Psychological Medicine, 1997, **27**, 741–748.

Book reviews

The Engine of Reason: The Seat of the Soul. By P. M. Churchland. (Pp. 329.) MIT Press: Cambridge, Mass. 1995.

Most philosophers know little and care less about cognitive neuroscience and its relevance to psychology and the philosophy of mind and perception. The Churchlands are a notable exception. Pat Churchland has co-authored the definitive textbook on the subject of computational neuroscience. Paul Churchland has now followed this up with a scintillating book written for a more general audience and with a wider scope. His declared aim is to cover all human cognition in all its familiar dimensions – perceptual knowledge, practical skill, scientific understanding, social perception, self-consciousness, moral knowledge, religious conviction, political wisdom and even mathematical and aesthetic knowledge – on the basis of computational neuroscience.

He starts with a very clear exposition of the concepts of computational neuroscience – self-trained nerve nets, parallel distributed processing, forward and back propagation, activation spaces, vector coding, activation vectors, vector-to-vector transformations, synaptic weight configuration, vector completion, etc. The claim made is that all psychology can be, and will be, reduced to the operation of these mechanisms. He then describes some of the brilliant successes, to date, of this approach in such fields as sensory recognition including the recognition of faces, stereoscopic vision, audition, sensorimotor coordination, visual illusions as well as artificial networks that transform written text into spoken speech via a speech synthesizer and a machine that can distinguish underwater mines from rocks. The same principles are then applied to social psychology, language, and moral understanding.

This is followed by a succinct account of some neurological conditions including schizophrenia. The next two chapters are devoted to an enquiry into the nature of consciousness and whether machines could ever be conscious. The last chapters are devoted to an even wider application of these principles to science, politics, ethics, art, and, in their practical application, to such topics as medical diagnosis and treatment, the criminal justice system, the abortion debate, earthquake prediction and in scientific research, in all of which he sees a useful role for computational 'nerve net' concepts and methodology. In all this he has many interesting things to say. His arguments are clear and persuasive. His style is elegant and lucid. However, many people hold that it is in the nature of things that we cannot deduce what we ought to do in any ethical quandry from a knowledge of what is the case. So, ethics cannot ever be underpinned by science. We carry the burden of being free agents in a world of conflicting loyalties. Moreover, there still remain some doubts that an all-inclusive account of brain functions can be based on this hypothesis.

Walter Freeman's well-known experiments on the olfactory bulb seems to indicate that odour recognition at least is dealt with by a different mechanism. Using an array of 60 electrodes spaced over the olfactory bulb he showed that a particular odour produces a complex pattern of voltage gradient contour pattern over the whole bulb. A different olfactory stimulus applied next produces a different pattern. If now the first stimulus is reapplied it produces a different voltage distribution pattern than it produced the first time. The conclusion is that olfactory processing (at this level) depends, not on a fixed net with fixed synaptic weights, but on flexible patterns of neural activation that may use different particular neurones each time they are expressed. It is only the statistical aspect that counts. Edelman (1992) and Globus (1992) have put forward similar ideas. Classical nerve net theory needs a constant set of synaptic weights spread over the relevant parts of the net – that is what the training programmes laboriously construct during the training sessions – not a whole or partially new net doing the same thing second time round. This alternative mechanism was first expounded by Roy John (1979) 'It is

not the location of cells that matter, but rather the rhythm at which they fire … cells combine to perform mental functions by a statistical process, …' and Edelman 'Decisions in such [selective] systems are based on the statistics of signal correlations.' (see Pritchard & Duke (1992) for a good review of this subject). Churchland recognizes that nerve nets work by non-linear dynamics (pp. 113, 320) in that very small causes can have very large effects that are in principle unpredictable (although they remain determined). He deals further with this problem by discussing the related concepts introduced by Elman's recurrent 'grammar' network (pp. 140–142). However, Freeman (personal communication) is of the opinion that his data cannot at present be explained by a connectionist theory.

Moreover, the concept of flexible nets have taken hold (Prut *et al*. 1995; Riehle *et al*. 1995) in which individual neurones may belong to several different nets. So, how can a neurone tell to which particular net a particular weighted synapse belongs? Does each net have its own set of synapses on the one neurone; or do they share synapses? The former would seem to be easier for nerve net theory to deal with than the latter.

