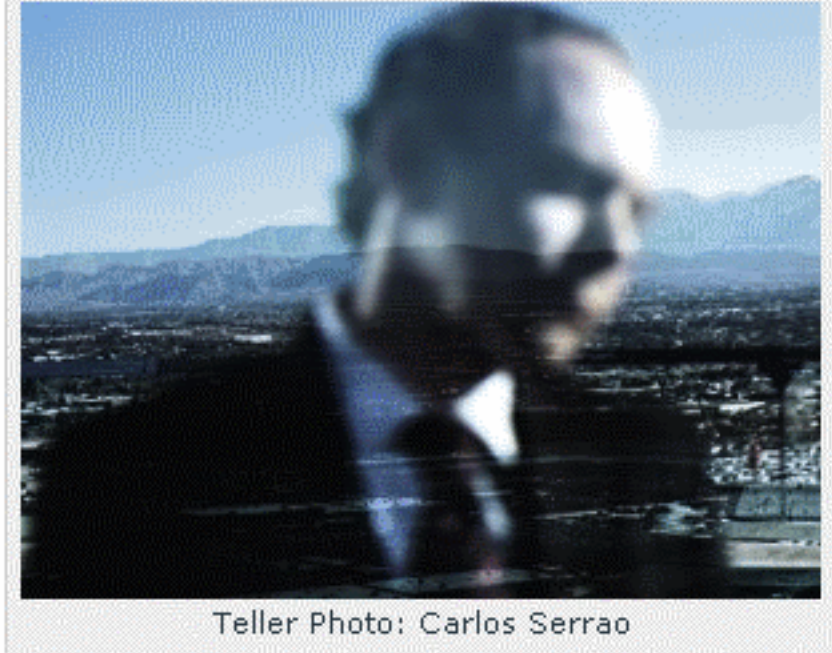




■ Magic and Neuroscience

Posted by: **Melany** | October 2, 2009

This entry is not about literary journalism, rather a collection of things that I have found interesting in my magic research. I thought it would be good to share.



Teller Photo: Carlos Serrao

I found this amazing article about the psychology of magic. It was written by Jonah Lehrer and is called **Magic and the Brain: Teller Reveals the Neuroscience of Illusion**. I won't explain what the whole article was about, but it has raised some very interesting questions and provoked thought within me for my own article. As my article progresses, I plan to talk about the methods used by magicians to fool you and trick your brain into being mystified by the illusions.

One such example is as follows:

“Attention, it turns out, is like a spotlight. When it’s focused on something, we become oblivious to even obvious changes outside its narrow beam. What magicians do, essentially, is misdirect—pivot that spotlight toward the wrong place at the right time.”

Information like this has been collected by different illusionists and academics researching neuroscience. This research has been pieced together into a research article. I will look through this article and include elements of what they have discovered in my story.

Now that on-the-job experimentation has taken an academic turn. A couple of years ago, Teller joined a coterie of illusionists and tricksters recruited by **Stephen Macknik** and **Susana Martinez-Conde**, researchers at the Barrow Neurological Institute in Phoenix, Arizona, to look at the neuroscience of magic. Last summer, that work culminated in an article for the journal *Nature Reviews Neuroscience* called “Attention and Awareness in Stage Magic.” Teller was one of the coauthors, and its publication was a signal event in a field some researchers are calling *magicology*, the mining of stage illusions for insights into brain function.

“Tricks work only because magicians know, at an intuitive level, how we look at the world,” says Macknik, lead author of the paper. “Even when we know we’re going to be tricked, we still can’t see it, which suggests that magicians are fooling the mind at a very deep level.” By reverse-engineering these deceptions, Macknik hopes to illuminate the mental loopholes that make us see a woman get sawed in half or a rabbit appear out of thin air even when we know such stuff is impossible. “Magicians were taking advantage of these cognitive illusions long before any scientist identified them,” Martinez-Conde says.

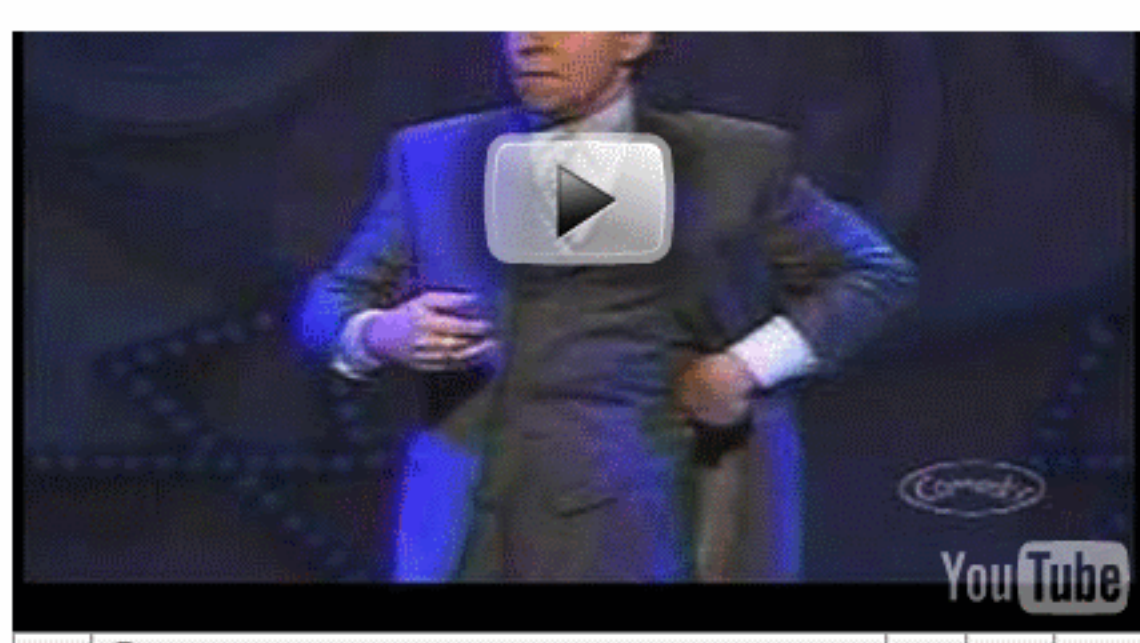
I find this concept fascinating. However, I have to be careful not to keep my article in the realms of ‘literary’ rather than simply a well-researched article of journalism.

