SKEPTOID 2

More Critical Analysis of Pop Phenomena

by Brian Dunning

Foreword by Michael Shermer
Illustrations by Nathan Bebb

Published by Skeptoid Media, Inc.

ISBN: 978-1440422850
Printed in the United States of America

We have arranged things so that almost no one understands science and technology. This is a prescription for disaster. We might get away with it for a while, but sooner or later this combustible mixture of ignorance and power is going to blow up in our faces.

Carl Sagan

Contents

Foreword: How to Be a Skeptologist

by Michael Shermer

I am not a psychic, but as a professional skeptic I occasionally play one to reveal the tricks used by peddlers of the paranormal. The most common ruse is known as cold reading, where you reveal facts about someone you have never met. It is not difficult. Armed with the knowledge that certain facts are likely to apply to anyone (e.g., a scar on your knee, a white car in your past, the number two in your address), a friendly and confident patter punctuated with inquisitive looks and knowing nods — and no moral scruples — you too can be a psychic, astrologer, palm reader or tarot card diviner. No matter how you market yourself, the process is the same.

And it's easy to find customers, because a great number of people are ready to believe. According to a 2005 Gallup poll, three-quarters of those surveyed believe in at least one paranormal phenomenon, including 41 percent who are convinced of ESP, 32 percent of ghosts, 31 percent of mind reading, 26 percent of clairvoyance and 25 percent of astrology.

Spend 10 minutes online and you can catalog many other highly questionable beliefs that aren't related to the paranormal, such as that space aliens landed at Roswell, New Mexico, that the earth was created less than 10,000 years ago, that the Holocaust never occurred, and that 9/11 was orchestrated by the U.S. government to galvanize America for war.

Why do so many people believe such weird things?

First, all humans seek patterns. That's our nature. We are also storytellers because it helps us find meaning in a chaotic world. In order to survive, we have evolved to find cause-and-effect relationships in nature, and then weave a plausible story to explain them. Our ancestors who identified the pattern linking the seasons to animal migrations ate better and left

behind more offspring. But because believing that the rain gods can be appeased through rituals isn't fatal, we also have inherited magical thinking. Add to this the fact that many of these beliefs make us feel better, meet some emotional need, promise miracle cures or instant wealth, and in general appeal to our emotional brains and bypass our rational brains.

What can we do about this? Think skeptically. How? Here are a few questions to ask when considering extraordinary claims:

1. Is the person making this claim a qualified expert in the field, or a quack?

People who are not trained in a subject can make contributions, but it is rare.

2. Does the source often make similar claims?

Paranormalists and members of fringe groups have a habit of going well beyond the facts.

3. Have the claims been verified by another source?

Typically pseudoscientists will make statements that are unverified, or verified by a source within their own circle. Who is checking the claim, and who is checking the checkers?

4. How does the claim fit with what we know about how the world works?

When considered in this manner, get-rich quick schemes and stock-market secrets never sound so good.

5. Has anyone gone out of the way to disprove the claim, or have they only sound evidence to confirm it?

This is known as confirmation bias, or the tendency to ignore negative evidence. This is why we need the methods of science, which include the attempt to prove yourself wrong.

6. Does the preponderance of evidence converge to the claimant's conclusion?

The theory of evolution, for example, is proven through a convergence of evidence from a number of independent lines of inquiry. No one fossil proves anything.

7. Is the claimant employing accepted rules of reason and tools of research?

UFOlogists suffer this fallacy in their continued focus on a handful of unexplained atmospheric anomalies and visual misperceptions while ignoring the fact that the vast majority of sightings are easily explained.

8. Has the claimant provided a different explanation for the observed phenomena, or is it strictly a process of denying the existing explanation?

This is a classic debate strategy—criticize your opponent and never affirm what you believe in order to avoid criticism. Creationists do this to great effect. But to be legitimate, positive evidence in favor of your idea must also be presented.

9. If the claimant has offered a new explanation, does it account for as many phenomena as the old explanation?

For example, skeptics who argue that lifestyle, not HIV, causes AIDS do not explain nearly as much of the data as the HIV theory does, such as the rise in AIDS among hemophiliacs shortly after HIV was inadvertently introduced into the blood supply.

