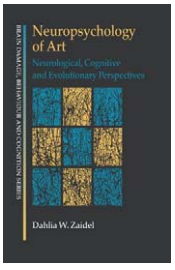
Bringing science to art

Neuropsychology of Art: Neurological, Cognitive and Evolutionary Perspectives by Dahlia W. Zaidel. Psychology Press, 2005. $87.50/£49.95 (hbk) (288 pp.) ISBN 1-84169-363-4

Steven Brown

Department of Psychology, Simon Fraser University, Vancouver, BC, Canada V5A 1S6



Several important books in recent years have examined the neuroscience of single art forms, including Zeki's *Inner Vision* [1], Livingstone's *Vision and Art* [2], and Peretz and Zatorre's anthology *The Cognitive Neuroscience of Music* [3]. Dahlia Zaidel's recent book is an attempt to look beyond single art forms and develop a broader and more integrative view of the arts and of human creativity. Through its emphasis on neurological case studies of professional painters, composers and musicians, the book aims to examine neural specialization for the arts. The fact that a book on this topic offers almost no mention of dance or the literary arts stems from an absence of informative lesions in practitioners of these arts rather than from any lesser interest in these branches of the arts.

An important strength of the book is its grounding of the arts in human communication processes rather than perception alone. Hence, production and perception of the arts are given equal treatment, in contrast to many cognitive approaches to the arts that focus on perceptual mechanisms or aesthetic responses rather than on the discursive processes that mediate art's communicative functions in society. Zaidel acknowledges from the outset that art works are not just pretty things that play with our emotions but are socially meaningful devices that convey cultural information between people. In addition, Zaidel makes a point of starting from the beginning – or at least what we know of the beginning – through a discussion of such ancient relics as Paleolithic petroglyphs, pictographs, figurines and musical instruments. She also reviews evolutionary hypotheses about the adaptive functions of creativity and the arts. Although none of this is new, its placement in a neuroscience text is significant. I hope that this synthesis of neural and evolutionary approaches to the arts is an optimistic sign of things to come, especially given the glaring absence of functional brain data in most evolutionary psychology treatises, whether of the arts or otherwise.

Much of the book deals with a presentation of neuropsychological case studies of professional painters and musicians. The logic of the lesion-deficit approach to cognition permeates the text. Some of these cases, like the aphasic composer Shebalin or the autistic child-artist Nadia, are well known. Others, however, were new to me, including Hugo Wolf's neurosyphilis, Fellini's hemispatial neglect, and Monet's cataracts. Zaidel's book is as comprehensive a review of these cases studies as I have seen, and will certainly serve as an important reference source for the field. But in addition, there is mention of neuroimaging findings as they pertain to music and the visual arts, and there is even inclusion of purely cognitive findings, such as Isabelle Peretz's interesting cohort of musically impaired although neurologically healthy individuals.

The book's major weakness for me is that it doesn't make an effort to show cognitive kinship among the arts but instead relies on neuropsychology's dissociational approach to maintain their separation. What the field needs beyond what is presented in Zaidel's book is a more detailed cognitive analysis, one that goes beyond neurological case studies, and hence one that doesn't exclude dance, sculpture, poetry, theatre, literature, and much else. An approach that considers the cognitive connections between music and language, literature and painting, dance and music, and so on, occupied the thinking of 18th century aesthetic philosophers [4] and should be revived. Neuroimaging research, with its capacity for experimental manipulation and unique ability to localize brain activity in healthy subjects, is providing crucial information regarding these very connections. Such a holistic view does justice to the probable origins of the arts in multi-modal ceremonial rituals, in which music, dance, narrative, role playing and visual decoration were no doubt highly intertwined [5].

An important question for the field relates to the extent to which the capacity to produce and perceive the arts depends on general cognitive capacities for everyday survival activities (e.g. general motoric, auditory, spatial and visual mechanisms) as opposed to specific 'art modules' that might exist in the brain. In my opinion, two of the most art-specific functions that we can identify in human cognition are the ability to create music (i.e. to generate meaning using music's tonal grammar) and the ability to draw (i.e. to translate a three-dimensional percept into a two-dimensional form). These, in fact, are the two topics that Zaidel covers most fully in her monograph. And although Zaidel herself doesn't make a case for analyzing art's specificity in the context of human cognition, her book provides important groundwork for the understanding of two of art's primary competencies. This makes it a work of great significance and a wonderful contribution to the nascent field devoted to the neuroscience of the arts.

Corresponding author: Brown, S. (s_brown@sfu.ca).

References

1 Zeki, S. (1999) *Inner Vision: An Exploration of Art and the Brain,* Oxford University Press
2 Livingstone, M. (2002) *Vision and Art: The Biology of Seeing,* Harry N. Abrams
3 Peretz, I. and Zatorre, R.J. (2003) *The Cognitive Neuroscience of Music,* Oxford University Press
4 Malek, J.S. (1974) *The Arts Compared,* Wayne State University Press
5 Dissanayake, D. (1988) *What is Art For?* University of Washington Press

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