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Descarte's Error

A Book Review by Gustav A. Uhlich

Rene Descartes lived in the first part of the 17th century in Holland. He was the leading mathematician and philosopher of his time. What was his error, and why should it matter to us? Damasio provides compelling answers to both questions.

Descartes said, "I think, therefore I am." Damasio counters: "I am, therefore I think." Descartes maintained that the essential "me" — the soul, the spirit, the mind — is entirely distinct from our body and in no way connected to our biological make-up. Damasio sets out to prove the opposite.

In Part I of the book we are introduced to the clinical evidence linking patterns of behavior to the anatomical structure and functional organization of the central nervous system. The fascinating case history of one Phineas P. Gage, a 25-year-old railroad construction foreman, sets the stage for exploring the results of traumatic brain damage. In the summer of 1848, while blasting his way through the rocky terrain of Vermont, Phineas had the misfortune of prematurely setting off an explosion. A three-foot-long iron rod shot through his skull. Miraculously, Phineas survived, but he was not the same man he had been before. A contemporary report attests to his rather complete physical recovery; however, his "equilibrium or balance, so to speak, between his intellectual capacity and animal propensities" had been destroyed. As a result, he lost the ability to plan his future as a social being. He lost his job, and died in 1861. His punctured skull was pre-served at Boston's Harvard Medical School Museum.

Damasio, with the help of modern computer technology, is able to reconstruct the extent of frontal lobe damage suffered by Gage. The devastating consequences of Gage's acquired "character disorder" bring to mind a few disturbing questions. "There are many Gages around us, people whose fall from social grace is disturbingly similar. Some have brain damage consequent to brain tumors, or head injury, or other neurological disease. Yet some have had no overt neurological disease and they still behave like Gage. If we are to solve humanely the problems they pose, we need to understand the nature of these human beings whose actions can be destructive to themselves and to others. Neither incarceration nor the death penalty — among the responses that society currently offers for

those individuals — contribute to our understanding or solve the problem." What best can help us to solve social problems — that is the question.

Part II of the book is devoted to the search for intelligent answers. What allows humans to behave rationally? How does the normal brain work? Damasio is careful in delineating the scope of his undertaking and in noting the speculative nature of some of his contentions. His hypotheses are based on careful

observation of some 1800 patients studied at his laboratories at the University of Iowa over a period of 17 years. The difference between science and mere philosophy deserves attention. The pursuit of both requires imagination, creativity, and inventiveness. Science, in addition,

demands reproducible observations and experimental verification before a hypothesis can claim credibility. Philosophy and religion are not hampered by such restraints. Their credibility is based primarily on the prestige of the prophet and the emotional impact of the message. In the case of Descartes, a multitude of true believers still populates the earth in spite of what we know, or should know, about neurobiology.

The sheer multitude of facts and opinions presented by Damasio may at times confuse the reader. Careful attention to the definition of terms used throughout the text is essential to an understanding of Damasio's line of reasoning. On page 86, for instance, we are informed, "Whenever I refer to the body, I mean the organism minus the neural tissue (the central and peripheral components of the nervous system), although in the conventional sense the brain is also part of the body." Why then this unorthodox definition of body? Because there are creatures that have a body but no brain — bacteria and amoeba, for instance. They are located rather low on the rungs of evolution, but they do play an important role in the overall scheme of things. A listing at the beginning or end of the book of such unconventional definitions, as well as of newly developed concepts, would prove helpful. It is not lack of clarity on part of the author, but the complexity of the subject matter under discussion that requires the utmost concentration on the part of the reader, who from the beginning is expected to be "curious, intelligent and wise."

Helpful diagrams are provided throughout the

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AND THE HUMAN BRAIN
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book and matters of everyday concern are well covered. Is it possible to die of a "broken heart?" Can a surge of oxytocin override the best intentions toward celibacy? Is cultural evolution capable of obliterating instinctual behavior? Are emotions and feelings one and the same thing? How does the neural network interact with the hormonal circuitry? What is the role of feelings in devising a rational survival strategy for Homo sapiens? Based on the concept of a "triune brain" first proposed by Paul D. MacLean, Damasio places great emphasis on the close interaction of all parts of a living organism in bringing about mental phenomena of an increasingly complex nature.

Part III of the book summarizes some of the experimental evidence in support of the biologic body-mind hypothesis. Beyond that, plenty of food for further thought is presented. Is there or is there not "free will," for instance? From a neurobiological point of view, the question seems poorly phrased. It makes more sense to ask to what degree and under what circumstances are we able to override automatic response mechanisms common to the species with more individual actions based on conscious cognitive activity. "Willpower is just another name for the idea of choosing according to long-term outcome rather than short-term ones." Intelligent foresight must be our ultimate goal. "The scientist's voice need not be the mere record of life as it is; scientific knowledge can be a pillar to help humans endure and prevail." In *Descartes' Error*, Damasio provides us with solid stepping stones for the path that leads from philosophical speculation to scientific knowledge. It deserves the reader's full attention. ■