

# Preface

The modern behavioral neuroscience perspective extends directly across the centuries of time from early writings of Hippocrates stating that “From the brain and the brain alone arise our pleasures, joys, laughter and jests, as well as our sorrows, pains and grief.” This evidenced-based philosophy, unlike some, finds direct support from science and is foundational for the discussions throughout the book. The initial discussions, though, will lend weight to other perspectives ultimately derived from one’s belief system.

The subsequent writings are influenced more directly by the teachings of my patients, former and current students, and great thinkers within the field, including Alexander Luria, Roger Sperry, Kenneth Heilman, and many others. I have had many fine teachers over the years. Foremost among these have been the individuals that I have met recovering from one or another brain disorder and the caregivers, family members, and therapists actively engaged in recovery and the rehabilitation process with them. I have seen grace in their eyes and in their demeanor, where life is a passion and worth the process even in the struggle for recovery and with loss of functions.

There is clearly something in life that is greater than the pieces of us that fall subject to injury or disease. Each of these individuals has provided bits of the puzzle necessary to better understand the working brain and how to facilitate recovery and compensation for residual loss of the fragments of our behavior, emotion, and cognition. Many of the tools in our rehabilitation chest came directly from these teachers. Many individuals contributed to these writings through these teachers. Many other individuals contributed to these writings through their own scientific inquiry and theoretical developments.

Luria provided a conceptual framework, which is fundamental to modern neuropsychology and neuroscience, through his functional cerebral systems perspective and the appreciation of his basic functional units of the brain. Roger Sperry contributed much to the appreciation of two separate but integrated brains differing in their processing specialization, view of the world, and often oppositional take on it all. *They* clearly appear to see, hear, and feel the world differently as might two distinct individuals with oppositional bias in perception and expression, one against the other, but communicating and seeking balance and harmony through

the interfaces or interconnections of the corpus callosum. Kenneth Heilman clearly advanced these topics in his theoretical accountings of emotion, spatial analysis, movement, memory, and so many other constructs.

Following a discussion of the mind body issue and the issue of localization of function, the basic functional units of the brain will be discussed, including the arousal systems, sensory perceptual or attentional systems, and the motor or intentional systems. This will be followed by discussion of functional neural systems theory. This will be followed by a discussion of the basic brain syndromes common to left sided or right sided brain pathology leading up to a brief account of neuropsychopathology for the clinician and clinical neuroscientist. The final sections of the book provide for specific topics on probable differences in specialization of each brain. Some of these topics evolve directly from our laboratory research findings and those of former students in the Behavioral Neuroscience Laboratory who each have contributed significantly to our literatures on cerebral lateralization of functions.

It has been a great pleasure to work with these fine folks and to come to know them a bit. I apologize in advance for any and all of the misconceptions or ill conceived adventures in the book. The errors are entirely mine. But some of the revelations of past and present science are expressed in the book from the perspective of the brains involved, I think.

Blacksburg, Virginia  
Date

David W. Harrison

<http://www.springer.com/978-3-319-13068-2>

Brain Asymmetry and Neural Systems  
Foundations in Clinical Neuroscience and  
Neuropsychology

Harrison, D.W.

2015, XIX, 613 p. 159 illus., 138 illus. in color.,

Hardcover

ISBN: 978-3-319-13068-2