10. Is there extraordinary evidence for the extraordinary claim?

Evidence is key. Normal claims need normal evidence, but extraordinary claims require extraordinary evidence.

But this is just a start. There is, today, a considerable body of skeptical literature outlining how to think like a skeptic. One of the very best is Brian Dunning's Skeptoid II. Flip open to any page in this exceptionally readable and highly informative book by one the America's top skeptical investigators and bloggers and you won't be able to stop reading. Jumping from one topic

to another, Dunning reveals the depth of his critical faculties and the breadth of his wide-ranging interests, and yet throughout the book one central theme comes through: evidence and logic is all that matters when evaluating a claim. It doesn't matter what your name is or what degrees you have or how emotionally compelling your arguments are, Dunning unfailingly demands evidence for your claim and applies logic to his analysis. If you can convince Dunning then you've jumped a mighty skeptical hurdle on the way to truth.

— Michael Shermer

Michael Shermer is the Publisher of Skeptic magazine, monthly columnist for Scientific American, and the author of Why People Believe Weird Things, How We Believe, Why Darwin Matters, and The Mind of the Market.

Introduction: Uphill through Mud

Almost nobody wants to hear what skeptics have to say.

Nobody wants to hear that a vitamin pill won't cure their cold, that financial independence is more than just a few books and tapes away, or that physical fitness requires more work than slipping on an ionized bracelet.

People want to be sold easy answers. They want to know that everything is in reach and is simple. People want superpowers, so they want to believe that it's possible to speak to dead people, to see into the future, to read minds, to have a super duper immune system, or that alien races visit one another. Offer to sell those easy answers, and you'll have customers lined up at your door, fistfuls of cash at the ready.

But offer to protect their wallets against such nonsense, and nobody wants to listen. The skeptical perspective is not the one that sells. No late night infomercial companies process millions of dollars in orders for books and tapes promising only cold hard reality.

And that's a shame, because reality is actually the secret to success. A decision well informed with facts is always more useful than a decision based on superstition. The patient who treats his diabetes with insulin will nearly always outlive the patient who relies on an untested herbal extract. The small businessman who works hard to provide a good service at a fair price will nearly always grow wealthier than someone who buys into a multilevel marketing pyramid scheme. The driver who buys an efficient car and drives cautiously will nearly always get better mileage than someone who buys implausible, scientific-sounding products off the Internet guaranteed to "double your mileage". A parent who understands perceptual phenomena and psychology is far better prepared to comfort a frightened child than a parent who believes there really is a ghost in the closet. The ability to apply skepticism and think critically is the single

most valuable ability a person can have, and the most universally applicable to all facets of life.

Everyone is a skeptic to one degree or another. Even the most hardcore, dyed in the wool believer in the supernatural is skeptical about something. If you're reading this book, think of some popular urban legend or myth that you think is silly: Bigfoot, alien abductions, the Loch Ness Monster, the Bermuda Triangle. Why is it silly? What about it is implausible? What's a better explanation for the reported claims?

That's skepticism. By applying critical thinking, you've just arrived at (probably) a better explanation that is more consistent with what we've learned about our world and our universe. If you ever need to make a decision about that subject, you're better equipped than some other people to make a wise and informed decision.

An experienced skeptic is much less likely to be taken advantage of: Critical thinkers are accustomed to the patterns that typically identify pseudoscience and frauds. Skeptics are more likely to discover scientific advances: An appreciation for and understanding of the scientific method, including the ability to discriminate between well sourced evidence and poorly sourced evidence, is a crucial element of scientific progress. A skeptic is much less likely to waste his money on useless alternative therapies, and instead banks his health on evidence based medicine.

These are the kind of benefits that promoters of critical thinking are trying to push on you, and that nobody wants to hear. I find this ironic, because I discover excitement and fascination every day in the process of illuminating facts from the darkness of fallacy.

It is in the hope of bringing this illumination to others that I continue trudging uphill through mud.

