Asymmetry

Right Hand, Left Hand: The Origins of Asymmetry in Brains, Bodies, Atoms and Cultures, by Chris McManus, 412 pp, with illus, $27.95, ISBN 0-674-00953-3, Cambridge, Mass, Harvard University Press, 2002.

ALTHOUGH BEING ASKED TO REVIEW A book on everything to do with symmetry and asymmetry from the atomic to the societal level is daunting, it is nothing compared with writing such a book. The breadth of scholarship needed to undertake such a task requires intensity, passion, even zealotry. Professor McManus must possess these qualities and has succeeded in a difficult task.

Right Hand, Left Hand discusses symmetry and asymmetry from many perspectives—physics and chemistry, physiology and neuroscience, social anthropology and religion. Expert readers might find coverage of their own fields lacking, but as an overview, the work exceeds the sum of its parts and should be enlightening to most.

The book has 15 chapters. A Web site, http://www.righthandlefthand.com, expands the text's extensive but abbreviated references, provides additional notes ("hypernotes"), and includes links to book reviews. The first chapter, "Dr Watson's Problem," introduces the issue of asymmetry from a medical perspective, with a discussion of situs inversus. (The question of why this biological variation is rare is of fundamental importance.) Chapter 2, "Death and the Right Hand," discusses the Durkheim school of social anthropology, the death of some of its apostles in World War I, and anthropological aspects of death and left-right symbolism in various societies. In chapter 3 the author considers entities that have handedness and symmetry, such as seashells and spiral staircases, and introduces a key problem: that of describing right and left without showing it—try this at home. Chapter 4 elaborates on linguistic and behavioral asymmetry. Chapter 5, "The Heart of the Dragon," presents animal models of the development of asymmetry, while chapter 6 raises the question of whether basic molecular asymmetries, such as the dominance of L-amino acids, might explain asymmetry in nature. Chapter 7, "The Dextrous and the Gauche," treats the development and phenomenology of dexterity and proposes a model its inheritance.

Chapter 8 provides examples of laterality demonstrated through the neurology of brain lesions, often using historical figures (eg, Pasteur, Mach, and Fellini) for illustration, but is not a replacement for neurological textbooks or the medical literature. While it is true that "the right hemisphere is involved in the process called perception," one must keep in mind that other brain regions, such as primary sensory and sensory association areas, play important roles in perception. Visual agnosia can occur with left as well as right hemispheric lesions and most often occurs in the presence of bilateral lesions. Similarly, dysphagia is usually caused by bilateral cortical or brainstem lesions, although there are examples of dysphagia based on unilateral lesions, perhaps including the example given of Fellini choking on mozzarella shortly before his death. Figure 8.8 does not show a "thrombosis" but rather an infarction, presumably caused by thrombosis. Despite minor quibbles, the general flavor of hemispheric specialization is conveyed in a reasonable and entertaining manner.

Historical and cultural differences in the prevalence of handedness are introduced next (although the author uses the term incidence). A persuasive, nonmathematical presentation of the author's model of inheritance of handedness follows along with a discussion of environmental influences. In chapter 10, the author considers directionality in writing and reading and its evolution and related topics, such as driving on the right or left side of the road, advantages of playing sports left handed, and potential disadvantages of performing left-handed surgery.

Social stigma associated with left handedness is discussed in the next chapter. The number of epithets (eg, "keggie hander") was surprising to me. The author speculates that left handers can "find" other left handers, but the comparison to "homosexuals, who are said to have a metaphorical radar for detecting other homosexuals (so-called 'gaydar')" seems out of place. Occasional local United Kingdom references might be missed by readers from other cultures.

Fallacies about handedness and symmetry, including data on differential mortality of right and left handers and other trivia, comprise two chapters. The two final chapters provide a summary and end with the author's thesis that societal and cultural aspects of symmetry might be traced to asymmetry at the elemental level, a compelling argument that is far from proven, as the author readily acknowledges.

The book is well organized with few typographic errors. The quality of some illustrations is poor, but that rarely interferes with their utility. Further development of the Web site might allow updating of concepts and addition of items such as the complete Flanders and Swan "Song of Asymmetry" and modern functional imaging and genetic techniques.

Right Hand, Left Hand is an enjoyable and clever book by an astute observer of the world. He brings together a breadth of information and generally presents arguments nonjudgmentally. Despite minor quibbles, it will on balance appeal to physicians, scientists, and lay persons and deserves a wide readership.

Richard Camicioli, MD
University of Alberta
Edmonton

NEW MEDIA

Medical Literature

PubCrawler: An Update Alerting Service for PubMed and GenBank, developed by Karsten Hokamp and Ken Wolfe, free Web site, Dublin Ireland, Department of Genetics, Trinity College, accessible at http://www.pubcrawler.ie.

THE INFORMATION EXPLOSION IN MEDICINE has left us overwhelmed by accumulating new knowledge. If one devoted only two hours a day to keeping up even within a subsubspecialty, one could hardly manage the task. Many replace the weekly visit to the medical