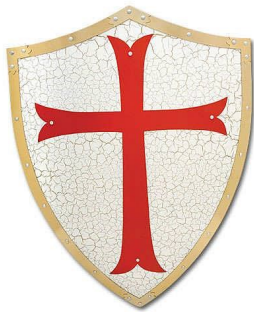


A man should never be ashamed
to own that he has been in the
wrong, which is but saying... that
he is wiser today than yesterday.
~ Jonathan Swift (1667–1745)

Phactum

The Newsletter and Propaganda Organ
of the Philadelphia Association for Critical Thinking
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The Mystery of the Templar Head Idols

By Don Nigroni

The Templars: Selected Sources (2002), translated and annotated by Malcolm Barber and Keith Bate, contains various texts about alleged head idols supposedly worshipped by the Templars. However, no idols turned up when the King's men confiscated the Templar's property in France during their arrests on various charges on October 13, 1307 nor were any ever found afterwards.

The *Order for the arrests (14 September 1307)* issued by King Philip IV of France listed various accusations against the Order such as "When they enter the Order" they "deny Him three times and spit in His face", perform illicit kissing, agree to commit homosexual acts and they "made offerings to idols".

The testimony of *Hugh of Pairaud, Visitor of France (9 November 1307)* is curious. He was the second most important member of the Order, after the Grand Master, Jacques de Molay. According to the report of his testimony, "Asked about the head, previously mentioned, he said on his oath that he had seen it, held it and stroked it at Montpellier in a chapter, and he and other brothers present had worshipped it." Then "Asked where it might be, he said that he sent it to Brother Peter Alemandin, Preceptor of the house at Montpellier, but did not know if the king's men had found it. He said that this head had four feet, two at the front, under the face, and two behind."

The *Episcopal inquiry at Clermont (4-10 June 1309)* listed under Article X:

- 46 Item that in all provinces these brothers had idols in the form of heads, some of which had three faces, some one and some had a human skull;
- 49 Item that they worshipped it or them as God;
- 53 Item that they said the head could save them;
- 54 Item that it made them rich;
- 55 Item that it gave them all their riches.
- 56 Item that it made the soil bring forth seeds;
- 57 Item that it made the trees flower.
- 58 Item that they encircled or touched some head with cords which they then tied around their shirts and bodies;

Malcolm Barber in *The Trial of the Templars*, Second Edition (2006) stated that “Several also mentioned the worship of an idol in the form of a head, although their descriptions varied from ‘a foul and black idol’ to one which ‘seemed to be white with a beard’. Two witnesses claimed that it had three faces.” And Peter Partner in *The Knights Templar and their Myth*, Revised Edition (1990) wrote that “Many Templars denied the idol, but those that did not tended to let their imaginations run riot in describing it: it was like a skull, like a reliquary, like a cat, like two or three cats, like a painting on a beam or wall, like a head of a man with a long beard.” And “The name given to the idol, ‘Baphomet’ (once or twice the form Mahomet is actually used by witnesses in the trial), is one of the most persuasive pieces of evidence that the charges were concocted to ‘smear’ the Templars.”

And then there is the curious case of testa LVIII M of which Barbara Frale, the Vatican Secret Archives Historian, in *The Templars and the Shroud of Christ* (2012) provides an account from J. E. Gugumus’s *Orsola e compagne*:

At that point, the designated guardian of the Order’s goods after the arrest, a certain Guillaume

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***Phactum*’s Roster of I.R.E. (Infamous Rational Errors)**

Phactum contributor Paul Schlueter III has accumulated over time a vocabulary listing of many of the egregious flaws of thinking, devious tactics of argument, and some pretty cool Latin phrases that might sound impressive used at a social gathering. This listing is nowhere near complete, but has been made into a pamphlet that is available free and only at PhACT Meetings.

Meeting attendees are invited to take one and are invited to participate in expanding the listing in the next edition as it is intended to be a collaborative project. Definitions and examples should be short and to the point and may be submitted to the *Phactum* editor at: phactpublicity@aol.com

New entry: GAMBLER’S FALLACY - When an individual erroneously believes that the onset of a certain random event is less likely to happen following an event or a series of events. This line of thinking is incorrect because past events do not change the probability that certain events will occur in the future. Example: consider a series of 20 coin flips that have all landed with the "heads" side up. Under the gambler's fallacy, a person might predict that the next coin flip is more likely to land with the "tails" side up.

Philip IV of France (1268-1314)

Philip IV, also known as Philip the Fair was knighted in 1284 at age 16 and wed Joan I of Navarre who was then 12 years of age. He became King of Navarre until Joan's death in 1305. Meanwhile, in 1285 Philip's father, Philip III died in 1285 and Philip ascended to the throne of France until his death.

Philip was aggressive and wished to increase the power of the monarchy. He did manage to install relatives on the thrones in Hungary and Naples but his greater ambition was to place a relative as Emperor of the Holy Roman Empire but that plan failed.

Philip had amassed huge debt from borrowing from Jews in France. This was a problem, so in 1306 he expelled all Jews from the land. He also had considerable debt owed to the Knights Templar, so a year later, on Friday, October 13, 1307 he arrested hundreds of the Knights, tortured them to confess, and had some burned at the stake.

In 1314 there was great scandal as two of Philip's daughters-in-law were accused of adultery. They and their lovers were tried, flayed, and executed. The third daughter-in-law was accused of knowing of the affairs.

Later in 1314 Philip, at age 46, suffered a stroke while on a hunt and died a few weeks later at Fontainebleau where he was born. Philip's three sons, Louis X, Philip V, and Charles IV sequentially ascended to the throne but none lived long and none had male heirs. By 1328 Philip's line had died out as French kings but his daughter Isabella was for a while Queen of England, the wife of Edward I.



Pidoeye, who held the crates containing the relics found in the Templar mansion of Paris, was called to the hearing. The guardian was ordered to take to the trial every object shaped as a head, whether of wood or metal, that was found in that building; he then handed over to the commissioners a large, handsome, gold-plated silver reliquary that represented a girl. Inside they found bones that seemed to be part of a skull, sewn in a white linen cloth and then placed in another red cloth. Along with the cloth there was a small ticket that said "testa LVIII M." The head seemed to belong to a girl child, and some said it was a relic of one of the Eleven Thousand Virgins. Since the guardian stated that there was no other head-shaped object, the commissioners summoned Guillaume d'Erreblay and showed him the reliquary, but the Templar said it was not the same and that he doubted he had ever seen that one in the Temple's mansion.

Frale stated that "The diocesan bishops swiftly came to understand that the Templars' notorious idol-head was in fact a reliquary, an upper bust sculpture containing the remains of some saint, a very widespread class of object in medieval sacred art".

The Templars surely had many valuable items which were considered to be relics and were stored in reliquaries, some of which would have been thought to be the remains of skulls and would have been held in head-shaped reliquaries. But the veneration of saints was hardly considered heretical by Catholics then or now.

She also noted that "The Templars paid special homage to their founder Hugues de Payns, revering him as a great saint during certain nocturnal liturgies, when they would expose his head, whether mummified or naturally preserved, within a large and precious reliquary." Frale pointed out that Hugues "had never been officially canonized". And then there was the theory of Ian Wilson from his *The Shroud of Turin: The Burial Cloth of Jesus Christ?* (1978) which, as Frale wrote, "the author maintained that the mysterious 'idol' worshipped by the Templars was in fact the shroud kept at present in Turin, folded on itself and kept in a container designed to show only the face."

The evidence from the interrogations does seem to indicate that, after the official ceremony receiving someone into this order of warrior monks, it was common prac-



Knights Templar about to be burnt at the stake. The painting was made in 1480.

tice to take said person into a separate room and, after he had previously just sworn absolute obedience to his superiors and to defend the Catholic faith, he was commanded by a superior to deny Christ and spit on a crucifix. Needless to say, this placed that person in an impossible situation since he could not possibly fulfill both requirements of rendering absolute obedience to his superiors and of always remaining faithful to his religion. But very few Templars admitted to homosexual practices or idol worship.

In *The History of the Knights Hospitallers of St. John of Jerusalem; Styled afterwards, The Knights of Rhodes, And at present, The Knights of Malta* (1770) by Abbe de Vertot we have a rendering of the contemporary account by Giovanni Villani of Jacques de Molay's statement just after he was sentenced in 1314 and just before he was executed:

It is but just ... that in this terrible day, and in the last moments of my life, I lay open the iniquity of falsehood, and make truth to triumph. I declare then, in the face of heaven and earth, and I own, though to my eternal shame and confusion, that I have committed the greatest of crimes; but it has been only in acknowledging those that have been charged with so much virulence upon an order which truth obliges me now to declare innocent. I made the first declaration they required of me, only to suspend the excessive tortures of the rack, and mollify those that made me endure them. I am very sensible what torments they inflict, and what executions they prepare for those that have the courage to revoke such a confession; but the horrible sight they offer to my eyes, is not capable of making me confirm a first lye by a second. On a condition so infamous as that, I freely renounce life, which is already but too odious to me. And what good would it do to me to spin out a few miserable days, when I must owe them only to the blackest of calumnies.

So the Grand Master is here declaring that he had confessed in order to not be tortured and to appease his persecutors and then did not revoke it so as to avoid being executed as a relapsed heretic. A plausible scenario is that the greedy and covetous King of France had set his sights on destroying the Templars in order to get out of having to repay them the loans they had made to him and also to gain their movable and immovable property which would help relieve his debts to others as well as allow him to pay for some of his many other expenses. Based on the vicious accusations of Esquin de Floyran, the King sent spies to join the Order in order to find irregularities on which to charge them with heresy. Once the accusation of idol worship was included in the 1307 order for the arrests then the King needed confessions about an idol or idols. Using torture or the threat of torture and the carrot and stick of offers of light punishment for those who cooperated and severe penalties for anyone who refused to play along, he got some Templars to confess to worshipping a head idol. Some low ranking members might have been confused by some Templar rituals and gave garbled testimonies about an idol under pressure but the Visitor surely would have known better. The leaders of the Order could have come to an understanding with the King and the Pope. When they were sentenced to life imprisonment over six years later, instead of being pensioned off or allowed to join another monastic order such as the Knights Hospitaller, they then would have realized that they had been betrayed by the King and perhaps also by the Pope. The reason that no eerie Templar head idols were ever found is quite simply because no such items ever existed.



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Don Nigroni received a BS in economics in 1971 from Saint Joseph's University and a MA in philosophy from Notre Dame in 1973. He retired in 2007 after working for 32 years as an economist with the US Bureau of Labor Statistics. He now spends his time cutting invasive plants as a volunteer Weed Warrior, hiking, kayaking, bird watching and metal detecting for buried treasure.



UPCOMING PHACT EVENTS

Dr. David Cattell, Chairman of the Physics Department of Community College of Philadelphia hosts meetings of PhACT - at 2:00 PM on the third Saturday of most months at Community College of Philadelphia. Parking is easily available and costs \$4.00 for all day. Enter the college parking garage on 17th Street which is one way south bound. It opens at 1:00 PM and closes at 6:00 PM. This meeting site is handicap accessible. **PhACT Meetings are Free and open to the public unless otherwise noted.**



Lectures are generally at Community College of Philadelphia in Lecture Room C2-28 in the Center for Business and Industry at the corner of 18th and Callowhill Streets, at 2:00 PM, unless otherwise noted. **Please try to arrive a few minutes early as the College now requires that meeting attendees sign in for security reasons. ID must be shown.**

Saturday, April 15, 2017 at 2:00 PM - In Lecture Room C2-28 in the Center for Business and Industry at the corner of 18th and Callowhill Streets.

Dr. Paul Offit will discuss his new book,

PANDORA'S LAB: SEVEN STORIES OF SCIENCE GONE WRONG.

Specifically, Dr. Offit will focus on two of the seven scientific inventions he argues changed the world--for the worse. Of interest, Dr. Offit got several of his initial ideas for this book in discussions with PhACT members following a meeting about two years ago.

Dr. Paul Offit is an internationally known vaccinologist based locally at Children's Hospital of Philadelphia.

(Continued on page 6)

Some Books by Paul Offit

Offit, Paul (2015). *Bad Faith: When Religious Belief Undermines Modern Medicine*. Basic Books. ISBN 0465082963.

Paul A. Offit (2013). *Do You Believe in Magic? The Sense and Nonsense of Alternative Medicine*. Harper. ISBN 0062222961.

UK title: *Killing Us Softly: The Sense and Nonsense of Alternative Medicine*

E. Allison Hagood; Stacy Mintzer Herlihy; Paul A. Offit (foreword) (2012). *Your Baby's Best Shot: Why Vaccines Are Safe and Save Lives*. Lanham, Md: Rowman & Littlefield Publishers. ISBN 1-4422-1578-X. CS1 maint: Multiple names: authors list (link)

Offit, Paul A. (2011). *Deadly Choices: How the Anti-Vaccine Movement Threatens Us All*. Basic Books. ISBN 978-0-465-02149-9.

Offit, Paul A. (2008). *Autism's False Prophets: Bad Science, Risky Medicine, and the Search for a Cure*. Columbia University Press. ISBN 978-0-231-14636-4.

Offit, Paul A. (2007). *Vaccinated: One Man's Quest to Defeat the World's Deadliest Diseases*. Smithsonian Books/Collins. ISBN 978-0-06-122795-0.

E-book version: Offit, Paul A. (2009). *Vaccinated: Triumph, Controversy, and An Uncertain F.* HarperCollins. ISBN 9780061871511.

Offit, Paul A. (2005). *The Cutter Incident: How America's First Polio Vaccine Led to the Growing Vaccine Crisis*. Yale University Press. ISBN 978-0-300-10864-4.

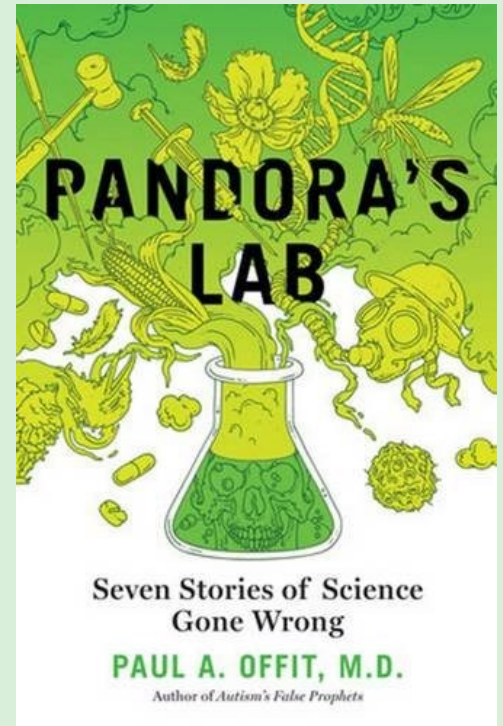
Marshall, Gary S; Penelope H. Dennehy; David P. Greenberg; Paul A. Offit; Tina Q. Tan (2003). *The Vaccine Handbook: A Practical Guide for Clinicians*. Lippincott Williams & Wilkins. ISBN 978-0-7817-3569-8.

Pandora's Lab: Seven Stories of Science Gone Wrong by Paul A. Offit, M.D.

Hardcover: 288 pages

Publisher: National Geographic (April 4, 2017)
ISBN-10: 1426217986 ISBN-13: 978-1426217982

What happens when ideas presented as science lead us in the wrong direction? History is filled with brilliant ideas that gave rise to disaster, and this book explores the most fascinating—and significant—missteps: from opium's heyday as the pain reliever of choice to recognition of opioids as a major cause of death in the U.S.; from the rise of trans fats as the golden ingredient for tastier, cheaper food to the heart disease epidemic that followed; and from the cries to ban DDT for the sake of the environment to an epidemic-level rise in world malaria. These are today's sins of science—as deplorable as mistaken ideas from the past such as advocating racial purity or using lobotomies as a cure for mental illness. These unwitting errors add up to seven lessons both cautionary and profound, narrated by renowned author and speaker Paul A. Offit. Offit uses these lessons to investigate how we can separate good science from bad, using some of today's most controversial creations—e-cigarettes, GMOs, drug treatments for ADHD—as case studies. For every "Aha!" moment that should have been an "Oh no," this book is an engrossing account of how science has been misused disastrously—and how we can learn to use its power for good.



