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## BOOK REVIEWS

# From Axonal Sprouting to Giggly Barristers

DOI: 10.1017/S1355617706210543

*Recovery After Stroke*. Michael P. Barnes, Bruce H. Dobkin, and Julien Bogousslavsky, (Eds.). 2005. Cambridge, UK: Cambridge University Press, 656 pp., $170.00 (HB).

Reviewed by David A. Kareken, Ph.D., ABPP-CN, *Associate Professor, Department of Neurology, Indiana University School of Medicine, Indianapolis, Indiana*.

*Recovery after Stroke* is an edited book (656 pages), and its contributors hale mostly from the United Kingdom and Western Europe. The title might suggest a focus on rehabilitation and treatment, but the contents extend well beyond, and include the neuroanatomic foundations of stroke syndromes as well as their "natural" course of recovery. The book is quite clearly intended for a general, multidisciplinary audience. As such, it covers a wide variety of topics such as spasticity/pain, imbalance and gait disorders, sleep disorders, incontinence, dysphagia, and the theory and practice of physical rehabilitation. More systemically, there are chapters addressing the principals of vocational rehabilitation, community rehabilitation, and sexual relationships after stroke.

An excellent introductory chapter by G.R. de Freitas and colleagues provides a brief overview of stroke's epidemiology, etiology, and risk factors, although some areas are not covered in any significant detail (for example, antiphospholipid antibodies and the quickly progressing field of genetic susceptibilities such as Factor V Leiden and angiotensin-converting enzyme polymorphisms).

In keeping with the intended multidisciplinary audience of the volume, many chapters devote the bulk of their discussion to the nature and localization of stroke-related syndromes and are without intensive detail on treatment or management. Several chapters do, of course, review their respective field's literature on treatment efficacy. However, a few do so in somewhat cursory ways, and without more in-depth discussions about the strengths and weaknesses of the data in question. Readers interested in detailed, empirical discussions on treatment and management would therefore best view this as a good introduction and survey of existing work.

Having said that, one of the more fascinating chapters is authored by Hogan et al. who review their own data on robotic therapy. In brief, this is a system that presents visual prompts that cue patients to move a robotic arm, which then provides graded assistance in the absence of the patient's own movement. The data provide compelling evidence of the technique's efficacy and point to the notion of "activity-dependent" neuronal plasticity during recovery.

A highly interesting series of chapters reviews data on functional recovery, neuronal regeneration, and cerebral reorganization after stroke in both animals and humans. These works are most focused on focal sensory and motor ability, which are clearly easier starting points than the more complex and variable systems that preoccupy readers of this journal. Included here are good discussions and reviews of recent compelling data that were impossible to collect not that many years ago, before the advent of functional magnetic resonance imaging.

Cognitive topics are specifically addressed in only approximately 20% of the book's chapters. Although some review of cognitive rehabilitation techniques is certainly present, this is a minor part of the volume. Marjorie Nicholas' chapter is a particularly good, concise, and easily understood review of the aphasic syndromes and approaches to their treatment. As with most of the book's chapters, it is written to be accessible to a larger audience that may not specialize in cognitive problems.

A rather clever and unique cap to the work is the perspective of a young North London attorney who suffered a stroke at age 43. This is a particularly articulate account delivered with insight and reflection, as well as good English wit and irony (one imagines that the English High Court does not often have to usher away wigged barristers gripped by fits of pathological laughter). Those interested in the politics of healthcare will also be interested in reading this patient's reflections on Britain's healthcare system.

Overall, the key benefit of the volume is its coalescence of thought and data spanning the disciplines involved in stroke rehabilitation. While this inevitably limits the detail and depth in any one area, it does provide a comprehensive reference from which to branch off in more specific directions. It also provides a more detailed glimpse at the other parts of the stroke rehabilitation apparatus that we might not otherwise take the time to investigate. As such, those of us mired in the detail of our own fields and subspecialties derive from *Recovery after Stroke* the ability to poke our heads above ground, and see what new ideas and collaborations can be had down the hallway.



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## Visual Agnosia Revisited

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*Visual Agnosia* (Second Edition). Martha J. Farah (Ed.). 2005. Cambridge, MA: The MIT Press/Bradford Books, 192 pp., $25.00 (PB).

Reviewed by H. Branch Coslett, M.D., Professor, *Center for Cognitive Neuroscience, University of Pennsylvania, Philadelphia, Pennsylvania*.

Martha Farah published her influential volume *Visual Agnosia* in 1990. As she notes in the Preface to the second edition of this book, she undertook the project in the interest of "reviewing and systematizing the case literature and posing some basic questions that could, in principle, be answered by such cases." The first edition of *Visual Agnosia* accomplished her objectives. From the extraordinarily rich but often confusing body of neuropsychological data, Dr. Farah developed a comprehensive account of visual processing disorders that was both true to the clinical phenomena and informed by then-current accounts of normal vision. Her short monograph quickly gained a wide audience and has become a standard reference. It has occupied a readily accessible spot on my bookshelf for years.