Churchland does not mention Freeman's, Edelman's or Globus's work. However, it remains possible, I imagine, to adapt nerve net theory to account for this data, but as far as I know this has not been done. A recent comprehensive review of computational models of visual attention (Tsotsos, 1994) does not refer to this problem.

One of the main examples given of nerve net computation in action is face recognition and what goes wrong on prosopagnosia. The nerve net is trained specifically by back propagation to recognize faces. However, the defect in prosopagnosia is rarely limited to face recognition. Most prosopagnosics cannot recognize other objects such as houses and cars either, not even their own. A bird-watcher could not recognize birds; an aircraft controller aircraft, etc. So, presumably, either one net is multiply trained or there are several different nets closely entwined in the same anatomical area.

One critique is Churchland's handling of introspection. Some philosophers hold that introspective observations are infallible ('How could you doubt that you are in pain?'). Other philosophers hold that introspection is so unreliable as to be worthless. Churchland tends to the latter view quoting our dubious insight into our own desires, fears and jealousies and the questionable status of introspective judgements when we are distracted, under a particular expectation, in conditions of brief sensory exposure, etc. However, introspectionist psychology, under the leadership of scientists such as Gregory and Ramachandran, is now a flourishing part of science that philosophers need to be familiar with. The fact is that introspective reports are neither invariably right or invariably wrong. It all depends on what you are reporting. A red after image is certainly red. But, we cannot say what exact shade of red. The pain in a phantom limb is certainly a pain. But, whether it is gnawing or tearing is harder to say. A scotoma placed over a plaid stimulus is filled in. But, exactly how far apart the hallucinatory lines produced by the brain are, is hard to determine. Introspectionist psychology is still at an early 'natural history' stage of development, but it is still an essential part of our investigations into Nature, supplying some important raw data for this enterprise.

In his discussions of consciousness Churchland wisely avoids trying to give an exact definition at this stage but gives seven salient features (p. 213) all of which are quite right. But he does not include what I feel to be three important features. First, consciousness has a content – that includes our sensations and images observable by introspection. As Edelman (1989) says 'Primary consciousness consists of phenomenal experiences such as images and sensations.' Secondly, phenomenal consciousness, *contra* Descartes, is a spatio-temporal system whose contents occupy phenomenal space. Our sensations and images have intrinsic spatio-temporal properties. In this connection the physicist Andrei Linde has suggested that consciousness has its own degrees of freedom on an ontological par with space-time and matter. Thirdly, as Roger Penrose and Paul Davies have noted, consciousness is the only place in the universe where time passes. Modern physics does not describe any passage of time in the block universe of special relativity. In Lord Brain's words '… we can never abstract from such an account [movements of electrical impulses in physical space and time] time as we

experience it psychologically' (Brain, 1963). These considerations seem to me to lie outside the field of competence of nerve net theory.

In looking for an anatomical site to harbour the content of different sensory modalities within a single unified experience in consciousness, Churchland ignores Dennett's claim that there is no such place – no 'Cartesian theatre' – and takes up Llinás's suggestion that this is a function of the intralaminar nuclei of the thalamus (ILN) on the grounds that these are inactive during slow-wave sleep and because bilateral lesions here cause 'profound irreversible coma … where consciousness disappears completely'. However, both these reasons are at fault. Dreaming occurs robustly during slow-wave sleep though not to the same extent as it does during REM sleep. Bilateral lesions of the ILN cause, not coma, but akinetic mutism, during which basic awareness is maintained. A better candidate is the midbrain reticular formation, especially the cholinergic pedunculopontine and lateral dorsal tegmental nuclei, where lesions really do cause coma, and which may play a major role in the intermodular switching of attention (Smythies, 1996). However, Churchland freely admits that his anatomical suggestions may well need revision.

In conclusion, this book gives the best popular account to date of a very important developing field in cognitive neuroscience and should prove of interest to all readers of this journal. But, I suggest, the time has not yet come when we can claim that the major problems of consciousness are all but solved. Some radical new theorizing may be necessary. Bullock (1993) has listed many different ways that the brain deals with information other than by changing synaptic weights. The role of the brain's many rhythms are almost unexplored, as are direct currents, non-synaptic 'transmitters' such as nitric oxide, hydrogen peroxide and carbon monoxide, etc. Bullock concludes that we currently know very little about how the brain really works.

