Safety In Numbers Can Be An Illusion

I distinctly remember a question I was asked when being interviewed for a wind power story on *North Country Public Radio* (NY). After I had gone through several scientific, financial and environmental reasons why wind power doesn't make sense, the reporter asked me: "But what you're saying is that all these federal and state agencies, as well as the Sierra Club, Union of Concerned Scientists, Pace University, most of the media, etc., are all wrong about wind power. *How can that be?*"

It was immediately obvious to me that he had not only already made up his mind on this subject, but that he hadn't heard a word I had said (or at least certainly hadn't given it much reflection). He simply couldn't get his head around the possibility that all these other people — and seemingly competent people at that — could be wrong.

It is a good question, and the answer is: *the number of people believing something —especially in a technical area like wind power— is* ***not*** *the criteria for determining whether it is right*. No matter how many well-intentioned intelligent people buy into an error, ***it is still wrong.***

As a physicist I know that what determines right and wrong here: the scientific facts.

Interestingly, little of this type of disparity is new. As an aspiring student of history I'm a big believer in the adage: *if you don't learn from history, you're doomed to repeat it.*

So what does history tell us in this regard? A lot! To begin with: we've been this way before, *and* the solution to solving serious technical problems (like our energy crisis) is to use **scientific methodology**, *not* what intuitively seems obvious.

Here are a few snapshot examples from our archives (chronologically arranged) as to what happened when this fundamental principle was bypassed in the past…

Challenge: to define the earth's position in the solar system.

Intuitive Theory: The earth was obviously the center of the solar system. Anyone could clearly see the sun moving around us every day. No other proof was needed.

Theory Supporters: essentially everyone. The media, scholars, businessmen, politicians, the public, all thought that the earth was the center of everything. In fact it was believed that God made it that way!

Fatal Flaw: This theory was not objectively examined using Scientific Methodology!

Conclusion: When Scientific Methodology was utilized by Galileo, he proved that the opinion held by essentially everyone was totally false, and the earth was no where near the center of the solar system.

Short Term Result: Total disbelief by almost everyone. Galileo was labeled a heretic, forced to recant his scientific findings, and put under house arrest for years.

Long Term Result: we all now know that Galileo was right, and that EVERYONE else in his time was mistaken.

Now we look back and say how could ***so many*** *people be so wrong? And weren't they really arrogant fools to punish a person for telling the truth!*

When people first hear the full story about Galileo they often say something to the effect that "Those people way back then were really stupid. Such a thing couldn't happen today!"

Really? This type of situation has actually happened ***repeatedly*** in human history. Here is another, more recent example:

Challenge: to decide whether people could be transported through the air.

Intuitive Theory: It was obviously impossible for a heavier-than-air flying machine to be able to travel any meaningful distance in the air.

Theory Supporters: essentially everyone. The media, scholars, businessmen, politicians, the public, almost all thought that the laws of science prohibited air flight. It was said to promote such a contraption was an absurdity, and a gross violation of the laws of nature. That it was an impossibility had been "proved", with "unassailable logic" by leading experts, writing in distinguished journals.

Fatal Flaw: This theory was not objectively examined using Scientific Methodology!

Conclusion: When Scientific Methodology was utilized by the Wright brothers (for instance they constructed wind tunnels), they proved that the opinion held by essentially everyone was mistaken, and that air flight was indeed not only possible, but practical.

Short Term Result: Total disbelief by almost everyone. The Wright brothers were publicly labeled liars in the media. Respected scientific magazines (like *Scientific American*) were openly skeptical of their claims. Even the Smithsonian Institute denigrated the Wrights for years. Because of the almost universal skepticism by the media, the establishment, and the academic community of experts, the first published report of the Wrights' successful Kitty Hawk flight was published in a *beekeeper* magazine.

Long Term Result: everyone now knows that the Wright brothers were right, and that almost EVERYONE else in their time was mistaken.

So we ask: *how could **so many** people be so wrong?*

Amazingly there are literally hundreds of these examples littering human history. here is one more:

Challenge: to determine what caused ulcers, a common medical condition where a hole is eaten into the lining of the stomach.