Saturday, May 20, 2017 at 10:00 AM. PhACT Expedition to Valley Forge National Park.

The 2017 Phact expedition will be on Saturday, May 20 at 10:00 AM. We will assemble at the the Yellow Springs Parking Lot off Wilson Road in the south west corner of Valley Forge Park. The parking lot area has bathrooms and picnic tables. Eric Krieg, our expedition leader, has been studying local folk lore and has plotted a mile and a half loop walk though a beautiful area past a lot of historic buildings in an area ripe with hauntings. Rob Kerr and Kim Sheridan will be available to identify flora and fauna that we may encounter.



The park is said to have many ghosts of revolutionary war soldiers - over 2500 of whom died till winter ended early 1778. The surrounding area has had a number of ghost and monster sightings.

This PhACT event is free and all are welcome. Bring something for lunch as we will picnic after the hike.

(Continued on page 7)

How to get there (for normal people) - From Philadelphia by car: Take the Schuylkill expressway (rt 76) West from the city. Take Rt 202 south. In not long take the exit for PA 252 N/ Valley Forge Rd. This gets you on Swedesford Rd East a short distance. Turn right onto Rt 252 North - (aka as Valley Forge Rd). In the park, Rt 252 turns left to follow Valley Creek Rd. Soon after this turn left to cross the covered bridge on Yellow Springs Rd. 100 m later, turn left on Wilson Rd, park in parking lot on the right where it dead ends 200 m later and look for skeptics.



The Knox Covered Bridge



How to get there (for rugged individualists) - From the Appalachian trail on foot heading north. After the PA town of Duncannon, the trail northbound climbs a steep hill after crossing rail road tracks. Pass a small shelter on the left. Over the crest of the hill take a yellow blaze trail on the right labeled "horse shoe trail". Go about 140 miles to 400m before the trail end in Valley Forge Park. turn right on the Valley Creek Trail and go around 1.5 miles south till you see the covered bridge and follow the above directions from there in to the parking lot.



Knox's Headquarters



TCarriage House at Valley Forge Farm

Saturday, July 22, 2017 - PhACT Picnic

10:00 AM to 2:00 PM at Mondauk Common Park (our usual location)

We always have fun visiting, eating, and playing sports. Bring your own food, you can cook on the grill. And bring stuff to throw. We have reserved the pavilion in the woods on the Southeast corner of Mondauk Common park in Upper Dublin. This is good fun for the whole family. We have negotiated with the park ants and they agree to not show up before 1:00 PM.



We will again have a book swap - it is a great free way to build up a science/skeptic book collection - or help someone else do so.



How to get there:

Broad street runs between Susquehanna and Limekiln roads. From the PA turnpike, go to the Fort Washington exit and take Rt 309 north, take the second exit and turn right onto Susquehanna. Make a left at the second light onto Broad Street, park in the second parking lot on the left, and follow the little sand path up to the pavilion.

For those with a GPS unit, program it for the intersection of Broad Street and Twin Pond Drive in Fort Washington, PA.

All are welcome. Free.

MCHUMOR.COM by T. McCracken



"Amazing! An entire book collection of nothing but volume 1 of encyclopedias given away free at as introductory offers."

Cartoon by T. McCracken
<http://www.mchumor.com/>
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Saturday, September 16, 2017 - The PhACT Lecture Series begins for 2017/2018. Save the Date

Letters to the Editor

Letters and Rants to the Editor are encouraged.
Send to PhACTPublicity@aol.com

Editor: On page 21 of the Jan-Feb-Mar '17 issue of Phactum, there is an article by Howard J. Wilk saying that he could call up a random person and say "Before you tell me if you support despicable A or disreputable B, think of a number ... I'm going to throw a die ..."

Before he could finish his sentence, if I were the person he called, I'd say "Save your energy; throw no dice; I'm not voting for either one of the people you mentioned. Why is it a choice of either/or? You never heard of 'none of the above?' I'm voting for Alyson Kennedy of the Socialist Workers Party. I'd rather vote for a person with a program I agree with, and see her lose, than vote for a 'lesser evil' and see them win, and have to regret for 4 years whatever they did, essentially in my name because I voted for them."

I don't understand Howard's "randomized response" anyway, but that's beside my point. Not only was the Socialist Workers Party on the ballot in several states (unfortunately not PA -- I had to write my candidates in, because for the last 30-odd years PA has made it well-nigh impossible for small parties to get onto the ballot), but I think there was also a Green Party, a Libertarian Party, possibly a Vegetarian Party, and others, on the PA ballot. There was some sort of Mormon party on the ballot in Utah.

Please don't go around assuming people are voting for either of 2 horrible choices, Howard Wilk. If you could have prefaced your paragraph by "Assuming you're voting for one of the 2 major candidates ..." before you get to the part about "then I'm going to throw a die and ask you bla bla bla," I wouldn't complain. As it is, I'm writing this whole letter-to-

the-editor-of-Phactum.

Amy Lowenstein

Yardley, PA

Howard J. Wilk responds:

I realize that there can be more than two candidates on the ballot and write-in votes are always possible (I wrote in Daniel Patrick Moynihan in 2000). I have a follow-up letter in which I show how the method works, and I'll make this explicit.

Editors note: I didn't understand it either.

Editor: I really ought to show the proof that my randomized-response method works (Phactum January/February/March 2017 page 21). It's not that hard. Remember, despicable A and disreputable B are running against each other. You want to make it so you can't tell from a response whom the person being polled is for, so people aren't reluctant to say "A" or "B".

You're conducting the poll over the phone or face-to-face, and you have a die.

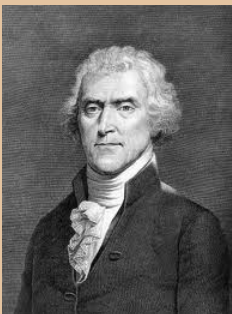
The method is, you say "Before you tell me if you support A or B, think of a number 1 through 6 but don't tell it to me. I'm going to throw a die and (tell you/you'll see) the result. Don't tell me if it's the number you chose or not, but if it is the number you chose, tell me the truth about whom you support, A or B, and if it isn't the number you chose, tell me the other name."

Here's how it works:

- ◆ A is the percentage of A supporters; B is the percentage of B supporters. $A + B = 100$. 'A' is the percentage of people who answer "A"; 'B' is the percentage of people who answer "B". $'A' + 'B' = 100$.
- ◆ 1/6 of A supporters will answer "A"; 5/6 of A supporters will answer "B".

Your thoughts and opinions are important.

So why not share those thoughts with other Phactum readers? We appreciate letters and articles about almost any topic. We would very much like correction on matters of factual error and polite expression of disagreement of opinion. Please, no partisan politics or angry rants about religion. You may rebut the ill-tempered Editor's ramblings with impunity as we promise not to stick pins in effigy dolls. Original poetry is welcome.



Send submissions to the Phactum Editor at : phactpublicity@aol.com

"Fix reason firmly in her seat, and call to her tribunal every fact, every opinion. Question with boldness even the existence of a God; because, if there be one, he must more approve of the homage of reason, than that of blindfolded fear."

~ Thomas Jefferson (1743 - 1826)

- ◆ 1/6 of B supporters will answer "B"; 5/6 of B supporters will answer "A".
- ◆ So 'A' = (1/6)A + (5/6)B
- ◆ 6'A' = A + 5B
- ◆ 6'A' = A + 5(100 - A)
- ◆ 6'A' = A + 500 - 5A
- ◆ 4A = 500 - 6'A'
- ◆ A = 125 - 1.5'A' and by the same reasoning B = 125 - 1.5'B'. This is the same result as before except it's expressed in percentages.

Howard J. Wilk

Philadelphia, PA 19115-4027

Editors's note: I still don't get it.

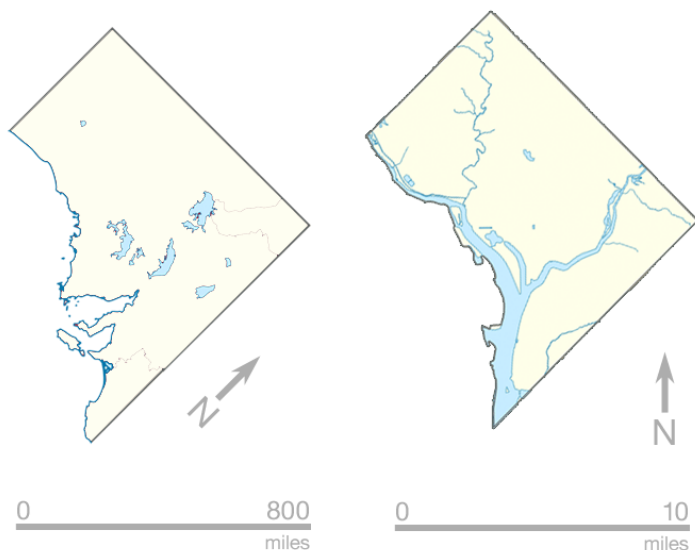
Editor: The outlines of South Australia and the District of Columbia: <http://ericfidler.me/2015/09/south-australia-resembles-the-district-of-columbia/>: A psychic connection? Given all the geographic entities in the world, it should come as no surprise that the outlines of some closely match others.

Howard J. Wilk

Philadelphia

South Australia

District of Columbia



Editor's note: Good eye, Howard! South Australia is one of six Australian states that comprise the major land area of the Commonwealth of Australia. SA is about 402,000 square miles in size but for its vastness is but 4th in rank geographically. SA's population is about 1.7 million people with the major population located in Adelaide or its environs.

Editor: The Gambling Addictions described in the January/February/March 2017 Phactum? Chickenfeed. Read up on Canadian banker Brian Molony, who embezzled over 10 million dollars from his employer. (I know--who knew Canadians were capable of such heinous crimes?) Molony was

apparently a fundamentally honest man who embezzled the money with every intention of paying it back, when he won it back of course, which he was sure he would do. Caesars AC casino had to shut down for a day, on what has become known as "Brian Molony Day", for letting him gamble away so much money without checking to see where he got it from. Read Stung: The Incredible Obsession of Brian Molony by Gary Stephen Ross. Or watch the movie Owing Mahowny (Philip Seymour Hoffman as "Dan Mahowny"). Or watch the movie Life of Brian, which has nothing to do with Brian Molony, but is one of the funniest movies ever.

Howard J. Wilk

Philadelphia

Editor:(Re: Oct./Nov./Dec., '16 issue, p. 8) Always eager to help out our Editor (or at least, the 11% of him which is not yet a curmudgeon), I have some comments on wildfire containment.

First, Wildfire (the pony) completely escaped confinement, and (hopefully) remains at large somewhere in folk legend (just outside the borders of the Michael Martin Murphey song).

Second, I wonder if the U.S. Forestry Service offers any explanation of how the degree of wildfire containment is determined? I can imagine a couple of options. With satellite imagery (and computer processing), it would seem simple enough to map the outline of a wildfire, and literally measure its circumference; play with the math some, and it's simple enough to come up with a precise statement of which portion of a wildfire's advance is being blocked by firefighters at any given moment (a number which can change quickly). A slightly less plausible method might be to overlay a map of the wildfire with a protractor, and literally compare the contained degrees (3.65° would equal 1%) with the uncontained degrees; this might get tricky when the wildfire doesn't advance in a smooth, even front. My speculations can be contained by a little internet reference work, by anyone who has an online computer.

More important than how containment is measured is the very serious issue of how much damage is being done by the wildfire within its containment boundaries. Wildfire containment is largely a process of cutting ditches and felling foliage ahead of the flamefront, which (hopefully) starves the wildfire of fuel and blocks its advance. The remaining fuel within the containment boundary (trees, homes, petroleum tanks, etc.) still bums until it is exhausted, or until doused by heavy rain. Contained fuel is rarely burned to ash, and it is often the case that a "quelled" fire can re-ignite by the disturbance of embers (ever try to stomp out a tiny little campfire?), or simply by the wind blowing a little harder. Wildfire fighters often remain on the site of an extinguished fire for days, just to ensure that incompletely-burned areas don't re-ignite and get out of control. A "contained" wildfire is still very dangerous, and far from "extinguished."

Wildfires are a classic example of the Law of Unintended

Consequences. During the first half of the 20th Century, foresters believed that the proper response to every wildfire was immediate dousing. Later, it was realized that wildfires are Nature's own means of eliminating dry brush and undergrowth, opening up "clogged" forests to new, regenerative growth (some pine cones won't even release their seeds unless baked open by wildfire heat!) Depending on complex ecological conditions, it is sometimes best to "contain" a wildfire and allow it to burn off much of its own fuel, in order to forestall further burning. This can be difficult news to assimilate when you've invested your nest-egg in a beautiful backwoods home, far from the familiar urban dangers.

A thorough understanding of Nature's cycle of growth and flame may be as difficult to come by as a sound appreciation of the true benefits and risks of immunization.

It can be interesting to compare incarceration with wildfires. Prisoners are usually contained 100%, yet some smolder for a long time (and occasionally flare-up). Some dangerous embers have been known to escape containment, and thus threaten the surrounding area. It might be possible to leave the embers contained indefinitely and until they die out, but the costs of that are prohibitive; it's much better to apply treatments to remediate the confined, and the result can often be great new fertility and opportunity for productive growth. The last thing anybody wants to see is "scorched earth" within the containment zone. Evidence-based Reason is the best policy guide.

Paul Schlueter III,
Dallas, PA

Editor: Re: "Study: Rational Thinking is Teachable" by Paul Schlueter III (*Phactum*, January/February/March 2017 p. 22):



"Rationalize" is not a dirty word in science. To say Einstein's theory of general relativity rationalizes observed anomalies in the orbit of Mercury, and the observation of stars being not in their normal positions in the sky during a total solar eclipse,* means the theory provides an explanation that makes sense of the observations. That doesn't necessarily mean the theory is correct—observations or experiments in the future could show the theory to be wrong or at least incomplete.

*Joke:

"I flew my Learjet to Nova Scotia the day after the total eclipse of the Sun."

"Why the day after?"

"The hotel room was less expensive then."

"You're so cheap. I'll bet you think this joke is about you. Don't you? Don't you?"

My specific inclusion of some of the phrases in this joke is rationalized by knowledge of music of a certain age.

Howard J. Wilk
Philadelphia

Editor: From the Wikipedia page of former major-league baseball player Kevin Youkilis: "In an embarrassing formatting oddity, it was noticed in 2007 that multiple baseball websites such as Baseball-Reference.com and BaseballProspectus.com had been using "youkike" as part of their urls for webpages featuring Youkilis [who is Jewish]. This unintended quirk affected those sites that used an automatic url-creating algorithm which combined the first five letters of a player's surname with the first two letters of his first name.

Kevin Youkilis (b. 1979)

played for the Boston Red Sox as first baseman and third baseman. By all accounts he was a competent athlete and was on the American League All Star Team in 2008, 2009, and 2011. Youkilis' lifetime major league batting average was .281.



Following the discovery, the sites manually adjusted the urls to remove the inadvertent slur."

Just a nasty coincidence? I wondered. It seemed plausible to me that someone at the first site to do this was playing around with names, noticed you could get "youkike" out of "Kevin Youkilis" this way, and built the algorithm around this fact. But a sabermetrician informs me that a database using that method of nomenclature goes back to at least 1996, while Youkilis wasn't drafted until 2001.

