« Situationism in the Blogosphere - February Part II

Brain Magic »

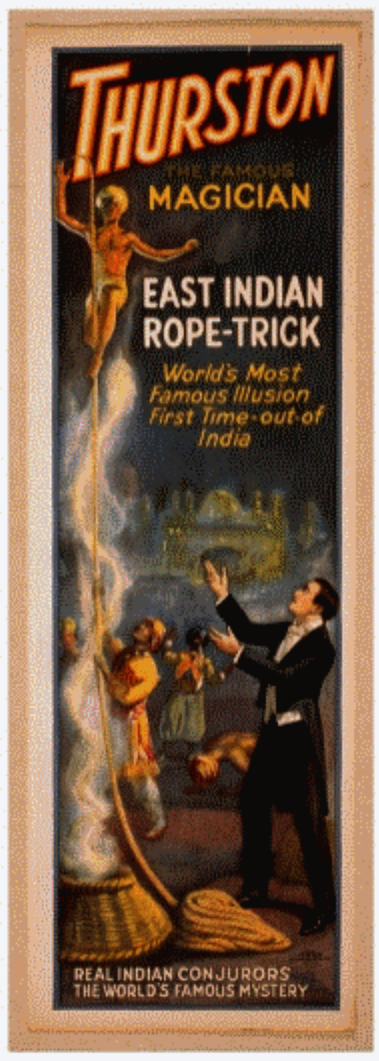
Magic is in the Mind

Posted by **The Situationist Staff** on March 28, 2009

Robyn Kim and Ladan Shams have a nice article, titled "What Can Magicians Teach Us about the Brain?," in *Scientific American*. Here are some excerpts.

* * *

. . . . Magicians . . . are masters of exploiting nuances of human perception, attention, and awareness. In light of this, a recent ***Nature Reviews Neuroscience* paper**, coauthored by a combination of neuroscientists (Stephen L. Macknik, Susana Martinez-Conde, both at the Barrows Neurological Institute) and magicians (Mac King, James Randi, Apollo Robbins, Teller, John Thompson), describes various ways **magicians manipulate our perceptions**, and proposes that these methods should inform and aid the neuroscientific study of attention and awareness.

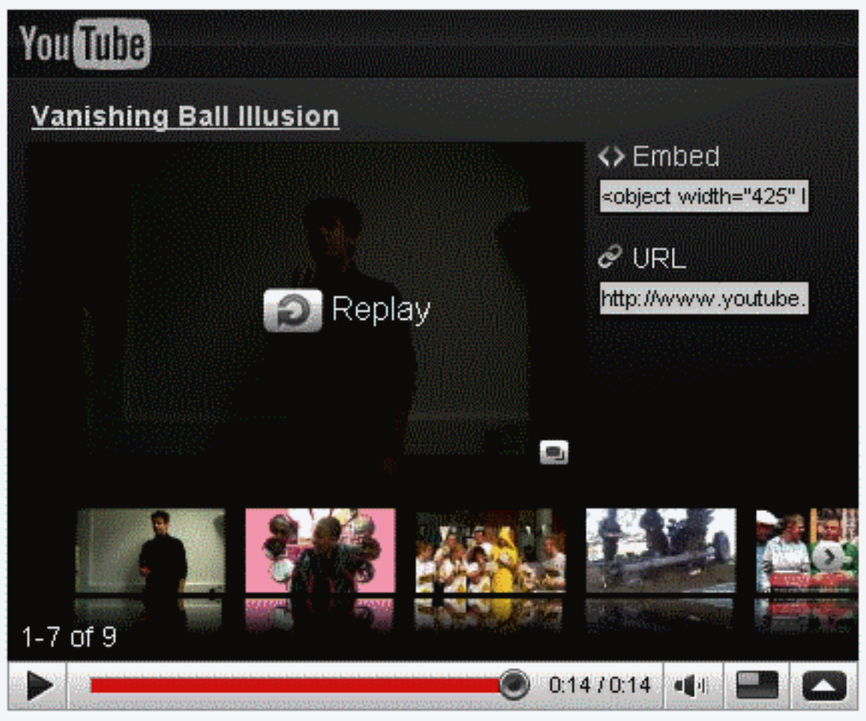


Magicians Secrets Revealed

The underlying concept of using quirks in human perception to learn about how the mind works is an old one. Visual, auditory and multisensory **illusions**, in which people's perceptions contradict the physical properties of the stimuli, have long been used by psychologists to study the mechanisms of sensory processing. Magicians use such sensory illusions in their tricks, but they also heavily use cognitive illusions, manipulating people's attention, trains of logic and even memory. Although magicians probably haven't studied these phenomena with the scientific method—they don't do controlled experiments—their techniques have been tested over time, perfected by practice and performed under conditions of high scrutiny by skeptical audiences looking to spot the trick.

An example of a visual illusion used by magicians is spoon bending, in which a rigid horizontal spoon appears flexible when shaken up and down at a certain rate. This effect occurs because of how different parts of objects (in this case, the spoon) are represented in the brain. Certain neurons are responsive to the ends/corners of the object, whereas others respond to the bars/edges; the end-responsive neurons respond differently to motion than do the bar-responsive neurons, such that the ends and the center of the spoon seem misaligned when in motion.

Attention can greatly affect what we see—this fact has been demonstrated in psychological studies of inattentional blindness. To misdirect people's attention and create this effect, magicians have an arsenal of methods ranging from grand gestures (such as releasing a dove in the theater to distract attention), to more subtle techniques (for instance, using social miscues). An example of the latter can be found in the Vanishing Ball Illusion . . . .