J. R. SMYTHIES

REFERENCES

Bullock, T. H. (1993). *How Do Brains Work*? Birkhäuser: Boston.

Brain, Lord (1963). Some reflections on brain and mind. *Brain* **56**, 381–402.

Edelman, G. M. (1989). *The Remembered Present: A Biological Theory of Consciousness*. Basic Books: New York.

Edelman, G. M. (1992). *Bright Air, Brilliant Fire*. Penguin Books: London.

Globus, G. G. (1992). Toward a non-computational cognitive neuroscience. *Journal of Cognitive Neuroscience* **4**, 299–310.

John, E. R. (1979). How the brain works; a new theory. In *Consciousness, Brain, States of Awareness and Mysticism* (ed. D. Goleman and R. J. Davidson), p. 16. Harper and Row: New York.

Pritchard, W. S. & Duke, D. W. (1992). Measuring chaos in the brain: a tutorial overview of non-linear dynamical EEG analysis. *International Journal of Neuroscience* **67**, 31–80.

Prut, Y., Vaadig, E., Bergman, H., Haalman, I., Slovin, H. & Abeles, M. (1995). Precise spatio-temporal firing patterns in the frontal cortex of behaving monkeys: existence and correlation to behavior. *Abstracts of the Society for Neuroscience* **21**, 2028.

Riehle, A., Grün, S., Aertsen, A. & Requin, J. (1995). Dynamic interactions between neurons of the monkey motor cortex in relation to behavioral deficits. *Abstracts of the Society for Neuroscience* **21**, 2077.

Smythies, J. R. (1996). The functional neuroanatomy of awareness. *The Encyclopedia of Neuroscience*. Birkhauser: Boston. (In the press.)

Tsotsos, J. K. (1994). Towards a computational model of visual attention. In *Early Vision and Beyond* (ed. T. Papathomas), pp. 207–218. MIT Press: Cambridge, Mass.

Societies of Brains: A Study in the Neuroscience of Love and Hate. By W. J. Freeman. Erlbaum: Hillsdale, NJ. 1994.

One of the most vibrant areas of neuroscience today is the application of non-linear dynamics and chaos theory to our understanding of how the brain works. Walter Freeman is one of the founders of this discipline and his new book gives a survey in depth and breadth of the subject. His approach is based on the extensive experiments of his group on the olfactory system. Classical nerve net theory pictures the brain as acting as a set of parallel distributed processors that compute information by altering synaptic weights along particular neuronal pathways in a linear dynamic system. The same pathways incorporating the same synaptic weights are used whenever any particular computation is exactly repeated. In contrast, Freeman's theory – and similar ones put forward by Roy John (1979), Globus (1992) and Edelman (1992) – see the brain essentially as a dissipative structure operating by non-linear dynamics and chaos. In these theories the particular synapses and neurones used in any computation may change in dynamic fashion the second time around. What counts is the statistical array – the overall pattern – not the particular neurons and synapses that make up the pattern. These systems function by means of setting up various types of attractor

(point, limit-cycle, quasiperiodic, chaotic), basins, modulated by itinerancy and complexity theory. Each thought, perception, or emotion involves the activation of a pattern of vast populations of neurons. 'With each new stimulus or change in reinforcement, the existing pattern changes slightly to a new form. This outcome is inconsistent with a hypothesis by which a stimulus is selectively filtered by neural networks and compared with stored templates for best match in a classification algorithm…' (p. 97). He also introduces a new term 'neuroactivity', which is not just the activity of neurons but, more subtly 'the relations between its electrochemical signs and overt, measured behaviors', that carry meaning (p. 39). Neuroactivity can be represented by a state variable Q, called an 'activity density function' in equations relating the physicochemical properties of neurons and behaviour.

