

Kinaesthesia and Touching Reality

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The invitation to the 2013 Birkbeck, University of London conference on ‘The Victorian Tactile Imagination’ quoted from Wilkie Collins: ‘You people who can see attach such an absurd importance to your eyes! I set my touch, my dear, against your eyes, as much the most trustworthy, and much the most intelligent sense of the two.’¹ Miss Finch is described by local people in Collins’s novel as ‘poor’ because she is blind, although the novel itself undermines this, not least by stressing how it is touch, not sight, which is the source of ‘trustworthy’ and ‘intelligent’ knowledge of the world. Such statements, by people with ordinary as well as unusual sight, were common in the nineteenth century. There is a long and complex history to this. Moreover, debate continues about the nature and sources of the basic elements of knowledge of what people think real.

Touch is a family of senses, and in many descriptions it includes the sense of movement. I shall argue that resistance to contact and movement (and there is no contact without movement) was basic to the Victorian notion of reality – and to much later knowledge. As Hans Jonas argued in a paper on the phenomenology of the senses, ‘reality is primarily evidenced in resistance which is an ingredient in touch experience.’² Thus, for some modern analysts, the kind of contact we have in touch is a model

¹ Wilkie Collins, *Poor Miss Finch*, ed. by Catherine Peters (Oxford: Oxford University Press, 1995), p. 220 (the passage is recalled, p. 414). Miss Lucilla Finch continued, referring to her arms: ‘The stretching of *these* to an enormous and unheard-of length. That is what I should have liked! [...] If I could only stretch out far enough to touch the stars’ (p. 220). I sincerely thank Heather Tilley for introducing me to Miss Finch and, along with an anonymous referee, for constructive criticism which helped me rewrite this article. For discussion on the culture of movement, I thank Irina Sirotkina. The Birkbeck conference on ‘The Victorian Tactile Imagination’ took place 19–20 July 2013.

² Hans Jonas, ‘The Nobility of Sight: A Study in the Phenomenology of the Senses’, *Philosophy and Phenomenological Research*, 14 (1954), 507–19 (p. 516).

in thought for understanding the way we perceive with the other senses.³ For example, if we look at a star we may imagine that light waves, mediated by complex instruments, pass between the star and the eye, and we might then say that the waves make contact with the nerve endings of the visual retina.⁴

This article will introduce the intellectual context of the Victorian emphasis on movement and resistance in touch perception. It will highlight the importance of the sense of movement, which cultural and literary historians of the tactile sense in the nineteenth century have not fully appreciated. Nineteenth-century writers — medical, scientific, philosophical, and moral as well as literary — developed knowledge of movement in relation to the touch sense. This knowledge supported ways of thought which took humans to be inherently active in a world of active forces. The third section will therefore enlarge on the word ‘force’. In conclusion, I will point to the importance of the discussion for the history of new forms of movement in the late nineteenth century, notably modern dance, and link this to modernist aesthetics.

A swathe of metaphors refer to being *in touch with* reality. Implicit in this is a philosophical argument. Life without sight or hearing is richly possible, but a person or animal without any touch sense would not be alive in the normal sense of the word. The philosopher Matthew Ratcliffe argues: ‘Without vision or hearing, one would inhabit a very different experiential world, whereas one would not have a world at all without touch.’⁵ Touch is constitutive of being an embodied subject. Everyday metaphors reflect this: ‘contact’ itself, naturally, and ‘to be in touch’, ‘to be touched’ or to have a ‘touching’ feeling or experience, ‘hands on experience’, ‘to feel the ground beneath one’s feet’, ‘to touch a nerve’, and ‘to

³ This article discusses historically situated claims regarding reality. For the phenomenological and scientific thesis that the sense of movement is primary in knowledge of ‘the real’, see Maxine Sheets-Johnstone, *The Primacy of Movement*, 2nd edn (Amsterdam: Benjamin, 2011); ‘Steps Entailed in Foregrounding the Background: Taking the Challenge of Linguaging Experience Seriously’, in *Knowing Without Thinking: Mind, Action, Cognition and the Phenomenon of the Background*, ed. by Zdravko Radman (Basingstoke: Palgrave Macmillan, 2012), pp. 187–205.

⁴ Cf. Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century* (Cambridge, MA: MIT Press, 1990), pp. 59–66, discussing vision conceived by analogy to touch in the eighteenth century.

⁵ Matthew Ratcliffe, ‘Touch and the Sense of Reality’ (forthcoming essay), p. 2. Thanks to Matthew Ratcliffe for making this available to me. See also Matthew Ratcliffe, ‘What Is Touch?’, *Australasian Journal of Philosophy*, 90 (2012), 413–32.

get a kick from something', among others. The words 'tangible' and 'intangible' significantly distinguish between what we can touch, or 'have contact with', and hence know with certainty, and what we cannot touch and hence know hazily, if at all.

But what *is* touch? There is no right description: touch is an open-ended category, and the range of sensory experience to which authors refer depends on context and purpose.⁶ Some contemporary authors differentiate touch and movement senses (including the sense of effort), while others treat the sense of movement, the sense of balance and feelings of warmth and cold all as varieties of touch. For some, touch includes the very experience of having a body with internal sensations.⁷ For many authors, touch is not dissociable from a sense of self: 'one cannot perceive the world tactually without perceiving oneself in the process' (Ratcliffe, 'Touch and the Sense of Reality', p. 1). For Ratcliffe, following the phenomenology of Maurice Merleau-Ponty, touch is at the centre of the human sense of being 'there' in a world, that is, of the sense of embodied self as a reality.⁸

This article turns to the place of the sense of movement, or kinaesthesia, in the Victorian understanding of touch. The word 'kinæsthesis' dates from 1880, and it quickly spread from narrowly medical or physiological usage to become the preferred term for the sensory system which makes it possible to experience the position, movement, and effort required to move the body. In the twentieth century, it became common to use 'kinaesthesia' to describe the conscious feeling of movement through muscular effort, and to adopt a later word, 'proprioception', to describe the system of largely but not entirely unconscious integration of all the sensory mechanisms involved in posture and movement.⁹ For Maxine Sheets-Johnstone, who is currently doing more than anyone to draw attention to the importance of movement, '*kinesthesia* is a *bona fide* sensory

⁶ This is evident in Constance Classen, *The Deepest Sense: A Cultural History of Touch* (Urbana: University of Illinois Press, 2012). The book draws in a rich range of sensory experience and makes no attempt to delineate a concept of touch. It notes the link between touch and the sense of movement but does not analyse it further or discuss the matter historically (p. xiv).

⁷ In 'Dream Touch', her contribution to this issue of *19*, and based upon her paper given at 'The Victorian Tactile Imagination' conference, Gillian Beer takes up the theme of the bodily senses in touch. Awareness of bodily feelings is sometimes called somesthesia.

⁸ Maurice Merleau-Ponty, *Phenomenology of Perception*, trans. by Colin Smith (London: Routledge, 2002).

⁹ See notes 27 and 28 below.

modality in its own right [...] that gives us an immediate sense of our own movement dynamics' (*Primacy of Movement*, p. 512). This tends somewhat to divorce kinaesthesia and touch. Following the custom of many other writers, I shall not do this; historically, knowledge of kinaesthesia developed with analysis of touch.

Theories of the senses that imply there might be a finite number of separate senses are complicated by the fact that the senses are integrated with each other. This integration is especially evident with the various modalities of the touch sense.¹⁰ Integration has long been noted if not always incorporated into discussion. If for certain purposes we do differentiate the senses, this is a convention and does not necessarily describe psychophysiological facts. For example, any form of contact involves a sense of movement or sense of lack of movement. 'Simple' physical contact involves feelings of pressure, of temperature, of roughness and smoothness, of resistance, and form. Bodily awareness is even more complex and may involve a sense of movement, balance, spatial relations of parts of the body, effort, the state of internal organs, contact of one part of the body with another part, fatigue, pleasure, pain, and so on.

