

Syllabus for January@ GSAS mini-course Magic and Scientific Thinking

Semester

Winter 2012

Course

GSC-5

Title

Magic and Scientific Thinking: how insights from magicians can broaden our thinking about problems/questions in the sciences.

Instructor

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Contact Info

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Location

TBA

Lectures

Mondays, Wednesdays and Fridays from 6-7pm; January 9-20, 2012

Recommended Reading

Sleights of Mind: What the Neuroscience of Magic Reveals About Our Everyday Deceptions by Stephen L. Macknik, Susana Martinez-Conde and Sandra Blakeslee

Course Website

<http://isites.harvard.edu/icb/icb.do?keyword=k85127>

Course Description

At first glance magic and science are complete opposites. But when one looks closer there are many similarities between the modern magician and the modern scientist and even more similarities between magic illusions and natural phenomena.

Clarke's Third Law: Any sufficiently advanced technology is indistinguishable from magic.

Niven's Law: Any sufficiently advanced magic is indistinguishable from technology.

Agatha Heterodyne (Girl Genius) Paraphrase of Niven's Law: Any sufficiently analyzed magic is indistinguishable from science!

Arguably, many of the most interesting discoveries in science come from interdisciplinary approaches. This is because when we look at a problem from a new/different perspective we can frequently discover things that were hidden from us if we only looked at a problem from one angle. In this course we will not only draw attention to some parallels between tools magicians use and nature but also to how thinking like a magician can help us be better scientists.

We will explore the limits of human cognition and attention and see how magicians use these to fool us into thinking that they can bend spoons with the power of their minds or that a chosen card can travel through a deck to reveal itself. We will discuss how superstition and preconceived notions work to the benefit of a magician but to the detriment of a scientist. We will look at how magicians imitate nature by looking at how appearing silks and flashes of fire are using the same principles that a stickinsect or an antelope uses to avoid predators. And we will think about how the thought process to developing a new illusion is analogous to how scientists try to understand molecular pathways and other natural processes.

Course Objective

Hopefully students will walk away from this course with more insight into thinking about their own projects and the world around them. Also they will gain an appreciation of the art of magic and illusion.

Schedule

Monday - January 9

History of scientific thinking and an introduction to the world of illusion and sleight of hand.

Wednesday - January 11

Cognitive principles underlying magic: what we can learn about our own neural pathways by looking at how magicians deceive us.

Friday - January 13

Going under or over the radar: camouflage/mimicry and alarm signals in both science and magic.

Monday - January 16

Why magic wands work: superstition and preconceived notions.

Wednesday - January 18

Sawing a woman in half: an analogy to the way we interpret molecular pathways.

Friday - January 20

Show by a local magician: Doc Rogers.