

Neural Substrates of Visual and Musical Art: A Book Review of "Neuropsychology of Art: Neurologic, Cognitive, and Evolutionary Perspectives"

Dahlia W. Zaidel. Hove, UK: Psychology Press; 2005. ISBN: 1-84169-363-4, Price: £49.95; \$87.5, pp. 288.

Scholars have long puzzled over how an extraordinary musician such as Beethoven could compose most of his music without ever hearing it, or how nearly blind painters such as Monet, Pissarro, or Degas could continue to create paintings of enormous beauty? And how can we explain Maurice Ravel's medical history? He was affected by a slow progressive dementing disease and was unable to read his writing, and yet could still recognize musical notes and melodies. His famous *Bolero* was composed after the first symptoms appeared. *Neuropsychology of Art* attempts to address, explore, and debate the issues raised by these conditions while looking for neuroanatomical and functional explanations; it refers to already suggested interpretations and adds new perspectives and different readings of these facts.

Despite the huge intellectual appeal regarding the intersection of artistic creativity, talent, aesthetics, and brain structures, very few investigators have researched it. Partly this is because of an inherent difficulty in such pursuits, namely availability of relevant critical material, and absence of clear definitions of the components of art. The first to describe the consequences of brain damage in artists was the neurologist Alajouanine,¹ and, later, a few additional artists were included in a book by Gardner,² which included some serious discussion of art and brain. Since then, however, there has been no major compilation or treatment of such artists. Reports of artists with focal brain damage and cases of

artists with sensory deficits are the best evidence for understanding the multiple brain regions involved in art production and their organization. Such cases are indeed rare and their neurologic reports widely scattered in the literature. In *Neuropsychology of Art*, however, we see for the first time a major assemblage of published cases of established artists who have suffered various types of damage to the brain. Some of those unearthed by D. Zaidel have long been "forgotten" by modern neurology and neuropsychology. She provides a broad range of case histories of famous artists, visual and musical, affected by unilateral cerebro-vascular accident, different kinds of deteriorating progressive brain diseases, and special groups of artists such as autistic savants. The collection positions the author and her readers to arrive at new understandings of the brain-art relationship and the relevant intersections with creativity, talent, and aesthetics.

For example, in the past, the elusive nature of the brain-art relationship has spawned scientifically unsubstantiated claims such as right hemisphere specialization in art production/perception and creativity. One major conclusion in this book is that neither the right nor the left hemisphere specializes in art, creativity, talent, or aesthetic judgment. The author points out that established artists continue to produce art regardless of the damage's laterality or its etiology. In addition, visual art is not defined by 3-dimensional representation on 2-dimensional space (ancient Egyptian or traditional Chinese paintings, for instance). Consequently, visual art need not depend solely on right hemisphere specialization for spatial cognition (in perception or production). Similarly, the status of musical production gleaned from the latest neuroimaging findings and the brain damage literature leads the author to concur that music has components specialized in the left hemisphere versus others specialized in the right hemisphere.

Moreover, to really look into art and its brain correlates it is necessary to use an interdisciplinary approach (combining neuroscience with art history, anthropology, biology and evolutionary theories) because art is always created within a cultural context and cannot be separated from humans' current events and biologic ancestry. This encompassing view has not been done until now in this context. In *Neuropsychology of art*, we see an implementation of this approach, thereby increasing the potential for insights into art's neural substrates. The evolution of the brain and language's origin together with exploration of the nature of art from its early beginnings hundred of thousands of years ago through its development and practice until today makes the material informative and thought provoking. In some ways, D. Zaidel points out, artistic and linguistic expression throughout the ages do not differ in their communicative nature as both represent combinatorial systems with infinite pairings. At the same time, we know from neuropsychologic description of artists that these 2 competences can be completely dissociated. She proposes that art is a whole-brain production, unique to humans but with precursors in our biologic history (eg, mate selection strategies and the bowerbird).

There is another unusual treatment of the subject matter in this book: Commonly, when we read neurologic and neuropsychologic reports of brain-damaged artists we read a paper written by nonartists that focuses on brain lesions, deficits, and rarely on spared capacities. Here, the author does not fall into this trap, in spite of being a neuropsychologist herself. We learn, for example, that when language function is completely destroyed, art, creativity, talent, and aesthetic taste remain intact. Neuroimaging findings of these clinical cases are not omitted and are described in critical and exhaustive way by the author. All of this allows us to speculate in-depth about the role of some brain regions or pathways in

artistic endeavors, creativity, talent, and beauty.

The book's written style is clear and scholarly, the scope is remarkably broad, and altogether makes for an interesting read. There is a detailed Subject Index, an Author Index, a useful Glossary (for beginners), and suggestions in Further Readings. Additional illustrations are in www.psypress.co.uk/zaidel (click on "color figures" in the left-hand column). To the best of my knowledge, no other book on the topic coalesces so many

of the reported neurologic data on visual and musical artists, provides interpretation of their deficits together with explanations of the role of the cerebral structures damaged in creativity and aesthetics. There is a rich tapestry of ideas not previously combined in scholarly writings on art and the brain. Although the nature of the brain-art relationship remains to be further debated in detail and extensively investigated in the future, some of its elusiveness has been unveiled in this book.

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