Something of the integrated complexity of the sensory world is reflected in contemporary references to 'haptic' sense. The word has multiple uses. Some commentators use the word as equivalent to touch, or, as the dictionary says, to highlight sensory experience 'having a greater dependence on sensations of touch than of sight'; others use 'haptic' to signal that sight is not independent of knowledge from touch; others, to indicate exploratory or manipulative as opposed to passive contact touch; and yet others employ it to emphasize all the senses which contribute to the feeling of embodiment.¹¹ The word was not used by my Victorian au-

¹⁰ The existence of these modalities calls into question the conventional list of five senses. See John O'Dea, 'A Proprioceptive Account of the Sense Modalities', in *The Senses: Classical and Contemporary Philosophical Perspectives*, ed. by Fiona Macpherson (Oxford: Oxford University Press, 2011), pp. 297–310.

¹¹ 'Haptic', *OED*, 2nd edn (Oxford: Clarendon Press, 1991). This usage is established among psychophysicists: Robert L. Klatzky and Susan J. Lederman, 'Perception, haptic', in *Encyclopedia of Cognitive Science*, ed. by Lynn Nadel, 4 vols (London: Nature Publishing, 2003), III, 508–12. Crary, following Deleuze, traced the distinction between optic and haptic sensation to the art critic Alois Riegl, writing in the 1890s (*Techniques of the Observer*, p. 82); Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. by Brian Massumi (London: Continuum, 2004), pp. 543–44. The language of the haptic permeates the cultural history of the senses, but this literature is not well informed about the history of psychology. For example, David P. Parisi wrongly states that

thors and I will not use it: for my purposes, it does no work which is not better done by more precise description.

The senses are not only integrated with each other but integrated with activity — with the sensation of movement at the centre. This has great importance, inadequately appreciated, for the cultural history of the senses.¹² Writers on the history of the senses frequently say that in the modern period (variously understood as the centuries from the Renaissance or the seventeenth century to the present, or only the last two centuries) the visual sense rises to a position of dominance and that this is even at the expense of the other senses. The French Marxist critic Guy Debord, when discussing the modern display of spectacle, wrote: ‘The spectacle is heir to all the weakness of the project of Western philosophy, which was an attempt to understand activity by means of the categories of vision.’¹³ Indeed, he accused modern visual life of turning the truth of the sense of touch on its head, that is, of negating life. Constance Classen, in her history of the touch sense, referred to a large social change beginning in the late Middle Ages: ‘It was at this time that practices of visual contemplation increased in importance, preparing the way for the more eye-minded culture of modernity’ (p. 148). Such very large claims have entered the literature on modern spectacle, especially film, as well as Jonathan Crary’s argument about the shift, in the early nineteenth century, to an emphasis on the bodily and material production of sensation.¹⁴ It seems to me, nevertheless, that the new literature on touch questions the large generalization. There are significant ways in which modern western culture treats — and has treated — the tactile sense, broadly understood as a sense of activity, as the source of deep experience and knowledge. In general terms, knowledge of ourselves as active subjects in the world as well as our notion of reality is understood to depend on touch. And *activi-*

‘prior to [E. H.] Weber’s experiments [published 1834], touch was largely unrepresented in scientific literature on perception’: ‘Tactile Modernity: On the Rationalization of Touch in the Nineteenth Century’, in *Media, Technology, and Literature in the Nineteenth Century: Image, Sound, Touch*, ed. by Colette Colligan and Margaret Linley (Farnham: Ashgate, 2011), pp. 189–213 (p. 195).

¹² See, especially, David Howes, *Sensual Relations: Engaging the Senses in Culture and Social Theory* (Ann Arbor: University of Michigan Press, 2003), ch. 1.

¹³ Guy Debord, *The Concept of the Spectacle*, trans. by Donald Nicholson (New York: Zone Books, 1994), p. 17. See also, *Modernity and the Hegemony of Vision*, ed. by David Michael Levin (Berkeley: University of California Press, 1993).

¹⁴ It is also worth noting that science textbook discussions of the five senses privilege vision and ignore kinaesthesia (Sheets-Johnstone, *Primacy of Movement*, p. 52).

ties, such as dance, gymnastics, eurhythmics (including ‘music and movement’ in English schools), and mountaineering all demonstrate, in particular terms, the modern importance of the tactile (and movement) senses.

By 1900, there had been at least two centuries of detailed discussion of touch and the other senses in relation to knowledge in philosophy, natural philosophy (or science), and medicine. During the nineteenth century, this discussion expanded into a considerable body of research on the psychophysiology of the senses, including the sense of movement as a specific topic. Much of this work supported the understanding of the kind Miss Finch voiced: touch and movement put people in touch with reality. Furthermore, writers then understood the touch senses to mediate subjective experience of causal action, of the person as effortful agent, and they turned to this experience for insight into understanding causality in the world in general. This informed many references to ‘force’ in descriptions of activity, human and physical alike. Developing the sensibility and language of movement, writers created knowledge of people as active participants in a world of real causal relations or forces.

The scientific and philosophical background

The new science of the seventeenth century elaborated knowledge of the physical world in terms of extended and impenetrable matter with inertia and motion. Writers on perception drew a distinction between knowledge of the primary qualities of matter (extension, impenetrability, motion), the qualities which matter itself had, and of secondary qualities (colour, temperature, etc.) which depended on the perceiving soul’s (or mind’s) activity and were not qualities of matter itself. Locke’s *Essay Concerning Human Understanding* (1690) systematized this as a theory of the senses as the source of knowledge. Locke and his contemporaries took for granted the ancient Greek list of five senses: vision, hearing, touch, smell, and taste. They asked what we would call psychological and physiological questions about how the senses worked, though they did not separate such questions from (philosophical) inquiry into reasons for saying something was known. It became apparent that sensory events were not simple but had a character dependent, in complex ways, on the structure of the sense organs and on previous sensory experience. In the immediate wake of Locke’s arguments, George Berkeley (Bishop Berkeley), in his very influential study *A Theory of Vision* (1709), examined a number of operations of the visual sense and focused attention on the role of touch in

sight. He argued that there was no direct visual perception of depth or distance, but that objects in sight called up the memory of ‘distance, tangible figure, and solidity’ learned from touch.¹⁵ Later Enlightenment authors, including Denis Diderot and David Hartley, elaborated the argument that it was touch, not vision, which was the original source of key elements in knowledge of the existence and qualities of the extended physical world. As Émile Meyerson commented, from Berkeley to Bain, ‘touch seems to some to be the supreme judge of reality.’¹⁶

The last years of the eighteenth century saw the analysis of touch taken much further. The *idéologue* Destutt de Tracy argued influentially that it was not contact per se which taught people about material reality but the movement of their bodies as they came up against material resistance, of their bodies encountering other bodies (which might also be the person’s own body, as when the hands touched each other). He stimulated discussion of what he and others claimed to be fundamental to awareness, the way knowledge of self as a body and knowledge of what was other, not self, emerged together in tactile perception. When people touched, Tracy argued, they felt movement as it came against resistance and therefore felt themselves as body. When people touched their own bodies, they experienced self as active and passive, agent and object, at one and the same time. Social and political associates of Tracy, Pierre-Jean-Georges Cabanis and Xavier Bichat, brought the arguments into medicine and physiology. In their work, touch encompassed bodily awareness; indeed, they discussed touch not just as one of the five senses but as the expression of the responsiveness thought inherent in living tissue in general. Early nineteenth-century French writing therefore theorized touch as an activity intrinsic to life rather than as a sense which an organism might or might not possess: to have touch was to have natural animal life. Such arguments in physiology and general biology persisted into the twentieth century. Around 1900, a number of scientists developed the discussion of movement and responsiveness to movement in the light

¹⁵ ‘An Essay towards a New Theory of Vision’, in *The Works of George Berkeley, Bishop of Cloyne*, ed. by A. A. Luce and T. E. Jessop, 9 vols (London: Nelson, 1948–57), 1: *Philosophical Commentaries* (1948), § xlv. In this historical section, I draw on a more extensively referenced resource: Roger Smith, ‘“The Sixth Sense”: Towards a History of Muscular Sensation’, *Gesnerus*, 68 (2011), 218–71. For modern understanding in relation to ancient thought, see Daniel Heller-Roazen, *The Inner Touch: Archaeology of a Sensation* (New York: Zone Books, 2007).

