OBITUARIES

Neuroscientists to explain how the brain is tricked at upcoming discussion

Like 5 Email Share Share Bookmark > Tweet 8 Google Print | Font Size: A' A' Why is it that when you're watching a magic trick you fall. for it every time — even though you know you're being

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fooled? The answer has to do with neuroscience, and it's the subject of a book published by two researchers at the Barrow Neurological Institute in Phoenix and a Santa Fe-

Anne Constable | The New Mexican

Posted: Saturday, February 19, 2011

the brain sciences.

based science writer. Stephen L. Macknik is director of the Laboratory of Behavioral Neurophysiology at BNI, and his wife, Susana Martinez-Conde, is the director of the Laboratory of Visual Neuroscience. Sandra Blakeslee is a science correspondent at the New York Times who specializes in

"Magic tricks work because humans have a hardwired process of attention and awareness that is hackable," the authors say in their book, Sleights of Mind: What the Neuroscience of Magic Reveals about our Everyday Deceptions.

In other words, a good magician uses your own brain against you.

The process depends on the specific trick, Martinez-Conde said in an interview Friday.

"The basic story is that our brain takes shortcuts. We don't process all the information that enters our senses only a tiny fraction," she explained.

For one thing, humans only have high resolution at the very center of their vision. So, even if you pay attention to what is happening at the periphery, that only helps so much because it is too far from the center.

Also, because the brain is limited in size and the number of neurons, "We cannot process everything out there," she said. In response, "The brain fills in gaps. It takes a guess. It makes predictions and simulations of the reality."

This approximation is generally pretty accurate. "For the most part (this ability) allows us to navigate in the world and not get eaten by predators," Martinez-Conde said. "But sometimes it's incorrect." Magicians take advantage of these limitations, these incorrect guesses we all make in everyday life" that lead to wrong conclusions about what's happening.

Macknik and Martinez-Conde, who describe themselves as a couple of Muggles — i.e. ordinary humans who are not like Harry Potter, born into the magical community — stepped into this world in 2005 when they decided to "rustle up some public enthusiasm" for their specialty of visual neuroscience by creating the Best Illusion of the Year contest for a meeting of the European Conference on Visual Perception, which they were organizing.

The contest was a huge success and has been held every year since then. The illusions can be viewed at http://illusionoftheyear.com, which gets about 5 million page views annually.

Literary agents and book publishers took notice of this and of the couple's articles in publications such as Scientific American Mind, and began calling:

And as scientists, they had read dozens of articles by Blakeslee in the science section of The New York Times.

Macknik and Martinez-Conde signed up with Blakeslee's agent and sold the book to Henry Holt and Company after meeting with a number of interested publishers. Since publication last fall, the book has garnered stories in the Wall Street Journal, The Financial Times and the Times of London, where the book debuted at number 51.

Macknik said one of the first things the authors did was buy an enormous whiteboard and sit down together over a weekend in Phoenix to structure the book.

They decided each chapter would describe a type of illusion — memory, choice, attention — and would include a particular trick to illustrate the psychological principle and its basis in neuroscience. Each chapter also includes "spoiler alerts" to prevent readers from inadvertently learning how the tricks are done - if that's their choice.

The book culminates with the story of the neuromagicians' own presentation of an elaborate trick — in which they pull a card out of a "brain" — at the Magic Castle, the Los Angeles home of the prestigious Academy of Magical Arts. Among other things, it involves a pinky break, a dovepan and a fake thumb tip.

Macknik said the couple wanted to write a book that would appeal to the general public's interest in how we interact in the world and how we behave, but also that would appeal to colleagues in the field. "Magic is still an area of knowledge people don't know a lot about," he said. "We could take advantage of the knowledge magicians have accumulated over millennia."

Neither of the neuroscientists had an interest in magic as youths, but they've realized that "magicians" manipulate attention and awareness better than scientists," and that they are masters of a "very intellectual form of performance art."

Macknik said many of the magicians they worked with (James the Amaz!ng Randi, Johnny Thompson, Omar Pasha, Mac King) are fans of cognitive science and interested in how tricks work in the brain. "These guys really know their stuff," he said. "To invent a trick, you have to have a theory of how the mind is working. Some of those theories we discovered are new. A subset of those are actually correct. Magicians have actually discovered new important principles of the brain."

On Wednesday, Macknik and Martinez-Conde will be in Santa Fe and will give a talk at the Santa Fe Complex on types of illusions magicians use, with particular focus on misdirection of attention. They promise a lot of illusions, videos and interactive exercises for the audience.

Contact Anne Constable at 986-3022 or aconstable@sfnewmexican.com.

