AMERICAN MUSEUM of NATURAL HISTORY

You are cordially invited to attend the seventy-sixth

JAMES ARTHUR LECTURE

On The Evolution Of
The Human Brain

by

Michael Gazzaniga

Sage Center for the Study of Mind
University of California, Santa Barbara

SUBJECT

Are Human Brains Unique?

Henry Kaufmann Theater, 1st Floor
Central Park West at 79th Street
New York City

Monday Evening, April 3, 2006
6:00 p.m.

[Enter through 77th Street Entrance]

jals@amnh.org

THE LECTURER

Michael Gazzaniga received his Ph.D. in Psychobiology at the California Institute of Technology, working with Roger Sperry, an earlier James Arthur lecturer, on the human split-brain research that won Sperry the Nobel Prize. Until recently he was the David. T. McLaughlin Distinguished University Professor at Dartmouth College, and the Director of the Center for Cognitive Neuroscience. Most recently he has become the first director of the Sage Center for the Study of Mind at the University of California, Santa Barbara. Through his extensive work with split-brain patients, Dr. Gazzaniga has made important advances in our understanding of functional lateralization in the human brain and of how the cerebral hemispheres communicate with one another. His research is well known not only in clinical and basic science circles, but to the lay public as well. He captured the main features of this work in 1985 in his widely acclaimed book, *The Social Brain*. His 1988 book *Mind Matters* served as an introduction to problems in mental disorders. In 1992 he published *Nature's Mind* which the New York Times said "would do for brain research what Stephen Hawking had done for cosmology." His landmark 1995 book for MIT Press, *The Cognitive Neurosciences*, featured the work of 92 scientists and is now recognized as the sourcebook for the field, and is in its third edition. He has just published another book, *The Ethical Brain*. Dr. Gazzaniga is the president of The Cognitive Neuroscience Institute, which he founded in 1982, and is the Editor-in-Chief emeritus of the *Journal of Cognitive Neuroscience*, which he also founded. In 1997, Dr. Gazzaniga was elected to the American Academy of Arts & Sciences. He has been elected President of the American Psychological Society. He also serves on the President's Council on Bioethics and in 2005 he was elected to the National Academies Institute of Medicine.

THE LECTURE

When a variety of findings from neuroscience and cognitive neuroscience are considered together, one sees the cortical arena as a patchwork of specialized processes that work in a more or less automatic way. Considering this in light of new studies on lateralization of human functions, it becomes reasonable to suppose that the corpus callosum enabled the development of the many specialized systems in humans by allowing for the reworking of existing duplicate cortical areas while preserving the original function. Thus, while language emerged in the left hemisphere at the cost of duplicate pre-existing perceptual systems, the critical features of the perceptual system were preserved in the opposite half brain. By having the callosum serve as the great communication link between redundant systems, a pre-existing system could be jettisoned in one hemisphere, while the other hemisphere could continue to perform the prior functions for both half brains. Split-brain studies have also revealed that the complex mosaic of mental processes that results nonetheless leaves us with the subjective experience of feeling totally integrated. Indeed, even though many of these specialized functions have an automatic quality to them and are carried out by the brain prior to our conscious awareness of them, our subjective belief and feeling is that we are in charge of our actions. These phenomena appear related to the uniquely human left hemisphere "interpreter", a device that allows us to construct theories about the relations between perceived events, actions and feelings. Anatomical, physiological and behavioral studies will be presented that support these views on the uniqueness of the human brain.

James Arthur
1842-1930

Born in Ireland and brought up in Glasgow, Scotland, James Arthur came to New York in 1871. Trained in mechanics and gear cutting, he pursued a career in the manufacture and repair of machinery, during the course of which he founded a number of successful businesses and received patents on a variety of mechanical devices. He was particularly interested in horology, the science of measuring time.

Early in the 20th century, James Arthur became associated with the AMNH, and began to expand his interest in time to evolutionary time, and his interest in mechanisms to that most precise and delicate mechanism of them all, the human brain. His fascination with the human brain led to his bequest to the AMNH permitting the establishment of the James Arthur Lectures on the Evolution of the Human Brain. The first lecture was given March 15, 1932.

Previous James Arthur Lecturers*

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*Available publications for previous James Arthur Lectures are in bold and can be ordered from the following address (Include payment when ordering †$2.00, ‡$4.00, § $7.00) [Checks payable to AMNH]:

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For public transportation and local parking information, call 212.769.5100.