The data on which classical nerve net theory is based consists of recordings of the unit activity of single neurons: the data on which Freeman's theory is based consists of EEG recordings summing the activity of vast numbers of neurons. The microscopic neuronal patterns described by the classical theory deals with the low level analysis of stimulus properties (i.e. lines, angles, colours, movements, nouns, verbs, hands, faces, etc.); whereas the macroscopic voltage patterns recorded by the EEG are distributed over the whole system (e.g. the olfactory bulb) and deal with the meaning of the stimulus. These neuronal cell assemblies are 'endogenous constructs from repeated dynamic state transitions, which correspond to meanings or thoughts about stimuli, and not to representations of stimuli' (p. 110). Thus, each new stimulus entering the brain changes the synaptic weights of all (or nearly all) the neurons in the relevant parts of the brain. So the static synaptic weight patterns of the classical theory become over-ridden by continual non-linear fluctuations for which the classical theory does not appear to allow. 'Brains are obviously open systems…[which]…operate far from equilibrium and keep themselves, when awake, close to thresholds for making sudden state transitions when sensory inputs are being sought… Among the millions of receptors available the stimulus typically activates a small selection. This microscopic input induces a state transition in a population of cortical neurons. A macroscopic spatial pattern of cortical activity emerges, which is imposed on the entire cortical population… Each cortical pattern is a dissipative structure emergent from a microscopic fluctuation.' (p. 51). The stroboscopic patterns (the complex geometrical patterns that we observe if the retinae are stimulated by a rhythmic flashing light) may represent a direct visualization of such dissipative structures in our own visual systems.

Freeman lists three previous approaches to explaining the operation of the brain – symbol manipulation (Craik, Turing); neurocomputation (Sejnowski, Churchland); and analog systems (Ashby, Llinás). He claims that these all fail because they do not incorporate the key phenomenon of a hierarchy of macroscopic state transitions induced by microscopic fluctuations. Thus, we may conclude that classical nerve net theory may explain a lot of brain function but not all of it. It needs to be complemented by non-linear dynamic theory.

Freeman's range of interests extends far beyond neurophysiology. In this book he incorporates and extends many sophisticated ideas from philosophers such as Descartes, Ryle, Searle, Whitehead, Nietzsche, Hume, Spinoza, Kant, etc. and other theorists such as Freud, Penrose, Foucault, as well as Edelman and Globus. He applies his basic theory to a wide range of fields including solipsism, intentionality, causality, qualia and consciousness, artificial intelligence, *Gestalt* psychology, sensation and perception, learning and unlearning, arousal, motivation, reinforcement, ethology, brain washing, dance and ritual, psychedelic drugs, ESP, certain clinical neuropsychiatric syndromes, the role of the limbic system and neuropeptides in emotion, higher-dimensional spacetimes, etc. In all this Freeman shows a creative and penetrating intelligence and professional grasp of these separate disciplines. Too often, when neuroscientists venture outside the confines of their own discipline, they tend to flounder hopelessly and sink in the treacherous quagmires of metaphysics. Freeman keeps his feet dry. I said previously that Freeman 'applies his basic theory' to a number of topics. Too often, when scientists try to do this, they end up with a ruthless procrustean operation using an insensitive reductionism. Freeman, in contrast, treats the other roads to truth and understanding

he considers with sensitivity and respect. His book combines very advanced neuroscience with a deep philosophical insight, aesthetic sensibility, a refreshing lack of the 'near arrogance', as Bullock termed it, sometimes encountered in contemporary neuroscience, and the courage to challenge a deeply entrenched orthodoxy.

He concludes that the current determinisms derived from Spinoza and Kant that underlie so much of contemporary science are '… not merely wrong. They are deeply corrosive to human welfare, dignity, and opportunity' (p. 8).

Now some criticisms. First, 'Minds are collections of thoughts and beliefs…' (p. 154). Yes, indeed, but of sensations and images as well. The key property of phenomenal consciousness is the spatio-temporally organized structure of its sensory component, lacking in its thoughts – its non-sensory ontological component – and even more lacking in its dispositional component – its beliefs.

