

We will start momentarily at 2pm ET



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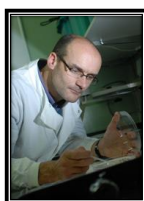
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Thursday, January 31, 2013

### Gender Bending Science: Impacts of Endocrine Disrupting Chemicals

Dr. Charles Tyler, University of Exeter  
Dr. Darren Griffin, University of Kent



Thursday, February 7, 2013

### Formula for Financial Stability in An Uncertain Time

Jason Fagan, Chesser Financial  
Bryan Bloom CPA, Chesser Financial

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**Q: “Hungry for a brain snack?”**

**A: ACS Webinars™ on**



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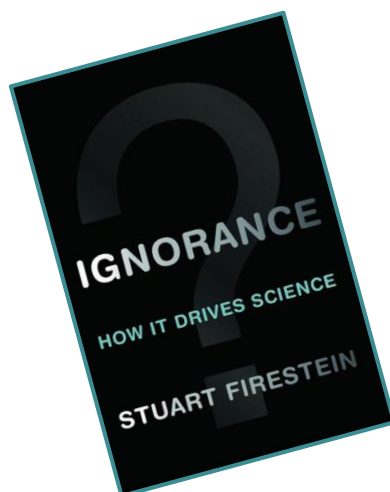


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## Stay Tuned for your chance to win Dr. Firestein's Book !



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ACS WEBINARS™

January 24, 2013



***Ignorance:  
Why Science Shouldn't Start with a Hypothesis***



**Dr. Stuart Firestein**  
Columbia University

**Dr. Darren Griffin**  
University of Kent

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# Ignorance

how it drives science



Stuart Firestein  
Columbia University  
New York, NY

<http://ignorance.biology.columbia.edu/>

**It's very difficult to find a black cat  
in a dark room.**

**Especially when there is no cat**



**The Scientific Method**

**vs.**

**Farting Around**

**...in the dark**

**Poll Question**

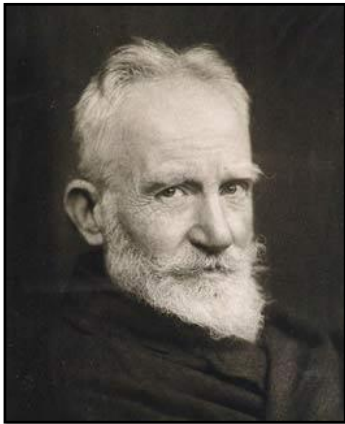
**When were you taught that science research should always start with a hypothesis?**

- a. High School**
- b. Undergraduate**
- c. Post-Graduate**
- d. Never**
- e. From Birth**

***“Thoroughly conscious ignorance is the prelude to every real advance in science.”***



**James Clerk Maxwell, 1831 -1879**



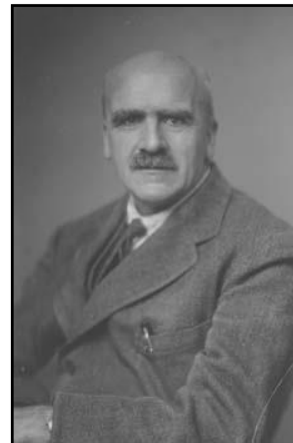
**George Bernard Shaw**  
1856 -1950

**“Science is always wrong.  
It never solves a problem  
without creating 10  
more.”**



**Immanuel Kant**  
1724 -1804

**The Principle of Question Propagation**  
**“Every answer given on principle of  
experience begets a fresh question.”**



**“Not only is the universe stranger than we imagine,  
it is stranger than we *can* imagine.”**

**-JBS Haldane (1928)**



# Cognitive Copernicanism

Nicholas Rescher



Nicolai Copernicus  
1473-1543



*De revolutionibus  
orbium coelestium*

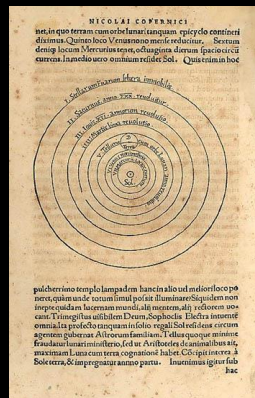
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# Cognitive Copernicanism

Nicholas Rescher



Nicolai Copernicus  
1473-1543



L. Wittgenstein  
1889-1951

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### Poll Question

How do you know that the earth rotates on its axis and that the sun remains still in the sky?

- a. you were told so in school
- b. it seems that way
- c. pictures from outer space
- d. other - what in a few words

**Answer: Foucault's Pendulum  
Pantheon, Paris**



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# Cognitive Copernicanism

Nicholas Rescher



Nicolai Copernicus  
1473-1543



These experiences which overtly contradict the annual motion of the earth, have so much more the appearance of convincings, that I cannot find any bounds for my admiration *how reason was able in Aristarchos and Copernicus to commit such a rape upon their senses...*

-Galileo, 1633

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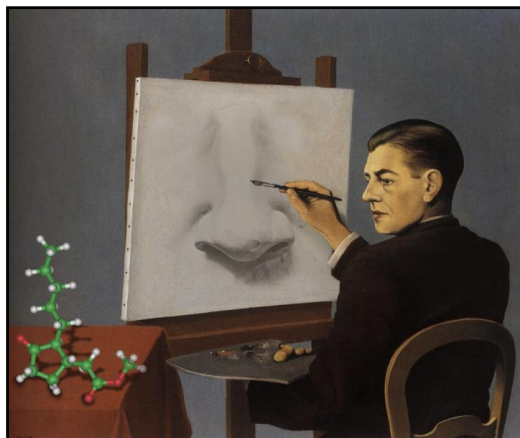
## Basic vs. Fundamental



La Clairvoyance  
Rene Magritte, 1936

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## Basic vs. Fundamental



**La Clairvoyance**  
(altered, S. Firestein, 2012)

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## Discovery (dis-cover)

### ENEMIES

Hypotheses (...non fingo.)

Facts

Occam's razor

### FRIENDS

Fishing expeditions

Curiosity

Failure

Serendipity (sort of)

"Chance favors the prepared mind"

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## **Science is the Search for Better Ignorance**

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**“In an honest search for knowledge you quite often have to abide by ignorance for an indefinite period.”**

**-Erwin Schrodinger, 1948**

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**“Education is not filling buckets,  
it is lighting fires.”**

**- W.B Yeats**

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Stuart Firestein  
Columbia University  
New York, NY

<http://ignorance.biology.columbia.edu/>

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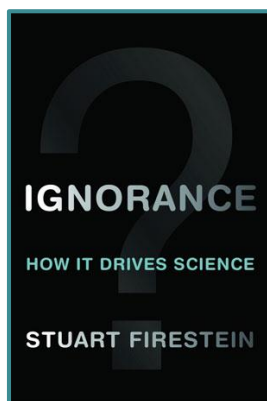
Jason Fagan, Chesser Financial  
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## And the Winner Is!!!



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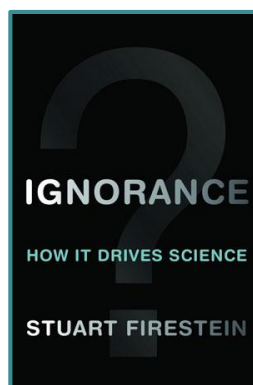
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