In the 15 years since the publication of *Visual Agnosia*, substantial progress has been made in the understanding of visual cognition, some of it attributable to the work of Dr. Farah and her collaborators. The second edition of *Visual Agnosia* incorporates these insights. For example, new sources of information have been incorporated. Functional imaging of vision was in its infancy at the time of the first edition; in the intervening years, functional magnetic resonance imaging in particular has made substantial contributions to the understanding of early visual processing, visual attention, motion perception, and several other topics. Although the second edition of *Visual Agnosia* remains true to its roots—the emphasis remains on disorders of visual processing in patients with brain lesions—the data from functional imaging studies inform and constrain the interpretation of the neuropsychological data. Additionally, while remaining approximately the same length, the accumulation of new information has led to changes in the emphasis accorded different topics. For example, reflecting the considerable investigations of normal and abnormal face processing, the discussion of prosopagnosia has been expanded to accommodate the wealth of new information. Additionally, a new chapter on the topic of semantic knowledge has been added. At the time of the first edition, this topic received relatively little attention. In the intervening years, however, there has been an explosion of interest in the topic. Reflecting this change, the second edition includes a concise and insightful chapter devoted to this controversial topic.

Finally, there has been a welcome change in the organizational structure of the volume. Whereas the first volume contained separate chapters on the phenomenology and interpretation of the "apperceptive" and "associative" agnosias, the second volume devotes chapters to specific subtypes of these disorders. For example, the second edition includes chapters on Visual Form Agnosia, Dorsal Simultanagnosia, Ventral Simultanagnosia and Pure Alexia, and Perceptual Categorization Deficit and Disorders of Orientation. The topic- or syndrome-based approach permits a more natural and seamless integration of the relevant clinical, neuropsychological, and theoretical issues.

Dr. Farah has once again performed a great service for those of us interested in the topic of disorders of visual processing and what their implications are for normal vision. By incorporating new data from investigations of patients with brain lesions as well as insights from functional imaging and connectionist modeling, she has generated a lucid and up-to-date monograph that, like its predecessor, is likely to be a classic for years to come.

## Fatigue in Neurological, Psychiatric, and Medical Conditions

DOI: 10.1017/S1355617706230546

*Fatigue as a Window to the Brain*, John DeLuca (Ed.). 2005. Cambridge, MA: The MIT Press, 336 pp., $55.00 (HB).

Reviewed by Sara J. Swanson, Ph.D., ABPP-CN, Associate Professor of Neurology, *Medical College of Wisconsin, Milwaukee, Wisconsin*.

Fatigue is ubiquitous and falls within the purview of several specialties, including neurology, psychiatry, neuropsychology, endocrinology, rheumatology, and immunology. As Simon Wessely points out in the Foreword of *Fatigue as a Window to the Brain*, fatigue has been virtually overlooked as an area of scientific study, because it is difficult

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to measure and, as a symptom, rarely aids in differential diagnosis. John DeLuca's edited book is part of the *Issues in Clinical and Cognitive Neuropsychology* series edited by Jordan Grafman. This is an ambitious book that examines the multidimensional and multifactorial nature of the neurobiology of central fatigue. This book advances the reader's understanding of the neural mechanisms of fatigue through review and integration of empirical data on fatigue and its cognitive correlates in neurological, medical, and psychiatric disorders.

Section I includes three chapters and lays the foundation for the remainder of the book through a discussion of the nature of fatigue, its assessment, and the relationship between fatigue and cognition. Chapter 1 addresses the nature, history, and epidemiology of fatigue from neurasthenia through Epstein-Barr virus to chronic fatigue syndrome, and persuasively indicates the need for a biopsychosocial approach. Chapter 2 sheds light on the historically murky topic of the assessment of fatigue by dividing it into (1) a subjective physical or mental experience or (2) a measurable performance decrement. Subjective fatigue is measured with self-report questionnaires that can be limited by response or recall bias as well as mood issues, whereas physical or cognitive performance decrement can be measured objectively by examining error rates and declines on cognitive or physical performance such as reduced muscle strength after physical exertion or sleep deprivation. This chapter provides a comprehensive review of fatigue scales that is useful for clinicians and researchers. Chapter 3 provides an excellent review of empirical studies of experimentally induced cognitive fatigue after prolonged time on task, sustained mental effort, and mental and physical exertion. This enlightening discussion of empirical research gives the reader perspective on the scientific study of fatigue, the cognitive domains it affects, and possible brain mechanisms.

