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BOOK REVIEWS

The Hardy Few on Leaner Pastures

Brain Asymmetry. R.J. Davidson and K. Hugdahl (Eds.). 1996. Cambridge, MA: MIT Press. 752 pp., $42.50 (paper).

Reviewed by ELKHONON GOLDBERG, Ph.D., *New York University School of Medicine, Clinical Professor, Department of Neurology, 322 West 57th Street, Suite 50G, New York, NY 10019.*

An acquaintance of mine once said that "scientists are like cattle. They graze the surface and move on to greener pastures." The author of this jaded verdict is himself a successful scientist and a master grazer, so he should know. Hemispheric specialization used to be among the more inviting pastures, but no longer is. Most young researchers tend to search for other pastures.

The hemispheric pasture has lost its luster not because all the truths had been revealed; to the contrary, very few have been for the amount of time expended. Nor because all of a sudden it lost its importance; to the contrary, we are finding hemispheric differences where none had been suspected—in gender dimorphism, biochemical pathways, and neuropsychiatric disorders.

The pasture was abandoned because the grazing proved to be less filling than hoped. Following a number of genuinely important discoveries, the seductive simplicity of tachistoscopic and dichotic methodologies went on engendering much research but little thought. In the end the folkloric profanation of hemispheric research in popular press (a self-inflicted consequence of overly simplistic scientific constructs) seemed to render the whole enterprise utterly *passé*. By the time new insights and tools arrived, the field had already moved on.

But a few hardy scientists stayed. Today the hemispheric pasture is a less crowded, less opportunistic place, where more complex ideas are entertained. The amount of research went down but its quality went up. This volume, an anthology of papers, summarizes the more rarefied, and more satisfying, state of hemispheric research that ultimately emerged. With a few omissions, it is a *Who's Who* of the hardy ones. Because of its thoroughness, the volume can be used as a supplementary graduate text.

The volume covers a broad range of topics: "Historical Overview" (Harrington); "Phylogenetic Antecedents and Anatomical Bases" (Lewis & Diamond; Galaburda); "Perceptual, Cognitive, and Motor Lateralization" (Brown & Kosslyn; Hellige; Hugdahl; Sergent; Peters); "Attention and Learning" (Heilman; Hugdahl); "Central–Autonomic Integration" (Lane & Jennings; Wittling); "Emotional Lateralization" (Davidson; Liotti & Tucker); "Interhemispheric Interaction" (Banich; Liederman; Zaidel); "Ontogeny and Developmental Disabilities" (Hiscock & Kinsbourne; Segalowitz & Berge; Hynd, Marshall, Hall, & Edmonds; Boliek & Obrzut); and "Psychopathology" (Bruder; Robinson & Downhill). The chapters are uniformly scholarly and thorough. Since it is impossible to comment on each of them in a brief review, I will focus on a few. The choice of chapters for the sampler does not imply a value judgment, just my personal idiosyncrasies.

Sexual dimorphism above the hypothalamus is among the most vibrant areas of research into cerebral lateralization today. Lewis and Diamond provide a comprehensive review of the role of gonadal steroids in the shaping of cortical asymmetries. The volume would have benefited from a complementary chapter on the cognitive expressions of this dimorphism.

The old field seems to be slow to adopt new tricks. Computational models and functional neuroimaging studies are only sparsely represented. It is unclear whether these approaches failed to find their ways into the field of hemispheric specialization, or merely into this volume. Either way, it is unfortunate. One can only hope that these powerful tools will enrich the field of hemispheric specialization as they have enriched other areas of neuropsychology.

However, Brown and Kosslyn do discuss neural-net models relating the size of receptive fields to the relative capacity for classifying shapes into categories *versus* identifying individual shapes. This is a useful formalization of the long-standing notions of different connectivity patterns characterizing the two hemispheres.

In her review of hemispheric contribution to face processing, Sergent drew on her original activation studies with PET and rCBF and argued, with her usual eloquence and force, against simplistic dichotomies. This is a particularly poignant paper, since it is one of Sergent's last.

Liotti and Tucker discuss the distinction between the ventral and dorsal visual pathways and cerebral lateralization. They claim a nonorthogonal relationship between the ventral–dorsal and left–right dimensions of functional cortical organization and propose a particular affinity between the dorsal system and the right hemisphere. I find the idea particularly heuristic in trying to establish the evolutionary precursors of hemispheric specialization, since the ventral–dorsal distinction emanates from primate research.

Eran Zaidel is among the pioneers of split-brain research, so it is very fitting that he should write about the long-term status of interhemispheric transfer following complete cerebral commissurotomy. Zaidel provides an extensive discussion of the extent of explicit and implicit interhemispheric transfer, and the comparison between the cognitive competencies of individual hemispheres in the normal brain *versus* split-brain. He argues in favor of dynamic independence between the two normal hemispheres.