Howard J. Wilk
Philadelphia

Editors note: "Sabermetrician" is likely a word that few of us have ever heard or read although we know what they do. Sabermetrics is the study of baseball statistics. Saber derived from *Society for American Baseball Research* + *-metrics* (as in *econometrics*)

Various Ruminations of Woo Woo and Real Science and some Gossip

Collected/Written by Ray Haupt
(with help from others)

3,991 Paranormal Societies in the U.S.A.!

Get a load of this!! According to the following website there are thousands of paranormal societies in the United States. There are plenty in Pennsylvania but it seems that relatively few are based in Philadelphia.

<http://www.paranormalsocieties.com/>

We are massively outnumbered, not a reassuring idea.

Potatoes on Mars

Scientists from the International Potato Center near Lima, Peru have devised a chamber that mimics temperature and atmospheric conditions on Mars and have succeeded in growing potatoes. The news article includes a time-lapse video of growing potatoes.

Mazel tov!! This suggests a bright future for Mars colonists to export potato chips.

<https://phys.org/news/2017-03-indicators-potatoes-mars.html>

Do I correctly recall a Robert A. Heinlein novel where



Mars was populated by giant cabbages? But not to worry, Earth, Idaho accepts the challenge of new competition.

A Happy Ending Achieved by Anti-vaxxer Activity No!!!

The ending to this tale is anything but happy, it is a disaster.

Sharon Hansen, a writer at The Daily Telegraph, a newspaper in Sydney, Australia, relates the story of a young mother in Byron Shire, NSW in eastern Australia, who refused to have her baby receive an intramuscular injection of Vitamin K shortly after birth. The young woman was not being stubborn and in a sense was not ill-informed. She was advised by public health officials at Byron Bay to not have her child vaccinated.

<http://www.dailytelegraph.com.au/rendezview/byron->

SOME CHANGES COMING TO PHACTUM

As of April 2017 PhACT will no longer offer U.S. Mail subscriptions to Phactum. Existing mail subscriptions will continue but will no longer be renewable upon expiration. We will continue to have a print edition that will be available free at PhACT meetings. We will continue to send Phactum by email which is free and has no expiration date. We do encourage skeptics and science minded people to become PhACT members for the princely annual membership fee of \$15.00. Dues and donations **received** are our only sources of income. This membership offers no benefits beyond the good feeling it might impart to help finance an organization whose educational mission is to propagate critical thinking and to be a voice against the (evil) forces of anti-scientism and Flat-Earthism.



Phactum will continue to be published at least four times a year, perhaps not quite quarterly depending on the Editor's whim and travel schedule. The Calendar of Events of other organizations will be truncated as it is a considerable burden to the editor and usually requires a lot of time just prior to publication.

As always, we appreciate critical feedback and well reasoned articles on almost any topic. Please eschew partisan politics, religion bashing, and the Kardashian's.

[shires-dangerous-antivax-sentiment-is-catching/news-story/677ff0e573a8199fec8b2660ce2ab279](http://www.naturalnews.com/0377ff0e573a8199fec8b2660ce2ab279-shires-dangerous-antivax-sentiment-is-catching/news-story/677ff0e573a8199fec8b2660ce2ab279)

Four weeks after birth the parents took the hemorrhaging child to a pediatrician who performed tests and sadly informed the parents that it was too late, the little boy would die.

Vitamin K Deficiency Bleeding (VKDB) is a condition found at times in newborns whose gut has yet to be colonized with bacterial flora which produce Vitamin K. It is Vitamin K that allows a newborn to develop sufficient blood clotting factors to prevent serious bleeding situations.

Since 1961 intramuscular injection of Vitamin K has been a standard tool of pediatricians in modern countries to prevent death or disability and according to the CDC is a safe procedure.

I suppose administration of Vitamin K is not technically a vaccination in the sense that it is preventing a communicable disease, but in the eyes of the anti-vaxxers it is an unnatural evil devised by money grubbing doctors and greedy Big Pharma. Accordingly anti-vaxxers fulminate against this technology despite well documented records of high efficacy and safety, and sadly at times they manage to infiltrate Public Health organizations.

The Natural Society had this to say about VKDP:



“Caution.

: Since newborns don't have bacteria in the intestine to produce vitamin K, countries like the U.S., Great Britain, and Canada inject newborn babies with vitamin K to prevent bleeding. Unfortunately, this controversial practice may not be a viable solution, and is deemed completely unnecessary by many experts. While the touted benefits of this administered vitamin K dose are understood, though not fully accepted, the immediate infliction of pain after birth can cause psycho-emotional trauma and physiologic instability.” Hardly a great endorsement of proven technology.”

The sad affair related above occurred 7 years ago and happily the offending public health nurses were removed by local officials. Unhappily, Byron Shire is a hotbed of anti-vax sentiment where about 50% of children under five years old remain unvaccinated. From 2008 to 2012 a whooping cough epidemic erupted in Australia and not surprisingly started and was centered in Byron Shire. A four week old and a nine week old died in the Shire of that disease and likely some others suffer some disability. Nonetheless that region stubbornly has become a mecca for natural cure enthusiasts and in some circles parents who do indeed have

their children vaccinated are shunned. It has become fashionable for pro-vax parents to deny their actions.

Byron Shire is the birthplace of the anti-vaccine movement. The Australian Vaccination Network was set up there in Bangalow in the 1990s and is a pestilence in its own right.

More information about VKDP can be found at the Quackwatch website where some details are related about four cases that occurred in Tennessee in 2013. The children all survived, but with some problems. One reason given for declining Vitamin K injection was a 1992 report linking Vitamin K with leukemia. That study has never been replicated.

<http://www.quackwatch.org/03HealthPromotion/k.html>

Measles In Romania

An outbreak of measles occurred in Romania beginning February 2016. Thousands have been sickened and 17 have died. The articles states that the cause of the epidemic is poverty and activity of anti-vaxxers.

The World Health Organization says that measles vaccination should be in two doses, the first before a child's first birthday. Romanian Public Health authorities state that only 80% of Romanians receive the first shot, the percentage falling to 50% for the second.

Of the 17 children that died none had been vaccinated.

<https://www.yahoo.com/news/measles-outbreak-romania-killed-17-children-164527550.html>

Meanwhile, Back in Australia ... homeoprophylaxis

The item below was pinched from Homeopathy Plus, an Australian newsletter that touts the benefits of homeopathy over scientific medicine. No doubt it is popular in jurisdictions such as Byron Shire described above. To be clear, PhACT and Phactum do not endorse homeopathy in any



form what-so-ever.

The article and others can be found at:

<http://homeopathyplus.com/human-homeopathic-prevention-records-studies-and-trials/>

Let's look at homeopathic immunisation (homeoprophylaxis)

We are struggling to manage two problems at once but could be a lot cleverer about it.

The first problem is that people, including children, still die from infectious diseases such as malaria, whooping cough, and other epidemic diseases.

The second is that, from the homeopathic standpoint, vaccines have several drawbacks.

Vaccines are expensive, slow to produce, offer variable rates of protection, and are complicated to distribute and administer. They also produce minor to serious side-effects, and in some instances, death. For some diseases, no vaccine exists.

So, to manage these problems better, why don't we look at the homeopathic alternative?

Homeopathy has been repeatedly used for protection AND treatment during world epidemics and outbreaks. It is inexpensive, quickly distributed, easily administered and safe. Remedies exist for all epidemic diseases.

Homeopathy first rose to prominence through its effective treatment and prevention of cholera and typhoid. 200-years later it is still doing the same; governments of today are using homeopathy to prevent, treat, or break

epidemics within their countries. Some examples are:

The Indian government controls epidemics of malaria, Japanese encephalitis, dengue fever, and epidemic fever with homeopathy

The Cuban government now depends on homeopathy to manage its leptospirosis epidemics and dengue fever outbreaks

The Brazilian government funded two large trials that successfully reduced the incidence of meningococcal disease in those given the homeopathy prophylactic

The governments of Thailand, Colombo and Brazil use homeopathy to manage dengue fever outbreaks and epidemics

(References and sources for these and other instances are found at:

<http://homeopathyplus.com/Homeoprophylaxis-Human-Records-Studies-Trials.pdf>)

Isn't it time we 'wised up' and researched the homeopathic option further? Under the circumstances, it is a reasonable and sensible thing to do.

Preposterous, is it not? Sadly, homeopathy and its kindred alternative medicine schemes are widely popular and likely will remain so for many years. Skeptics of alternative medicine have a long uphill battle.

An Astronomic Inquiry by Paul Schlueter III



The Sept. 30, 2016 issue of *The Week* reported that the moon can cause major earthquakes. The statement I found interesting was: "The effects of lunar gravity are most dramatic during full and new moons, when the Earth, the sun, and the moon are aligned." This causes tidal effects (which can involve tides within the soft magma within the earth, as well as the oceans on her surface).

When the moon is full, the earth is almost exactly between the sun and the moon. When there is a "new moon" (when it cannot be seen), the moon is almost exactly between the earth and the sun. In the former instance, the gravity from the moon and sun pull in opposite directions; in the latter instance, they pull in the same direction. The article states that there is a difference of about 1% in the strength of tidal forces, between these extremes.

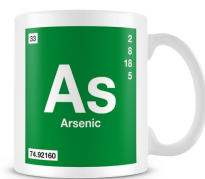
So my inquiry is: If there is such a dramatic influence between phases of the moon that earthquakes can be caused, then why aren't those influences sufficient to cause people to become werewolves? Can anybody help me with this?

Editors's note: Phactum invites responses from readers, who are asked to apply Critical Thinking skills, Reason, and/or Science to answer the question about werewolves.

Used by permission
<http://cliparts.co/howling-cartoon-wolf>

Arsenic and Darwin

The New Scientist reported in the February 22, 2017 edition that people in the Atacama Desert of northern Chile have evolved to tolerate unusually high levels of arsenic in their drinking water. In fact, the arsenic level of 1 milligram per liter of water is the highest anywhere in the Americas and is 100 times higher than the maximum safe level as prescribed by the World Health Organization. The FDA limit for safe consumption is arsenic levels cannot exceed 10 parts per billion in the water.



People first settled in that region of South America about 7,000 years ago and ever since a major concern was adequate fresh water. It seems that the people in the region have adapted to have a genetic ability to thrive with high levels of arsenic.

Scientists theorize that arsenic's negative effects on human health, such as inducing miscarriages, acted as a natural selection pressure that made this population evolve adaptations to it. A new study suggests this is indeed so.

Another example of human evolution is lactose tolerance. A mutation which allowed adults to keep producing the enzyme lactase to digest milk emerged around 7000 years ago, alongside dairy farming, and now 35 per cent of adults carry it and can digest milk as a result.

It seems that Charles Darwin was on to something rather interesting when he came up with that new fangled Theory of Evolution.

<https://www.newscientist.com/article/mg23331144-200-desert-people-evolve-to-drink-water-poisoned-with-deadly-arsenic/#>

Gambling Addiction

♠♣♥♦ **Asia** - Brain disorder cause of gambling addiction, study shows

Compulsive gambling can be attributed to a brain disorder that renders addicts incapable of determining appropriate risk, a Japanese research group has found. The group, led by Hidehiko Takahashi, associate professor at Kyoto University, found that gambling addicts showed reduced activity in the frontal lobe. The findings are expected to help in the development of a novel treatment for problem gambling.

<http://www.japantimes.co.jp/news/2017/04/05/national/science-health/brain-disorder-cause-gambling-addiction-study-shows>

♠♣♥♦ **USA** - A Nation of the Walking Dead

The United States consumes 80 percent of opioids used worldwide, and more than 33,000 died in this country in 2015 from opioid overdoses. There are 300 million prescriptions written and \$24 billion spent annually in the U.S. for painkillers. But these monetary figures are far less than what we spend on gambling. Americans in 2013 lost \$119 billion gambling, with an additional \$70 billion-or \$300 for every adult in the country-spent on lottery tickets. Federal and state governments, reliant on tax revenues from legal gambling

and on lottery ticket sales, will do nothing to halt the expansion of the industry or the economic and psychological toll it exacts on those in financial distress. State-run lottery games had sales of \$73.9 billion in 2015. "The poorest third of households buy half of all lotto tickets," Derek Thompson noted.

<http://www.commondreams.org/views/2017/04/03/nation-walking-dead>

♠♣♥♦ **USA - Pennsylvania** - Airport Gambling Struck Down by State House

The state House of Representatives struck down an amendment that would have allowed gambling in Pennsylvania's airports. The bill defined airport gaming as "the placing of bets or wagers with a slot machine licensee through the use of a multi-use computing device to play an authorized airport game." The proposed bill would have also given a slot machine licensee authorization from the state Gaming Control Board to operate airport gambling. Prospective airport gamblers would have to be at least 21 years old, would have to clear airport security checks and hold a valid airline boarding pass.

<http://www.cardplayer.com/poker-news/21504-gambling-expansion-pennsylvania-rejects-slots-at-airports-bill>

♠♣♥♦ **USA - Pennsylvania** - Our view - Could gambling grant money be put to better use?

It has become a perennial question in this space, but remains valid. Is the state, and the county, making the best use of the "Local Share Account" grants created with money from gambling revenue at the Mohegan Sun



Pocono casino in Plains Township? The annual lament here relates to the process for dishing out what is typically \$10 million to \$12 million each year in Luzerne County. Municipalities can apply for grant money, with the Commonwealth Financing Authority in Harrisburg picking the "winners." The system leads to dribs and drabs of money oozing irregularly into purchases and projects often with very limited and local impact. The biggest winner got less than 10 percent of the total: Wilkes-Barre nabbed \$1 million to further plans for new corporate headquarters for the Berkshire Hathaway Guard Insurance Companies. Should this money go toward helping private companies thrive?

<https://timesleader.com/opinion/editorials/648075/our-view-could-gambling-grant-money-be-put-to-better-use>

♠♣♥♦ **USA** - Daily lottery play linked to gambling addiction, study finds

People with a gambling problem are most likely to play the lottery each day and have a greater portion of friends and family who gamble themselves, a new study has found. The report, based on a survey of almost 10,000 Massachusetts residents, was released Thursday at a meeting of the state Gaming Commission. Researchers based at the University of Massachusetts Amherst's School of Public Health and Health Sciences identified 11 factors that correlate with problem gambling, including demographics. Blacks, immigrants, and people with less education are more likely to be problem gamblers, researchers found

<https://www.bostonglobe.com/metro/2017/03/30/daily-lottery-play-linked-gambling-addiction-study-finds/>



[YIZgURmy0YnNznJHQIMEbP/story.html](https://www.bostonglobe.com/metro/2017/03/30/daily-lottery-play-linked-gambling-addiction-study-finds/)

♠♣♥♦ USA - Pennsylvania - Lawmakers Debate Credit Card Gambling

Pennsylvania lawmakers have taken one step closer to allowing people to use credit cards to gamble, allowing the proposal out of a committee to the full assembly. The Commonwealth is one of the few states that bans linking credit cards directly to gambling - and some in this budget strapped state say it's perhaps time to change the law. The I-Team's Andy Mehalshick takes a closer look. The Wilkes-

Barre Scranton International airport could soon see slot machines and travelers would be permitted to use credit cards to play those machines. That's the first step in a major gaming overhaul the state house is now reviewing.

<http://www.pahomepage.com/news/i-team-lawmakers-debate-credit-card-gambling/681509159>

♠♣♥♦ USA - Pennsylvania - Gambling addicts on this list can be criminally charged - A local state rep wants them to get treatment, too

Nearly 500 people in Pennsylvania entered a casino last year and left with a criminal charge. They had placed themselves on the state's self-exclusion list, which allows individuals with gambling addictions to voluntarily ban themselves from casinos. Now, a state rep. from Allegheny County wants to offer those offenders treatment, as well as punishment. State Rep. Jason Ortity, who represents the suburbs west of Pittsburgh in Allegheny and Washington counties, introduced a bill Wednesday that would allow judges to offer treatment - in addition to punishment.

