

bring to the subject matter. Almost without exception they reach far beyond the theoretical and metaphoric arguments that predominate in the humanities literature. "Normal and Pathological Gait as Inspiration for the Artist" is one of the many selections that will certainly engage *Leonardo* readers. Geneviève Aubert's research in this article was prompted by her interest in Arthur Van Gehuchten (1861–1914), a pioneer in the use of cinematography for documenting clinical neurology. She successfully integrates new works (such as the Belgium composer Renaud De Putter's interpretation of Van Gehuchten's neurological films) into the discussion of the topic.

Some material spoke to gaps in my own body of knowledge, a reaction that I am certain would be the same for other readers. For example, there are many sources that have suggested El Greco suffered from astigmatism (which would have caused his retinal images to be vertically narrower than they should be). The astigmatism argument has long been used to account for the elongation of his painted saints. Perceptual laboratory experiments, however, have documented the fallacy in this argument [1]. Until reading Rose's "The Neurology of the Arts: An Overview," I was unaware that there is an alternative scientific interpretation to El Greco's elongated style. Rose cites J.R. Heron's "El Greco and Muscular Dystrophy?" [2], wherein Heron argues that the distortions in El Greco's paintings might not be artistic license so much as deriving from the neuromuscular disorders of the inpatients of St. James Hospital, Toledo. The examples include the dystrophic facial muscles of San Sebastian, the hand wasting of Santiago el Mayor, the *pes cavus* of the angel in *The Crucifixion*, the peroneal muscular atrophy of St. John in *The Baptism of Christ* and the facioscapulo-humeral dystrophy in *Adoration of the Shepherds*.

Finally, even in the rare instances when an author became a bit technical, I found the articles engaging and useful. Some topics, such as epilepsy, are included in both the visual arts and literature sections. This gives the reader an opportunity to consider the condition from more than one perspective. Although I tend to focus on visual arts in my own work, I found the sections on literature and music equally compelling. The music section, for example, includes essays that cover the parts of the brain linked to perception and

memory, as well as *amusia* (a neurological deficit in music perception, recognition or production, attributable to a central cause), and the effect of music on intelligence and learning (the Mozart effect). The section on literature relates to Shakespeare, Dostoyevsky, Conan Doyle, James Joyce and the poetry of one of England's most famous neurologists, Henry Head. In summary, I highly recommend *Neurology of the Arts* to all who are looking for a greater understanding of how the brain and the nervous system work together. It is an accessible book, and one that a reader need not read from cover to cover to enjoy, although all of the contributions can be recommended.

References

1. S.M. Anstis, "Was El Greco Astigmatic?" *Leonardo* 35, No. 2 (2002) p. 208.
2. J.R. Heron, "El Greco and Muscular Dystrophy?" in *British Medical Journal II* (1979) p. 256.

ESSENTIAL SOURCES IN THE SCIENTIFIC STUDY OF CONSCIOUSNESS

edited by Bernard J. Baars, William P. Banks and James B. Newman. MIT Press, Cambridge, MA, U.S.A., 2003. 1,163 pp., illus. ISBN 0-262-52302-7.

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Essential Sources in the Scientific Study of Consciousness is a massive compendium of articles and papers spanning some 50 years of scientific research into the nature and operation of human consciousness. Within the nearly 1,200 pages and almost 70 chapters a huge range of issues are given detailed discussion, including perceptual consciousness, attention, memory, internal data, unconsciousness and dreaming. All the papers are in some way significant to the developing history of consciousness studies, and have been drawn from some of the key journals in the field.

In contrast to many other books on this subject that take a philosophical line of inquiry, the papers here are almost exclusively empirical and experimental in nature, although a selection of more theoretical articles are included from contributors such as Gerald Edelman, Antonio Damasio and Bernard J. Baars. In fact, Baars, one of the editors and best known for his "global workspace" theory of con-

sciousness, is a prominent presence, providing not only the introductory text but also four other papers.

In his comprehensive introduction (which in itself would serve as a useful set text for a wider audience) Baars argues for consciousness to be treated as a variable rather than as an absolute state. By this he means that consciousness can be measured as being more or less present in relation to other states, such as between wakefulness and sleep, alertness and coma, new and habituated events, and so on. In this way, and in opposition to those who deny consciousness can be scientifically (that is, experimentally) studied at all, Baars and his colleagues propose that hard empirical data can be reliably gathered about the processes of consciousness, and thus contribute to the building of a coherent scientific theory of this most enigmatic of human attributes. The favored methodological approach seeks to correlate internal, subjective experiences with objective experimental techniques so that, as Baars says, "in modern science we are practicing a kind of verifiable phenomenology" (p. 8).

This volume would be a highly useful reference and source book for any serious scholar of the science of consciousness, which nowadays includes many from beyond the purely scientific community.

SHOOTING KENNEDY: JFK AND THE CULTURE OF IMAGES

by David M. Lubin. University of California Press, Berkeley, CA, U.S.A., 2003. 355 pp., illus. Trade. ISBN 0-520-22985-1.

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In her recent essay on the photographs of Americans torturing prisoners at Abu Ghraib, Susan Sontag reminds us that for about the past 60 years photographs have played a central role in determining how conflicts are judged and remembered. Photographs now have a special role in constructing historical memory. We seem to be so aware of this today that we look for the iconic image that will define an event, as Sontag does in her essay by arguing that the Abu Ghraib photographs will become the defining images of the Iraq war. At the same time, there is increasing uncertainty as to what such images