Secondly, 'The properties of consciousness that most interest philosophers, physicists and lovers, its qualia, are inaccessible to experts in neurobiology and medicine.' (p. 136). But not inaccessible to science in the form of introspectionist psychology. Qualia (a philosophical term), or better, sensations (a neurological term) have intrinsic properties that we can examine and observe. Freeman accepts Searle's 'double aspect' theory of mind–brain relation. 'I agree with Searle (1990) that neural and mental events are different facets of the same entity…' (p. 41). This theory runs into the difficulty that the intrinsic properties of sensations are quite different from the intrinsic properties of the neural events that this theory states that they are merely different facets of, or, in the case of the Identity Theory, with which they are identical. It does not seem to me that two series of events with different intrinsic properties can be identical. However, they can be complementary, as in Niels Bohr's theory of mind, which is based on an analogy with the wave/particle complementarity of quantum mechanics. Freeman rejects the Identity Theory: '… psychoneural identity… is a metaphysical belief that I cannot verify' (p. 93) but feels comfortable with Bohr's theory (personal communication).

Finally, 'Brains normally locate objects outside their bodies…' (p. 151). In order to interpret this statement we have to distinguish between epistemic perception (which deals with the acquisition of knowledge) and non-epistemic perception (which deals with phenomenology). Clearly brains 'locate objects outside their bodies' in the sense that they get to know that physical objects lie outside their physical bodies. But brains do not 'locate objects outside their bodies' in a phenomenal sense. Visual objects (i.e. what we experience in our visual fields) are located outside the body-image (somatic sensory field) and not outside the physical body. Both the phenomenal visual field and the somatic sensory field are located inside the brain. No sense can be made of the mind–brain relation unless this key fact from neurology is recognized.

Societies of Brains is a quite exceptional book and should be a 'must' on the reading list of every reader of this journal.

J. R. SMYTHIES

REFERENCES

Edelman, G. M. (1992). *Bright Air*, *Brilliant Fire*. Penguin Books: London.

Globus, G. G. (1992). Toward a non-computational cognitive neuroscience. *Journal of Cognitive Neuroscience* **4**, 299–310.

John, E. R. (1979). How the brain works: a new theory. In *Consciousness*, *Brain*, *States of Awareness and Mysticism* (ed. D. Goleman and R. J. Davidson), p. 16. Harper and Rowe: New York.

Searle, J. R. (1990). Consciousness, explanatory inversions and cognitive sciences. *Behavior and Brain Science* **13**, 588–638.

Perinatal Psychiatry. Use and Misuse of the Edinburgh Postnatal Depression Scale. Edited by J. Cox and J. Holden. (Pp. 275; £15.00.) Gaskell: London. 1996.

No conference about postnatal depression, wherever it is, is complete without mention of the Edinburgh Postnatal Depression Scale (EPDS). From its (fairly) humble start in the Kennedy Tower at the Royal Edinburgh Hospital during the mid-1980s, the EPDS has taken over the world of postnatal research, so that any English language study in the field would now need a good reason not to use it. In fact, it has been so widely used that in 1991, only 4 years after its publication, a conference was held to discuss what it was actually for. Hence the subtitle of *Perinatal Psychiatry*, the book of the event, edited by two of the authors on the original EPDS paper.

So, for any would-be designer of the questionnaires of the future, it is worth considering why

https://doi.org/10.1017/S0033291796234087 Published online by Cambridge University Press

the EPDS has been so successful, without the advantage of a memorable acronym. It is short – only 10 items. It is simply worded and easy for subjects to complete. It has been carefully validated in two substantial studies. Crucially, it was designed with its target population firmly in mind. This is why not coping, one of the main complaints of depressed mothers, is specifically rated. It is also why, although it is intended to identify depression, it does not ask about sleep disturbance *per se* – loss of sleep in postnatal women is not confined to the depressed 10%. The question is phrased to focus on sleep disturbance because of unhappiness.

The abuse of the EPDS referred to in the subtitle comes down to over-use, use beyond its original purpose as a screening instrument for depression at 6 weeks after childbirth. At other times, particularly in the first postnatal week or antenatally, its validity is not certain. Nevertheless, it is often used at these times, and sometimes as if it could diagnose depression on its own, apparently to the embarrassment of its originators.

But the main challenge facing the EPDS now is to prove itself in transcultural studies, meaning translations and new studies of their validity (the item about 'things getting on top of me' is famously difficult to translate without mishap). *Perinatal Psychiatry* ends with a series of foreign language versions, some of which are presumably in use. But motherhood is steeped in cultural influence and what signifies depression in one ethnic group may be routine or absent in another. Whether the experience of Edinburgh women and the way they described it are as universal as depression itself is for the moment an unanswered question.