— Brian Dunning

1. Inside the World's Most Haunted House

Gather now as we throw another log on the fire, pour some milk in our tea, and close the shutters against the mist as we tell stories of Borley Rectory, the most haunted house in England, and probably in the world.

A rectory is the residence provided by a church to its rector, vicar, or minister. This particular rectory was built on the same site as a Cistercian priory perhaps several hundred years older in what is now Borley, Essex, United Kingdom. There are two stories of ancient love affairs gone wrong from Borley Rectory. In one account, a monk from a nearby 14th century monastery had a relationship with a novice from the local nunnery at Bures. When the illegal affair was discovered, the monk was hanged and the nun was bricked up alive inside the basement of the priory, which later became Borley Rectory. Later, in the 17th century, a French nun named Marie Lairre left her order in Le Havre and came to England, staying for some time at the same nunnery in Bures. Soon she met and married Henry Waldengrave, owner of a manor home that stood on the site of Borley Rectory. In an evening of rage, Waldengrave strangled his wife, and buried her in the basement.

Eventually, in 1862, Borley Rectory was constructed for the Reverend Henry Dawson Ellis Bull. Almost from the beginning, the Bull family was plagued by frightening apparitions. A ghostly nun was frequently reported in the twilight near the home, walking through the gardens. Once Bull's daughters tried to talk to the nun, only to see her fade away and disappear as they got closer. The family was shocked to learn that the nun's path through the garden was already well known to the local villagers, and was called the "Nun's Walk". Sometimes the nun was seen watching people from an upstairs window. Even more terrifying was the appearance of a phantom coach driven by two headless coachmen, which was sometimes

seen and often heard at night in front of the rectory. The sounds of mysterious footsteps and strange creaks and crashes were commonly heard inside the house. Reverend Bull's son, Harry Bull, succeeded his father and stayed in the home until his death in 1927. It was said that Harry Bull enjoyed the ghostly disturbances as entertainment, and built a summer house overlooking the Nun's Walk where he could enjoy cigars and watch the spectacle.

The new rector, Guy Smith, moved in with his family in 1928. While cleaning, Mrs. Smith found a strange package wrapped in brown paper, and inside was the skull of a young woman. The same strange incidents plagued the Smith family, and after Mrs. Smith saw the phantom coach, they called in *The Daily Mirror* newspaper for help. *The Daily Mirror* sent paranormal researcher Harry Price to investigate. Price had stones and a vase thrown at him from unseen hands. After the Smith's daughter was inexplicably locked in a room with no key, they had enough, and moved out after only one year.

The next victims were Reverend Lionel Foyster and his wife Marianne, and it was during their stay that Borley Rectory's most famous haunting occurred: the appearance of automatic writing on the walls of the house. The writings contained pleas for help from Marie Lairre, often addressed specifically to Marianne. The writings said things like "Marianne, please help get" and "Marianne, light mass prayers" and "Pleas for help and prayers". The writings sometimes even appeared in real time while people watched! The Foysters tried to erase and even paint over the writing, but it persisted.

Marianne was often victimized by violence. She was thrown from her bed on many occasions, was attacked and slapped by unseen assailants, and was struck by flying rocks. Windows shattered spontaneously. Reverend Foyster tried many times to exorcise the house, without result, and kept logs of the incidents which he mailed to Harry Price. Price said that the Foysters reported as many as 2,000 events.

The Foysters finally gave up and moved out, and Harry Price himself rented Borley Rectory. Price advertised for 48 volunteer researchers to come and stay in the house with him

and help record the supernatural episodes. Along with his best friends and fellow researchers Sidney and Helen Glanville, Price conducted seances using a planchette, a writing implement held by the seance participants similar to a Ouija Board. Two spirits most often manifested themselves during these seances. Marie Lairre, the most vocal of the spirits, told her woeful story and explained that she was condemned to wander until her bones could receive a proper Christian burial. The second spirit, named Sunex Amures, warned that he would burn down the rectory that very night, and that the bones of a murder victim would be revealed in the wreckage.

