military purposes, i.e. he chose to follow the obvious path from telegraphy to wireless telegraphy. Lodge finally sold his radio patents to Marconi, but there is no sign that he tried to convert his laboratory into a radio laboratory for the Empire, though this was exactly what would have been expected of him in the framework of his generational training as a British physicist. Maybe a different and virtually much vaster empire seemed to be waiting for him.

To conclude, in 1891, Oliver Lodge situated his research in a unified and symmetrical world: the starting point of one trajectory is a technical medium, telegraphy, and the trajectory leads to the exploration of mediumism but also to the invention of new technical media, especially “wireless telegraphy.” The starting point of the other trajectory is the ultimate medium, the polymorphic ether, and this trajectory results in many newly designed laboratory instruments and electromagnetic frequencies. Oliver Lodge was situated right in the middle of these cross-roads at least throughout the 1880s and 1890s—in a time of incessant imperial and epistemic expansion. The same holds true for some of his friends and fellows. And probably only this scientific and imperialistic expansion explains the

part that physicists played in the emergence of psychical research, i.e. the trust in the ability to laboratorize the mediumistic controversy of the long nineteenth century. Lodge seems to have been the first who declared the necessity of a national psychical laboratory. Indeed, for Lodge in the early 1890s, the infrastructural tasks of Empire and physics, and of physics and psychical research, were intersecting. Going from one crucial experiment to the other, for the systems-builder Lodge the two imperatives must have seemed to reach a perfect, if fragile balance in the early 1890s:

“Give me a laboratory and I will raise the world!”

&

“Break on through to the other side!”

REFERENCES

- Arapostathis, Stathis, and Graeme Gooday. *Patently Contestable: Electrical Technologies and Inventor Identities on Trial in Britain*. Cambridge: MIT Press, 2013.
- Besterman, Theodore. *A Bibliography of Sir Oliver Lodge F.R.S.* Oxford: Oxford University Press, 1933.
- Bowler, Peter J. *Reconciling Science and Religion: The Debate in Early-Twentieth-Century Britain*. Chicago: University of Chicago Press, 2001.
- Callon, Michel. "Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St. Brieuc Bay." In *Power, Action and Belief: A New Sociology of Knowledge?*, edited by John Law, 196–223. London: Routledge, 1986.
- Edwards, David. "A Victorian Polymath." In *Oliver Lodge and the Invention of Radio*, edited by Peter Rowlands and J. Patrick Wilson, 19–39. Liverpool: PD Publications, 1994.
- Enns, Anthony. "Psychic Radio: Sound Technologies, Ether Bodies, and Vibrations of the Soul." *The Senses and Society* 3/2 (2008): 137–152.
- Hunt, Bruce J. *The Maxwellians*. Ithaca: Cornell University Press, 2005.
- Jolly, W.P. *Sir Oliver Lodge*. London: Constable, 1974.
- Lodge, Oliver. *Past Years*. London: Hodder and Stoughton Ltd., 1931.
- Lodge, Oliver. *The Survival of Man. A Study in Unrecognised Human Faculty*. London: Methuen & Co, 1909.
- Lodge, Oliver. "Address by the President." *Proceedings of the Society for Psychical Research* 17 (1902): 37–57.
- Lodge, Oliver. "Experience of Unusual Physical Phenomena Occurring in the Presence of an Entranced Person (Eusapia Paladino)." *Journal of the Society for Psychical Research* 6 (1894): 306–336.
- Lodge, Oliver. "Presidential Address to Section A. Mathematical and Physical Science." In *Report of the Sixty-first Meeting of the British Association for Advancement of Science Held at Cardiff in August 1891*: 547–557. London: John Murray, 1892.
- Lodge, Oliver. "An Account of Some Experiments in Thought Transference." *Proceedings of the Society for Psychical Research* 2 (1884): 189–200.
- Luckhurst, Roger. *The Invention of Telepathy: 1870–1901*. Oxford/New York: Oxford University Press, 2002.
- Morus, Iwan Rhys. *When Physics Became King*. Chicago: University of Chicago Press, 2005.
- Morazé, Charles. *The Triumph of the Middle Classes: A Study of European Values in the Nineteenth Century*. London, Weidenfeld and Nicolson, 1966 [orig.1957].

- Noakes, Richard. "Haunted Thoughts of the Careful Experimentalist: Psychical Research and the Troubles of Experimental Physics." *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences* 48/A (2014): 46–56.
- Noakes, Richard. "The Historiography of Psychical Research: Lessons from Histories of the Sciences." *Journal of the Society for Psychical Research* 72/2 (2008): 65–85.
- Noakes, Richard. "The 'World of the Infinitely Little': Connecting Physical and Psychical Realities circa 1900." *Studies in the History and Philosophy of Science* 39/3 (2008): 323–333.
- Noakes, Richard. "Ethers, Religion, and Politics in Late-Victorian Physics: Beyond the Wynne Thesis." *History of Science* 43 (2005): 415–455.
- Oppenheim, Janet. *The Other World: Spiritualism and Psychical Research in England 1850–1914*. Cambridge/New York: Cambridge University Press, 1985.
- Parks, Christopher G. "Oliver Lodge and the Paranormal." M.Sc.-Thesis, Liverpool University, 1993.
- Raia, Courtenay Green. "From Ether Theory to Ether Theology: Oliver Lodge and the Physics of Immortality." *Journal for the History of the Behavioural Sciences* 43 (2007): 18–43.
- Root, John D. "Science, Religion, and Psychical Research: The Monistic Thought of Sir Oliver Lodge." *Harvard Theological Review* 71 (1978): 245–263.
- Rowlands, Peter. "Oliver Lodge's Subliminal Influence." Presentation at the workshop "Civic Science: Oliver Lodge, Physics, and the Modern University," University of Birmingham, November 9, 2013.
- Rowlands, Peter. *Oliver Lodge and the Liverpool Physical Society*. Liverpool: Liverpool University Press, 1990.
- Rowlands, Peter, and J. Patrick Wilson, ed. *Oliver Lodge and the Invention of Radio*. Liverpool: PD Publications, 1994.
- Schüttpelz, Erhard. "Trance Mediums and New Media. The Heritage of a European Term." In *Trance Mediums and New Media. Spirit Possession in the Age of Technical Reproduction*, edited by Heike Behrend, Anja Dreschke, and Martin Zillinger, 56–76. New York: Fordham University Press, 2014. [Translation of: Schüttpelz, Erhard. "Mediumismus und moderne Medien – Die Prüfung des europäischen Medienbegriffs." *Deutsche Vierteljahrsschrift für Literaturwissenschaft und Geistesgeschichte* 86/1 (2012): 121–144]
- Schüttpelz, Erhard, and Ehler Voss. "In jeder Beziehung ebenso wirksam. Die mediumistische Kontroverse im langen 19. Jahrhundert." In *Theorien der Passivität*, edited by Kathrin Busch and Helmut Draxler, 97–109. Munich: Wilhelm Fink, 2013.
- Stewart, Balfour, and Peter Guthrie Tait. *The Unseen Universe: or Physical Speculations on a Future State*. London: Macmillan, 1875.

- Voss, Ehler. "A Sprout of Doubt. The Debate on the Medium's Agency in Mediumism, Media Studies, and Anthropology." In *Religion, Tradition and the Popular in Asia and Europe*, edited by Judith Schlehe and Evamaria Müller, 205–224. Bielefeld: transcript, 2014.
- Wilson, David B. "The Thought of Late Victorian Physicists: Oliver Lodge's Ethereal Body." *Victorian Studies* 15 (1971/72): 29–48.