¹⁶ Émile Meyerson, *Identity & Reality*, trans. by Kate Loewenberg (London: Allen & Unwin, 1930), p. 303.

of new biophysics concerned with the metabolism and energy relations of organisms. For example, Max Verworn, who researched irritability as the fundamental property of protoplasm basic to living systems, even turned to what he held was primitive art for suggestions about the properties of protoplasm, as he believed that primitive expression reflected primitive nature.¹⁷ When Collins's heroine claimed that touch was a profound sense, she was saying something that had parallels in the contemporary scientific conceptualization of life.

Around 1800, the English physician Erasmus Darwin, and later the philosopher Thomas Brown, also enlarged accounts of touch to include muscular sensation. Brown referred to touch as 'probably the very feeling with which sentient life commences'.¹⁸ Medical studies also contributed information about the place of the sense of temperature and of balance in touch.¹⁹ In the work of the German researcher Johann Georg Steinbuch, *Beytrag zur Physiologie der Sinne* [Contribution on the Physiology of the Senses] (1811), there was an experimental approach to touch and vision. As a result of all this, by the 1820s a number of writers were referring to 'the muscular sense'. Brown and subsequently James Mill discussed the muscular sense, involving the double sensation of movement and resistance to movement, as the most fundamental source of knowledge. They distinguished the feeling of movement and the feeling of resistance, supposed that touch contact called up both feelings by 'suggestion' and

¹⁷ Robert Michael Brain, 'The Pulse of Modernism: Experimental Physiology and Aesthetic Avant-Gardes circa 1900', *Studies in History and Philosophy of Science*, 39 (2008), 393–417 (p. 411). Also, Max Verworn, *Irritability: A Physiological Analysis of the General Effect of Stimuli in Living Substance* (New Haven: Yale University Press, 1913), ch. 1; and the entry for Verworn in *Dictionary of Scientific Biography*, ed. by C. C. Gillispie, 16 vols (New York: Charles Scribner's Sons, 1970–80), XIV (1976), 2–3. Anson Rabinbach discusses the scientific and social context of energy theories but not sensory psychophysiology in *The Human Motor: Energy, Fatigue, and the Origins of Modernity* (Berkeley: University of California Press, 1992). For the cultural connections of sensory psychophysiology, see Jonathan Crary, *Suspensions of Perception: Attention, Spectacle, and Modern Culture* (Cambridge, MA: MIT Press, 2001).

¹⁸ Thomas Brown, *Lectures on the Philosophy of the Human Mind*, 2nd edn, 4 vols (Edinburgh: Tait, 1824), I, 448; on the muscular sense, see James Mill, *Analysis of the Phenomena of the Human Mind*, 2 vols (London: Baldwin and Cradock, 1829), I, 31–35.

¹⁹ Nicholas J. Wade, 'The Search for a Sixth Sense: The Cases for Vestibular, Muscle, and Temperature Senses', *Journal of the History of Neurosciences*, 12 (2003), 175–202.

argued that this was the source of differentiation of self and other. The double, active-passive, sense was, in their analyses, the process in which human awareness became knowledge of reality. Brown was so impressed by the distinctiveness of resistance that he ascribed it, ‘not to our organ of touch, but to our muscular frame [...] as forming a distinct organ of sense.’ (*Lectures*, I, 460). Similarly, the London anatomist Charles Bell (in 1830) referred to the muscular sense as ‘the sixth sense’, a sense he thought so important and distinct that he separated it from touch.²⁰ Bell, who studied the distribution and function of nerves, contributed to empirical research on where and how, through which structures, the muscular sense, along with control of movement, actually worked. Interestingly, Bell was an accomplished artist as well as anatomist, and his work on ‘the sixth sense’ related to his interest in expression, particularly in the nerves and muscles controlling the face and the hand, two surfaces of the body held to reveal distinctively human capacities.²¹ This points towards a further dimension of the relevant history, with which I cannot deal here: the place of touch and sensations of movement in communication and self-formation, involving habit, ritual, gesture, and language.

Studies of the sense of movement became part of the experimental science of physiology, which began to expand as a specialist field in the 1830s and 1840s and had impact on human self-understanding on a wide front. The large number of medically trained researchers, and the sheer difficulty of experimenting on the fabulously delicate and complex body, ensured that clinical evidence and the case study, knowledge of the so-called natural experiments illness performed on people, continued, alongside experimental research, to be a major source of psychophysiological evidence. The study of the senses and the nervous system, in turn, played a large part in the establishment of scientific psychology.²² The

²⁰ Charles Bell, *The Nervous System of the Human Body* (London: Rees, Orme, Brown, and Green, 1830), Appendix; Charles Bell, *The Hand, Its Mechanism and Vital Endowments, as Evincing Design*, 2nd edn (London: Pickering, 1833), p. 195.

²¹ See Pamela Gilbert’s contribution to this issue of *19*, based upon her paper given at the conference on ‘The Victorian Tactile Imagination’.

²² For psychology in the Victorian period, see *Psychology in Britain: Historical Essays and Personal Reflections*, ed. by G. C. Bunn, A. D. Lovie, and G. D. Richards (Leicester: British Psychological Society, in association with the Science Museum, 2001); ‘Psychology/Aesthetics in the Nineteenth Century’, ed. by Carolyn Burdett, *19: Interdisciplinary Studies in the Long Nineteenth Century*, 12 (2011) <<http://www.19.bbk.ac.uk/index.php/19/issue/view/80>> [accessed 5 September 2014]; Kurt Danziger, ‘Mid-Nineteenth-Century British Psycho-Physiology: A

different forms of sensation appeared to be phenomena open to investigation with the experimental and physical methods developed in physiology and the physical sciences, thus clearing a way to a natural science of mind. From the middle of the century, there was a large and increasingly specialist interest in the individual senses, including touch and the muscular sense, and in the way subjective sensation (mind) related to objective sensory stimulus (body and world). Hermann von Helmholtz, to mention the work of an extremely eminent scientist, studied the role of muscles and sensory information in eye movement and hence the role of movement in visual perception of distance. This research made clear that much sensation of movement was unconscious, since people were not normally aware of moving the eyeballs in visual activity. The muscular sense, indeed, increasingly appeared to be not so much a sense, comparable with the traditional five senses, as part of the integrated system of control in living beings.

