**THE SKEPTIC ARENA**

**October 31, 2015**

**A Quick Puzzle to Test Your Problem Solving**

**By David Leonhardt of the N.Y. Times**

[**http://www.nytimes.com/interactive/2015/07/03/upshot/a-quick-puzzle-to-test-your-problem-solving.html?\_r=2&abt=0002&abg=1**](http://www.nytimes.com/interactive/2015/07/03/upshot/a-quick-puzzle-to-test-your-problem-solving.html?_r=2&abt=0002&abg=1)

**(Readers: click the link above and try to solve the puzzle first ... and then return to this essay)**

***But most people start off with the incorrect assumption that if we’re asking them to solve a problem, it must be a somewhat tricky problem.***

**David, if that were the case then most people would not have started out with the easiest and most obvious rule "double the previous number."**

***They come up with a theory for what the answer is, like:***

***Each number is double the previous number.***

**David, anyone who is challenged to solve a puzzle will have to come up with a theory for what the answer is. That theory will have to be based upon trying to find a pattern in the numbers given. Doubling the previous number is just one obvious choice.**

***And then they make a classic psychological mistake. They don’t want to hear the answer “no.” In fact, it may not occur to them to ask a question that may yield a no.***

***Remarkably, 78 percent of people who have played this game so far have guessed the answer without first hearing a single no. A mere 9 percent heard at least three nos — even though there is no penalty or cost for being told no, save the small disappointment that every human being feels when hearing “no.”***

**David, as you stated**

**"there is no penalty or cost for being told 'no' ...."**

**So maybe you need to consider other alternatives. For example: perhaps when people receive a series of "yeses" they incorrectly assume that they have discovered the rule. What they should have done is to invest more effort into disproving their rule. In that case, the classic psychological mistake wasn't one of not wanting to hear "no" but one of mental laziness. One way to disprove the rule would have been to double negative numbers.**

**Ironically, your conclusion echoes the same mistake that many of those puzzle-solvers made: you didn't exhaust more possibilities and rule out other causes, like the one I just described above, before reaching your conclusion.**

***It’s a lot more pleasant to hear “yes.” That, in a nutshell, is why so many people struggle with this problem.***

**David, it's also a lot more work to exhaust other possibilities, as your conclusion just proved.**

***Confirmation Bias***

***This disappointment is a version of what psychologists and economists call confirmation bias.***

**David, that's only true if your conclusion is correct; and I already gave you one example ... of where it is not.**

***Most of us can quickly come up with other forms of confirmation bias — and yet the examples we prefer tend to be, themselves, examples of confirmation bias.***

**David, your conclusion above just proved that ... about you. Hence, my earlier use of the word "ironically."**

***If you’re politically liberal, maybe you’re thinking of the way that many conservatives ignore strong evidence of global warming and its consequences and instead glom onto weaker contrary evidence.***

**David, you don't have to be a Liberal to see that. Conservatives make it easy for all of us to see.**

***Liberals are less likely to recall the many incorrect predictions over the decades, often strident and often from the left, that population growth would create widespread food shortages. It hasn’t.***

**David, I would have used their obsession with GMO's ... then you wouldn't have left yourself open to having to explain the hundreds of thousands of Africans who starve to death each year.**

[**http://www.worldhunger.org/articles/Learn/africa\_hunger\_facts.htm**](http://www.worldhunger.org/articles/Learn/africa_hunger_facts.htm)

[**https://africacheck.org/reports/do-12-africans-die-of-hunger-every-minute-the-claim-is-exaggerated/**](https://africacheck.org/reports/do-12-africans-die-of-hunger-every-minute-the-claim-is-exaggerated/)

**David, and if you read the links above, you'll find that there are far more fatalities from malnutrition than just those in Africa.**

***This puzzle exposes a particular kind of confirmation bias that bedevils companies, governments and people every day: the internal yes-man (and yes-woman) tendency. We’re much more likely to think about positive situations than negative ones, about why something might go right than wrong and about questions to which the answer is yes, not no.***

**David, when I think of a yes-man, I think of a sycophant (and the dictionary backs me up on this one):**

[**http://dictionary.reference.com/browse/yes-man**](http://dictionary.reference.com/browse/yes-man)

**David, what reference are you using?**

***Sometimes, the reluctance to think negatively has nothing to do with political views or with a conscious fear of being told no. Often, people never even think about asking questions that would produce a negative answer when trying to solve a problem — like this one. They instead restrict the universe of possible questions to those that might potentially yield a “yes.”***

**David, or maybe they're just trying to solve the puzzle and aren't even thinking about "yes" or "no" answers except in the context that those answers can lead them to a solution.**

***Government Policy***

***In this exercise, the overwhelming majority of readers gravitated toward confirming their theory rather than trying to disprove it. A version of this same problem compromised the Obama administration’s and Federal Reserve’s (mostly successful) response to the financial crisis.***

**David, that all depends on how you measure success, doesn't it?**

**We all know that it was wildly successful ... for the rich.**

**Not so much ... for everyone else.**

***They were too eager to find “green shoots” of economic recovery that would suggest that the answer to the big question in their minds was, just as they hoped and believed: “Yes, the crisis response is aggressive enough, and it’s working.” More damaging was the approach that President George W. Bush’s administration, and others, took toward trying to determine whether Iraq had weapons of mass destruction a decade ago — and how the Iraqi people would react to an invasion. Vice President Dick Cheney predicted in 2003, “We will, in fact, be greeted as liberators.”***

