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Multisensory Research 38 (2025) 137–141



Book Review

Longo, Matthew L. (2025). *The Invisible Hand: Neurocognitive Mechanisms of Human Hand Function*. MIT Press, Cambridge, MA, USA, 520 pp., ISBN: 9780262551878

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The human body undoubtedly offers a number of fascinating areas to study; some authors have chosen to draw attention to any number of its unique parts (Aldersey-Williams, 2013; Bryson, 2019), while others have chosen to focus on just one part, such as the jaw (Kahn and Ehrlich, 2018), or hands instead (Lundborg, 2014). Matthew L. Longo's new book *The Invisible Hand: Neurocognitive Mechanisms of Human Hand Function* published by MIT Press definitely falls into the latter category. Focussing specifically on the hand, singular, note, rather than the hands plural: for myself, much of what has been most interesting over the years has been the intriguing confusions between the hands that can give rise to perceptual phenomena such as the so-called 'Japanese illusion' (Henri, 1898; Klein and Schilder, 1929; Van Riper, 1935; Zampini *et al.*, 2005) and the crossed-hands effect (Shore *et al.*, 2002; Yamamoto and Kitazawa, 2001). As such, I was therefore relieved to see that by the time we have got to the Preface that the scope of Longo's endeavour had been expanded to 'The Visible and Invisible Hands'.

When it comes down to it, the focus of most of the research on the sense of touch concerns itself with the fingertips rather than the back of the hand, which most of us (perhaps surprisingly) don't seem to recognize anyway (Wuillemin and Richardson, 1982). As Gallace and Spence (2014) noted in their earlier volume, *In Touch with the Future*, the vast amount of empirical research in experimental psychology, and latterly cognitive neuroscience has

focussed almost entirely on this tiny region of the skin surface. However, it is just such a narrow focus on the fingertips that presumably explains why it took researchers so long to uncover the existence of C-tactile afferents, the so-called pleasure receptors in the human skin, that respond to slow warm stroking (Ackerley *et al.*, 2014; Croy *et al.*, 2016). It turns out that these receptors are only found on hairy, not glabrous, skin; In fact, everywhere except the palms of the hands and the soles of the feet (Spence, 2022).

While researchers such as Parisi (2018) have focussed their histories of touch on the evolution of those devices that are capable of stimulating the skin/body, here the focus is very much on the functional use of the hand (e.g., to grasp, point, manipulate, and gesture). In a sense, one might consider this a shift from a focus on the passive tactile stimulation of the skin surface that has characterised many earlier volumes on the skin, or rather on the sense of touch (e.g., Gallace and Spence, 2014; Katz, 1925/1989) to the use of the body to haptically explore and interact with the environment.

Some of you, like me, may have been wondering what Longo means when he claims that the hand is ‘invisible’. However, those hoping for a detailed discussion of the invisible hands of the blind (Röder *et al.*, 2004), or any consideration of what happens when the hands are placed out of sight (e.g., behind the back, in the space we never see; Kóbor *et al.*, 2006) will likely be disappointed. In the Preface to the book, which already hints at the cross-disciplinary and thoroughly rigorous historical research that has undoubtedly gone into the preparation of this extensively referenced book, Longo refers to the fact that while the hand has been lauded by some commentators over the centuries (including Aristotle,¹ Sir Isaac Newton, Darwin, and the novelist Charles Dickens), it has been dismissed as utterly mundane by others (or at least by one apparently eminent anatomist from more than a century ago; Wood Jones, 1920).

Having spent a couple of decades researching the cognitive neuroscience of tactile perception, body representation, and peripersonal space, Longo is undoubtedly a well-qualified guide to lead the reader through an area of research that has exploded in recent years. The chapter titles very much focus on the active use of the hand, with chapters on: ‘The Visible Hand’, ‘The Sensing Hand’, ‘The Moving Hand’, as well as chapters on tool use, peripersonal space, etc. Those familiar with the literature on body representation will not necessarily find any original insights or revelations hidden away within the pages of this volume. Nevertheless, *The Invisible Hand* most definitely provides an up-to-date summary of what cognitive neuroscience research has revealed about the use of the human hand over recent decades, by a researcher

¹ Who apparently described the hand as ‘the tool of tools’.

with ‘hands-on’ experience (if you’ll excuse the pun). The focus, it should be said, is squarely on the neurophysiology, neuropsychology, evolution, and anthropology literature, more than necessarily on the cognitive psychology, psychophysics, or attention/consciousness. Taken as a whole, there is certainly more than enough discussion of matters multisensory as they relate to the active use, and awareness, of the human hand(s), invisible or otherwise, for the readers of *Multisensory Research* (and the literature discussed moves well beyond Paterson’s, 2007, 2021, volumes which cover some of the same ground). And given the clear and engaging writing style, not to mention the passion and commitment that has obviously gone into the research/writing (clearly a labour of love), there is much to enjoy in Longo’s new book. I especially enjoyed the connection to the older literature on a topic with which most chapters start, not to mention the selection of black-and-white illustrations and photos that were by turns striking and informative. The one criticism is that the depth of historical coverage is not matched by an equivalent depth of thinking about contemporary research, as for examples, when considering the most appropriate interpretation of Iriki *et al.*’s (1996) tool use study (e.g., see Holmes and Spence, 2004, for a critical for what the findings can actually be taken to show in terms of the extension or projection of peripersonal space following tool use). The failure to connect to any of the contemporary research by Andy Bremner, (Bremner *et al.*, 2008a, b, 2012), Alberto Gallace (Gallace *et al.*, 2008), Lorimer Moseley (Moseley *et al.*, 2008, 2012), nor to most of the research from Nick Holmes, all former collaborators of mine, was also striking. This leaves one with the impression that while very well referenced, the coverage, at least of contemporary findings, is perhaps a little more selective than one (or at least this reader) might have hoped.

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