The rectory did burn down, but it was eleven months after the ghostly threat. The home's new owner, Captain W. H. Gregson, was unpacking and accidentally overturned an oil lamp, starting a fire that destroyed the building. During the inferno, onlookers spotted a nun in one of the windows. Afterward the rubble was demolished and the bricks were re-used for the war effort, leaving a bare hole in the ground.

Harry Price took advantage of the unfortunate opportunity and excavated the basement. The bones of a young woman were found, certified by a pathologist, and reburied in the nearby cemetery at Liston in 1943. After nearly a century of haunting, Marie Lairre was finally at rest, the Nun's Walk found peace, and the legend of the most haunted house in England came to an end.

And now, decades later, we turn a skeptical eye upon Borley Rectory and see how much of it we can verify, and how much of it is complete bunk. One of the keys to understanding the events at Borley Rectory is to understand who Harry Price was. By no means was he a scientist or an unbiased researcher. He was an expert magician, a member of the British organization The Magic Circle, and proven hoaxer. He was a close friend of Charles Dawson, the man behind the infamous Piltdown Man hoax. He and photographer William Hope staged an elaborate photograph depicting a ghost looking over the shoulder of Price as he sat for a portrait. Harry Price went on the road with a fake statue of Hercules. He exhibited a fake silver ingot from the reign of Roman emperor Honorious. He showed gold coins

from the kings of Sussex and a bone carved with hieroglyphics, all proven to be fakes. By every account, Harry Price was a practiced hoaxster and very much of the P. T. Barnum mold. Harry Price did not investigate Borley rectory for his own health. He achieved a great deal of notoriety from it, including the publication of three books, *The Most Haunted House in England, Poltergeist Over England,* and *The End of Borley Rectory.*

It's important to note that prior to the 1929 article in *The Daily Mirror,* when Harry Price was first called in, no written account exists of any unusual incidents at Borley Rectory. A closer look at the facts reveals a long string of inconsistencies and contradictions between Price's published accounts and the reports of the families themselves. Let's go through a few of these.

The legend of the nun bricked up in the cellar, that so frightened the Bull family, came from a novel that they owned by Rider Haggard. Reverend Bull used to read this chilling tale to his children.

Reverend and Mrs. Smith said that they left the house due to its horrible condition and prehistoric plumbing, not due to any hauntings. The skull that Mrs. Smith found was attributed to a victim of the 1654 plague, many victims of which were crudely buried in the ground that later became part of the garden of Borley Rectory. It was not uncommon for skulls and other bones to be found on the property, and they were routinely reburied in the churchyard.

Marianne Foyster stated that she believed many of the strange incidents were being staged by her husband working in league with Harry Price. Harry Price countered that he believed Marianne herself was, consciously or unconsciously, causing some of the incidents, stating that events only seem to occur when she was present.

There is much confusion over the automatic writing. Most significantly, accounts of the Glanville's seances show that they used rolls of wallpaper on which to capture the writings of their planchette. Why they used wallpaper rolls is not clear, but it could be as simple as wallpaper being the largest rolls of paper

that were handy. The story of automatic writing appearing on the walls of Borley Rectory while people watched appears to be nothing more than a misinterpretation of the reports of the planchette seances, in which writing was captured on wallpaper while seance attendees watched and participated. As for the contents of the writings, most are almost completely illegible, and the popular interpretations are dubious at best. In particular, the writing interpreted as the name Marie Lairre appears to many skeptics to say no such thing.

When Borley Rectory burned down, the insurance company determined the fire to be arson, and Captain Gregson's claim to be fraudulent. What connection this has to Harry Price is not certain, but Gregson was instrumental in organizing Price's excavation, and was present when the bones were found in the cellar. You decide.

Price's discovery of the bones has also been the subject of debate. Critics have questioned the likelihood of Price turning up bones in a single search in only a few hours, when other searches, both before and after Price's excavation, came up empty handed despite far more extensive digging. They also question the fortuitous presence of a pathologist and a barrister to certify the remains. And to make it even more confusing, the two gardeners who did the actual digging, Johnnie Palmer and Mr. Jackson, identified the only bone recovered as a pig's jawbone. What was actually recovered, and how did Price happen to have a pathologist and a barrister on hand? It's unlikely that we'll ever know either answer for sure, but there's enough uncertainty to put Price's own claim on thin ice.