The following video is an example of a very simple everyday activity that appears real. However, once it has been revealed to be a trick, you realise how a simple activity can actually be a very well-crafted illusion.



We really are terrible at noticing things going on around us

Watch this video before reading the following information.



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In the article, Teller uses this as an example of how people generally don't notice things happening right in front of our eyes. If we are focused on one thing in particular, our attention is narrowed to that one thing. Illusionists take advantage of this fact. About this, they said:

“The idea for this trick came straight from science,” Teller says. “We thought it would be fun to show people how bad they are at noticing stuff.” Called change blindness, the phenomenon is illustrated in a video (On YouTube) that inspired the duo. Shot in 2007 by British psychologist Richard Wiseman, it ostensibly documents a simple card trick—the backs of the cards in a deck are magically transformed from blue to red. But during the course of the video, Wiseman’s shirt, his assistant’s shirt, the tablecloth, and the backdrop all change color, too. Most viewers watch the card trick unspool and miss the other alterations.

Oh magic is fun!

Finally, this article includes a very interesting part about the relationship between our eyes and our brain. This part is fascinating and I have been telling everyone that will listen to me.

Consider a technique used by the legendary pickpocket

Apollo Robbins, another coauthor of the Nature article spearheaded by Macknik and Martinez-Conde. When the researchers asked him about his devious methods—how he could steal the wallet of a man who knew he was going to have his pocket picked—they learned something surprising: Robbins said the trick worked only when he moved his free hand in an arc instead of a straight line. According to the thief, these arcs distract the eyes of his victims for a matter of milliseconds, just enough time for his other hand to pilfer their belongings.

At first, the scientists couldn't explain this phenomenon. Why would arcs keep us from looking at the right place? But then they began to think about saccades, movements of the eye that can precede conscious decisions about where to turn one’s gaze. Saccades are among the fastest movements produced by the human body, which is why a pickpocket has to trick them: The eyes are in fact quicker than the hands. “This is an idea scientists had never contemplated before,” Macknik says. “It turns out, though, that the pickpocket was onto something.” When we see a hand moving in a straight line, we automatically look toward the end point—this is called the pursuit system. A hand moving in a semicircle, however, seems to short-circuit our saccades. The arc doesn't tell our eyes where the hand is going, so we fixate on the hand itself—and fail to notice the other hand reaching into our pocket. “The pickpocket has found a weakness in the way we perceive motion,” Macknik says. “Show the eyes an arc and they move differently.”



Apollo Robbins Photo: xploremagic.com

I'm hoping to include something about this in my blog. I want anyone who reads my article to be as fascinated with the information I present as I was ready this article.

This article is primarily about neuroscience and magic. There has been a very long link between science and magic, as can be seen in the early alchemists.

What is an alchemist? From 4to40.com

An alchemist was an early student of the science of chemistry. According to one theory the word “alchemy” is derived from “Khem”, the ancient name for Egypt. That country was the source of a great deal of the pioneer work in the various sciences.

Much of the early work of the alchemists is frowned on by today’s scientists because it was bound up with experiments to find “the elixir of life” and “the philosopher’s stone” which would turn all base metals into gold. The alchemists also studied magic and astrology.

The “hermetic art” is another name for alchemy. Hermes Trismegistus was the name given by the Greeks to the Egyptian god of alchemy. Thus hermetic sealing is derived from the method of airtight sealing used by alchemists in their experiments.

This connection has been present for years and years and is something I want to note in my article.

I have just written this possible paragraph to include in my article:

“Science and magic have been linked for centuries, dating back to the early days of alchemy. Alchemists have forever been in the pursuit of “the elixir of life” and “the philosopher’s stone”, but they have also forged the way for science breakthroughs such as the hermetic seal. This air-tight seal is the namesake of mythological alchemist, Hermes Trismegistus, who was believed to possess a magical ability to seal treasure chests from unwanted access to their contents. Science, magic and mythology have long been intertwined and the relationship between science and magic has become a fascinating topic of research over the past few years.

“International comedy-magic duo, Penn and Teller are well known for their unusual presentation of tricks and their confidence in teaching the audience how their tricks are performed – something that is usually frowned upon by magicians.”

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