<https://theincline.com/2017/03/10/gambling-addicts-on-this-list-can-be-criminally-charged-a-local-state-rep-wants-them-to-get-treatment-too/>

♠♣♥♦ USA - How Are Brain Structures Disrupted in Addiction?

In a new meta-analysis, functional magnetic resonance imaging studies were used to determine the ways in which the brain in individuals with addictive behaviours differs from those without addictions. The findings suggest that there are two separate dysfunctions found in the brain's reward system depending on the underlying disease. The data showed that during reward anticipation, striatum activity was universally decreased in individuals with both substance and gambling addiction compared to those without addiction. An important distinction, however, was found during reward outcome

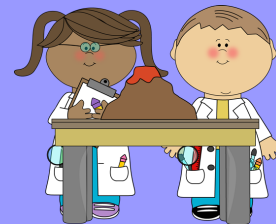
<https://www.medicalnewsbulletin.com/brain-structures-disrupted-addiction/>

Ω Ω Ω

“The important thing is not to stop questioning. Curiosity has its own reason for existence. One cannot help but be in awe when he contemplates the mysteries of eternity, of life, of the marvelous structure of reality. It is enough if one tries merely to comprehend a little of this mystery each day.”

~ Albert Einstein (1879-1955), Old Man's Advice to Youth:
'Never Lose a Holy Curiosity.' *LIFE Magazine* (2 May 1955) p. 64

PhACT Participates in School Science Fairs



We are pleased to announce that PhACT has once again participated in two countywide science fairs, the George Washington Carver Fair in Philadelphia County and the Bucks County Science Fair. We participated in middle school divisions with judges looking for students whose work displayed good critical thinking skills. We awarded ten cash prizes of \$50 each and a beautiful and quite heavy metal medallion to each winning student. We thank PhACT member Al Erpel for making and donating the medallions. We thank PhACT members who donated cash prize money.

Carver Science Fair - Philadelphia County

Board secretary Becky Strickland judged the 37th Carver Science Fair at Temple University on March 16th. The Fair, which has been operating yearly since 1979, is open to all students attending school or homeschooled in Philadelphia County.

This year's fair showcased over 600 exhibits from grades 7 through 12, in 14 scientific disciplines. PhACT prizes are given for excellence in critical thinking. Specifically, we look at projects that were manipulating a variable and followed proper scientific procedure. 12 exhibits were initially selected, then after speaking with each student, 6 equal prizes of \$50 and a custom designed medallion were awarded to:

Zoe Kelly of St Francis School for 'Which tooth whitening toothpaste works the best?'

Bernadette Mooney of St Francis School for 'The Placebo Effect.'

Ohona Rahman of Woodrow Wilson School for 'Drug Solubility.'

Gwendoline Twiford of Sharswood School for 'Multiple Intelligence Quiz.'

Angeline Atacan of St Peter's School for 'Natural Charging.'

Anthony Kinsey of St Peter's School for 'What Materials Block WiFi?'



Bucks County Science Fair

PhACT Vice-president Eric Krieg was a judge at the Bucks County Science Fair held at Delaware Valle College in Doylestown. Eric presented 4 medallions and prizes of \$50 to middle school students from Bucks County who displayed strong critical thinking skills.

Students explored a wide variety of topics. Among the winning entries were

Does menthol in mints actually make your mouth cooler?

Does temperature affect paper towel absorption?

Can people tell if they are being watched?

Will solar cells work better with a coating?

(short answers, no, yes, no and yes)

Congratulations to all of our winners and many thanks to those who contributed money for prizes. Thanks also to Al Erpel who designed, manufactured and donated the medallions.

Meeting Reports - January, February, March 2017

Reported by Abdul Sesay, Jeremy Maher, Michael Devinsky,
and Nicolas Bugueno,
Physics students of
Dr. David Cattell at Community College of Philadelphia.

Mathematician John A. Paulos discussed his recent book *A Numerate Life - A Mathematician Explores the Vagaries of Life, His Own and Probably Yours.* Saturday, January 21, 2017

Reported by Abdul Sesay

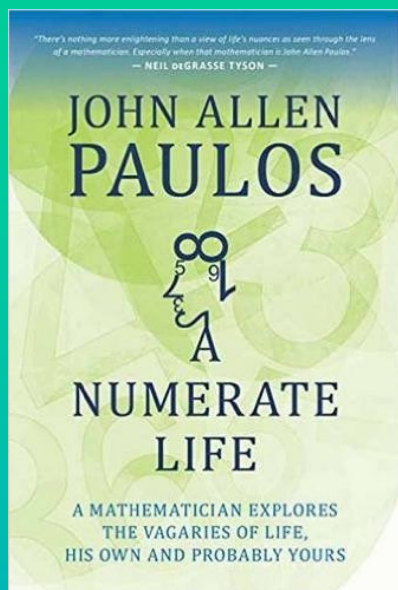
The January 21st, 2017 PhACT meeting featured guest speaker, John Paulos, who is a well known mathematician in academic circles and is currently a professor at Temple University. Paulos discussed and read excerpts from his most recent book, "A Numerate Life - A Mathematician Explores the Vagaries of Life, His Own and Probably Yours".

Paulos looks at and recalls the experiences in his memoir from a mathematical standpoint while drawing lessons from psychology, philosophy, statistics, and logic in order to think critically about life's perplexities. One of those perplexities is coincidences. For example, one of the most fascinating and nonintentional coincidences is that the particular sequential order of the following planets from the sun acronymically spell "S.U.N": Saturn, Uranus, and Neptune. The three aforementioned planets in increasing distance away from and orbit around the star of our solar system, which is our sun. Paulos notes that the most amazing coincidence of all is that we cannot avoid coincidences. This bewilderment touches upon existentialism.

A good amount of people, especially in the United States, have disdain of mathematics more so because of its applicability to real life situations. The very abstract nature of mathematics makes it difficult to grasp. We are very much accustomed to relying on our limited but fallible senses, particularly sight, to make sense of the world around us; the writer of this summary suspects and wonders about the biological evolutionary relationship between the abstract and concrete - for a lack of a better term - faculties of our human brains in relation to survival.

Nonetheless, Paulos stresses that mathematics has much to do with computers as literature does with typing. In short, mathematics is another way of (critical) thinking. One cannot have tunnel vision when it comes to mathematics and won't have much of an appreciation for the discipline during higher education. One also won't have an appreciation for literature if one narrowly looks at literature just as a collection of Venn diagrams.

There were some interesting questions asked during the talk. One had to do with whether the abstract thinking of mathematics was an acquired skill or innate talent. Paulos hinted that it was more of an acquired skill by referencing that language is very complex and everyone has the natural ability to learn and master it. Needless to say, some people are more talented when it comes to thinking abstractly, but practice can help. One question that particularly attracted this writer's attention was if there is a mathematical part of the brain that allows some people to do arithmetic computations faster than others and sometimes even more efficiently than computers. Paulos admits not to having the answer to that question and references savants and that science, particularly neuroscience, still does not know a whole lot about the human brain.



A Numerate Life: A Mathematician Explores the Vagaries of Life, His Own and Probably Yours by John Allen Paulos

Paperback: 200 pages Publisher: Prometheus Books (November 10, 2015)
ISBN-10: 1633881180 ISBN-13: 978-1633881181

Employing intuitive ideas from mathematics, this quirky "meta-memoir" raises questions about our lives that most of us don't think to ask, but arguably should: What part of memory is reliable fact, what part creative embellishment? Which favorite presuppositions are unfounded, which statistically biased? By conjoining two opposing mindsets--the suspension of disbelief required in storytelling and the skepticism inherent in the scientific method--bestselling mathematician John Allen Paulos has created an unusual hybrid, a composite of personal memories and mathematical approaches to re-evaluating them.

Entertaining vignettes from Paulos's biography abound--ranging from a bullying math teacher and a fabulous collection of baseball cards to romantic crushes, a grandmother's petty larceny, and his quite unintended role in getting George Bush elected president in 2000. These vignettes serve as springboards to many telling perspectives: simple arithmetic puts life-long habits in a dubious new light; higher dimensional geometry helps us see that we're all rather peculiar; nonlinear dynamics explains the narcissism of small differences cascading into very different siblings; logarithms and exponentials yield insight on why we tend to become bored and jaded as we age; and there are tricks and jokes, probability and coincidences, and much more.

* * * * *

Other Books by Dr. John Allen Paulos

All books available at bookstores and online through Amazon, Barnes & Noble, or Booksense.

Irreligion: A Mathematician Explains Why the Arguments for God Just Don't Add Up

Hardcover: 176 pages Publisher: Hill and Wang (December 26, 2007) ISBN-10: 0809059193

Innumeracy: Mathematical Illiteracy and Its Consequences

Paperback: 208 pages Publisher: Hill and Wang Pub. Date (1988) ISBN-13: 9780809058402

A Mathematician Plays The Stock Market

Publisher: Perseus Publishing Pub. Date: May 2004 ISBN-13: 9780465054817 Paperback: 216 pages

Beyond Numeracy: Ruminations of a Numbers Man

Publisher: Knopf Publishing Group
Pub. Date: April 1992 ISBN-13: 9780679738077
Paperback: 285 pages

A Mathematician Reads the Newspaper

Publisher: Knopf Publishing Group Pub. Date: March 1996
ISBN-13: 9780385482547 Paperback 212pages

Once Upon A Number: The Hidden Mathematical Logic Of Stories

Paperback: 224 pages Publisher: Basic Books
Pub. Date: October 1999 ISBN-10: 0465051596

I Think Therefore I Laugh.

Publisher: Columbia University Press; Pub. Date 1985
ISBN-13: 978-0231119153 Paperback: 192 pages

Mathematics and Humor

Publisher: University of Chicago Press
Pub. Date: November 1982 Paperback: 116 pages
ISBN-13: 9780226650258

Professor Jon Nyquist, an Environmental Geologist at Temple University discussed: Disasters: Geology vs. Hollywood Saturday, February 18, 2017

Reported by Jeremy Maher

Geology vs. Hollywood: My Thoughts

Professor Nyquist is a geophysicist from Temple University who was this week's speaker at the Critical Thinking seminar. His lecture was about the errors in Hollywood's depiction of natural disasters. Before the lecture, I had no clue what a geophysicist responsibilities were, but after a 20-minute conversation with Professor Nyquist I was much better educated on the exciting field of geophysics. Most of the focus was around earthquakes and tsunamis that occur when the sea floor rises due to shifting tectonic plates or an asteroid impact. Professor Nyquist's objective was to give us the cold, hard facts when it comes to natural disasters and ways to possibly avoid them.

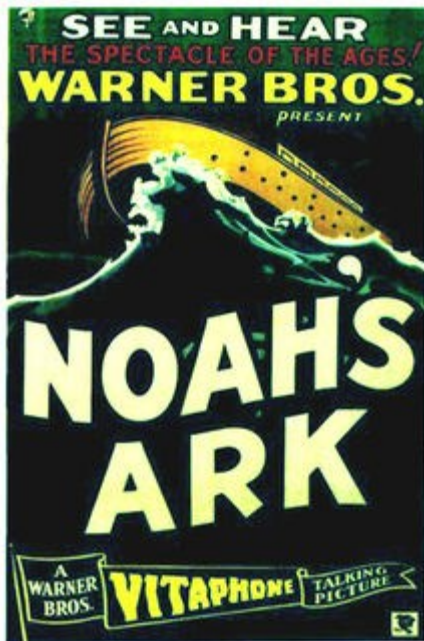
Professor Nyquist first talked about how tsunamis in Hollywood film or television are shown with giant cresting waves that never break, only once the wave is inland does it finally collapse onto its victims. The truth of the matter is that the tsunami almost always never shows a cresting wave, but surges inland like a white foam and doesn't stop until it reaches higher ground. The reason why the 2011 earthquake off of the Pacific coast of Tahoka (2011 Tōhoku earthquake and tsunami, n.d.) tsunami did so much damage wasn't because of giant wave but rather a steady inrush of water onto flat terrain.

Professor Nyquist also explained an early alert system and how vital it is to limiting the damage done by tsunamis. The hand out for the travel time of a wave in the ocean showed us that in some situations there could be hours of lead time before a tsunami makes landfall, allowing for an early alert system to save lives. The 2004 Indian Ocean tsunami (2004 Indian Ocean earthquake and tsunami, n.d.) had no early alert system to give any warning about the approaching danger and the damage caused by the tsunami was immense.

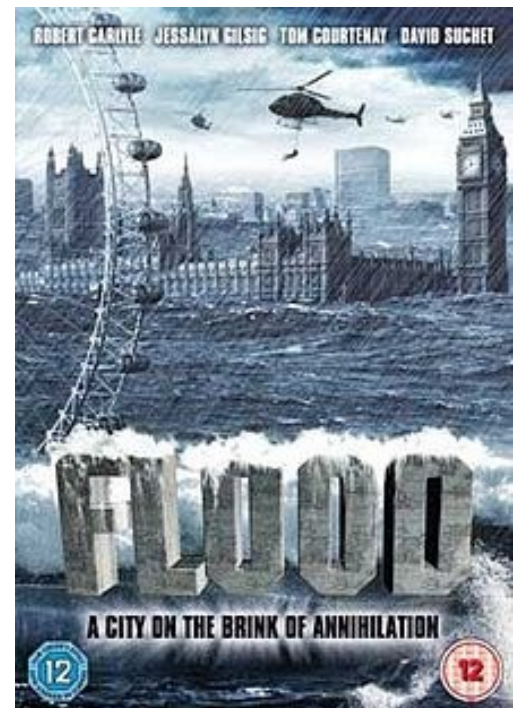
After Professor Nyquist explained the reality of most natural disasters it seemed like humans are almost powerless to impact these calamities. Other than an early alert system it is almost like we are along for the ride hoping that things will turn out in our favor. Maybe early alert systems are all we need to prepare for these types of events be it tsunamis or asteroid impacts, but only time will tell if humans will endure the hardships of natural disasters.

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1928 Warner Brothers film poster



2007 Lionsgate DVD cover

Skeptic and Musician George Hrab presented Worldwide Adventures in Skepticism Through Story and Song Saturday, March 18, 2017

Reported by Michael Devinsky

This presentation at PhACT was an interesting one. Here we had George Hrab presenting scientific knowledge through song. Seemingly very successful in his industry, he mentioned he presented for such figures as Bill Nye and was even invited to be the entertainment on some cruise ship if I remember correctly. Anyway, it seems that his approach is a nice bridge between the scientific community and a popular audience. Similar to Neil Degrasse Tyson, who has recently taken the public by storm. Combining wit, scientific knowledge, and comedy he has been able to catch the attention of scientific readers and popular audiences alike. I see both Neil and George working towards the same task and using very similar approaches, they even both have podcasts!

While I think what these two are doing is important, which is making science approachable and attempting to correct misconceptions, I do think another bridge must be built. If someone of a popular audience listens to George Hrab and all they learn is that blood is not blue inside your body, we are lacking an important process. The most important part of science in my opinion is not the memorization of facts, but rather the understanding of the process. You should know why the blood has the red color, that is, how it got its red color! Without this you are teaching people to memorize facts and they are just as easily persuaded to be misinformed in the future. We need to teach people to think for themselves. I think George or Neil could have accomplished this in their entertainment, George could have followed up with a line: Blood is red because....