Harry Price died only a few years later, and some of his former associates from the English Society for Psychical Research published their own findings and analysis. A similar report was made by the London Society for Psychical Research. Both reports concluded that (1) there were no verifiable events that could not have had natural explanations, (2) that Harry Price's duplicity made it hopeless to determine the validity of his findings, and (3) that the most popularized events were caused by Harry Price himself. They even debunked specific episodes, such as a light often seen in one of the rectory's upper

windows happened to coincide with the reflected headlight of a regularly scheduled train nearby.

The conclusion I draw from all of this is that to enjoy a good ghost story, you'd better not look at it too closely. If the events at the world's most haunted house can be total fabrications, then what about all those other lesser hauntings around the world? Maybe it's time for one of them to step up and take over the crown. All it takes is some creativity and a book with a great title.

2. Science Magazines Violating Their Own Missions

Today we're going to sit back with our favorite science magazine, open a cold beverage, and read outrageous pseudoscience claims. How's that? Have they lost their editorial way? Not quite: They've lost control of their advertising departments.

I've been a reader of popular publications like *Scientific American* and *Popular Science* for many years. I enjoy the articles but I always have to deliberately avoid the last pages where they tend to run advertisements for blatantly pseudoscientific products: aphrodisiacs, herbal supplements, magic jewelry, and the like. Now obviously, *Popular Science* has to make money and advertising is one way they do that. If their hands were completely tied and they tried to be too restrictive about what types of ads they run, they might not make the money they need. Even skeptical readers like me would rather see them in business than out of it, so we should probably allow them the leeway they need to make the money they need. Right? Well, maybe. It's a give and take. The more bogus ads they run, the more it cuts into their credibility. These publications put themselves out there as proponents of scientific advances, and when they publish even third-party materials that run counter to this mission, they're contributing to society's built-in adhesion to the Dark Ages.

I contacted *Popular Science's* advertising department and asked for their advertising guidelines. I wasn't able to get anything on paper, but I did get a verbal instruction that the products they advertise must actually work and must do what the ad says they do. OK, interesting. Let's open *Popular Science* and see if the advertised products are truly evidenced to do what they claim.

Here's an anti-aging supplement on page 90 that will make you look and feel younger, stronger, perform better, and recover

faster. Plus it's "lab tested" and "highest rated". Apparently, that's good enough for *Popular Science.*

On another page I find a "trust potion". It's a spray that "compels others to trust you" and "fuels intimacy". A trust potion, *Popular Science!* Shouldn't this be your cover story? Can we get an article about this? Obviously you must agree that it does what it claims.

I actually did find one ad for a useless product that says, as required, that its statements have not been evaluated by the FDA — but only one, and my understanding of the law is that this is required of all ads that make unsupported medical claims. This one's for a "Super Male Pill from Europe". Oh, it's from Europe! We'd better read on. It's an "all natural super sex pill" and it makes some very specific claims for its male enhancement results that are a little too racy for this book. I counted 24 exclamation points in this one advertisement. Generally, exclamation point count is considered the hallmark of responsible reporting. But not to worry, this product does promise that it will not cause "blue vision".

Here's an ad for a pheromone additive for your cologne. It says it was published in a "respected biomedical journal". But they are looking out for you: They advise you to "reject cheap imitations".

Here's a two-page spread with facing ads for competing male enhancement products. One of them is "doctor approved", offers 5 inches of "enhancement", and sells for $120 for a three month supply. But the other is "natural", offers only 1 to 3 inches of "enhancement", and sells for $327 for a six month supply. Even though the latter product doesn't enhance you as much, it's worth so much more because it's natural and not doctor approved. Once again we have excellent proof that anything all-natural is much better than anything doctor approved.