LOUIS APPLEBY

Treatment without Consent: Law, Psychiatry and the Treatment of Mentally Disordered People since 1845. By P. Fennell. (Pp. 356; £50.00.) Routledge: London. 1996.

The recent developments in the area of consent are perhaps the most challenging and important facing psychiatric law. In his new book, *Treatment without Consent*, Phil Fennell not only describes the current standing of capacity, advanced directives, proposals for legal change and recent case law, but presents his own original research into the Second Opinion Approved Doctor (SOAD) system and places all of this into historical context. Fennell has produced an authoritative work which will prepare the reader for future changes in the law and provides useful reflection on current practices. It is highly readable and helps to make clear complex areas of law; it will be of great interest to all those involved in mental health law.

The author begins by placing consent in its historical context from 1845. This date is chosen since it heralds both the creation of the county asylums and of the first comprehensive regulative body over psychiatry, the Lunacy Commission. The focus is almost exclusively on England and Wales, which will limit international readership. The early chapters are more interesting in their description of the emerging relationship between the Commission and professional bodies of psychiatrists, rather than the issues of consent. All patients then were admitted under a legal order and were treated without consent, with the exception of surgical procedures. Not until 1890 were patients boarded out and voluntary patients on general psychiatric wards were only introduced in 1930.

The popularity of clitoridectomy in the 1860s established that some form of consent, at least by proxy from a relative, was necessary before undertaking surgery on psychiatric patients. Baker Brown, one of the major proponents of this cure for masturbational disorders, fell foul of the profession's consent requirements and was stripped of his fellowship.

The Lunacy Commission could not interfere with matters of clinical judgement, but could lead the profession down certain pathways. An early important dichotomy was created in what could be considered as treatment, and therefore out with the remit of the Commission to interfere directly, and what could be considered punitive. It was accepted that the motive behind the action dictated whether it was treatment or punishment. The Commission failed in its attempts to bring a prosecution in the infamous Snipe case, partly because of this point. The Commission discovered, however, one of its principal methods of control: paperwork and form filling. If compulsory baths could not be banned, then the compulsory attendance of the medical officer and copious compulsory form

filling could be introduced as a disincentive. One might reflect that the Commission's preoccupation with paperwork has endured. Ironically perhaps, this process also 'medicalized' the various methods used to control patients.

Another area which sheds light on current practices is the long tradition of chemical restraint, a term coined by Pritchard Davies in 1881. Various sedative medications have been termed the 'sheet anchor' of the asylum; the heaviest anchor on the ship when all else fails. Perhaps Goffman's concept of the institution, that by its isolation and routine inmates were made biddable, is more familiar; in reality powerful sedative drugs were used throughout the age of the asylum. Emetics were also used to control patients and in the 1920s scandal emerged when a junior doctor wrote about his experiences of emetics used punitively. The subsequent professional and political responses and enquiries resemble the pattern of more recent controversies.

A major preoccupation of the Lunacy Commission was its opposition to mechanical restraint and this debate particularly helps our current understanding of the anti-seclusion debate. It is worth remembering that seclusion was introduced as an alternative to mechanical restraint. Particularly interesting is Fenell's account of the re-emergence of mechanical restraint in the 1880s, which could be interpreted as the defeat of idealism by pragmatism.

The author returns to the central theme of consent in a fascinating account of the eugenics debate of the 1920s and 1930s. There is a comparison between the United States, where there had been some eugenic laws legislated, and Nazi Germany who introduced draconian eugenic measures. Britain came very close to enacting her own laws to allow sterilization in incompetent people with learning disability and Fennell argues that it was the scathing press response to Germany's laws that postponed any British legislation, until perhaps the abortion legislation of the 1960s.

The theme of consent in the mentally disordered is, arguably, the most topical issue currently in mental health law and Fennell brings the reader up-to-date with one of the best accounts I have seen of the Law Commission's (1995) recent proposals. This is coupled with readable and comprehensive accounts of two important cases which involved consent: *B* v. *Croydon District Health Authority* and *Re C*. Both of these cases are already having an important influence on practice and *Re C* has provided a new common law test of capacity; dubbed the 'Eastman Test' by Fennell, after the forensic psychiatrist who had to provide, at short notice to the court, an outline of how capacity might be assessed. At one stage during *B* v. *Croydon District Health Authority* a judge commented that he had arrived at the 'disquieting' conclusion that a patient could be treated against her will, under section 63 MHA (Mental Health Act) 1983, even if she had competency under common law to decline treatment. Fennell returns to this theme in his discussion of the Law Commission's (1995) proposals: that if the proposals were enacted there would be two quite distinct statutory mechanisms by which someone could be treated without consent, one involving the new proposals about capacity and the other under the MHA 1983. Enaction of the Law Commission proposals, Fennell argues, would necessarily prompt a fundamental review of compulsory treatment under the MHA 1983.