I'm not fully convinced George knows why blood is red and not blue, but that's not his fault, much of our education and society has been structured so that memorization of information is a priority and people are considered super intelligent when they can spit out tons of facts and information, even if they don't understand it fully themselves. Knowing the parts does not mean you understand the connection. A big pet peeve of mine, likely because I am the result of the detriment, is that people who question are often not held in high esteem. The more outlandish your theory, the heavier the outlash against you. I think those with outlandish theories should be embraced because these are the creatives of our society. Without originality there is no progress, and we should welcome ideas from everywhere and put them to scientific testing to see if we can further them. As Feynman said, we are not sure of anything, we just have different degrees of doubt.



George Hrab

George's podcast may be accessed at:
www.geologicpodcast.com

“We are at the very beginning of time for the human race. It is not unreasonable that we grapple with problems. But there are tens of thousands of years in the future. Our responsibility is to do what we can, learn what we can, improve the solutions, and pass them on.”

~ Richard Feynman (1918-1988)

Reported by Nicolas Bugueno

George Hrab is a musician and lecturer whose songs and ideas touch issues about science, skepticism, atheism, religion, and rationalism. Presenting a different viewpoint to commonly accepted ideas most people have, his productions seek to shake basic norms and invoke critical thinking. With songs like “God Is Not Great,” he sings about some of the shortcomings of God, who is supposed to be perfect. Without presenting atheistic beliefs, he promotes questions we should ask ourselves about God, no matter which religion we believe in. In “Everything Alive Will Die Someday,” it’s about the eventual demise of every living thing. Not taking into consideration anything related to the afterlife, this song seeks to remind us of the scientific fact of death that applies to all of us. Like a timer continuously ticking down above our head, we can do nothing to stop or avoid it, making us question if our individual impact we have on the anything in the world will matter at all. “When I Was Your Age,” reflects on the impact each generation has on future generation’s lives. With technology increasing communications globally, what used to be unthinkable to people in the 19th century is now an easily accessible action one can do in the 20th century. This is changing the way children are growing up in the world and will eventually also change their core values and be reflected in future societies. A 21st century teen, whose hobbies are video games and Facebook is drastically different to a 19th century teen whose hobbies were learning various manual trades and sewing.

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Everyone tried their best to ignore the dinosaur.

Cartoon by Nick D. Kim, <http://www.lab-initio.com>
Used by permission.

The Monty Hall Paradox

By Howard J. Wilk

The subject of the Monty Hall Paradox came up during John Paulos's 21 January 2017 PhACT talk. What follows is my explanation, which has been called "the best explanation of the Monty Hall Paradox ever." Called that by me. But John Paulos himself—John *Allen* Paulos, not to be confused with the Pope—pronounced it "a good way to analyze it."*

The problem, per Wikipedia: Suppose you're on a game show, and you're given the choice of three doors: Behind one door is a car; behind the others, goats. You pick a door, say No. 1, and the host, who knows what's behind the doors, opens another door, say No. 3, which has a goat. He then says to you, "Do you want to pick door No. 2?" Is it to your advantage to switch your choice?

The short answer is "yes". The longer answer: The contestant has picked no. 1. The usual assumption when discussing this problem is that if the contestant is right, Monty *randomly* chooses to open no. 2 half of the time and no. 3 half of the time. So if the contestant is right—the chances of which are $1/3$ —Monty opens no. 2 *because the car is behind no. 1* $1/3 \times 1/2 = 1/6$ of the time, and by the same reasoning Monty opens no. 3 *because the car is behind no. 1* also $1/6$ of the time.

If the contestant is wrong and the car is actually behind no. 2—the chances of which are $1/3$ —Monty opens no. 3, so Monty opens no. 3 *because the car is behind no. 2* $1/3$ of the time. Likewise, if the car is actually behind no. 3, Monty opens no. 2 *because the car is behind no. 3* $1/3$ of the time.

Monty opens no. 3. Why did he open no. 3? It's twice as likely ($1/3$ v. $1/6$ of all the times Monty first opens a door) that he opened no. 3 because the car is behind no. 2 than that he opened no. 3 because the car is behind no. 1. So you should switch your choice to no. 2.

If you still don't understand the problem, you're not alone. The mathematician Paul Erdős didn't believe the solution until he observed the outcome of hundreds of trials by computer, which randomly chose sticking or switching, and which favored switching 2 to 1. (Paul Hoffman, *The Man Who Loved Only Numbers*, 1998, pp 234 to 240.) Learning this surprised me, because I would think Erdős, one of the twentieth century's most prolific mathematicians, would understand it instantly, and because no number of examples or trials is convincing to a rigorous mathematician.

You can try it yourself: <http://www.shodor.org/interactivate/activities/SimpleMontyHall/>

*Not at the talk – a few years ago.** After his talk, he was speaking to someone about the Paradox, and I interrupted and said (quotations could be a little off), "I have an explanation of the Monty Hall Paradox that's been called 'the best explanation of the Monty Hall Paradox ever'". Paulos said, "Who called it that. You?" I acknowledged the fact, then went on to explain that I can use statements like that ("it's been called the most elegant and ingenious mechanical device ever", "it's been called the best dinosaur poem ever written", etc.) as a sort of intelligence test. Only people whom I know on other evidence to be very, very smart see through my bs that way.

**In 2011, actually. What explains my "fear of precision" for not just writing 2011? It's shorter by one syllable and conveys more information. I'm not alone in writing or speaking this way. You'll sometimes hear a stock rose "a little more than one percent" when it's quicker and more informative to say it rose "one point one two percent". I think at least part of the explanation is that you don't want the reader or listener to get too hung up on the details (TMI) to the point of overshadowing the rest of your message – you don't want the reader/listener to miss the forest for the trees.



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Howard Wilk is a Philadelphia based chemist, a long time skeptic, and an amateur pundit.



So Then, Why DO Bees Fly?

by Paul Schlueter III

I recently watched a SciFi movie called "Equals," in which Kristen Stewart's character repeated a familiar old claim: "According to the laws of aerodynamics, bees shouldn't be able to fly. But they don't know that, so they do anyway." I may have gotten a word or two wrong, but that's the gist of it.

This reminds me of a conversation I once had with the best Harley- Davidson mechanic I've ever known, a dealership Service Manager with multiple levels of factory service training. He told me that H-D motors are so oddly designed that they shouldn't run at all, yet run they do, and given sufficient "massaging," they can actually be turned into thunderous powerplants. If we pay attention, we can hear all sorts of statements about how "impossible" the perfectly ordinary would be, except that it happens. The eye is too complex an organ to have evolved in stages, yet evolve it did. A coelecanth fish should be extinct, yet it can be found in the depths off Madagascar. The list goes on.

One of the things all of these claims have in common is



the position that "science is dumb." Yet, nobody bothers to present the study, the experiment, or the Law that proves their point; they merely assert (as if it were common knowledge) that science claims a thing impossible, or that science has missed something obvious to "common sense."

I've had a lifelong interest in aeronautics, and I've read

quite a bit about aerodynamics. I know enough to explain how airplanes fly, how their engines work, how gliders (sailplanes) can stay aloft for hours, what makes balloons lift, and how rockets must be designed to fly a ballistic trajectory. I've studied the technological progress of these subjects, and observed the development of sophistication in each*. I've come across the old bee quote several times, but never once have I seen ANY scientific document which states that bees shouldn't be able to fly. The closest you will get is the much softer point that, at first glance, one MIGHT THINK that a bee couldn't fly, but obviously it does so. That's a long way away from a declaration of impossibility!

Aerodynamics is a branch of Physics, which is itself a natural science. Natural sciences do not make idle declarations about what is not possible - they observe what IS, what DOES occur, what CAN be observed and measured, and then they study that phenomenon until a hypothesis can be presented which is supported by the factual evidence, under testing.

Here, then, is a phrase that I propose should be made the First Law of Aerodynamics: "That which can routinely be observed to fly is, by definition, ABLE to fly." Bees clearly fall into the scope of aerodynamic science, and their flight can most definitely be analyzed and explained, all according to natural principles and the regular Laws of Physics. Maybe such a First Law would finally put to rest the silly claim about bees.

Like the dozens of models I built during my adolescence, the one sure test of whether or not one could fly was to put it to the test of actual flight. Howard Hughes knew this when he took his "Spruce Goose" out onto the water for a taxi test, and decided to damn the plan - he slid the throttles open, and made the ponderous seaplane lift clear of the waves just long enough that nobody could ever again proclaim that "It'll never get off the ground!" "Flying fish" can also fly, and have been studied well enough to explain how they do it; they swim very fast, jump clear of the water, and glide, and when they get close to the water again, they can re-power their ex-

Railroad carriages are pulled at the enormous speed of fifteen miles per hour by engines which, in addition to endangering life and limb of passengers, roar and snort their way through the countryside, setting fire to the crops, scaring the livestock, and frightening women and children. The Almighty certainly never intended that people should travel at such break-neck speed.

President Martin Van Buren, 1829

First, by the figurations of art there be made instruments of navigation without men to row them, as great ships to brooke the sea, only with one man to steer them, and they shall sail far more swiftly than if they were full of men; also chariots that shall move with unspeakable force without any living creature to stir them. Likewise an instrument may be made to fly withall if one sits in the midst of the instrument, and do turn an engine, by which the wings, being artificially composed, may beat the air after the manner of a flying bird .

Frier Roger Bacon, c1250, 'Epistola de secretis operibus.

tended glide- path by flicking just the lower fin of their tail in the water! If a thing DOES fly, then it CAN fly.

Some people are determined to live in an imaginary world, where ordinary reproduction is a "miracle," where the environment around us is populated by mysterious (and undetectable) beings and forces, and where there must most certainly be "something beyond this life which will make all this worthwhile." The more you try to explain the natural world to such folks, the more loudly they will insist on their mysterious imaginings (and those of others whom they "respect"), sticking fingers in their ears and singing "LaLaLaLa" to block your words if necessary to keep from having their fantasies exposed. Such people seem to have a

You would make a ship sail against the winds and currents by lighting a bonfire under her deck...I have no time for such nonsense.

Napoleon, commenting on Fulton's Steamship.

large influence in the making of movies, since Directors bend over backward to support such fantastic thinking.

Those of us who are so audacious and arrogant as to know better may feel free to "suspend disbelief" in front of the screen, because one of the more enjoyable aspects of the cinema is its ability to create worlds of fantasy, merely for entertainment purposes. Kristen Stewart's character was merely foreshadowing her non-compliance with the robot-like mental state her cinematic society expected; "Equals" reassures us (as did the Star Trek series when presenting the Vulcan race) that the "disease" of having feelings (even passions) is the greatest human ability, and we must never give it up for mere Reason or Logic. This has apparently become the definitive moral of Sci Fi cinema.

Meanwhile, if a bee can't fly, it's either sick or dead. If your Harley- Davidson won't run, just bring it to a good mechanic and let him fix it - a broken Hog can be repaired. Don't limit your grasp of science to those lovely drawings (of unworkable parachutes and helicopters) Leonardo DaVinci created hundreds of years ago. Instead, examine the detailed, advanced drawings in Patent Office files, which show how designers have progressively invented all the marvelous machines in our lives, from cell phones to hydroplaning

catamarans to spacecraft which can fly past Pluto and take close-up photos to radio home for our examination.

Rest assured that if it flies, then it does not violate the Laws of Aerodynamics. Aerodynamics can either explain that flight, or it is studying the problem in order to discover the explanation which awaits.

I confess that in 1901, I said to my brother Orville that man would not fly for fifty years... .
Ever since, I have distrusted myself and avoided all predictions.

*Wilbur Wright, in a speech to the Aero Club of France,
5 November 1908*

*For a truly fascinating story of government-led cooperation among competing manufacturers, look up the story of the Liberty engines for WWI aircraft. Compare each V-pair of cylinders in these to the V-twin used by Harley-Davidsons of the era. The U.S. Gov't demanded, and obtained, a standardized engine design for military aircraft which could be easily altered for various applications (2-, 4-, 6-, 8-, 10-, or 12-cylinder setups, depending on power requirements and weight restrictions), and with that standardization was able to spread out various manufacturing jobs to the best-suited companies all across the country. And yes, the Liberty engines flew, well enough to help win the war.

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Soon shall thy arm, unconquer'd steam! afar
Drag the slow barge, or drive the rapid car;
Or on wide-waving wings expanded bear
The flying chariot through the field of air.

*Erasmus Darwin, (1731-1802), '
The Botanic Garden,' Part i. Canto i.*

NYC Trip Poems by Albert Fried-Cassorla



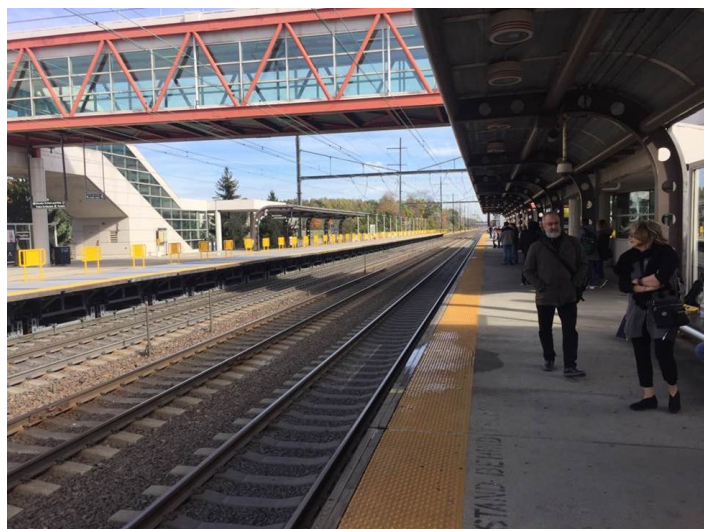
NYC Poem 1. Sky

On the way to NYC, town of vast multiplicity
Yet bewitching sky precedes... blocking urbanity
with its majesty

Gorgeous up-wafted curls and random thought-
tossed whorls
Where Stripe and cotton clash.
Celestial cascade of cirrus eyelash

Smart blonde at my side
Hours ahead open wide

If I say I'm not excited by the beauty of today
-- you should say I lie.



NYC Poem 2. Train to where?

This train from here to where?
Infinite track takes us to Time's End in imagina-
tion...
Or maybe just to Penn Station.

Hamilton Station greets us with Grounds for
Sculpture audacities,
That American Gothic geezer all set to pitchfork
us into Hades,
But we're rescued by giant dancing Renoirs who
twirl us beyond enmity

Now gliding on a double-decker Amtrak to that
Hudson tunnel
in the distance looming
With two thousand chatting millennials, most of
us Broadway bound
through dreary drowsy Jersey marshes, our train
chortles and chugs





to the dark lower tunnel
as we chat and we hug approaching our destination

as we read, sing and sip coffee awaiting the halt, our
arrival at Penn Station

Now emerging, seeing unknown happy people, shar-
ing their baseless elation

This City vibe, like Whitman's electricity
gives us oneness with our urban nation

So good to be in NYC on this extraordinary day
with my blessed Other
would not trade it -- or her -- for another.

-- Albert Fried-Cassorla
October 29, 2016

Poem and photography copyright Albert Fried-Cassorla



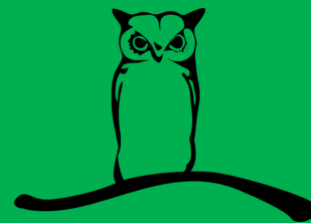
Albert Fried-Cassorla is Adjunct Professor of English at Gwynedd Mercy University, a playwright, poet and the founder of the Melrose Park Philosophy Club. See him read this poem on [youtube.com](https://www.youtube.com/watch?v=...) by there for Poem A Single Rose June 26, 2016. He may be reached at

albfcc@verizon.net

Off the Beaten Path

By Kim A. Sheridan

Hidden in Plain Sight



The evidence is mounting: spending time in nature is good for you! Study after study indicates that exposure to nature has benefits for psychological well-being as well as physical health. Time spent in natural settings relieves stress, anxiety and depression. It boosts concentration and memory and can even inspire creative thinking.