The evolutionary perspective is offered by Hiscock and Kinsbourne. Through cogent and thorough analysis, they argue in favor of evolutionary continuity of cerebral lateralization. This is a welcome point of view. The notion of uniquely human cerebral lateralization appearing like a *deus ex machina* late in evolution, which was dominant in our field for so long, flies in the face of basic neurobiological premises. It is intellectually isolationist at best, and epistemologically illiterate at worst. Curiously, however, this review fails to reveal a phylogenetically cohesive functional thread in the evolution of cerebral lateralization. Neither does it address questions of whether lateralization is truly adaptively selective, or accidental, or possibly even parasitic on other functions? The authors may consider bringing Stephen Jay Gould into the volume's second edition.

Laterality in psychopathology is discussed by Bruder; and lateralization of psychopathology in response to focal brain injury by Robinson and Downhill. Both chapters present cogent original research, but each would have benefited from a more extensive discussion of the other. Such a discussion may have cleared up an enduring inconsistency between the psychiatric and neurological findings on depression, the former mostly implicating the right hemisphere and the latter the left hemisphere.

On the whole, the book is a testimony to the vitality of hemispheric research "after the fad." It is good to see the field vibrant and strong, and most of all, thoughtful and serious.

A Broadening of Neuropsychological Practice

Family Support Programs and Rehabilitation: A Cognitive–Behavioral Approach to Traumatic Brain Injury, by Louise Margaret Smith and Hamish P.D. Godfrey. 1995. New York: Plenum Press. 222 pp., $34.50.

Reviewed by Frank Larøi, cand. psychol., *Department of Neuropsychology and Rehabilitation, Ullevål Hospital, Oslo, Norway.*

Far too few books exist on the subject of neuropsychological rehabilitation *beyond* the cognitive rehabilitative approach. However, certain signs seem to suggest that this situation is about to change, such as the publication of this book.

These authors attempt to demonstrate that a holistic and psychosocially oriented approach to rehabilitation for TBI individuals is both fruitful and successful. First, they present arguments for such an undertaking (i.e., empirical studies documenting the various cognitive, behavioral, emotional, and psychosocial effects a traumatic brain injury can have on both patient and family). Second, they present and evaluate their "Family Support Program" (consisting of an empirical study involving 14 patients who followed the program and 14 matched TBI patients who did not).

Of the book's eight chapters, the first two are dedicated to both a clinical presentation of the TBI patient group and to a presentation of the various treatment approaches to their rehabilitation. The following four chapters present an in-depth review of the various approaches with illustrative case examples taken from their project. They are "Compensating for Cognitive Impairment," "Enhancing Emotional Adjustment," "Improving Social Competency," and finally, "Fostering Family Adaptation." The last two chapters present an evaluation of their program, with a look at methodological aspects. An extensive appendix finishes off the book, which mainly consists of various questionnaires, information brochures, additional demographic data of the patient groups in the study, etc.

The book is a fine addition to the neuropsychological rehabilitation library, with its extensive review of past research, especially research concerning the effects that brain insult can have on the individual and the family and on the cognitive–behavioral approach to treatment. The reference

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section was also of great help when the urge to read more about the particular studies became too great.

However, this book is missing a number of important references, in particular, those from the original therapy literature. For example, under depression and its treatment, a number of cognitive strategies are mentioned, but the manner in which the Family Support Program utilized these strategies seems a bit simplistic. In a clinical example, patients are encouraged to "identify their negative thoughts and replace them with more positive thoughts." Yet the goal of such treatment is not simply to have a more positive outlook, but to alter faulty assumptions, where a positive outlook is only one of many possible outcomes. Moreover, the authors do not mention other, alternative, treatment procedures that could just as easily have been applied. That is, there is a lack of acknowledgement that therapy *could* move in a different direction. This point is especially relevant when Smith and Godfrey mention that depression in TBI is more likely to be reactive and perhaps associated with increased awareness of deficits and/or losses. Stringent adherence to the procedures and approaches of the Family Support Program may not allow treatment to be individualized.

The strength of the book is in its extensive, in-depth, and illustrative treatment of cognitive–behavioral procedures that emphasize cognitive compensation. This follows the general trend within neuropsychological rehabilitation that focuses on resources and intact functions rather than on deficits and impairments. This is also probably where this book differs from other books about neuropsychological rehabilitation. However, there are already a number of books on cognitive rehabilitation that have considered psychosocial aspects and the value of supportive counseling of families of brain injured individuals. What remains to be seen, however, are books that present a family therapy approach, where the family may need something more than simply the supportive and educative clinician of the Family Support Program. For example, there is no reason why structural family therapy could not assimilate into TBI treatment programs. Moreover, we are also not given clear reasons why the authors favor certain procedures or approaches. For example, authors have chosen cognitive compensation as opposed to cognitive retraining; this even though early in the book the authors mention that there is no clear empirical documentation that either cognitive retraining or compensation techniques are more effective than the other. Such is the case with other approaches and procedures as well. Although the authors present behavioral approaches concerned with the modification of behavioral excesses, deficits, and cognitive deficits, it is only the behavioral excesses that this book seems to illustrate further.