Systematic Victorian thought about touch owed a particular debt to the writings of the psychologists Alexander Bain and Herbert Spencer, who both gave unsurpassed prominence to the muscular sense.²³ Bain,

Neglected Chapter in the History of Psychology', in *The Problematic Science: Psychology in Nineteenth-Century Thought*, ed. by William R. Woodward and Mitchell G. Ash (New York: Praeger, 1982), pp. 119–46; Peter Garratt, *Victorian Empiricism: Self, Knowledge, and Reality in Ruskin, Bain, Lewes, Spencer, and George Eliot* (Madison: Fairleigh Dickinson University Press, 2010); Nikolas Rose, *The Psychological Complex: Social Regulation and the Psychology of the Individual* (London: Routledge & Kegan Paul, 1985); Rick Rylance, *Victorian Psychology and British Culture 1850–1880* (Oxford: Oxford University Press, 2000); Sally Shuttleworth, *Charlotte Brontë and Victorian Psychology* (Cambridge: Cambridge University Press, 1996); Sally Shuttleworth, *The Mind of the Child: Child Development in Literature, Science, and Medicine, 1840–1900* (Oxford: Oxford University Press, 2010); Roger Smith, 'The Physiology of the Will: Mind, Body, and Psychology in the Periodical Literature, 1855–1875', in *Science Serialized: Representations of the Sciences in Nineteenth-Century Periodicals*, ed. by Geoffrey Cantor and Sally Shuttleworth (Cambridge, MA: MIT Press, 2004), pp. 81–110; Roger Smith, *Free Will and the Human Sciences in Britain, 1870–1910* (London: Pickering & Chatto, 2013); *Embodied Selves: An Anthology of Psychological Texts 1830–1890*, ed. by Jenny Bourne Taylor and Sally Shuttleworth (Oxford: Clarendon Press, 1998); R. M. Young, *Mind, Body, and Adaptation: Cerebral Localization and Its Biological Context from Gall to Ferrier* (Oxford: Clarendon Press, 1970). This work is placed in a larger overview in Roger Smith, *Between Mind and Nature: A History of Psychology* (London: Reaktion, 2013).

²³ Bain's name repeatedly surfaced at the conference on 'The Victorian Tactile Imagination'. Marie Banfield's paper, 'Mid-Victorian Psychology and the Aesthet-

who emphasized mental activity, and Spencer, who elaborated a theory of evolution, addressed weaknesses which idealist philosophers and Christian critics had long found in the empiricist approach to knowledge. Their work, they argued, overcame these weaknesses, and belief that it had indeed done so contributed to the authority which scientific, naturalistic world views acquired in the second half of the nineteenth century. In *The Senses and the Intellect* (1855), Bain brought empiricist analysis of mind into relation with the new physiology of the nervous system. He argued that all sensation — and hence all knowledge — began with the spontaneous activity of the organism (or person). Therefore, sensation was a result of activity, not a passive receptivity.²⁴ All sensation, Bain argued, was secondary to the primary feeling of activity or movement, a feeling which inevitably became paired with resistance to movement. The first sensation of the child came from movement in the womb. Bain argued that elementary sensation was composed of the modalities of effort and resistance, and that from this originated notions of self and other and of space and time. Bain thus reinforced the earlier argument that muscular sensation and touch were the senses through which people acquired knowledge of reality.

Spencer, in *The Principles of Psychology* (1855), brought a similar psychological-philosophical theory of knowledge within an evolutionary world view. According to Spencer, the muscular sense gave the mind its most elementary, its evolutionarily most primitive, form of awareness, awareness of activity in the organism that had come up against activity in the physical world: ‘The perception of resistance is fundamental [...] as being the perception into which all other perceptions are interpretable, while itself interpretable into none.’²⁵ This awareness he called perception of force. Force, for Spencer, was the building brick of the universe, the most elementary notion which it was possible to have of the stuff out of which everything in evolution, from the stars to human social organization, had come about. This elementary notion — and this is the point

ics of Touch: Alexander Bain and the Experimentalism of George Meredith’, showed that there was at least one instance when Bain directly influenced a literary writer.

²⁴ Alexander Bain, *The Senses and the Intellect* (London: Parker, 1855). There was a 4th edition in 1894. Bain also wrote extensive notes, repeating his arguments, for John Stuart Mill’s edition of James Mill, *Analysis of the Phenomena of the Human Mind*, 2nd edn, 2 vols (London: Longmans, Green, Reader and Dyer, 1869).

²⁵ Herbert Spencer, *The Principles of Psychology* (London: Longman, Brown, Green & Longmans, 1855), p. 272.

which I stress — originated, according to Spencer, with each person's irreducible awareness of force mediated by the sensory apparatus of body, skin, and muscles. For Spencer, 'the consciousness of muscular tension forms the raw material of primitive thought.'²⁶ Human touch, which generated awareness of perceiving subject and perceived object, was an evolutionary elaboration of the irritability of living tissue, and that irritability in turn was an evolutionary complexification of the interaction of natural forces. Bain and Spencer, then, gave systematic expression to thought which claimed that touch, broadly understood, literally put human awareness 'in touch with' reality: awareness was *an expression of dynamic reality*.

The word 'kinæsthesia' first appeared in debate about the details of Bain's psychophysiological theory of the muscular sense. A London neurologist (that is, a medical specialist on diseases of the nervous system, though the professional speciality was not at this time clearly separate), H. Charlton Bastian, assembled clinical evidence to oppose Bain's view that there was a sensory awareness accompanying the motor or outward impulse from the brain to muscles in voluntary action. Bastian's position, supported by other writers such as the psychologist William James, was that there was no such awareness; rather, he claimed, the muscular sense was just that, a *sense* dependent on sensory endings in muscle and perhaps also tendons, joints, and skin. Bastian termed this sense, which he argued was peripheral not central in its origin, 'kinæsthesia'. He introduced the term, which combined Greek roots for words of movement and for things perceived by the senses, in a book for the general public, and the word caught on.²⁷ By 1900, the understanding of kinaesthesia which Bastian proposed had become generally, though not universally, accepted. Many

²⁶ Herbert Spencer, *The Principles of Psychology*, 2nd edn, 2 vols (London: Williams and Norgate, 1870–72), II (1872), 242. This second edition was much revised and attracted greater attention.

²⁷ H. Charlton Bastian, *The Brain as an Organ of Mind* (London: Kegan Paul, 1880), p. 543. Maine de Biran had earlier used the word '*coenesthèse*' to describe immediate awareness of the body in perception, but this was not what Bastian referred to with 'kinæsthesia'. Besides, Biran's usage was not well known in the English-language world, beyond a reference by the philosopher William Hamilton, 'Supplementary Dissertations; or, Discursive Notes, Critical and Historical', in *The Works of Thomas Reid, D. D.*, ed. by William Hamilton, 6th edn, 2 vols (Edinburgh: Maclachlan and Stewart, 1863), p. 866. See Crary, *Techniques of the Observer*, p. 72; also, Jean Starobinski, 'Le concept de cénesthésie et les idées neuropsychologiques de Moritz Schiff', *Gesnerus*, 34 (1977), 2–20.

of the details of how the sense actually worked, and indeed where precisely in the body it was located, remained obscure. But the idea of kinaesthesia as a sense comparable with and integrated with the other senses was firmly established. Then, in 1906, the physiologist C. S. Sherrington related the muscular sense to what he called ‘the proprioceptive field’, the field of sensory information generated by bodily activity and not by the external world (as in the traditional five senses), using Latin roots to make a word for feeling when ‘the stimuli to the receptors are given by the organism itself’.²⁸ Both terms, ‘kinaesthesia’ and ‘proprioception’, became embedded in the scientific literature.

As this summary history has stated, there had long been writing about the interaction, and even integration, of the senses. This was especially the case in connection with the modalities of touch, including the modalities of awareness of movement. As W. J. Dodds, a neurologist in the 1880s, observed:

In your visual reflexes there is a regular jumble of sight, touch, hearing, the kinæsthetic sense, in fact of all the senses, with a few of the appetites, several distinct instincts, and the whole group of the higher faculties of reason, memory, judgment, &c. — such a jumble, in fact, that it is quite impossible to say where sight begins and where it ends.²⁹

This writer’s subject was disorders of sight, but his appreciation of the difficulty of knowing quite what was sensed by one sense alone and separate from the workings of reason and feeling applied a fortiori to touch. His notion of a ‘jumble’ of the senses questioned the tradition which distinguished five separate senses and argued for the dominance of one sense (sight or touch). Seen in retrospect, his notion pointed towards a more modern idea of an integrated sensory-motor complex.