For city and suburb dwellers alike, an urban green space such as the John Heinz National Wildlife Refuge can be an oasis in a concrete desert. 1.7 million people live within 10 miles of the refuge. Yet what do I hear from visitors most? "I've lived in Philadelphia my whole life, and I never knew this was here!" Hidden in plain sight!

What is everyone missing? Come, take a walk with me and I will show you.

Let's start at the meadow. In the warm months, it bursts with grasses and wildflowers like asters, coneflowers, goldenrod and New York ironweed. Butterflies flutter over the lush greenery; over 30 species of butterflies have been tallied at the Refuge.

Darby Creek runs beside the trail. Hear that rattling call? Look quickly for a kingfisher zipping along the water's surface. Fish like catfish, bass and carp are plentiful in the creek, as well as in the impoundment pond across the road.

The impoundment attracts stately herons, egrets and shorebirds in the summer, and ducks in the spring and fall. Watch the acrobatic swallows put on an aerial show. Red-bellied and painted turtles crowd the turtle platform; snapping turtles lurk nearby. Muskrats and even river otters have been spotted here. This year, beavers built a very visible lodge along the shore. Hopes are high for baby beavers soon!

At any point along the trail, you might see or hear frogs such as spring peepers, bullfrogs or wood and green frogs. Look for garter snakes sunning themselves along the open edges. Groundhogs and white-tailed deer are common. If you're lucky you might spot a fox!



The freshwater tidal marsh is the reason for the Refuge's existence. October, 2015.



Green-winged Teal are among the numerous duck species to stop in at Heinz NWR on their migratory journeys. November, 2016.



A dragonfly looks things over. August, 2014.

Near the top of that tall tree across the water, a pair of Bald Eagles keeps house. This is their ninth year raising chicks. In spring, it is easy to spot the parents, and soon the eaglets will grow big enough to be seen over the top of the very large nest.

Beyond the eagle nest, a boardwalk reaches out into the marsh. These wetlands are the centerpiece of the Refuge. Once, there were more than 5,700 acres of tidal marsh along the Delaware River in the Philadelphia vicinity. Now less than 300 acres remain. Heinz NWR was established in 1972 to protect the largest remaining freshwater tidal marsh in Pennsylvania, thanks to a dedicated grassroots group who fought a long and difficult battle to protect the marsh they loved. Today Tinicum Marsh is a haven for shorebirds, red-winged blackbirds, ospreys and harriers, as well as the invertebrates, fish, reptiles, amphibians and small mammals which these birds eat.

The end of our walk meanders through woods where river birch, black cherry, maple and oak trees shade the trail. In spring these woodlands draw many species of wood warblers, small colorful songbirds that stop to rest and refuel on their long migra-



A sense of serenity settles over Darby Creek. June, 2016.

tory journey. There's no shortage of birds here; over 300 species of birds use the Refuge at some point in their life cycle, as a breeding site, a migration stopover, or a winter abode.

The Philadelphia area is home to a surprising number of natural spaces. They are tucked in amongst the concrete and clamor of the city and suburbs. From Heinz Refuge to the Pine Barrens, the Susquehanna River to the Delaware Bay, there is an abundance of green sanctuaries, hidden in plain sight.

Human beings need nature, and natural places, now more than ever. Without them, wildlife would suffer and decline, and our lives would be the poorer for it. Conserving our natural places is not just good for the other creatures of Earth, it's good for us, good for our health and good for our peace of mind.

It all starts with the simple act of getting to know these special places off the beaten path.

If you go: John Heinz National Wildlife Refuge at Tinicum is conveniently located near the Philadelphia Airport and I-95. The grounds are open from sunrise to sunset, 365 days a year. The Visitor Center is open from 8:30 to 4 daily (except for Federal holidays.) Stop in and chat with the friendly front desk volunteers. They'll give you a trail map and answer all your questions. Be prepared for ticks and poison ivy – use bug spray, dress in light-colored long pants, and stay on designated trails.

John Heinz National Wildlife Refuge at Tinicum
8601 Lindbergh Blvd.
Philadelphia, PA 19153
215-365-3118

https://www.fws.gov/refuge/John_Heinz/

Facebook: <https://www.facebook.com/HeinzNWR>

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Kim Sheridan is an ardent amateur naturalist and wildlife observer based in Havertown, Pennsylvania.. She may often be found in forest or marsh with camera in hand. Her blog site is dedicated mainly to nature photography at:

<http://thewildededge.net/>



) Great Blue Herons hang around the impoundment even in winter. February, 2015.

MATTERING: The Birth of a New Paradigm"

by Paul Schlueter III

In the February/March 2017 issue of Free Inquiry (the magazine of secularhumanism.org), Rebecca Newberger Goldstein and Andy Norman each offered individual articles describing a twist on philosophy that I haven't encountered before. "MATTERING" is essentially presented as a philosophical purpose, and also as a verb addressing the (perhaps innate) human need to matter, to have value and importance. The two essayists are both philosophers, and they effectively state their own theses quite well, so I strongly recommend reading their articles for yourself.

Much of "the theory of mattering" addresses the gap David Hume (1711 - 1776) famously noted in the effort to derive statements of "what ought to be" from empirical observations of "that which is." In other words, it is notoriously difficult to rationally derive morality solely from scientific fact. Both essayists credit one another's contributions to establishing the definitions at the core of this exploration, and while each makes reference to others' ideas (pro and con) on this issue, it appears that they have cofounded "Mattering Theory" as a new point of view, a new frame of reference, with which to regard and analyze human morality through philosophy.

These subjects are not so thickly laden with jargon or polysyllables to make the reading difficult. It is still a new enough approach that its supporters are still sketching out a framework of ideas and conclusions, so it is the perfect time for Critical Thinkers to jump in and make ourselves familiar with the dialogue. Both essayists have books in print which address the topic at greater depth, and other thinkers are reviewing the ideas and developing argument.

Goldstein makes the proposition that the concept can be divided between "what matters" and "who matters," and then goes on to divide "who matters" between the 1st person (the ways in which one perceives that one matters, to oneself), and the 2nd person plural (the ways in which others perceive that one matters to them). The 1st person is arguably so instinctive that it can be shown to motivate "the survival instinct" of living organisms; all creatures perceive that their lives are important from their

David Hume (1711—1776)

Generally regarded as one of the most important philosophers to write in English, David Hume (b. 1711, d. 1776) was also well known in his own time as an historian and essayist. A master stylist in any genre, his major philosophical works—*A Treatise of Human Nature* (1739–1740), the *Enquiries concerning Human Understanding* (1748) and *concerning the Principles of Morals* (1751), as well as his posthumously published *Dialogues concerning Natural Religion* (1779)—remain widely and deeply influential.

Although Hume's more conservative contemporaries denounced his writings as works of scepticism and atheism, his influence is evident in the moral philosophy and economic writings of his close friend Adam Smith. Kant reported that Hume's work woke him from his "dogmatic slumbers" and Jeremy Bentham remarked that reading Hume "caused the scales to fall" from his eyes. Charles Darwin regarded his work as a central influence on the theory of evolution. The diverse directions in which these writers took what they gleaned from reading him reflect both the richness of their sources and the wide range of his empiricism. Today, philosophers recognize Hume as a thoroughgoing exponent of philosophical naturalism, as a precursor of contemporary cognitive science, and as the inspiration for several of the most significant types of ethical theory developed in contemporary moral philosophy.



own perspective, so they feed, defend themselves from predation, and procreate. This would correlate to the "Nature" side in the familiar "Nature vs. Nurture" debate.

The 2nd person plural only begins to apply to organisms advanced enough to have some sort of social tendency; a mother matters to her offspring by defending and feeding them, an individual matters to the pack so far as it can contribute to the common benefit, and so on. So far, these are purely instinctive, and they don't reach any level we would immediately consider "deliberate" or moral. However, once conscious, intelligent beings begin to make choices about behavior, and about how we treat others differently based on their relative identity (kinship, class, religious affiliation, race, gender, etc.), we begin to apply a moral component to behavioral decisions. What we "ought to do" begins to "matter" in direct relationship to the party with whom we're dealing.

Where these issues hold importance to secular humanism (a body of values held by FI readers) is in the egalitarian equation "I want to matter to others, so it's fair that others ought to matter to me." We see within this equation a secular version of the well-known "Golden Rule." In this lies the ethical aspect of "Mattering;" the masses may not matter to the elite, the infidels may not matter to the devout, but in an ethical society, it is crucial that each member of society INHERENTLY matters, and so is deserving of human rights, a responsible level of self-determination, opportunity to better one's self and the world around himself, and so on. We are all, to borrow a phrase, entitled to "life, liberty, and the pursuit of happiness." Well, maybe the "happiness" part presents some difficulties, but if you substitute "mattering," you might be closing in on the root of the concept.

Another interesting aspect of "mattering" is that it should exist independent of partisanship, religion, sexual orientation, and all those other characteristics we tend to use to define the "in group" while ostracizing the "out group." Pure Utilitarianism would demand that all the little bees must suborn to the benefit of the hive, but the 1st person aspect of Mattering serves to maintain the interests each individual has in self-realization, in "self-mattering."

Norman's article addresses problems inherent in religion, from the perspective of moral mattering. Goldstein also addresses religion, but tends to focus more on pointing out how ideological biases (of all their various sorts) fall under "false moralities" of comparative mattering, the idea that some entities matter MORE than others, entitling them to greater consideration. Goldstein insists that "[t]he laborious moral progress that we've made over the centuries has consisted in undermining, one by one, these ideological claims to comparative mattering," and that privileges which are "grounded in a form of comparative mattering ... are just as inadmissible as those that are incompatible with empirical evidence, logical coherence, and compassion." Norman adds that "humanism is a commitment to developing a shared, responsible, reality-based understanding of what matters: a worldview that also happens to immunize its adherents against the worst forms of ideological derangement."

Perhaps such ideas could be called "liberal," insofar as they tend to fall in opposition to "conservatism" of the status quo. I think it better to consider these concepts as "progressive," and I look forward to much further discussion on this new Theory of Mattering.

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“In our reasonings concerning matter of fact, there are all imaginable degrees of assurance, from the highest certainty to the lowest species of moral evidence. A wise man, therefore, proportions his belief to the evidence.”

~ David Hume (1711– 1776), An Enquiry Concerning Human Understanding

THE DETERMINATION OF FREE WILL

By A. Granville Fonda, PE

The mind-body problem has arguably been the central problem in modern philosophy since its inception in the seventeenth century.¹ We will approach it here by discussing the closely related problem of Determinism versus Free Will.

Determinism Grounds Newtonian Law

The central issue is whether we are *correct* in feeling that we can by intention – by free will – cause our bodies to move. “We have a profound conviction of freedom. We know we are free. Yet when we think of ourselves from a scientific point of view, we do not see how we can be free,” says J. R. Lucas² Correlation does not infallibly denote causation; but we ask, what does observed correlation in this case denote? The feeling of effective free will logically could be, as some contend, a mere illusion. If we do have that feeling and our bodies do move but not because of the intent, *ipso facto* something other than the intent, some common antecedent, has jointly caused both events.

The process common to several forms of determinism³ is the endless chaining of causation which results when every effect is determined by an antecedent cause, which is in turn the effect of a still earlier cause. This predicate rules out every and all causeless events, including seemingly indeterministic sub-atomic events. At ordinary scales determinism is pragmatically valid, as are the Newtonian laws of force and motion⁴ which determinism grounds. After centuries we are now comfortable with Newtonian law; perhaps we could be equally comfortable with its grounds in the more abstract case of determinism.

Determinism *per se* is not the cause of anything — it only delineates credible sets of causes and effects. Examples thereof are the causation of any effect by a corresponding cause (*determinism*), the causation of physical acceleration by physical force (*Newtonian law*), and the causation of motor neuron activation by a neural signal formed (or not formed) by intent (*neural physiology*).

Brain Pragmatically Deterministic

Quantum-scale, sub-atomic, seemingly random events are found everywhere, so that both Determinism and Newtonian Law can be only approximately (and pragmatically) valid. But with regard to neural functioning, top nuclear physicist Erwin Schroedinger said in 1944 that

“The working of an organism requires exact physical laws. ...[Otherwise] even a few atoms could make a perceptible impression on our senses ...A physical organization, to be in close correspondence with thought (as my brain is with my thought) must be a very well-ordered organization, and that means that the events that happen within it must obey strict physical laws, at least to a very high degree of accuracy.” Regarding determinism and free will, Schroedinger further said that “the space-time events in the body of a living being which correspond to the activity of its mind, to its self conscious or any other actions, are if not strictly deterministic at any rate statistico-deterministic. ...In my opinion, and contrary to the opinion upheld in some quarters, quantum indeterminacy plays [there] no biologically relevant role.”⁵

Thus the mature human brain must be, if it is to be rational, pragmatically deterministic⁶. Indeed, such deterministic immunity could have evolved only by utilization of consistent as opposed to random antecedents.

Determinism May Condemn Free Will

Everyone reports the subjectively feeling of acting spontaneously, without any cause. But if so that would not only (as Lucas noted) contradict the regularity we otherwise observe, but would leave our actions with no reason to occur. One alleged cause or the other, then, must be false.

On that basis some emphatically condemn free will, considering it to be an epiphenomenon — a secondary phenomenon that is a by-product of another. Presuming mind to be immaterial,, Thomas Huxley asked in 1877:

How is it possible to imagine that volition, which is a state of consciousness, and, as such, has not the slightest community of nature with matter in motion, can act upon the moving matter of which the body is composed, as it is assumed to do in voluntary acts?⁷

In 2012, avoiding the metaphysical, neuroscientifically trained philosopher Sam Harris likewise denied effectual volition. Rather, our physical behavior must be, he said⁸, “fully determined by background causes;” so “free will is an illusion.” This “reveals you to be a biochemical puppet.”

In 2014, philosopher Alfred Mele summarized, with reservations, the leading scientific disproofs of free will to date. Those disproofs were, arguing from neuroscience, that “all our decisions are made subconsciously,” and (equivalently), from social psychology, that “factors of which we are unaware have such a powerful influence on our behavior that no room remains for free will.”⁹ In accepting the objective account as if it excluded the subjective one, Huxley, Harris, and the sources Mele cited all decided that determinism *condemns* free will.

Logically these positions on causation permit the feeling and the acting to have been the effect not of one of these upon the other but of some unrecognized cause. In support of this, numerous independent tests^{10,11} show that certain sorts of action precede rather than follow the subjective initiation of the intent. This would suggest the routing of sensory perception of external events through the subconscious prior to possible conscious awareness of those events.



Determinism May Cultivate Free Will

In the alternative, Determinism – Necessity, to use an older term – may not condemn but rather promote and amplify Free Will — that is, Liberty. Consider the following 2014 suggestion by U C London philosopher and neuroscientist Patrick Haggard¹²:

Newborn humans appear to have little or no voluntary control over their actions and progressively acquire the capacity for voluntary action during childhood. But if the signals that trigger action produce an identifiable conscious experience, then children may learn to produce motor outputs that increase or decrease the intensity of that experience. They would thus acquire volition through reinforcement learning at the same time as acting to satisfy drives, desires, and motivations — such as reducing hunger or inducing pleasure. Humans may learn to be voluntary¹³.

Haggard presumes only natural physicalism, that is, determinism. The feeling of willing is, he suggests, a subconsciously learned but eventually conscious response neural process acting as a subjective place-holder and proxy for un-sensed and unknown deterministic causation of motor responses. It is an *ad hoc*, pragmatic improvisation — and it is less an “illusion” than a token of a blend of subconscious and conscious causation. Determinism may cultivate rather than condemn free will.