**David, Bush and Cheney? You don't even want to get me started.**

***Corporate America***

***Corporate America is full of more examples. Executives of Detroit’s Big Three didn’t spend enough time brainstorming in the 1970s and 1980s about how their theory of the car market might be wrong. Wall Street and the Fed made the same mistake during the dot-com and housing bubbles. To pick an example close to home, newspapers didn’t spend enough time challenging the assumption that classified advertisements would remain plentiful for decades.***

**David, in their defense, predicting the future is pretty risky business. Take for example, Sylvia Browne, a highly successful professional seer: when she looked into the future, she saw herself alive and kicking at 88 ... 11 years after she died.**

***One of the best-selling business books in history — about negotiation strategy — is “Getting to Yes.” But the more important advice for us may instead be to go out of our way to get to no. When you want to test a theory, don’t just look for examples that prove it. When you’re considering a plan, think in detail about how it might go wrong.***

**David, I believe you just conflated two separate concepts: when you look for examples to disprove a theory, that is called "trying to falsify it." When you think about how a plan might go wrong, you aren't trying to falsify it, you are "preparing alternatives in case of failure." Those are not the same thing.**

***Some businesses have made this approach a formal part of their decision-making: Imagine our strategy has failed; what are the most likely reasons it did?***

**David, if the business has failed, it is more important to have an alternate plan ready to implement. Thinking about things that may have caused a business to fail, are things that should be done before, not after a failure.**

***When you seek to disprove your idea,***

**David, that's called "trying to falsify it."**

***you sometimes end up proving it —***

**David, that results when your attempts to falsify it have failed.**

***and other times you can save yourself from making a big mistake.***

**David, and that's where you confused the two concepts. Successfully falsifying a theory can save you from making a big mistake, and save you the embarrassment of having someone else falsify your theory for you.**

**While planning alternatives to implement in case of failure can save you *after* you have made a big mistake.**

***But you need to start by being willing to hear no.***

**Okay David, let's see if you are willing ... "no." No I don't think that most people failed to solve the puzzle because they were unwilling to hear the word "no."**

**I admit that I don't know how many people failed because of that reason; surely some did. But for me to accept your claim that *most* people failed because of that reason, that would require evidence; and that is something you did not provide in this essay.**

***And even if you think that you are right, you need to make sure you’re asking questions that might actually produce an answer of no. If you still need to work on this trait, don’t worry: You’re only human.***

**David ... ain't we all.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**THE SCIENCE SEGMENT**

**Warm-blooded fish swim faster and farther**

**than their cold-blooded counterparts**

**Marine scientists have long known that some species of fish possess a unique physiological characteristic: a web of arteries and veins lying very close together that enables them to raise their internal temperature higher than that of the water surrounding them.**

**Species possessing the ability to warm their core, a process called endothermy, are able to swim two and a half times faster than those whose body temperature doesn't change. In addition, these species, which include some sharks and tunas, can also swim twice as far; ranges comparable to those of warm-blooded animals such as penguins and other marine mammals.**

**The cost of moving faster and farther is high so there has to be an ecological reason that outweighs the physiological expenditure. These endothermic fish are putting a lot more energy into each unit of movement than their cold-blooded counterparts.**

**In fact, the estimated cost of transport is twice as high, but in return they're getting benefits from that increased swimming speed and wider range of migration. Researchers hypothesize that these gains allow these endotherms to be more efficient hunters and to span larger areas in their migration, which probably provides feeding and reproductive benefits.**

**Four shark species are endothermic: salmon, porbeagle, white, and shortfin mako; as are five species of tuna: yellow fin, southern bluefin, Atlantic bluefin, Pacific bluefin, and albacore. One species in particular, the white shark, has a migration range greater than that of the humpback whale.**

**Endothermy evolved independently in these distinctly different groups of fish. The two taxonomic groups diverged more than 450 million years ago, and their common ancestor was most likely cold-blooded.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**FAMOUS QUOTES**

**Oliver Wendell Holmes Sr. (1809 – 1894) 85 years**

**He was an American physician, poet, professor, lecturer, and author based in Boston. His most famous prose works are the "Breakfast-Table" series. He was also an important medical reformer.**

**After graduating from Harvard in 1829, Holmes briefly studied law before turning to the medical profession. He began writing poetry at an early age; one of his most famous works, "Old Ironsides," was published in 1830 and was influential in the eventual preservation of the navy ship, the USS Constitution. Following training at the prestigious medical schools of Paris, Holmes was granted his M.D. from Harvard Medical School in 1836. He taught at Dartmouth Medical School before returning to teach at Harvard, and for a time, served as dean there. During his long professorship, he became an advocate for various medical reforms and notably posited the controversial idea that doctors were capable of carrying postpartum infections from patient to patient. Holmes retired from Harvard in 1882 and continued writing poetry, novels and essays until his death in 1894.**

**Many of Holmes' works were published in The Atlantic Monthly, a magazine that he named. For his literary achievements and other accomplishments, he was awarded numerous honorary degrees from universities around the world. Some of his medical writings, were considered innovative for their time.**

**“I like paying taxes. With them I buy civilization."**