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The cognitive neuroscience of magic

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Posted on: August 7, 2008 10:20 PM, by Mo



In *The Conjurer*, by Hieronymus Bosch (above), a medieval European magician performs in front of a small crowd. As the spectators marvel at the conjurer's tricks, their attention is diverted away from the pickpockets who steal their belongings. The painting illustrates well that magicians throughout the ages have had an understanding of attention and awareness, and that their art is in large part based on their ability to subtly manipulate these processes in their audience.

Recently, there has been a great deal of interest in what magic can teach us about the brain. A year ago, scientists and magicians gathered in Las Vegas for [The Magic and Consciousness Symposium](#); last month, TED posted [a talk by "brain magician" Keith Barry](#); and [a Perspective article](#) in this month's issue of *Nature Reviews Neuroscience* (which is freely available) suggests that neuroscientists can gain a better understanding not just of cognitive processes such as attention and awareness, but also of the neural correlates of consciousness, by studying magicians and the techniques they use:

Magic combines multiple principles of attention, awareness, trust and perception to both overtly and covertly misdirect the audience. Whether they are used for performance art or as a means to illicitly separate victims from their money and valuables, the accomplished performer uses robust and intuitive manipulative devices that are of great interest to neuroscientists pursuing the neural underpinnings of cognition, memory, sensation, social attachment,

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causal inference and awareness. Among these devices, we would like to emphasize the use of misdirection as a means to generate cognitive illusions such as inattentional blindness, change blindness, memory illusions and illusory correlations. Magicians are able to obtain these effects under conditions of high scrutiny show after show. Some of the crucial principles one needs to take into account when designing a robust trick are the understanding that every motion should seem to have a purpose, that the magician should not perform the same exact trick twice, and that the most successful tricks use apparent repetition to close all the doors on every possible explanation of the trick except for 'magic' itself.

Although magicians are famously reluctant to divulge the secrets of their trade, the article, whose authors include neuroscientists [Stephen Macknik](#) and [Susana Martinez-Conde](#), and magicians [Teller](#) and [James Randi](#), includes quite a few explanations of the neural and psychological bases of magic tricks. In the [supplementary information](#) accompanying it are 10 film clips recorded at last year's symposium, which demonstrate some of the principles in action. Randi is also featured in this week's edition of *The Guardian's Science Weekly podcast*, in which he covers much of the same ground.

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Great point. I was just in Vegas and watched a magician literally feet before my eyes. As I watched his stuff materialize and disappear I was asking myself questions about the brain. Great photo find too. #1

Posted by: [Damien Riley](#) | [August 8, 2008 3:54 PM](#)

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