Common belief about the special intimacy of touch and reality and the latest psychological writings reinforced each other in the middle Victorian years. With the passing of the decades, however, Bain’s and Spencer’s work, though it continued to be cited, no longer represented the cutting edge. The topic of muscular sensation and the sources of knowledge broke up into increasingly separate physiological, psychologi-

²⁸ C. S. Sherrington, *The Integrative Action of the Nervous System*, 2nd edn (New Haven: Yale University Press, 1961), p. 132.

²⁹ W. J. Dodds, ‘On Some Central Affections of Vision’, *Brain*, 8 (1885), 21–39, 345–69 (p. 25). I was referred to this article by Crary, *Suspensions of Perception*, p. 337.

cal, and philosophical specialities. Later specialist research was rarely directly a resource and authority for artistic and everyday expression of psychological reality. All the same, the precedent was there for an analysis of mind which linked touch and reality in the formation of the subjectively experienced, phenomenal world, an analysis predisposed to take the encounter of active movement with resistance as central to the discovery of realities of self and physical other.

Touch and 'force'

Victorian psychological-philosophical accounts of the muscular sense and contact touch emphasized awareness of active movement against resistance. Writers from Brown to Spencer described awareness of movement–resistance in phenomenalist language: there was an introspectively known and irreducible individual consciousness of force as a reality. What was known, these writers claimed, was not passive matter but activity of movement in a resisting world. This helps to explain the ubiquity of the language of force in Victorian writing on physical nature and on 'man's place in nature' (to use T. H. Huxley's famous phrase). The word 'force', to be sure, was ill-defined. But the very imprecision of the word was its value. The word helped hold together, or at least helped keep on speaking terms, Christian or idealist views of the teleological pattern of natural and human events and naturalistic accounts which denied such purpose (but still found order in nature).³⁰

The language of force conjured the imagination about unity behind the world. Thomas Carlyle wrote:

This universe, ah me! — what could the wild man know of it; what can we yet know? That it is a Force, and thousandfold Complexity of Forces; a Force which is *not we*. That is all; it is not we, it is altogether different from *us*. Force, Force, everywhere Force; we ourselves a mysterious Force in the centre of that.³¹

This was romantic-mystical; yet the relentlessly dry utilitarian James Mill used the same language. Explaining how people learned to differentiate

³⁰ For the shared language of Victorian scientists and humanists, see Gillian Beer, *Open Fields: Science in Cultural Encounter* (Oxford: Clarendon Press, 1996).

³¹ Thomas Carlyle, *Sartor Resartus and Lectures on Heroes* (London: Chapman and Hall, 1858), pp. 190–91.

self and other, Mill described subjectively experienced opposition between movement and resistance in terms of awareness of forces:

Resistance means a force opposed to a force; the force of the object, opposed to the force which applies to it. The force which we apply is the action of our muscles, which is only known to us by the feelings which accompany it. (*Analysis*, I, 43)

Representations of touch, including the muscular sense, were the source of metaphors for belief about nature as a system of forces. Reality, for the Victorians discussed here, was known by subjective experience of movement–resistance, that is, in Victorian language, by knowledge of force.

During the mid-nineteenth century, there were a host of studies of the interrelatedness and interconvertibility of physical forces, and they created a vivid picture of the unity of nature.³² Then, around 1850, Helmholtz, William Thomson (later Lord Kelvin), and other scientists formulated the laws of thermodynamics, which included the principle of the conservation of energy, a principle understood in public language in terms of the interchangeability and conservation of forces. A number of authors, however imprecisely, drew mental and spiritual forces into the synthesis. Bain and Spencer suggested that the concept of force, in terms of which the physicists were analysing the dynamics of the universe, originated as the primitive constituent of mental awareness. A picture of mind and nature as an integrated system of forces appeared plausible. The physicists, however, elaborated a quantitative science of energy, and those of them who supported a positivist theory of knowledge argued that reference to ‘force’ denoted a mathematical function not something real.³³ This distanced the physics of the experts from popular accounts of nature,

³² W. R. Grove’s 1843 series of lectures to the Royal Institution in London, much reprinted, was a widely read introduction: *On the Correlation of Physical Forces* (London: for the Managers of the Royal Institution, 1846). See also Geoffrey Cantor, ‘W. R. Grove, the Correlation of Forces, and the Conservation of Energy’, *Centaurus*, 19 (1976), 273–90; V. M. D. Hall, ‘The Contribution of the Physiologist William Benjamin Carpenter (1813–1885) to the Development of the Principle of the Correlation of Forces and the Conservation of Energy’, *Medical History*, 23 (1979), 129–55.

³³ Particularly Karl Pearson, *The Grammar of Science*, 2nd edn (London: Black, 1900). For the physicist’s language of energy, see Crosbie Smith, *The Science of Energy: A Cultural History of Energy Physics in Victorian Britain* (London: Athlone Press, 1998).

and of mind in nature, as a system of forces. Nevertheless, some physical scientists continued to promote research which looked for forces with a mental or spiritual nature. William Crookes, for example, sought scientific authority for belief in unknown forces which might account for spiritualist phenomena; and the physical chemist Wilhelm Ostwald, who elaborated what he called energetics, filled the world with energy relations rather than matter.³⁴ At the end of the century, as sixty or seventy years earlier, there were world views, the views of theosophists, for example, which identified the stuff of nature as activity, force, or energy, and which drew on the subjective awareness which touch was thought to provide for experiential knowledge in support of the ontological commitment.

Bain and Spencer relied heavily on the language of force: they used the word to describe the sensory modality they supposed basic to experience. Bain, for his part, stated baldly: 'Force. — This is without doubt the most fundamental notion of the human mind.'³⁵ Spencer used the language of force throughout his account of 'first principles', the philosophical basis for his evolutionary argument.³⁶ He treated the force sense, our awareness of activity–resistance, as the phenomenal representation of the ultimately unknowable force of the evolving cosmos. Human consciousness of resistance to movement, and all the knowledge of the world which follows from this, in Spencer's account, was the latest and highest stage of the general evolutionary process of readjustment of relations between forces.

This phenomenalist language of forces entered into Victorian debate about causality. At issue was whether there were real, substantial causes in the world or whether descriptions of causation were simply descriptions of regular sequences. Those who took up the former position in defence of a Christian world view, like the physiologist and registrar of London University, W. B. Carpenter, brought subjective experience of force into a theory of knowledge about causation and described causes as real forces. Thus, when empiricists in the theory of knowledge like Bain and Spencer wrote about force, they used a language shared by writers whose concern was with the spiritual underpinnings of nature. Indeed, for this reason J. S. Mill was unenthusiastic about Bain's contribution to discussion of causation, since what Bain said about the sensory character

³⁴ See respective entries in *Dictionary of Scientific Biography*, II, 474–82, and XV, 455–69.

³⁵ Alexander Bain, *Logic*, 2 vols (London: Longmans, Green, Reader, & Dyer, 1870), II, 222.

³⁶ Herbert Spencer, *First Principles* (London: Williams and Norgate, 1862).

of experienced force appeared to lead him to treat forces as real causal agents.³⁷ Mill's analysis, like Hume's, was that knowledge of causal relations was simply knowledge of regular temporal sequences: there were no causal agents. Bain's and Spencer's language about awareness of force in resistance to the external world, however, moved on from the description of the sequence of action and resistance to the description of an actual dynamic link. In this way their language moved closer to everyday language about causality; but for Mill this was a concession to idealist opponents.