IF YOU GO

What: Talk by neuroscientists Stephen L. Macknik and Susana Martinez-Conde, authors of Sleights of

When: 4 to 5:30 p.m. Wednesday

Where: Santa Fe Complex, 632 Agua Fría St. Cost: Free

Information: Call 216-7562

On the Web: www.sleightsofmind.com

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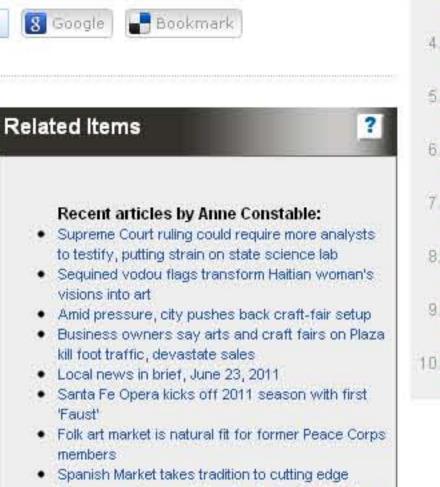
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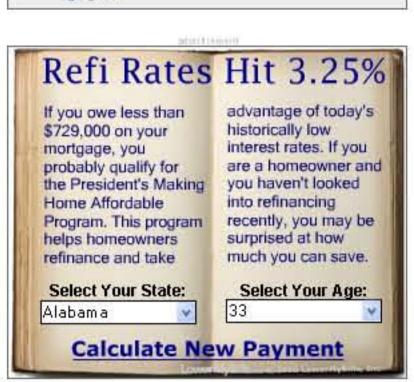
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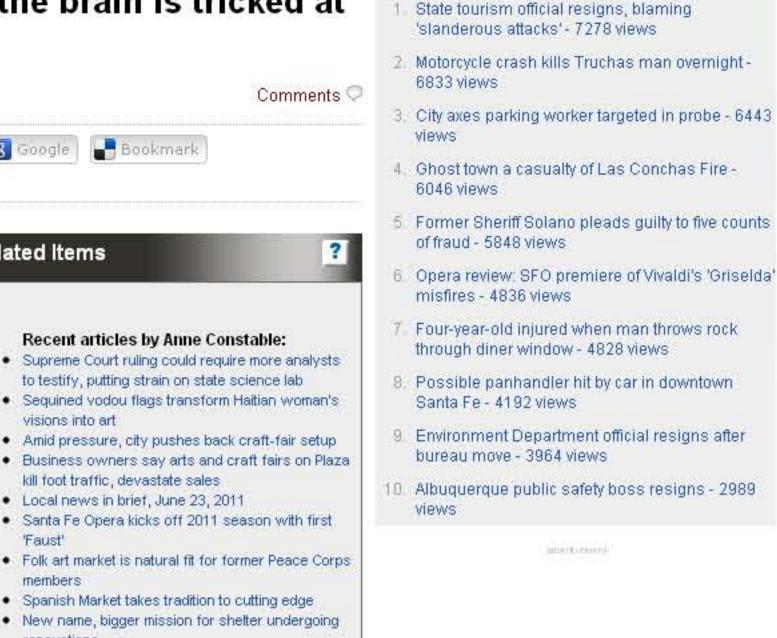




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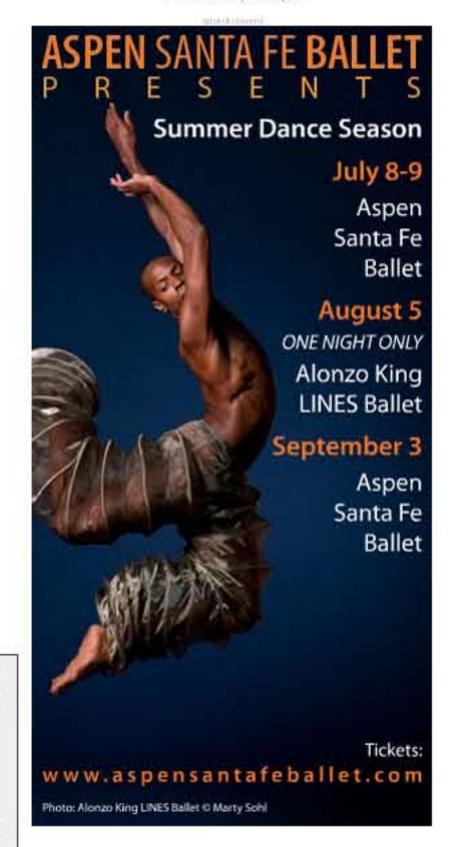
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