Shortly before this book was published the Government announced that there would be no new legislation based on the Law Commission's proposals, perhaps because of the point Fennell highlights. It is tempting to speculate how a future MHA might be framed in the light of the new thinking about capacity and consent. In Quebec there are already distinct mechanisms for the compulsory admission of a psychiatric patient and the assessment of their capacity to consent to treatment (*Corporation professionnelle des médecins du Québec 1985*). This can lead to patients being compulsorily detained in hospital, but being judged to have the capacity to refuse any treatment. One could imagine a system by which any psychiatric compulsory admission to hospital might be judged on capacity, rather than need or dangerousness. Perhaps, in part, we already have such a system: the 'sectionability' of patients is often informally referred to, but less clear is what is actually meant by 'sectionability'. It probably does not purely refer to the existing criteria in the MHA 1983, which potentially could be interpreted as having a vast scope. Perhaps it refers to an assessment of capacity, particularly illus-

trated when the decision is taken not to use compulsory powers in the context of personality disordered patients.

This speculation does not occur in the book, but were my immediate ruminations after reading the final chapter. The description of recent legal developments by Fennell is done in an accessible and thought-provoking way. Time will tell whether the promise of these recent developments in consent and capacity will fundamentally alter the way we approach the treatment of psychiatric patients. To be fully informed about this debate, *Treatment without Consent* should be read.

JOHN CRICHTON

CASES

B v. *Croydon Health Authority* (1994). 22 BMLR 13 (QBD and CA) [1995] 1 All ER 683 (CA only).
Re C (Mental patient: Medical treatment) [1994] 1 All ER 819.

REFERENCES

Corporation Professionelle des Médecins du Québec (1985). *Consent*. Corporation professionelle des médecins du Québec: Montreal.
Law Commission (1995). *Mental Incapacity: Item 9 of the Fourth Programme of Law Reform: Mentally Incapacitated Adults*. Law Com. No. 231. HMSO: London.

The Neuropsychology of Mental Imagery. Edited by M. Behrmann, S. Kosslyn and M. Jeannerod. (Pp. 250; $60.00.) Pergamon Press: London. 1995.

In case there was any doubt, this collection of scientific papers published in the journal *Neuropsychologia* and bound in a single volume attests to the unchallenged respectability of mental imagery as a worthy subject of enquiry in neuropsychology. As the introductory chapter explains, mental imagery can refer to the mental operations we perform when trying to decide how many windows there are in our living room and can extend to studies of patients with brain damage who, it appears, cannot see but can imagine. All the contributors have a track record in imagery research and these range from those with a pure cognitive science background to others with a very clinical perspective. Each chapter is extensively referenced and contains both empirical data and reviews of the literature. The fact that the papers were published in a journal ensures a uniformity of style but also precludes more imaginative layout, colour illustrations, etc.

Of particular interest to psychiatrists will be the chapter by Smith and colleagues from Reed College, Portland, Oregan, which examines in minute detail the influences upon auditory imagery, a topic of immediate relevance to those studying auditory hallucinations in schizophrenia. The case report by Goldenberg and colleagues from Vienna of a 48-year-old woman who suffered a stroke rendering her cortically blind, but apparently blind to her blindness, will also intrigue psychiatrists interested in notions of conscious perception and insight. Other chapters deal with the role of imagery in enhancing short-term memory and in problem-solving. The final 'Afterword' by Lynn Cooper from Columbia University, New York, puts the whole enterprise into a neat historical context.

This volume, then, is a must for anyone who does not subscribe to *Neuropsychologia* whose librarian is unlikely to overlook the copyright-busting photocopying of an entire journal issue.

ANTHONY S. DAVID