Writers in the tradition of English natural theology claimed first that subjective awareness of force was an expression of personal action coming against resistance, and then they claimed that this provided a model of the agency of forces in nature. As the historian and philosopher of science William Whewell stated, 'without body muscular force cannot be exerted, and force in general is not conceivable.'³⁸ People knew themselves as agents, the argument went, through the feeling of effort overcoming resistance in movement. And when people saw change in nature, they likewise perceived that agency had effects. 'We derive the conception of Force from the muscular effort which we are conscious of making.'³⁹ Claims about the subjective awareness each person was supposed to have merged belief in the personal will as agency with experience, through touch, of the will in interaction with world-agency, of personal force in interaction with natural force. In this context, the metaphor of being in touch implied that each person had the capacity to share, albeit in small measure, in the creative agency of spiritual forces in the world. Subjective awareness of individual will, mediated by the touch sense, suggested a model of understanding the forces of nature as ultimately the expression of the Will of God. The Oxford philosopher H. L. Mansel stated in his inaugural lecture to the university:

My notion of Causality, of power, as distinct from mere succession, is derived from my immediate consciousness of my

³⁷ J. S. Mill, *A System of Logic Ratiocinative and Inductive*, 8th edn (London: Longmans, Green, 1900), Preface, and Book III, ch. 5, §§ 2, 10.

³⁸ William Whewell, *The Philosophy of the Inductive Sciences Founded upon Their History*, 2 vols (London: Parker, 1840), I, 179. For Whewell, see Richard Yeo, *Defining Science: William Whewell, Natural Knowledge, and Public Debate in Early Victorian Britain* (Cambridge: Cambridge University Press, 1993).

³⁹ William Whewell, *Lectures on Systematic Morality Delivered in Lent Term 1846* (London: Parker, 1846), p. 53.

own activity in volition. From this I proceed by a natural law of association to assume the presence of a similar power whenever I observe a change.⁴⁰

By implication, knowledge of power at work in the world was knowledge of will power, the Will of God.

Belief that there were real causal links between things, and that this expressed a purpose in existence, was a mainstay of idealist thought. One point of opposition between Mill and Whewell in the 1840s focused on this. Mill continued the argument in the 1860s, writing against William Hamilton; while two champions of Whewell's position, Carpenter and James Martineau, came forward to oppose the scientific naturalism which the likes of Huxley, William Kingdon Clifford, and John Tyndall were then promoting on the back of evolutionary world views, physiology, and the principle of the conservation of energy. Carpenter and Martineau (a theologian and Professor of Mental and Moral Philosophy at New College, Manchester) were both Unitarians who turned to belief in real causal agents, which Carpenter called forces, in order to defend a rational Christian account of purpose in nature. They aired their position in debates at the elite dining club called the Metaphysical Society, and there they described personal agency coming up against resistance in touch as the model of causal relations in nature at large.⁴¹ They perpetuated language from the eighteenth century which distinguished knowledge of efficient causes, knowledge of causality as a process inherent in things, from knowledge of physical causes, that is, knowledge merely of the regular sequence of events.⁴²

Martineau was, in addition, a rather bitter critic of Bain's psychology. Speaking in a tone reminiscent of Carlyle, he indicted this psychology for failing to do justice to the active feel of mental life. Bain's analysis of ideas, Martineau wrote, was 'a cruel operation — a cold-blooded dissect-

⁴⁰ Henry Longueville Mansel, *Psychology the Test of Moral and Metaphysical Philosophy* (Oxford: Graham, 1855), p. 31.

⁴¹ Alan W. Brown, *The Metaphysical Society: Victorian Minds in Crisis 1869–1880* (New York: Columbia University Press, 1947). In addition, Carpenter, as President of the British Association for the Advancement of Science in 1872, delivered a rebuke to the naturalists, 'Man the Interpreter of Nature', in *Nature and Man: Essays Scientific and Philosophical* (London: Kegan Paul, Trench, 1888), pp. 185–210. He took his title from Whewell's *Philosophy of the Inductive Sciences*, 2nd edn, 2 vols (London, Parker, 1847), I, 37.

⁴² For further discussion, see Smith, *Free Will and the Human Sciences*, ch. 5.

ing of them to death'.⁴³ Bain thought that with his theory of activity he had dealt with this kind of objection to empiricist psychology. Martineau, however, wanted to take much further Bain's claims about the phenomenal reality of the sense of movement against resistance. For Martineau, subjective awareness showed the universe to be a system of living forces, and the person's individual will to be a spiritual and moral power within the overall system of God's will. He encouraged empirical argument that the world was filled with purposeful power: will forces were real. As Martineau wrote: 'The universe [...] appears to men in simple times, to young eyes still, to poets in all times, as Living Objective Will. But it is supposed that, with the aids of Science, we learn something better.'⁴⁴ Christian writers like Martineau and Carpenter supposed that through effort, muscular movement, and contact each individual had an awareness of the dynamic nature of agency. Such argument validated a living or vivacious subjectivity which encompassed knowledge of real causes and even a glimpse of the mode of operation of the Deity.

Such writers claimed phenomenal knowledge of the spiritual dynamic of the world. They believed in the possibility of being in touch with this dynamic. A phenomenology of force bridged the subjective and the objective. For Carpenter and Martineau, this was empirical rather than speculative argument: in subjective awareness, each person was aware of effort, movement, and touch. For some (certainly not Carpenter, a severe critic), the empirical evidence included the spirit world called up in seances. It was, however, a way of imagining, as we can see in retrospect, which proved vulnerable to both rational and empirical criticism. It was the kind of view of 'man's place in nature' that, when lost, Max Weber famously called 'disenchantment'.⁴⁵

Bain and Martineau both wrote in largely abstract terms about touch and the sense of movement. Missing from what they wrote was the living experience of the kind Collins so vividly summoned up in the world of Miss Finch. Bain and Martineau argued from a generalized notion of movement encountering resistance in contact, rather than from the particular sensuous encounters that gave literature so much of its colour.

⁴³ [James Martineau], 'Cerebral Psychology: Bain', *National Review*, April 1860, pp. 500–21 (p. 511).

⁴⁴ James Martineau, 'Is There any "Axiom of Causality"?', *Contemporary Review*, April 1870, pp. 636–44 (p. 644).

⁴⁵ Max Weber, 'Science as a Vocation', trans. by M. John, in *Max Weber's 'Science as a Vocation'*, ed. by Peter Lassman and Irving Velody (London: Unwin Hyman, 1989), pp. 3–31 (p. 30).

These forms of writing, however, shared a conception of reality. There were writings in literature, philosophy, natural science, and psychology alike which drew on imagery of humans in interaction with a world of forces, forces with spiritual resonance. For many, these forces were intuited in the very act of being a knowing and acting subject — with ‘being in touch’. This should, I now argue, be taken into account when we turn to consider the modernist arts — most obviously, dance. The sense of movement, and of force in movement, was taken up in the artist’s understanding of what was real.

Conclusion: touch and the arts

There was a long history of the claim that conscious awareness, inseparable from a person’s sense of being alive, originated with activity encountering resistance. Miss Finch’s belief in touch as the most profound sense was commonplace in the nineteenth century. Moreover, this understanding of touch summoned up a spiritualized understanding of human activity, an understanding embedded in the language of science, in the language of force, as well as in the language of opposition to scientific naturalism.

There were intellectuals, however, who questioned the correctness of claims about touch and kinaesthesia as the primary source of knowledge of reality. As a matter of logic in the theory of knowledge, it was (and is) not clear why kinaesthesia and touch should have opened the road to knowledge of what was real any more, or any less, than the other senses. This was William James’s view: ‘I hold that every peripheral sensation gives us an outer world.’⁴⁶ And the philosopher F. H. Bradley described the idea that sensation of resistance uniquely accessed reality as ‘mere thoughtlessness’.⁴⁷ Such critics, who separated philosophical questions about what was real from psychological questions about the sources of experience of reality (questions which the Mills, Bain, and Spencer, along with many non-experts, ran together), thought it psychologism to claim that any one sense was the base of knowledge of reality.⁴⁸ In addi-

⁴⁶ William James, *The Principles of Psychology*, 2 vols (New York: Dover, 1950), II, 518.

