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Magicians take Advantage of Failures in the Mind

Benedict Carey

A decent magic show is frequently an exercise of purposeful chaos: cards flying through the air, glass crashing upon the floor, high volume exclamations such as "abracadabra!" or things that are set on fire. All because the magician needs a cover.

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The visual distraction to cover a card or a coin is one of the most used forms to exploit the cerebral processes that permit primary and imperceptible manipulation.

In an article published last week in Nature Reviews Neuroscience magazine, a team of neuroscientists and magicians described the form in which magic tricks - both simple and spectacular - exploit the "technical problems" that the brain has when it has to build a model of the exterior world in a short time or in relation to what we think is objective reality.

To magicians The Great Tomsoni (John Thompson), Mac King, Penn and Teller and James Randi, this contribution represents a scientific vindication as well as a new way to find ideas.

To the scientists Susana Martinez-Conde and Stephen Macknik, from the Barrow Institute of Neurology in Phoenix, this enlarges on the hope that magic could accelerate research into perception.

"We have here a kind of art that perhaps originated in ancient Egypt that basically the neuroscientist community had not realized" its direct application in studies of perception, said Martinez-Count.

"It is a marvelous article", indicated Michael Bach, a scientist from Freiburg University in Germany.

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For example, a theory of perception maintains that the brain builds representations of the world moment by moment, using the senses to offer signs and creating a mental image based on experience and context. The brain performs this function by neuron activity: being approached, sifting through and choosing in an instant and subconscious way, affirm brain scientists. Magic provides evidence of the "internal couture" of our minds: the neuron stitches of the curtain of perception.

The cornea is attentive to sudden changes in the environment if something appears or disappears, Martínez-Conde said. When something suddenly disappears, what the neuroscientists call "a post-discharge" appears: a spectral image of the object that persists for a moment.

This illusion is behind a spectacular magic act by the Great Tomsoni. The magician brings on stage an assistant in a white dress and tells the public that he will change the color of the dress before their eyes. The first thing he does is to illuminate the dress with a red light - an obvious tactic that becomes a joke. Then the red light is turned off, and the stage light switched on again and the woman appears in a red dress.

The secret is that after the red light disappears, the red image persists in the brain for some 100 milliseconds, sufficient time to remove the white dress and reveal a red one hidden underneath.

A similar process occurs with cognition. The brain is focused in a conscious way upon a single thing at a time at the expenses of others and without caring about the direction of the eyes.

In studies with images, neuroscientists found evidence that the brain suppresses the activity around the visual area when it is concentrating upon a specific task. In worrying about this task, the brain cannot register in a conscious way the actions that its eyes are nonetheless looking at. Magicians exploit this in many ways.

In a telephone interview, Teller explained the way in which a magician can disappear a card in one hand while quickly looking for a pencil in both his pockets: "I go to the two pockets, find a pencil, take it out and give it to someone... all this is incidental. If the public is focused on reading the intention - in this case, finding the pencil - then the other action is forgotten and nobody remembers that you've put the hand with the card in it in your pocket", he said.

"You don't see it because it's no longer an image, just the backdrop ".

(El Universal, Mexico)

Translated by Joseph Mutti

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