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Book Reviews

Weiskrantz, L. (1986). *Blindsight: A case study and implications*. Oxford University Press. Pp. 187. ISBN 0–19–852129–4. £19.50.

Humphreys, G. W. & Riddoch, M. J. (1987). *To see but not to see: A case study of visual agnosia*. Hove and London: Lawrence Erlbaum Associates Ltd. Pp. 124. ISBN 0–83677–064–9. £12.95.

Neuropsychological examinations of single cases present special experimental and theoretical problems. These two monographs are about single patients (both of whom are still living), but the authors' approaches are very different. Weiskrantz has brought together all the material assembled since 1973 on his patient "D.B." and combined it with a review of the literature and critical discussion of the recently recognized condition of "blindsight"; the book is therefore of major scientific importance. Humphreys and Riddoch write for a broader public, and although their account of "John's" visual agnosia may arouse the interest of many who are unfamiliar with such cases, it does not claim such serious scientific attention.

Blindsight is a detailed and fascinating account of research on a patient suffering from a surgically induced scotoma who denied seeing anything in his blind field. Nonetheless he was found to be capable of indicating reliably the presence and position of visual stimuli and even showed knowledge of their orientation and movement. Though the patient sometimes had subjective experiences from stimulation of his "blind" field, he was repeatedly surprised at the reliability of his own responses at times when he himself thought he was "just guessing". The monograph describes the careful experimental testing required to explore this "unconscious" vision and includes a discussion of its physiological and anatomical basis.

The selectivity of the patient's deficit (and lesion) are clearly crucial to the informativeness of the study. In DB's case, the extent of the lesion in the striate cortex was fairly well known since it had been surgically destroyed during the removal of a congenital arteriovenous malformation. Even so, the resulting blind field underwent an inexplicable reduction in size during the ten-year testing period, and the exact anatomical defect is not known.

Single case studies of novel conditions run into difficulties over control data. Weiskrantz is particularly scrupulous in his attempts to examine and exclude alternative explanations in terms of stray light, "silent" clicks from the apparatus, eye movements, etc. One example of a particularly elegant experiment is the use of the patient's blind spot (which fell within the

scotoma in the left eye's field of view) to examine the extent to which stray light could provide sufficient information to account for DB's accurate performance; the results ruled out this possibility. Another such example is the demonstration of double dissociation between the capacities of the "blindsight" field and a peripheral region of the normal field; if this region was chosen so that detection ability was comparable, discrimination in the blindsight field was worse, and if discrimination was comparable, detection was better; hence discrimination was impaired more than detection.

DB's general abilities, and his vision in the intact half-field, were sufficient for him to lead a normal working life. He was an intelligent subject who cooperated in the experiments for many years; this has made it possible to provide a rather full picture of this extraordinary phenomenon, and the purity of the deficit together with the subject's own comments make the account especially valuable.

The patient's denial of "seeing" when he could visually localize an object prompts many questions, and there are two curious omissions in Weiskrantz's treatment. First, there is no discussion of his ability to distinguish colours in the scotoma. As he could discriminate orientation and movement, it is not unlikely that he had some capacity for colour discrimination, and it would be particularly interesting if he did as the loss of colour discrimination is one of the commoner defects accompanying damage to the occipital cortex; thus the paired conditions—loss of colour with preservation of "seeing" and its converse—may each be possible and may result from damage in not very remote regions of the occipital cortex. The second question is whether the patient's residual visual capacity is what requires an explanation, or whether it is his denial of it; the combination of localizing a stimulus, while denying seeing it, is certainly sufficient to raise the possibility of hysteria or malingering, and it is strange that the problem is not discussed.

Weiskrantz does not shirk other complex questions raised by his results. In his final chapter he discusses these broader matters and is evidently firmly committed to making physiological sense of the phenomenological. He assembles an impressive amount of evidence in favour of the view that DB's residual vision is mediated by the non-geniculo-striate visual system based on cells of a separate retinal origin. He suggests that this system has limited access to consciousness compared with the normal geniculo-striate pathway; more specifically, what DB appears to lack is visual input to the "commentary" system that allows us to reflect upon our experiences and relate them to others. Thus he at least makes a start at opening up the question of consciousness in a manner that may enable neuropsychologists, cognitive scientists, animal-behaviourists, and even philosophers to make useful statements about it.

The book is not easy to read. Occasionally the reader feels deluged by information, and details of method intrude into the narrative to an unneces-