Repetition Reinforces Volition

Haggard explicitly suggests that *humans learn to be voluntary* when the feeling and the motor outputs are consciously observed as paired effects of subconscious antecedents. But with repetition the feeling of planning the action enters into its causation (says Haggard); the feeling itself becomes an *active contributor* to the motor output. Observed correlation between acting and feeling adaptively *develops into* causation of acting by prior feeling — Free Will.

Haggard's radical suggestion is that in the mature brain the unconscious antecedents of action foster conscious intention to act — hence effectual “free will.” We do more than merely “imagine” that we have freedom of will — in collaboration with our own “subconscious will” we *actually have it*. Deterministic causality has among its consequences self-awareness, volition, and action.

Independent support for Haggard's scenario may be recognizable in National Geographic's superb documentary “In the Womb” (2005)¹⁴. Commencing at film time 1:06:20 the narrator says that “During the final trimester (the last 14 weeks) he (the fetus) must prepare for life outside his comforting cocoon. Apart from being physically robust, he must also learn how to behave. Many of the tricks and skills he would use on the outside are advanced reflexes that he can perfect in the womb. ...I am putting my body through its paces and what for? Rehearsing, rehearsing for being born.” After 28 weeks but before 32 weeks, he is “becoming increasingly aware of the world around him. His brain is mature enough to support consciousness, and for the first time he is beginning to create memories.” It seems reasonable to identify this third-trimester maturation with the adaptive neural plasticity Norman Doidge¹⁵ and other neuroscientists have observed in the adult brain. This explains how and why repetition may reinforce volition.

Further and more recent corroboration comes from Corinna Bauer, a scientist at Schepens Eye Research Institute of Massachusetts:

The brains of those who are born blind make new connections in the absence of visual information, resulting in enhanced, compensatory abilities such as a heightened sense of hearing, smell and touch, as well as cognitive functions (such as memory and language), according to a new study. On the scans of those with early blindness, the team observed structural and functional connectivity changes, including evidence of enhanced connections, sending information back and forth between areas of the brain that they did not observe in the normally sighted group. These connections that appear to be unique in those with profound blindness suggest that the brain “rewires” itself in the absence of visual information to boost other senses.¹⁶

This fits with Haggard's suggestion that early in life, in early childhood if not as early as the third trimester, volition develops by means of adaptive enhancement.

Iterative Closed-Loop Control, Subconscious and Conscious

Further confirmation and extension of Haggard was presented by philosopher J. T. Ismael¹⁷ in another article in the same 2014 volume as Haggard¹⁸ and in Ismael's later book.¹⁹ Quoting from that article,

“In a self-governing system ...there is some centralization of information and some top-down regulation of behavior. ...Information distributed throughout the systems is collected and synthesized and used as input to a decision procedure aimed at the collective good. ...The details of how self-governance is implemented in the brain are not fully understood, but no one ...denies that there is the genuine forging of a collective deliberative standpoint in the human psyche that can play some role in the determination of behavior. ...When a system develops an internal point of view and starts making judgments and decisions, the unity that emerges is a real unity, not the as-if unity attributed to the anthill by the curious spectator. ... The “I” of a normal human adult is the “I” of the reflective standpoint. ...The agent, on this view, is not a material particular inside the brain, but a point of view ...whose indivisibility is a formal indivisibility, fully compatible with the idea that it is built out of material parts. ...In a being with the kind of psychic organization exemplified by self-governing systems, the reflective stand point is the thing that judges when I judge, decides when I decide, and is in control of the things that I do.”

Restated in servo engineering terminology, this describes a closed-loop system or servomechanism in which subtractive feedback of an output signal slaves a controlled parameter (at “the bottom”) to the control signal (at “the top”). That principle applies to armies, governments, and herded sheep in which deviations from plan are observed, reported, and powerfully enforced from the top down in opposition to those deviations. Human or animal alike, wanderings are sensed and soon corrected. While such systems remain *powered* from the “bottom” up, they are *regulated* from the “top” down. But in the human mind, says Ismael, “the unity that emerges ...is in control of the things that I do” even if partially in response to submerged prior influ-

ences. If so then iterative closed-loop control implements both our subconscious and our conscious mental functions.

Mentation Block Diagram

Consistent with Ismael a closed-loop block diagram of both the subconscious and the conscious mind is shown in the adjacent figure, adapted from my 2015 paper²⁰ in the field of artificial intelligence. Successively downward we see external input to the oft-recognized²¹ set of fundamental operations of planned action, namely *perception*, *recollection*, *evaluation*, and *execution*. In the first pass through the brain those operations are executed *subconsciously* to generate a tentative plan of action. In the second pass, in response to feedback (broken line) of that initial plan, the same operations are executed again, but now *consciously* — with conscious awareness. Time permitting, the subconscious mind *primes the conscious mind* for subsequent refinement of the situation-aware decision generation, possibly repeated.

The final output, shown here issuing at the bottom right, may be motor action, or it may be only a memory of the generated plan. By some theories of mind the aggregate of such memories constitutes (commencing as early as the third trimester) the ongoing present and eventually historical self. If so, this might explain conscious awareness itself — as the necessary progenitor of free will.

This concise diagram, hopefully equivalent to Ismael's construct, shows not utter domination of the conscious by the subconscious (as Harris, a dubious Mele, and others say), but rational augmentation of the subconscious by the conscious activity.

The observation that on occasion the subconscious initiation (at t_1 , says Libet²²) of a motor response (at t_3) detectably (at t_2) precedes the conscious intent to act constitutes no anomaly. Neither does the occasional intentional inhibition, or veto, of briefly planned action, whereby that plan is replaced with a better one as the iteration continues.

Such brain behavior denotes neither absence of cause — a *causa sui* — nor absence of effect — a futile illusion. Rather, all activities are compatibly deterministic (Necessary) events generating volition (Liberty), a conscious brain activity validly affecting/effecting bodily motor response.

By Being Determined We Develop Free Will

As we have shown, then, the “determination of free will” may well be an accomplishment of deterministic brain processes. Those are not two mutually exclusive and opposed alternatives; rather, *deterministic processing is specifically the means to the end of free will*.

Determinism rules in principle the propagation of physical actions in sequence all the way from post-expansion Big Bang some 14 billion years ago to our most recent microsecond of experience. Each of us is the latest effect of a very long causal chain.

But we have long known that the stuff of which we are made — this material, this matter and energy — has a history, including even the stuff of stars. One might also speculate that as our species began to evolve, but for Liberty born of Necessity *we would have been not quite fit enough to survive — and thereby evolve — as we did*. Individually and as a species we may from the beginning have had “the right stuff” only by introducing learned spontaneity into a pragmatically “very well-ordered organization.”

Conclusions

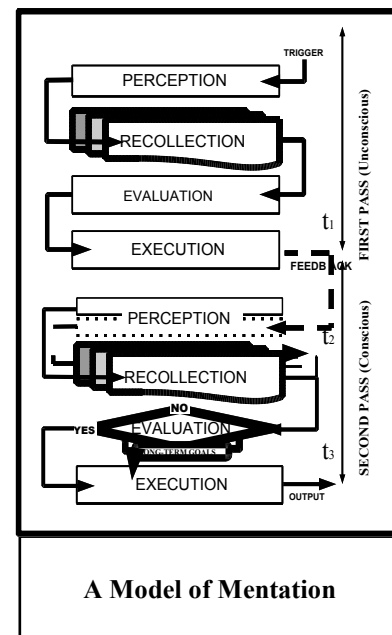
The rule that every effect has a cause is the essence of Determinism — as it is of Newton's more explicit Laws. Quantum events are indeterministic exceptions, but to reason well the brain must reject such noise.

If free will were as spontaneous as we imagine, indeed it would contradict Determinism — but we imagine wrongly. This mis-attribution starts when (some say) our fetal or infant brain reasons from observed coincidences that it is controlling the body. Upon repetition, however, neural plasticity makes that conclusion come true.

The maturing brain develops iterative closed-loop control, exercised first subconsciously and then, time permitting, consciously. Preparation for action thus may be initiated subconsciously even before it is consciously re-initiated.

Contravening certain current teachings, this affirms the efficacy of conscious volition — that is, free will — but denies literal causeless spontaneity. Nor are our reasons for thinking and acting as obvious to us as we naively believe.

Whether or not this solves the mind-body problem is left for the reader to consider. Hopefully, for some it may resolve the problem of Determinism versus Free Will.



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Al Fonda is a long term member of PhACT. Mr. Fonda has expertise in technology and his degrees are BME, Cornell, 1951 and MS, Cornell, 1954, with post-Master’s courses at the Universities of Buffalo, Villanova, Drexel, and Penn State. He is a Registered Professional Engineer in Pennsylvania. Al is a philosopher at heart and in 2010 he authored a Special Edition of Phactum that may be found at: <http://www.phact.org/special.php> which the present article updates and extends.

Editor’s note: Readers are invited by the author and by the editor to comment/critique this essay.

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PHACT CALENDAR

Upcoming PhACT Events

Dr. David Cattell, Chairman of the Physics Department of Community College of Philadelphia hosts meetings of PhACT - at 2:00 PM on the third Saturday of most months at Community College of Philadelphia., Parking is easily available on the free parking garage on 17th street on the left hand side before Callowhill Street. It opens at 1:00 PM and closes at 6:00 PM. 17th Street is one way south bound. This meeting site is handicap accessible. **PhACT Meetings are Free and open to the public unless otherwise noted. Please try to arrive a few minutes early as the College now requires that meeting attendees sign in for security reasons. ID must be shown.**



Saturday, April 15, 2017 at 2:00 PM - Lecture

Dr. Paul Offit, M.D. will discuss his new book *Pandora's Lab: Seven Stories of Science Gone Wrong*

See Page 5 for more details.

Saturday, May 20, 2017 - PhACT Expedition to Valley Forge National Park

Erik Krieg will be our fearless leader on this history/nature ramble through a portion of the park.

See Page 6 for more details.

Saturday, July 22, 2017— PhACT Picnic

At Maundauk Commons Park in

See Page 8 for more details.

September 16, 2017 The 2017/2018 PhACT Lecture Season begins

The Philadelphia Area Center for the History of Science (PACHS) maintains an extensive calendar of events about the history of science, technology and medicine that may contain some interesting events not listed in the *Phactum* Calendar. Check out their website at:

<http://www.pachs.net/events>

Lectures and Other Events of Interest for Skeptics Around Philadelphia

See websites for details

Saturday, April 15, 2017 PhACT Event

Monday, April 24, 2017 American Revolution Round Table of Philadelphia

Tuesday, April 25, 2017 – PENN SCIENCE CAFÉ

Tuesday, May 2, 2017 Eastern State Penitentiary

Monday, May 8, 2017 Science on Tap

Wednesday, May 10, 2017 Rittenhouse Astronomical Society

Friday, May 12, 2017 Delaware Valley Amateur Astronomers

Saturday, May 20, 2017 PhACT Event

Monday, May 29, 2017 American Revolution Round Table of Philadelphia

Tuesday, June 6, 2017 Eastern State Penitentiary

Friday, June 9, 2017 Delaware Valley Amateur Astronomer

Monday, June 12, 2017 Science on Tap

Tuesday, June 13, 2017 PENN LIGHTBULB CAFÉ

Wednesday, June 14, 2017 Rittenhouse Astronomical Society

Monday, June 26, 2017 American Revolution Round Table of Philadelphia

Monday, July 10, 2017 Science on Tap

Wednesday, July 12, 2017 Rittenhouse Astronomical Society

Friday, July 14, 2017 Delaware Valley Amateur Astronomers

Saturday, July 22, 2017 PhACT Event

Tuesday, August 1, 2017 Eastern State Penitentiary

Wednesday, August 9, 2017 Rittenhouse Astronomical Society

Friday, August 11, 2017 Delaware Valley Amateur Astronomers

Monday, August 14, 2017 Science on Tap

Tuesday, September 5, 2017 Eastern State Penitentiary

Friday, September 8, 2017 Delaware Valley Amateur Astronomers

Monday, September 11, 2017 Science on Tap

Wednesday, September 13, 2017 Rittenhouse Astronomical Society

Saturday, September 16, 2017 PhACT Event

Monday, September 25, 2017 American Revolution Round Table of Philadelphia

Tuesday, October 3, 2017 Eastern State Penitentiary

Monday, October 9, 2017 Science on Tap

Wednesday, October 11, 2017 Rittenhouse Astronomical Society

Friday, October 13, 2017 Delaware Valley Amateur Astronomers

Saturday, October 21, 2017 PhACT Event

Monday, October 30, 2017 American Revolution Round Table of Philadelphia

Monday, November 13, 2017 Science on Tap

Tuesday, November 7, 2017 Eastern State Penitentiary

Wednesday, November 8, 2017 Rittenhouse Astronomical Society

Friday, November 10, 2017 Delaware Valley Amateur Astronomers

Saturday, November 18, 2017 PhACT Event

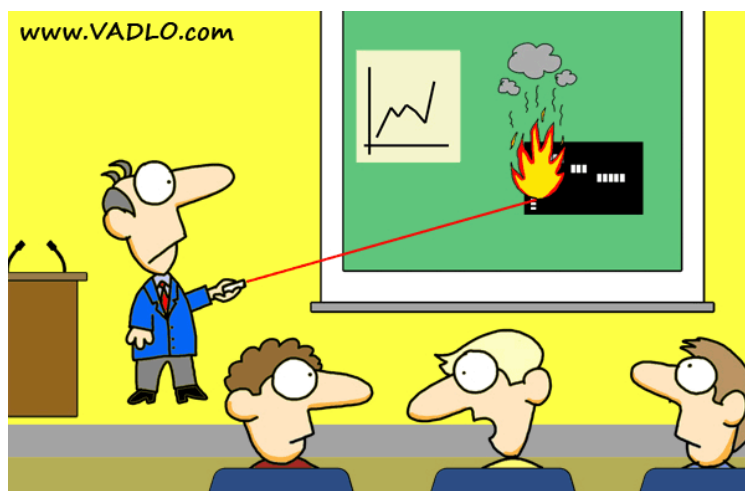
Monday, November 27, 2017 American Revolution Round Table of Philadelphia

Tuesday, December 5, 2017 Eastern State Penitentiary

Friday, December 8, 2017 Delaware Valley Amateur Astronomers

Wednesday, December 13, 2017 Rittenhouse Astronomical Society

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“This is what happens when you are stuck on a slide for 15 mins!”

Philadelphia Area Lecture Host Websites

This listing is likely incomplete. If there is a site you wish listed or a link is erroneous then please email the Phactum editor at phactpublicity@aol.com

Academy of Natural Sciences

Monday, January 13, 2013 at 6:00 PM-8:00 PM at The Academy of Natural Sciences, 1900 Benjamin Franklin Parkway, Philadelphia 19103
www.ansp.org

American Philosophical Society

, Benjamin Franklin Hall, 427 Chestnut Street, Philadelphia
<http://www.amphilsoc.org/>
Free and Open to the Public

American Revolution Roundtable of Philadelphia (ARRTOP)

at MaGerks Pub and Grill, 582 South Bethlehem Pike, Fort Washington, Pennsylvania
<http://arrtop.com/>
Free and Open to the Public

Chemical Heritage Foundation

315 Chestnut Street, Philadelphia, PA 19106
<http://www.chemheritage.org>

College of Physicians of Philadelphia

19 South Twenty-Second Street, Philadelphia, PA
http://www.collphyphil.org/prog_calendar.htm

Delaware County Institute of Science

11 Veterans Square, Media, PA 19063
<http://delcoscience.org>

Delaware Valley Opera Company at the Venice Island Performing Arts Center, located in the Manayunk section of Philadelphia. Turn onto Cotton Street from Main Street and use the Venice Island public parking lot.
www.dvopera.org
2017 Summer Opera Festival

Delaware Valley Amateur Astronomers

in the Radnor Township Municipal Building, 301 Iven Ave, Radnor, Pennsylvania 19087
<https://dvaa9.wildapricot.org>
Free and Open to the Public.

