

"What Art Can Tell Us About the Brain"

April 13, 2012
12:30 - 2:00 pm
Room 7-431

Margaret Livingstone

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Abstract:

Many techniques developed over the centuries by artists can be understood in terms of the parallel organization of our visual systems. I will explore how the segregation of color and luminance processing are the basis for why some Impressionist paintings seem to shimmer, why some op art paintings seem to move, some principles of Matisse's use of color, and how the Impressionists painted "air". Central and peripheral vision are distinct, and I will show how the differences in resolution across our visual field make the Mona Lisa's smile elusive, and produce a dynamic illusion in Pointillist paintings, Chuck Close paintings, and photomosaics. I will explore how artists have intuited important features about how our brains extract relevant information about faces and objects, and I will discuss why learning disabilities may be associated with artistic talent.

Bio:

Margaret Livingstone is best known for her work on visual processing. In collaboration with David Hubel she did groundbreaking work on the parallel processing of visual information. In 1984 they described a new subdivision in primate primary visual cortex involved in processing information about color, and described the anatomy and physiology of this previously unknown system. She went on to apply objective, quantitative mapping techniques to primary and extrastriate visual areas, revealing fundamental computational strategies used by the visual system in processing information. Her work has led to a deeper understanding of how we see color, motion, and depth, and how these processes are involved in generating percepts of objects as distinct from their background. In collaboration with Albert Galaburda's laboratory, Livingstone looked at differences in visual processing in subjects with dyslexia, and found a selective slowing of the fast achromatic visual channel.

Lastly, Livingstone has explored the ways in which vision science can understand and inform the world of visual art. She has written a popular lay book, *Vision and Art*, which has brought her acclaim in the art world as a scientist who can communicate with artists and art historians, with mutual benefit. She generated some important insights into the field, including a simple explanation for the elusive quality of the Mona Lisa's smile (it is more visible to peripheral vision than to central vision) and the fact that Rembrandt, like a surprisingly large number of famous artists, was likely to have been stereoblind.