At the last toss, the magician does not actually release the ball from his or her hand. Crucially, however, the magician's gaze follows the trajectory the ball would have made had it been tossed. The magician's eye and head movement serves as a subtle social cue that (falsely) suggests a trajectory the audience then also expects. A **recent study** examining what factors produced this effect suggests that the miscuing of the attentional spotlight is the primary factor, and not the motion of the eyes. In fact, the eyes aren't fooled by this trick—they don't follow the illusory trajectory! Interestingly, comedy is also an important tool used by magicians to manipulate attention in time. In addition to adding to the entertainment value of the show, bouts of laughter can diffuse attention at critical time points.

* * *

Magic's Role in Neuroscience

Cognitive neuroscience can explain many magic techniques; this article proposes, however, that neuroscientists should use magicians' knowledge to inform their research. . . .

More concretely, the use of cognitive illusions—for example, during brain imaging—could serve to identify neural circuits underlying specific cognitive processes. They could also be used to map neural correlates of consciousness (the areas of the brain that are active when we are processing a given aspect of consciousness) by dissociating activity corresponding to processing of actual physical events from the activity corresponding to the conscious processing.

* * *

* * *

The entire aritcle is here. To read some related *Situationist* posts, see "The Situation of Illusion" or click here for a collection of posts on illusion.

Possibly related posts: (automatically generated)

- The Situation of Illusion

This entry was posted on March 28, 2009 at 12:01 am and is filed under **Illusions**, **Neuroscience**, **Video**. Tagged: **Illusion**, **magic**. You can follow any responses to this entry through the **RSS 2.0** feed. You can **leave a response**, or **trackback** from your own site.

Leave a Reply

Name (required)

Mail (will not be published) (required)

Website

XHTML: You can use these tags: <a href="" title=""> <abbr title=""> <acronym title=""> <b> <blockquote cite=""> <cite> <code> <del datetime=""> <i> <q cite=""> <strike>

Submit Comment

Notify me of follow-up comments via email.

« Situationism in the Blogosphere - February Part II

Brain Magic »

The Project

The Project on Law and Mind Sciences at Harvard Law School

PLMSTube

Visit the Project's Youtube Channel.

Creators

Jon Hanson
Michael McCann

Contributors

Mahzarin Banaji
John Bargh
Adam Benforado
Geoffrey Cohen
John Darley
Peter Ditto
Susan Fiske
Gráinne Fitzsimons
Jon Hanson
John Jost
Dan Kahan
Jerry Kang
Aaron Kay
Sung Hui Kim
Linda Hamilton Krieger
Michael McCann
Thomas Nadelhoffer
Brian Nosek
Emily Pronin
Paul Slovic
Tom Tyler
Timothy Wilson
David Yosifon
Philip Zimbardo

Fellows

Jason Chung
Chloe Cockburn
Elizabeth Johnston
Goutam Jois
Will Li
Pam Mueller
Emma Polgar
Al Sahlstrom
Previous Fellows

Artists

Marc Scheff

Background

About The Situationist
About Situationism
About The Project
Contact Us
Praise for
The Situationist

Blogroll

3 Quarks Daily
Advances History
Psychology
Bibliodyssey
Blackprof
BPS Research Digest
Center for Naturalism
Channel N
Choices Worth Having
Cognition & Culture
Cognitive Daily
Concurring Opinions
Consumer Law & Policy
Blog
Daniel Gilbert
Deception
Deliberations
Developing Intelligence
Discoveries
Dr. X's Free Associations
Everyday Sociology
Experimental Philosophy
Experiments in
Philosophy
Feminist Law
Frontal Cortex
Garden of Forking Paths
Illusion Sciences
Inquisitive Mind
Jurisdynamics
Laura's Psychology
Legal Theory
Legal Theory Lexicon
Lucifer Effect
Mind Hacks
Mixing Memory
Neuroanthropology
Neuroethics & Law
Neuromarketing
Neuronarrative
Neurophilosophy
Orgtheory
Overcoming Bias
Pooh's Think
PsyBlog
Psych & Crime News
Psychablog
Psychology Today
Race Equity Project
Radiolab
Sex Crimes
Social Psychology Daily
Social Psychology
Network
Sociological Images
Splintered Mind
Sports Law
Stanley Milgram Website
Two Minds
Us and Them
Warren Reports
We're Only Human
What Sorts of People
Whose Law?

Third PLMS Conference

The 2009 PLMS Conference: The Free Market Mindset

The Test

Take the Implicit Association Test

Recent Posts

Think Progress or Die
Brain Magic
Magic is in the Mind
Situationism in the Blogosphere - February Part II
Stare Decisis is Cognitive Error - Abstracts
Racism Meets Groupism and Teamism
Jeffrey Sachs on the Situation of Global Poverty
The Situation of "29" & the Downside of Goal-Setting
Dan Ariely on Cheating
Take the Policy IAT
Dick Cheney: A Situationist?
Conference on the Free Market Mindset
The Situation of Blaming Rihanna
Sarah Palin - Objectification - Reaction - Situation
Market Manipulation - Assuaging Cognitive Dissonance

a

Select Category

Archives

Select Month

Search

March 2009

M	T	W	T	F	S	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

« Feb

Situationist Books

Social Psychology and the Unconscious

The Construction of Preference

The Lucifer Effect
Understanding How Good People Turn Evil
Philip Zimbardo