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Art, the Visual Imagination and Neuroscience: the Chauvet Cave, *Mona Lisa's* smile and Michelangelo's *terribilità*

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Art, the Visual Imagination and Neuroscience:  
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**Abstract:** This paper considers several types of imagination relevant to art historical enquiry. These are exemplified in artistic expressions ranging from palaeolithic paintings in the Chauvet Cave, to drawings, sculptures and buildings designed by Michelangelo and drawings and paintings by Leonardo, and are related to recent neuroscientific discoveries. From this it emerges that important types of imagination cannot be understood without an appreciation of the neural processes that underlie them and especially without an acknowledgement of the importance of neurochemistry.

**Keywords:** Imagination, art, memory, admiration, fear, amygdala, neural plasticity, neurochemistry

## **Introduction**

As an art historian I have often had to use my imagination, but never so much as when I started to use neuroscience to solve art historical problems, especially those concerned with the visual imagination itself. After all, how does one relate the hard facts about the brain, which are the

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