



Perception, illusion, prediction, magic, autism

Apr 21st, 2009 by Dr. Michael Merzenich

There is an enjoyable article in the current issue of *Wired* in which the magician Teller (the silent, smaller and more sneaky chap on the Penn and Teller team) engages in a conversation with the science writer Jonah Lehrer about the neurological bases of magic. Reading this article led me to a review on this subject published in *Nature Reviews Neuroscience*, written by Teller and two card-carrying psychologists (Stephen Macknik and Susans Martinez-Conde).

As is very nicely described in both articles, magic is based on the ability of the illusionist to misdirect our attention and misguide our predictions. It thrives on the fact that our view of the world is piecemeal, because our selective attention is guided (reliably captured) by the salience of new and surprising events, and by strong, ongoing predictions of what SHOULD happen next. This selectivity and predictability for our neurological operations are great gifts. We rely on selective attention to construct reliable models of (and to appropriately sort and categorize 'what goes with what', and 'what comes next') the million-and-one small and large things (and all of that myriad of features that distinguish them, one from another) of our world. We rely on ongoing prediction to drive the flow of thoughts and actions continuously FORWARD, filling in any gaps by prediction ('guessing'), on the path to order and fluency. The more reliable these selective processes, the more stable our neurological operations — and the easier it is for the magician to lead us merrily down the garden path to deceive us.

One would guess that a child or adult that has impaired selective attention and a less reliable ability to predict 'what comes next' (for example, signature deficits of autism) could not be so easily fooled by a magician. Is this the case? Are their individuals out there reading this blog who invariably see **exactly** what the magician is up to, every minute?! If so, why don't you respond to this blog entry, and tell us about it!

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