Although there is much multidisciplinary interaction in most rehabilitation centers at present, the treatment needs to continue in the home and in the local community of the patient. In this sense, *Family Support Programs and Rehabilitation* represents a unique publication in neuropsychological rehabilitation, especially since its focus concerns a psychosocial and holistic view of treatment with the brain injured individual. George Prigatano, in his foreword to the book, takes for granted that this book is generally for family members. However, this book can be equally instructive for neuropsychologists or clinical psychologists who have contact with TBI patients for this book communicates the important point, that there should be an interaction between these two types of clinicians.

Neuroimaging: Clinical Applications

Neuroimaging I: Basic Science and *Neuroimaging II: Clinical Applications*, edited by Erin D. Bigler. 1996. New York: Plenum Press. 342 pp. and 365 pp., $75.00 each.

Reviewed by Jarl Risberg, Ph.D., *Department of Clinical Neuroscience, Division of Psychiatry, University Hospital, S-221 85 Lund, Sweden.*

Imaging of the structure and function of the human brain has grown to an area with increasing impact on neuropsychological research as well as on the routine clinical evaluation of brain damaged patients. The scientific and popular literature is now flooded by increasingly more spectacular pictures of the brain. The images no longer only illustrate what is well known from earlier research but they do also sometimes provide information of importance for the further development of neuropsychological theories. The two volumes edited by Erin D. Bigler, *Neuroimaging I* and *II*, offer a possibility for neuropsychologists and other interested readers to get acquainted with the more recent developments in measurement technology and applications in basic science (Volume I) as well as in the clinic (Volume II). The authors of the 24 chapters are generally outstanding researchers, with impressive expertise within their fields of specialization.

A critical remark is, however, that the two books consti-

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tute a collection of mixed review articles rather than an integrated volume that one enjoys reading from the first to the last page. For example, the reader interested in the normal functional organization of cognition and memory will find two not very exciting reviews of, mainly, the positron emission tomography (PET) literature together with a chapter on electrophysiology in the first volume. To continue with the same topic one has to jump to the end of the second volume to enjoy two excellent chapters based on functional magnetic resonance imaging (fMRI). The reader has thus to pick the chapters from a smorgasbord to get an integrated reading experience, and will most likely also skip the many redundant descriptions of imaging techniques included in many of the chapters.

The different brain imaging methods have been allocated very different space and varying degrees of in-depth analysis. The most favored method is magnetic resonance imaging (MRI and fMRI). The basic physiology and methodology are dealt with in detail. It appears extensively in illustrations throughout the volumes. The first book also contains a normative data base, description of a 3D-atlas, and a complete MRI brain atlas as an appendix. As a contrast, the reader with an interest in single photon emission computed tomography (SPECT) will be looking in vain for more substantial information regarding methodology and applications.

The clinical fields reviewed in the second volume are morphologic and functional brain imaging in neurological and psychiatric disorders. These include chapters concerned with dementia, memory disorders, epilepsy, and head trauma. There are also interesting chapters dealing with developmental aspects of brain morphology and function as well as sex differences and changes due to normal aging. The two volumes offer as up-to-date information as is practically possible in books of this type (references up to 1995 in many of the chapters). They can certainly be recommended, especially for the reader with interest in the very rapidly developing field of MRI and fMRI. But hurry! The explosive development of this field will make this publication obsolete within a few years.

Neurology and Neuropathology in Living Color

Mosby's Color Atlas and Text of Neurology, by G.D. Perkin. 1998. London: Mosby-Wolfe. 306 pp., $39.95.

Reviewed by Muriel D. Lezak, Ph.D., *Department of Neurology, L226, Oregon Health Sciences University, 3181 SW Sam Jackson Park Road, Portland, OR 97201-3098.*

