Cognitive Scientists Advance the Art of Magic With a Study of Penn & Teller’s ‘Cups and Balls’ Illusion

Feb. 12, 2013 — Cognitive brain researchers have studied a magic trick filmed in magician duo Penn & Teller’s video in Las Vegas, to illuminate the neuroscience of illusion. Their results advance our understanding of how observers can be deceived, and will aid magicians as they work to improve their art.

The research team was led by Dr. Stephen Macknik, Director of the Laboratory of Behavioral Neuroimaging at Barrow Neurological Institute, in collaboration with Penn and Teller’s research scientist Dr. Scott MacKenzie. The research was funded by the University of California, San Diego, and the University of California, Berkeley.

The research focused on the Cups and Balls trick, which involves a magician hiding a ball under one of three cups, then moving the cups around to disorient the audience, and finally revealing the ball. The team found that the magician’s movements cause the observer’s brain to create a false perception of where the ball is, leading to the illusion.

The illusion is created by the magician’s movements, which cause the observer’s brain to create a false perception of where the ball is. This perception is strengthened by the magician’s use of misdirection, which makes it difficult for the observer to follow the ball’s movements accurately.

The researchers hope that their findings will help magicians improve their illusions, and may also have applications in fields such as advertising and sales, where misleading information is often used to influence people’s decisions.