⁴⁷ F. H. Bradley, *Appearance and Reality: A Metaphysical Essay*, corrected 2nd edn (Oxford: Oxford University Press, 1969), p. 199.

⁴⁸ ‘Psychologism’ – explaining by psychology what requires understanding in other terms.

tion, as research on the psychophysiology of touch and muscular sensation developed, it did so with specialization and the increasing isolation of different areas of work. As a result, the sciences left behind the kind of syntheses which Bain and Spencer had produced, syntheses which drew philosophical conclusions from particular empirical claims about the body. Moreover, the language of force, which had so central a role earlier in the nineteenth century as a way to link the mind, the body, and the powers of nature, began to appear undisciplined at best and anthropomorphic at worst. The language did not die out, but it did lose critical authority. Thus, at least some philosophically informed observers criticized claims that awareness of movement opened access to knowledge of reality.

All the same, arguments for the special status of the touch senses continued to be made in the twentieth century, and they continue to be made now. Around 1900 and on into the mid-twentieth century, there were numerous attempts to establish systems of metaphysics which would make it intelligible to understand individual human action, known through the life of the body, as a real power, or agency, in nature.⁴⁹ In their very different ways, both A. N. Whitehead's process philosophy and Soviet dialectical materialism were attempts to break down the separation of knowing subject and known object on the basis of argument that knowing was itself activity in the world.⁵⁰ In non-philosophical language, the expression 'being in touch' carried the same implication. Indeed, as this article argues, the everyday comprehension of this expression informed the notion of reality in significant areas of Victorian psychophysiology.

It remains to comment on relations between the accounts of movement and touch discussed here with artistic performance. This is not the place to deal with debates signalled by the word 'modernism', except to say once again that any thesis equating modernist culture and the dominance of the visual sense must be heavily qualified. At the end of the nineteenth century, a way of thought in everyday and philosophical culture (in

⁴⁹ See Smith, *Free Will and the Human Sciences*.

⁵⁰ Alfred North Whitehead, *Nature and Life* (Cambridge: Cambridge University Press, 1934); Alfred North Whitehead, *Process and Reality: An Essay in Cosmology* (New York: Free Press, 1969). For an introduction, see Dorothy G. Emmet, *Whitehead's Philosophy of Organism*, 2nd edn (London: Macmillan, 1966). For an introduction to Soviet dialectics as it affected science, see Loren R. Graham, *Science, Philosophy, and Human Behavior in the Soviet Union* (New York: Columbia University Press, 1987), ch. 2.

spite of some critics) related the tactile sense to knowledge of what was real. New art forms gave this tactile culture a new voice.

The clearest instance was free dance. When free dance (the roots of what is now called modern or contemporary dance) originated in the years between about 1890 and 1910, it did so as a turn away from bourgeois artifice and academic rules towards expressivity in the life of the natural human body.⁵¹ This turn took one form in the African-American animal dances, with their parody of civilized movement and debt to rag-time. It took quite different form when imagined, as it was by Isadora Duncan, as a return to ancient Greece and a recreation of the harmony of mind and body. It was different again in the dances of Loïe Fuller, which involved innovative lighting effects and extending the arms with batons to which flowing materials were attached, making the body the centre of a completely new form of movement. And it differed yet again in the expressionist work of Mary Wigman. All this new dance, however, rejected the ballet as artificial movement. As Hillel Schwartz pointed out, the new dance forms freed the body to utilize gravity in movement, whereas ballet (and the corset costume) had been designed to create the illusion of overcoming gravity.⁵² A dancer in Russia, Ella Rabenek, most clearly of all, self-consciously removed the mirror from her studio: dancers, she instructed, should look inwards to the body senses not outwards to the reflected image. Duncan danced barefoot, to give direct contact with the ground (to play with the metaphor of language). The women pioneers of modern dance freed themselves of restrictive clothing and used free-flowing dress to enhance the moving character of the body.

With Duncan at least, all this was accompanied by rhetoric about the aesthetics of the spiritually real, which was known by and in the body.⁵³ She combined dance with music and thus linked movement, rhythm, and the kinaesthetic sense. In this she had been preceded by the work of François Delsarte (dating from 1840), who pioneered exercises in

⁵¹ For introductions to the history of modern dance, see Susan Leigh Foster, 'Dancing Bodies', in *Incorporations*, ed. by Jonathan Crary and Sanford Kwinter (New York: Zone Books, 1992), pp. 480–95; *What Is Dance?: Readings in Theory and Criticism*, ed. by Roger Copeland and Marshall Cohen (Oxford: Oxford University Press, 1983). For a highly stimulating discussion of Fuller, see Frank Kermode, 'Poet and Dancer before Diaghilev', in *Puzzles and Epiphanies: Essays and Reviews 1958–1961* (London: Routledge & Kegan Paul, 1962), pp. 1–28.

⁵² Hillel Schwartz, 'Torque: The New Kinaesthetic of the Twentieth Century', in *Incorporations*, ed. by Crary and Kwinter, pp. 71–126.

⁵³ Isadora Duncan, *My Life*, restored edn (New York: Liveright, 2013).

breathing and voice control (both of which involved the touch sense), and by the eurhythmics of Émile Jaques-Dalcroze, work which involved teaching musical appreciation through movement. Women had a central place in dance innovation, a reminder that dance was one of the forms of energetic movement allowed to middle- and upper-class women in the late-Victorian period. Furthermore, in the late nineteenth century, there was a spreading interest in physical education and gymnastics as the means to recreate harmony and wholeness in lives displaced, disoriented, and, as many thought, degenerated by social change and massive urbanization. These activities played a part in nationalist and imperialist ambitions and took their place in the search for the health and hygiene of a number of nations. Idealization of walking in the countryside and climbing in the mountains, along with an ethics and aesthetics which opposed urban civilization and nature, looked to bodily activity to restore balance. Drawing a contrast with interpretations of modernism which have linked the body to the machine age, Schwartz pointed to ‘a new kinaesthetic that insists upon rhythm, wholeness, fullness, fluidity and a durable connection between the bodiliness of the inner core and the outer expressions of the physical self’ (‘Torque’, p. 104).

The exercise of movement and touch, to which free dance gave a new repertoire, appealed as the way to personal participation in the real and natural world, that is, the way to expression of being human through natural powers. The appeal lay in contrast with artifice (the ballet), restriction (clothing), the ugly (a weak or degenerate body), and philistinism (the pursuit of wealth). The touch and movement senses made possible contact with the real beneath the veneer of the day-to-day. Above all, the turn to free dance made the individual a participant in the natural powers of the world rather than a mere observer or mechanical manipulator. It *enchanted*. It was a generous way of imagining, able to stress, as different performers and audiences preferred, the material, the spiritual, or the holistic constitution of the world — but always a world with the human as creative agent.

Maxine Sheets-Johnstone puts forward scientific and phenomenological arguments which suggest a deeper level in this turn to new dance and movement. Movement in itself, she argues, is meaningful (in the manner in which, as Gertrude Stein said, ‘a rose is a rose is a rose’). Movement is animation, and ‘thinking in movement is the natural expression of this elemental biological character of life’ (*Primacy of Movement*, p. 442; she cites Stein p. 426). Duncan would surely have agreed, if in the language of the spirit rather than the language of biology. Alongside phi-

losophers who sought to escape from the dualisms of subject–object, mind–body, free will–determinism, artists sought to be the expressive vehicle of aesthetically unified acts. The artists of the body (including not only dancers but gymnasts, mountaineers, high-wire performers, and others) took as given the primacy of the movement sense in living being.