One of the most bizarre ads in *Popular Science* is for a water filter — or something; neither their ads nor their web site is willing to tell you exactly what their product is — that claims that pure water, filtered water, and distilled water are toxic, and that their special water machine (whatever it is) is the only way

to get water that doesn't "spread disease". Among the mess on their home page are claims that going to the dentist can give you AIDS, pure water causes serious prostate problems, water is "dead", Internet search engines "lie to push their own hidden agenda in spite of human suffering", and my favorite, "sellers of pure water products are breaking the law by hiding facts from buyers that they need to make an informed buying decision!" (exclamation point). Thank you, *Popular Science* magazine, for alerting us to these dangers.

Scientific American is perhaps not as guilty of spreading this nonsense as *Popular Science,* but their closet is by no means totally clean either. In nearly every issue they run a full page ad for an outrageously priced exercise machine, and it states clearly that four minutes a day on this machine gives you the same benefit as 20 to 45 minutes of running, plus 45 minutes of weight training, plus 20 minutes of stretching, plus it balances your blood sugar (whatever that means), plus it repairs bad backs and shoulders, plus it will make your body look so good that your friends will all buy one too — all in only four minutes a day. Now I don't want that company to sue me, so I'm not going to make a statement like those claims are all blatantly fraudulent, but I find it bizarre that a magazine with standards for the products they advertise could have read over that copy and found it to be acceptable. And by the way, the same ad is also in *Popular Science.*

If you make the decision that your mission is to advance science, it makes no sense to undermine that mission by publishing ads for products that are fraudulent or that make unsupported bogus claims. So I can only assume that *Popular Science* does not have the advancement of science as their mission, or if they do, it's in some kind of "negotiable" status. So, buyer beware, and read with caution. The standards here are basically the same as those for Oprah or Montel.

3. The Twin Towers: Fire Melting Steel

Today we're going to really put the Men in Black under the microscope. And by Men in Black, I mean blacksmiths. You know, those evil government conspirators who expect us to believe that steel can be melted by something that ignites at a far lower temperature. For thousands of years, blacksmiths have been lying to us. They've been telling us that they use coal to melt steel for casting, which, according to a poster on the Skeptalk email discussion list, burns at about 560°F. Fortunately we know better. We don't buy into their lies. We know that steel melts at 2750°F, so we know that these blacksmith shops at local living history museums are all part of the government's master plan of deception. The whole smithing profession and false history was probably invented by the government to prepare us to believe in their biggest lie: That the fires inside the World Trade Center could have brought the towers crashing down.

Conspiracy theorists love to quote retired New York deputy fire chief Vincent Dunn, who said "I have never seen melted steel in a building fire." But they conveniently omit the second half of his sentence: "But I've seen a lot of twisted, warped, bent and sagging steel. What happens is that the steel tries to expand at both ends, but when it can no longer expand, it sags and the surrounding concrete cracks."

One tactic used by conspiracy theorists that has frustrated engineers is their use of a straw man argument, which is where you repeat your opponent's position and carefully reframe it to be weaker and obviously false. Here, the conspiracy theorists have reframed the engineers' position as stating that the World Trade Center fire melted the steel. This is not true, no such claim has been made, as actual melting was neither necessary for the collapse nor possible with the amount of heat that was available.

Let's review the numbers one more time, if you're not already sick of hearing this over the past six years. Steel melts, or liquefies, at 2750°F. Let's take that off the table, because nobody claims that it got that hot, and it wasn't what happened. Jet fuel burns at up to 1500°F. Within about 10 minutes, the jet fuel was exhausted, and the fire then raged among the building itself: its furniture, rugs, curtains, papers, whatever, and temperatures preceding the collapse reached a maximum of 1832°F, according to the National Institute for Standards and Technology's analysis of heat damage to the debris, and as simulated using their computational fluid dynamics model known as the Fire Dynamics Simulator. According to the American Institute of Steel Construction, "Steel loses about 50 percent of its strength at 1100°F, and at 1800°F it is probably less than 10 percent." Even the lowest end of the temperatures inside the fire were way hotter than the hottest temperatures at which the steel trusses could have maintained integrity.

But for the conspiracy theory to work, you have to dismiss any statements made by any official or independent agency, because they could all be part of the conspiracy. The only figures considered reliable are those which differ significantly from official reports. Even expert Rosie O'Donnell told us "It's the first time in history that fire has melted steel."