Eastern State Penitentiary

2027 Fairmount Avenue, Philadelphia, PA 19130 <http://www.easternstate.org/home>

Franklin Institute -
<http://www.fi.edu>

Free Library of Philadelphia (FLOP)

1901 Vine Street, 19103
<http://libwww.freelibrary.org/authorevents/>

Freethought Society

<https://www.ftociety.org/>



Friends of Valley Forge - first Tuesday of the month

<http://www.friendsofvalleyforge.org/speaker-series.shtml>
Free and Open to the Public.

Humanist Association of Greater Philadelphia (HAGP)
www.HAGP.org

Institute for Science and Religion

<http://www.irands.org>
Free and Open to the Public. A free will donation is requested.

Laboratory for Research on the Structure of Matter - Science Cafe

<http://www.lrsm.upenn.edu/events/sciencecafes/index.html>

Laurel Hill Cemetery

3822 Ridge Avenue, Philadelphia,
<http://www.thelaurelhillemetery.org>

Nerd Nite -

<http://philadelphia.nerdnite.com/updates/>
Email us at: nerdnitephilly@gmail.com

Penn Science Cafe & Lightbulb Cafe

at World Cafe Live, 3025 Walnut Street, Philadelphia
<http://www.upenn.edu/pennnews/science>
Free and Open to the Public.

Pint of Science

<https://pintofscience.us/city/philadelphia>

Rittenhouse Astronomical Society

at the Fels Planetarium, The Franklin Institute, 222 North 20th Street, Philadelphia
Astronomy lecture open to the Public.
www.rittenhouseastronomicalsociety.org/

Science on the Hill at St. Joseph's

at Landmark Americana Tap & Grill at 54th and City Avenue, Philadelphia 19131 at St. Joseph's University
<http://scienceonthehill.weebly.com/>
Free and Open to the Public.

Science on Tap

2nd Monday of each month at 6:00 PM
National Mechanics, 22 S. Third Street, Philadelphia, PA 19106
<http://scienceontapphilly.com/>

University of Pennsylvania Museum

3260 South Street, Philadelphia, PA 19104
<http://www.penn.museum/events-calendar>

Wagner Free Institute of Science

1700 West Montgomery Avenue, Philadelphia,
www.wagnerfreeinstitute.org
Free and Open to the Public



At the Wagner Free Institute of Science

1700 W. Montgomery Ave., Philadelphia, PA 19121 215-763-6529 Tuesday-Friday 9am-4pm

<http://www.wagnerfreeinstitute.org>

Lectures and Other Events at the Wagner

Thursday, April 6, 2017 at 5:30 PM

Evenings with an Expert

Insects with Entomologist Greg Cowper

Tour starts promptly at 6:15

Doors open at 5:30 for a wine and cheese reception

See the Wagner's collections as you've never seen them before with our new Evenings with an Expert series—intimate, scholar-led tours that highlight specific areas of our collection. For our first Evenings with an Expert, we'll focus on our fascinating insect collection with Greg Cowper, an entomologist at the Academy of Natural Sciences and a member of the Wagner faculty. He will share stories and facts about our six-legged invertebrates, including collection and preparation techniques and what makes our specimens scientifically and locally significant. The tour will conclude with an exclusive unveiling of Cowper's new installation of insects collected from the Wagner yard, which will be on display in the museum as a temporary exhibit.

Tour is limited to 20 participants.

Cost: \$30; \$20 for members*

See website for registration.

Sunday, April 23, 2017 at 12:00-4:00 PM

BE A SCIENTIST DAY

at the Wagner Free Institute of Science

Be A Marine Biologist!

Dive into ocean life at the Wagner Free Institute of Science.

Temple biologist Dr. Erik Cordes and other special guests will reveal the wonders of ocean organisms with a focus on the importance of deep sea coral reef ecosystems. Activities and demonstrations will take place throughout the afternoon and are geared toward children ages 6-12, but our museum and building will also be open for exploration by visitors of all ages!

Admission is Free. Suggested donations of \$10 for adults and \$5 for children. Any amount helps support the Institute's mission.

This event can be ASL interpreted upon request.

Wednesday, May 17, 2017. Lecture at 6:00 PM

Moses Williams, Cutter of Profiles

An Illustrated Presentation By

Gwendolyn DuBois Shaw, University of Pennsylvania

The museum will be open prior to the lecture.

Followed by the **Annual Members' Reception**

(Free for members, \$10 for non-members)

Many people know of Charles Willson Peale, a portrait artist and collector who established one of the first public museums in Philadelphia in the 18th century. Lesser known is Moses Williams, one of the Peale family's slaves who worked in the museum after becoming free. Among his other odd jobs, Williams was a "cutter of profiles"—meaning he created cut silhouette portraits that museum visitors could take away as souvenirs. William Wagner himself had a silhouette cut when his family visited Peale's museum, a visit that he says inspired his founding of the Wagner Institute. Join Dr. Shaw, Associate Professor of History of Art at the University of Pennsylvania, to explore the life and work of Mr. Williams, and how his story illuminates hidden narratives about race, identity, and art in the age of Peale's museum.

This talk is co-sponsored by the [American Philosophical Society Museum](#), which is hosting an exhibit on the Peale family from April 7th to December 30th, 2017.

Adult Education Winter / Spring 2017 Course Schedule

Trees of Philadelphia, Professor David Hewitt.

6 Tuesdays, March 28 - May 2, 2017, 6:30 - 7:30 PM. Pennsylvania Horticultural Society, 100 N. 20th St. (20th and Arch Sts.).

This course will provide an overview of our urban forest, with a focus on the trees of Philadelphia. There will be in-depth discussion of tree species including identification, physiology, growth and ecology. This course requires preregistration.

Preregistration opens on Tuesday, November 29, 2016.

Register online here or call 215-763-6529 x23.

The Science Behind Global Warming, Professor Kevin Cannon.

6 Wednesdays, March 29 - May 3, 2017, 6:15 - 7:30 PM. Independence Branch of the Free Library, 18 S. 7th Street (between Market and Chestnut). This course explores the science that is associated with global warming, and examines the evidence pointing to ongoing global warming and the modeling techniques used to predict the warming trend.

No preregistration necessary. Register by attending the first class.

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Wagner lectures and courses are FREE and open to the general public. Contributions are gratefully received. Courses are taught at introductory college level.



LAUREL HILL CEMETERY EVENTS

3822 RIDGE AVENUE, PHILADELPHIA, 19132
WWW.THELAURELHILLCEMETERY.ORG 215-228-8200

Laurel Hill Cemetery was established in 1836 not only established as a permanent, non-sectarian burial place for the dead, but also as a scenic, riverside sanctuary for the living. Today it is open seven days a week with free admission for self-guided strolls, exercise, sightseeing or picnics. A full schedule of diverse programs for all ages and interests are offered throughout the year. For more information on visiting the cemetery see the website or call 215-228-8200

Sunday, April 2 at 1pm Cryptic Crypts: Egyptian Symbolism at Laurel Hill Hades, Heaven, Valhalla, She'ol, Xibalba—religions, philosophies, mythologies, and cultures all have a name for it:

Saturday April 8 at 1pm Designing for the Dead: Art and Architecture of Laurel Hill Noted architects like John Notman, William Strickland, Frank Furness, John J. McArthur, C.C. Zantlinger, Horace Trumbauer and Napoleon LeBrun competed fiercely for the chance to design for the dead.

Saturday, April 8 at 10am The Hot Spots and Storied Plots In life and in death, we all have stories to tell and what better place to hear tales of wonder than Philadelphia's most famous home of the dead.

Sunday, April 9 at 1pm America Enters the Great War: Laurel Hill's WWI Veterans On April 6, 1917, America formally declared war on Germany, thus ending its position of neutrality in World War I.

Saturday, April 22 at 1pm History Hunt, Family Hike and Journal Making There are many ways to learn about and enjoy the wonders of Laurel Hill. This special Earth Day program incorporates a history hunt designed for families (with children ages- 7 and older).

Sunday April 23 at 1pm Liberty or Death: The Revolutionary War Patriots of Laurel Hill The American Revolution began with the first exchange of fire between British and American forces at Lexington on April 19.

Friday, April 28 at 7:30pm Citywide Star Party (a Philadelphia Science Festival Event) Grab a blanket and take a tour of the cosmos with local astronomers. As part of the Philadelphia Science Festival (www.philasciencefestival.org).

Friday, April 28 at 10am The Hot Spots and Storied Plots In life and in death, we all have stories to tell and what better place to hear tales of wonder than Philadelphia's most famous home of the dead?

Friday, May 5 at 7pm Ghosts Among Our Graves Is there

anything on the other side? What becomes of our life energy after we die?

Saturday, May 6 at 10am Members-Only: Voices of the Civil War Despite having been passed into history, the voices of Civil War veterans buried in Laurel Hill Cemetery can still be heard today, 150 years after the end of the war.

Sunday, May 7 at 1pm Death Loves a Shining Mark: The Language of Mourning In Victorian America, formal bereavement was an accepted cultural institution. Mourning was observed through many non-spoken rituals to commemorate the dead.

Tuesday, May 9 at 6:30pm Buried, Not Taxidermied: Academy of Natural Sciences Members at Laurel Hill Founded in 1812, The Academy of Natural Sciences in Philadelphia is considered the oldest natural sciences institution in the Western Hemisphere.

Saturday, May 13 at 10am The Hot Spots and Storied Plots In life and in death, we all have stories to tell and what better place to hear tales of wonder than Philadelphia's most famous home of the dead?

Saturday, May 13 at 1pm Shades of Animals at Laurel Hill Animal influence is evident throughout culture—in art, sport, business, home, even personal names—and this inescapable connection to the non-human animal world infuses Laurel Hill Cemetery.

May 18-20 at 7pm The Latecomer: An Anthology of Edgar Allan Poe Edgar Allan Poe spent his most productive years in Philadelphia, and many have speculated that his tales may have been inspired amidst the graves and gardens of Laurel Hill Cemetery.

Saturday, May 20 at 2pm Yoga in the Cemetery Find inner tranquility and balance during a one-hour yoga session in the peaceful backdrop of Laurel Hill Cemetery, overlooking the Schuylkill River.

Saturday, May 20 at 1pm Duty, Honor, Country: Laurel

Hill's West Point Graduates West Point dates back to the Revolutionary War era, when leaders such as George Washington realized America's need for an institution devoted to the art and science of warfare.

Sunday, May 21 at 10am Volunteer Flag Placement: Preparing to Honor America's Heroes The General Meade Society of Philadelphia, in conjunction with the Friends of Laurel Hill Cemetery, call all volunteers to assist in preparing for the nation's Memorial Day commemoration.

Sunday, May 28 at 12pm Memorial Day Parade, Service & Reception The traditional Decoration Day service of the Grand Army Meade Post #1 will be recreated at historic Laurel Hill Cemetery, the site of the first Memorial Day Observance in Philadelphia in 1868.

Saturday, June 3 at 6pm Music for the Hearing Eye: The Divine Hand Ensemble This summer the Divine Hand Ensemble will be returning to Laurel Hill to enchant and delight with music unlike any other now being performed.

Sunday, June 4 at 1pm Six Feet (Under) From Stardom "Six Feet (Under) From Stardom" is a salute to supporting players—little-known characters whose friends, relatives, and even enemies are household names.

Thursday, June 8 at 6pm The Art of Laurel Hill Cemetery (Co-sponsored by The Barnes Foundation) Presented in conjunction with The Barnes Foundation, this unique walking tour will examine the art and aesthetics of historic Laurel Hill Cemetery.

Saturday, June 10 at 10am The Hot Spots and Storied Plots In life and in death, we all have stories to tell and what better place to hear tales of wonder than Philadelphia's most famous home of the dead.

Sunday, June 11 at 1pm Heavenly Intonations: Laurel Hill's Musical Legacy Whether we can hear it or not, music hangs in the air at Laurel Hill Cemetery—heavenly intonations of the singers, musicians, lyricists and composers buried within.

June 16 and 17 at 7pm The Ghostly Circus: Fire and Aerial Theater This June Laurel Hill Cemetery will partner with 7textures, a creative group of styling and event design, to bring The Ghostly Circus to life for its fourth consecutive year.

Saturday, June 17 at 2pm Yoga in the Cemetery Find inner tranquility and balance during a one-hour yoga session in the peaceful backdrop of Laurel Hill Cemetery, overlooking the Schuylkill River.

Thursday, June 22 at 7:00pm MEMBERS-ONLY: Twilight Tour of Laurel Hill Experience what the average visitor does not have access to: the magical and mysterious aura that undulates through Laurel Hill's grounds after the gates close for the day.

Friday, June 23 at 10am The Hot Spots and Storied Plots In life and in death, we all have stories to tell and what better place to hear tales of wonder than Philadelphia's most famous

home of the dead.

Saturday, June 24 at 7pm The Soulstice (a Young Friends Event) To kick off the start of summer Laurel Hill Cemetery's Young Friends group, The Antemortem Society, is putting the soul in solstice with a celebration and fundraiser like no other.

Sunday, June 25 at 1pm Engines of Creation: Architects, Inventors and Scientists Who was the civil engineer who designed the first wire-cable suspension bridge in the United States? The famed architect who received a Medal of Honor during the Civil War?

Friday, July 7 & Saturday, July 8 at 8pm Hamlet (Presented by REV Theatre) A skull, a poisoned sword, a villainous uncle/King, a funeral (or a wedding?), a devoted friend, a drowned girl, and - "To be or not to be," of course.

Saturday, July 8 at 10am The Hot Spots and Storied Plots In life and in death, we all have stories to tell and what better place to hear tales of wonder than Philadelphia's most famous home of the dead.

Sunday, July 9 at 10am Gettysburg and Beyond: Laurel Hill's Ultimate Civil War Tour The most bloody and pivotal moment in the history of the American Civil War was the decisive Battle of Gettysburg, fought from July 1st through the 3rd of 1863, only 120 miles away from the home front...



Friday, July 14 & Saturday, July 15 at 8pm Hamlet (Presented by REV Theatre) A skull, a poisoned sword, a villainous uncle/King, a funeral (or a wedding?), a devoted friend, a drowned girl, and - "To be or not to be," of course.

Saturday, July 22 at 10am Cyanotypes in the Cemetery First discovered in 1842 by Sir John Herschel, the cyanotype process was initially utilized to make blueprints.

Friday, July 28 at 9pm Cinema in the Cemetery Pack a picnic, gather some friends or a date, and enjoy an evening under the stars. As the sun sets over Laurel Hill's historic tombs the grainy joys of the film experience will be brought to life.

Friday, July 28 at 10am The Hot Spots and Storied Plots In life and in death, we all have stories to tell and what better place to hear tales of wonder than Philadelphia's most famous home of the dead

Thursday, August 3 at 6pm Victorians After Dark (A Young Friends Event) Scandal, scorned lovers, and 1850s sexts: if only the editors of Page Six had been alive in the 1800's! Join Laurel Hill tour guide Alexis Pedrick for a wild ride through 19th century gossip.

Sunday, August 6 at 10am From Deutschland to Deadland: Historic Germans of Laurel Hill Since its founding in 1682, German immigrants have played an important role in the development of Philadelphia.

I support the aims of PhACT and would like to join/rejoin for the next year. The annual membership is \$15 and \$10 for students which includes e-mail delivery of *Phactum*.

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The PhACT website is: www.phact.org

**“Truth often suffers more by the heat of its defenders
than the arguments of its opposers.”**

~ William Penn (1644-1718),
founder of the Province of Pennsylvania