We may recall Spencer. His ‘synthetic philosophy’ drew all aspects of the human world, including aesthetics, into a unified vision of interacting forces.⁵⁴ He claimed that sensory events, including those stimulated by the visual arts and dance created and left traces as part of the body, and these traces, inherited over generations, formed and reformed human nature. Spencer laid the basis for a naturalistic aesthetics, taken up in the English-speaking world by Grant Allen.⁵⁵ With the development of instrumentation to measure physiological effects, an experimental science of aesthetics seemed possible. There were explorations, for example, of synaesthesia, the production of sensation relating to one sense by the stimulation of another sense. The Russian composer Scriabin, for example, devised a circuit of electric bulbs to light in different colours in time with his music. The new research on aesthetics incorporated knowledge of kin-aesthesia, beginning perhaps with Robert Vischer’s studies in the 1870s (which built on the work of Helmholtz) of eye movements in the work of visual artists (Brain, pp. 409–11). Much later, Johannes Itten began his preliminary class at the Weimar Bauhaus with finger exercises, based on the assumption that there were natural rhythms in movement which were the key to expression of form: ‘To perceive form is to be moved, and to be moved is to give form.’⁵⁶ Spencer’s turgid prose, and his highly generalized references to force, now rather conceals the fact that, to use later language, he laid out a philosophy of life. Around 1900, philosophies of life flowered along with the innovations in movement which were thought to give them expression.⁵⁷ Havelock Ellis wrote: ‘For dancing is the loftiest, the most moving, the most beautiful of the arts because it is no mere

⁵⁴ This assessment of Spencer’s interest and importance diametrically opposes Crary’s dismissal of what he claimed was Spencer’s ‘widely-read pseudo-psychology’ (*Suspensions of Perception*, p. 171).

⁵⁵ Grant Allen, *Physiological Aesthetics* (London: King, 1877).

⁵⁶ Johannes Itten, ‘[Analyses of the Old Masters]’, extract trans. in *Art in Theory: An Anthology of Changing Ideas*, ed. by Charles Harrison and Paul Wood (Malden, MA: Blackwell, 2003), pp. 304–06 (p. 305); also cited in Brain, p. 412.

⁵⁷ Dee Reynolds, *Rhythmic Subjects: Uses of Energy in the Dances of Mary Wigman, Martha Graham and Merce Cunningham* (Alton: Dance Books, 2007), ch. 1.

translation or abstraction from life: it is life itself.’⁵⁸ Language using ‘force’ to describe active movement persisted, along with the assumption that knowledge of force came with touch.⁵⁹ Rhythmic movement and dance was important to theosophists and anthroposophists in the decades on either side of the Great War, connecting belief in cosmic forces with experience of the moving body. Through Rudolf Laban, this entered systematic training in modern dance technique.⁶⁰

This article argues that there was a background understanding of reality in terms of knowledge thought to come from the touch (and movement) sense. When the modernists turned away from traditional practices in pursuit of ‘the real’, there was a ready-made version of ‘the real’ to hand, the embodied reality of animated, moving being. Yet — just as many descriptions of the modernist arts ignore dance — cultural historians have not, by and large, appreciated the importance of the sense of movement as a modality of touch.⁶¹

It was not the case, though, that modernists in the arts in general read up on psychophysiology or were directly influenced by theories of perception, though there were connections. A much-discussed instance involves the pioneer photographers of movement, Étienne-Jules Marey (a physiologist) and Eadweard Muybridge. These researchers, to my knowledge, did not discuss kinaesthesia. Rather, their research transformed the visual description of movement. Muybridge specifically tackled the ancient question of whether there are moments when all the legs of a galloping horse are free of the ground. It is also well known that the tactile imagination entered art criticism and art history. According to E. H. Gombrich, in the 1890s the neoclassical sculptor Adolf von Hildebrand argued that we cannot dissociate memories and associations of

⁵⁸ Havelock Ellis, *The Dance of Life* (London: Constable, 1926), p. 60.

⁵⁹ For example, the philosopher of symbolism, Susanne K. Langer, interpreted dance as the play of subjectively sensed, or ‘virtual’, vital ‘powers’: *Feeling and Form: A Theory of Art Developed from Philosophy in a New Key* (London: Routledge & Kegan Paul, 1953), pp. 175–76, 188–90.

⁶⁰ Colin Counsell, ‘The Kinesics of the Infinite: Laban, Geometry and the Metaphysics of Dancing Space’, *Dance Research*, 24 (2006), 105–16. For the culture of esoteric beliefs in Britain, see Alex Owen, *The Place of Enchantment: British Occultism and the Culture of the Modern* (Chicago: University of Chicago Press, 2004).

⁶¹ Significant exceptions include Schwartz, ‘Torque’; Reynolds, *Rhythmic Subjects*; Irina Sirotkina, ‘Dance-*plyaska* in Russia of the Silver Age’, *Dance Research*, 28 (2010), 135–52; Irina Sirotkina, *Svobodnoe dvizhenie i plasticheskii tanets v Rossii* [Free Movement and Plastic Dance in Russia] (Moscow: Novoe literaturnoe obozrenie, 2012).

touch from our visual reaction to art. Indeed, if we could, he said, we would not perceive a world at all. Taken up by Bernard Berenson, this became the claim that ‘the painter can accomplish his task only by giving tactile values to retinal impressions’.⁶² Such arguments fed into a new art history and into the work of a number of painters — Seurat and Cézanne, notably — for whom brushwork and the tactile quality of paint were at least as important as any more obviously visual expression of the artist’s claim to address reality.⁶³ As the work of Vernon Lee showed, these discussions connected with a new science of experimental aesthetics.⁶⁴ Lee was familiar with the work of the German psychologist of aesthetics Theodor Lipps, but she developed her own understanding of the empathetic responsiveness of the observer of art work in the light of a motor theory of the perception of form.⁶⁵ She attributed the perception of form to the muscular sense generating ‘sympathy’, which had the nature of incipient movements based on nervous events supposed to be the source of conscious appreciation. Lee’s observation ‘that we prefer to get our notions of the exterior world, and particularly of what we call landscape, rather when we are moving about than when we are standing still’, opened up the connection of aesthetics to walking.⁶⁶ Lee’s writing was also notably rich with personal observation of muscular sensations.

There may be much more to uncover in the late-Victorian and Edwardian world to link the kinaesthetic sense, dance, and modernism, but

⁶² Quoted in E. H. Gombrich, *Art and Illusion: A Study in the Psychology of Pictorial Representation*, 6th edn (London: Phaidon, 2002), p. 14. The recognition of the importance of touch to painting was not new. The long brush held prominently by the artist in Velazquez’s magnificent ‘Las meninas’ may be seen as a symbol of this tactile capacity.

⁶³ For Seurat and Cézanne, see Crary, *Suspensions of Perception*.

⁶⁴ Vernon Lee and C. Anstruther-Thomson, *Beauty & Ugliness and Other Studies in Psychological Aesthetics* (London: John Lane, Bodley Head, 1912); Carolyn Burdett, ‘“The Subjective Inside Us Can Turn into the Objective Outside”: Vernon Lee’s Psychological Aesthetics’, in *19: Interdisciplinary Studies in the Long Nineteenth Century*, 12 (2011) <<http://www.19.bbk.ac.uk/index.php/19/article/view/610/712>> [accessed 5 September 2014]. I thank Carolyn Burdett for introducing me to the work of Vernon Lee (Violet Paget).

⁶⁵ According to motor theorists, the act of perceiving involved the motor side of the sensory-motor nervous system.

⁶⁶ Lee and Anstruther-Thomson, ‘Beauty and Ugliness’, pp. 179–80. Also, Vernon Lee, *The Beautiful: An Introduction to Psychological Aesthetics* (Cambridge: Cambridge University Press, 1913), p. 58. Lee emphasized breathing in feelings of movement, and breathing was central to new dance techniques.

this is for the future. When artists turned against the aesthetic values of the academy and sought for what they believed was deeper, real, or natural authority for their work, they found in the sphere of touch and movement a pre-existing imagination about what was deeper, real, or natural, an imagination linked to the very conception of life itself.