This small (15.5 × 23.5 cm) book summarizes in a clear, well-organized format almost all of the most common conditions, features, and concerns of neurological practice. A chapter on the neurological examination precedes the next 14 chapters which cover (2) "Headache and Facial Pain"; (3) "Loss of Consciousness and Coma" (beginning with epilepsy and ending with sleep apnea, and coma); (4) "Cranial Nerve Dysfunction" (1 through 12 with special emphasis on oculomotor disorders); (5) "Vertigo, Dizziness and Ataxia" (including a brief discussion of psychiatric issues); (6) "Disorders of Higher Cortical Function" (just about all of them); (7) "Cerebrovascular Disease" (with largest sections on infarction, small vessel disease, and subarachnoid hemorrhage); (8) "Parkinson's Disease and Other Extrapyramidal Disorders"; (9) "Cerebral Tumour and Hydrocephalus"; (10) "Multiple Sclerosis" (more pages—12—on MS than any other condition); (11) "Central Nervous System Infection" (HIV is covered under the "Retrovirus" subsection); (12) "Motor Neuron Disease and Peripheral Nerve Disorders"; (13) "Spinal Cord Disorders"; (14) "Myasthenia Gravis and Muscle Disease"; and (15) "The Neurology of Cancer, Systemic Disease and Psychiatry."

The presentation is elegant: photographs in color (of patients' dysfunctional body parts, of autopsy material, and PET and SPECT scans) and black-and-white (MRI scans) richly illuminate textual data. Graphs (e.g., visual evoked responses) and diagrams (e.g., cerebral territory infarctions) further enhance the writing and clarify the conditions under review.

This little text provides a handy, easy to use, quite thorough and very comprehensible reference resource for neuropsychologists and those in allied nonmedical professions, and probably for most practicing physicians as well. Unfortunately, one major area of neuropathology remains untouched—trauma! The two references to trauma mention that (1) trauma probably does not trigger or exacerbate multiple sclerosis, but that (2) boxing is associated with Parkinsonism. Given the extent to which traumatic injuries involving the nervous system contribute to neurological and neuropsychological practice and issues, one can hope that this oversight will be corrected in future editions.

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The Functional Brain in Depth and Breadth

Neuropsychiatry, Neuropsychology, and Clinical Neuroscience (2nd ed.), by Rhawn Joseph. 1996. Baltimore: Williams & Wilkins. 864 pp., $72.00.

Reviewed by DIANE B. HOWIESON, Ph.D., *Department of Neurology, L226, Oregon Health Sciences University, 3181 SW Sam Jackson Park Road, Portland OR 97201.*

This book gives a comprehensive account of the functional neuroanatomy of the brain. The first edition, *Neuropsychology, Neuropsychiatry, and Behavioral Neurology* (1990), consisted of topics traditional for this subject matter, such as "The Cerebral Hemispheres," "The Limbic System," and "Neuroanatomy and Pathophysiology of Head Injury, Stroke, Neoplasm, and Abnormal Development." With the addition of eleven new chapters, the second edition is impressive and unique in its range of topics. The new chapters cover evolution and ontogeny of the brain, social–emotional intelligence, and such unusual topics as the neurophysiology of repression and religious experiences, and the origins of life. One section is titled "The Birth of God and Limbic Hyperactivation." The writing style is clear and compelling. Most topics are well referenced with scientific literature and include informative illustrations. More theoretical topics are presented with logical arguments.

Rhawn Joseph is a theorist willing to explore difficult subject matter. He explains multiple personality disorder on the basis of hyperactivation of the amygdala–hippocampus–temporal lobe complex. He states that "stress and emotional trauma during adulthood significantly affects and reduces the size of the right hippocampus—a condition that is undoubtedly paralleled by similar disturbances in other brain areas." This statement appears to be more theory than fact.

There are many topics that have not been included. These omissions include clinical assessment techniques such as the neuropsychological or neuropsychiatric evaluation, and brain imaging. Treatment techniques such as psychopharmacology, psychotherapy, and cognitive rehabilitation are not discussed. There is little discussion of traditional neuropsychiatric topics of pain disorders, drug abuse, and neurotoxicology. Persons interested in a "how-to" approach for the care of patients would best look elsewhere.

This book would be of interest to neuroscientists from many backgrounds. Neurologists, psychiatrists, and neuropsychologists would, of course, be interested in the many clinical syndromes that are described. However, the richness of the broad background of this book makes for interesting reflections on anthropology, evolution, and spirituality. Therefore, graduate and postgraduate students from many backgrounds would enjoy this book, as would philosophers. Although a text of this large scope is rarely read cover to cover, this one is hard to put down.

OTHER BOOKS OF INTEREST

Conway, M.A. (Ed.). (1997). *Cognitive models of memory*. Cambridge, MA: The MIT Press. 367 pp., $27.50.

Harris, J.G. (1995). *Developmental neuropsychiatry* (Vols. I & II). New York: Oxford University Press. Vol. I: 272 pp., $49.95; Vol. II: 596 pp., $79.96.

Pashler, H.E. (1997). *The psychology of attention*. Cambridge, MA: The MIT Press. 494 pp., $45.00.

Stern, P.S.G. (Ed.). (1997). *Neurons, networks, and motor behavior*. Cambridge, MA: The MIT Press. $60.00.

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