Section II includes chapters on fatigue in various neurological conditions, including multiple sclerosis, stroke, traumatic brain injury, and other conditions (dementia, post-Lyme encephalopathy, and Parkinson's disease). This presentation of research is particularly cogent with discussion of central mechanisms, cytokines, hypothalamic-pituitary-adrenal axis and endocrine mechanisms, and the role of the reticular activating and striatocortical systems in fatigue after brain injury. Several chapters include sections in which results of functional neuroimaging studies are reviewed to provide insight into the neural correlates of fatigue in specific disease states. Functional magnetic resonance imaging (fMRI) studies of pathologic populations such as individuals with chronic fatigue syndrome or traumatic brain injury often show increased and more dispersed cerebral activation relative to healthy controls, suggesting that recruitment of additional brain regions may be needed to perform the studied task. However, the opposite pattern is seen in comparisons between healthy individuals and patients with multiple sclerosis: hypometabolism and reduced functional activation in frontal cortex and basal ganglia on fMRI were observed in multiple sclerosis patients during a simple motor task The existence of these inconsistencies highlights the conclusion that we are in the infancy of our use of neuroimaging methods to study of fatigue.

Section III addresses fatigue in various psychiatric conditions. It begins with an interesting chapter on the history of the diagnosis of fatigue in psychiatry along with a discussion of its psychiatric treatment. Chapters follow on fatigue in specific psychiatric disorders including chronic fatigue syndrome (which the authors acknowledge may be considered either a psychiatric or a neurological condition), depression, and somatization. These chapters nicely discuss the interplay between psychological and physiological factors that may contribute to fatigue.

Section IV is composed of chapters on fatigue associated with general medical conditions, including human immunodeficiency virus, cardiovascular disease, systemic lupus erythematosus, and breast cancer. The cancer chapter includes comparisons of fatigue associated with radiotherapy, chemotherapy, and autologous bone marrow transplantation, as well as considering the puzzling finding that chronic fatigue continues long after systemic therapy has been completed. This section also includes well-written chapters on the relationship between sleep and psychoneuroimmunology with an illuminating discussion of how the brain and immune system interact through proinflammatory cytokines. Although a single chapter, Section V is particularly useful clinically in that it discusses the treatment of fatigue through cognitive behavioral therapy, graded exercise, and pharmacotherapy.

The book culminates with a summary chapter in Section VI in which fatigue is separated into primary mechanisms (biological/neural) and secondary mechanisms (general), including deconditioning, depression, stress, medication, and sleep habits. This distinction is complex and appears somewhat artificial at times, however, as secondary mechanisms such as depression or stress may lead to mechanisms considered primary such as physiologic changes in neurotransmitters or hypothalamic-pituitary-adrenal axis abnormalities.

*Fatigue as a Window to the Brain* is unique in that fatigue is examined not only in various conditions but also from the vantage points of different disciplines with different methods of study. At first blush, fatigue as a general concept seems a challenging area for scientific inquiry because of its complexity and multifactorial nature. However, through its incisive definitions, presentation of empirical methods of study, and integration of available knowledge across disciplines, this book advances the scientific study of fatigue and provides compelling evidence that brain mechanisms underlie many of its aspects. Moreover, despite the findings presented that subjective fatigue associated with chronic physical illnesses does not correlate highly with disease severity, physical performance, or performance on neuropsychological tests, the book succeeds in using fatigue to elucidate how the brain functions.

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## Recent and Relevant

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The following books were received in recent months:

*Alcohol Problems in Adolescents and Young Adults*, Marc Galanter (Ed.), 2006. Secaucus, NJ: Springer, 456 pp., $49.95 (PB). This is the soft cover version of Volume 17 in the Recent Developments in Alcoholism Series, of the American Society of Addiction Medicine and the Research Society on Alcoholism.

*Brain Arousal and Information Theory: Neural and Genetic Mechanisms*, by Donald Pfaff. 2005. Cambridge, MA: Harvard University Press. 205 pp., $45.00 (HB).

*Schizophrenic Speech; Making Sense of Bathroots and Ponds that Fall in Doorways*, by Peter McKenna and Tomasina Oh. 2005. Cambridge, MA: Cambridge University Press, 210 pp., $95.00 (HB).

*Words and Things: Cognitive Neuropsychological Studies in Tribute to Eleanor M. Saffran.* Marlene Behrmann and Karalyn Patterson (Eds.), 2004. New York: Psychology Press/Taylor and Francis. 462 pp., $100.00 (HB). A hardcover edition of a special issue of *Cognitive Neuropsychology*.

*The Rational Imagination*, by Ruth M.J. Byrne. 2005. Cambridge, MA: MIT Press, 254 pp., $32.00 (HB).

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