But then, on April 29, 2007, fire melted steel for the second time in history. A freeway accident occurred in Oakland, California that made us all take a second look. A tanker truck carrying 8,600 gallons of gasoline lost control and crashed on an elevated underpass in the Macarthur Maze, a knot of converging freeway ramps taking cars from the 24, 80, 580, 880, and 980 freeways and funneling them into the San Francisco - Oakland Bay Bridge toll plaza. The fuel exploded into flames and burned fiercely for several hours, but it only took minutes for the span above the flames to collapse and fall onto the span below. The director of Cal Trans, the California state transportation authority, said the heat from the fire had melted the steel girders and bolts that support the concrete roadway. He said "If you have that kind of heat, you're going to have this kind of reaction. We're not surprised this happened."

The massive I-beams built into the structure of the freeway overpasses are far thicker and heavier than the lightweight steel trusses supporting the floors of the World Trade Center. The speedy and graphic nature of this failure demonstrated once and for all how easy it is for heat to soften steel just enough to sag, and that little sag is all it takes for the structure to come apart and then it's Good Night Ladies. In Oakland, these giant beams didn't just sag: they squished like they were made of clay, as you can see if you look up the photos.

Happily, the freeway collapse did have a silver lining. Engineers everywhere breathed a sigh of relief, since this was such a major bitch-slap to the 9/11 conspiracy theorists. Now maybe those nutballs would shut up and go home, right? Maybe even take down their insulting web sites. But is that what happened? Don't bet on it. Remember how the logic of the conspiracy theorist works: Evidence against their theory is really evidence for the conspiracy. Within hours, conspiracy theorist blogs and web sites were charging that the government staged the Oakland freeway collapse in a transparent attempt to bolster the official version of the World Trade Center events.

Three basic arguments have been made alleging the conspiracy. First, it just seems consistent with what an evil government might do. But, like the majority of the 9/11 conspiracy "evidence", appearing consistent with one possibility in addition to others is hardly proof that that one possibility is the true one.

Second, this fire was outdoors, and not insulated within a building. For some reason the conspiracy guys have turned this one completely around, saying that an uncontained outdoor fire traps heat in better than an enclosed fire. This logic is a little too bizarre for this author to attempt to address. This has nothing to do with oxygen availability, which was the only remotely intelligent extrapolation I could make from this, as the World Trade Center fires were fed not only by airliner sized holes in the side of the building, but also by millions of cubic yards of oxygen inside the buildings.

Finally, the conspiracy guys argue that of all the hundreds of thousands of freeway overpasses in the country, how could this

accident just happen to occur at one of the busiest interchanges on the busiest bridge in one of the most traffic congested urban areas in the country? If you wanted to deliberately select the most disruptive and highly visible interchange in the country, this is quite possibly the exact one you'd choose. The two spans that were destroyed carry 160,000 cars a day. What are the chances that this is where such an accident would just happen to occur? Next to impossible. Clearly, this location had to be deliberately chosen. The only possible explanation is that the wreck was staged by the government.

It's kind of hard to argue against that kind of logic. So, I say, don't bother. People who are smart enough to know better, and educated enough to understand the physical sciences, and yet still believe the conspiracy theories, are beyond help. They are paranoid delusionals. Don't waste your breath trying to reason them into mental health. And also, don't worry that their fantasies will eventually creep into the history books and infect your children, any more than you should worry that the schools will start teaching the Flat Earth theory. The conspiracy theories are false, so they're unprovable, and all the evidence will always be against them. They're never going to go away, and they're never going to shut up, and as offensive as their paranoid pipe dreams are to civilized people, they have every right to present them and argue their point of view. This is the lesson for your children. Show your children the facts of what happened, and explain why the terrorists did what they did — that's the easy part — and then expand the lesson to the importance of free speech. Better if your children first hear these conspiracy theories within the context of an example of protected free expression of an offensive idea.

That way, your children will be better prepared to visit a blacksmith shop, and know when they're being lied to.