Intuitive Theory: Since acids are powerful chemicals, it was obvious that excess acidity (known to be produced by stress) would erode away the lining of a stomach.

Theory Supporters: essentially everyone. The media, scholars, the public, almost all thought that this was the proper explanation. That's John Hopkins, the Mayo Clinic, American Medical Association, Center for Disease Control, all the teachers in state-of-the-art medical schools, **thousands** of highly educated doctors, all the pharmaceutical giants with their extensive labs, etc.

Fatal Flaw: This theory was not objectively examined using Scientific Methodology!

Conclusion: When Scientific Methodology was utilized in 1982 by two Australian physicians (Robin Warren and Barry Marshall), they proved that the opinion held by essentially the **entire medical establishment** (generally intelligent people) was totally false, and that 90%+ of ulcers were caused by a bacteria.

Short Term Result: Skepticism by the medical establishment. In a 1995 study (13 years after their findings were published and *verified*), data show that about 75 percent of ulcer patients are still treated primarily with antacid type medications, and only 5 percent receive antibiotic therapy. In 1996 the FDA approved the first antibiotic for treatment of ulcer disease. In 1997 the CDC, with other government agencies, academic institutions, and industry, launched a national education campaign to inform health care providers and consumers about the link between the *H. pylori* bacteria and ulcers.

Long Term Result: most people now know that the bacteria explanation is right, and that almost EVERYONE else in the medical, academic and pharmaceutical fields was wrong. [Note: we are now talking current times, so most of the medical leaders and experts who were wrong on this issue are still with us.]

Again we ask: *how could **so many** people — leading experts at that — be so wrong*? That brings us to today, and my perplexed Public Radio reporter.

Challenge: to provide commercial electric power generation that will materially reduce CO2 emissions, while still being economical and environmentally friendly.

Intuitive Theory: It is obvious that "renewables" (like wind power) are the answer. After all wind appears to be free, green, and won't be exhausted.

Theory Supporters: most people. The media, government employees, politicians, scholars, sophisticated environmental organizations, businesses and individuals who stand to profit from wind power implementation, the public: almost all think that this is a logical explanation. That's the Sierra Club, Union of Concerned Scientists, Pace University, most of the teachers in state-of-the-art schools, hundreds of educated scientists, etc.

Fatal Flaw: This theory has not been objectively examined using Scientific Methodology!

Conclusion: Can it really be possible that 60,000± wind turbines have been put in operation as of 2008, and **no scientific proof exists** that they work as advertised? ***Yes!*** Since we are in the middle of this, the "conclusion" has yet to be written. But based on how things are currently going, let's speculate:

When Scientific Methodology was finally utilized in 2020 by two American researchers, the Right brothers, they proved that the view held by essentially the **entire environmental establishment** (and their government allies) was totally false. Wind power's contribution towards global warming is proven to be trivial, *and* extremely expensive. If that wasn't bad enough, its implementation was also demonstrated to be seriously environmentally destructive.

Short Term Result: Total denial by environmental organizations and their political agents. The Right brothers are publicly labeled "anti-green" in the media. Respected scientific publications are openly skeptical of their claims.

Long Term Result: by 2030 most people come to know that wind power existed primarily due to the enormous subsidies thrown at it by politicians, with the encouragement of well-intentioned but unscientific environmentalists. Because of this misguided effort, trillions of dollars were wasted, and CO2 continued to climb at an unabated rate. Tens of thousands of abandoned wind turbines liter the landscape. Lawsuits are in the hundreds of Billions. Environmentalists blame politicians. Politicians blame environmentalists...

The same refrain comes to mind: *how could **so many** people be so wrong*?

Even better questions are: why haven't we learned from the past? And how long is it going to take before we wiseup?

For those who want to have more insight into the psychology of this situation, let's quickly investigate *why it's so easy for major **groups** of "**experts**" to be 100% wrong?*

It begins with laziness. Everybody is in a hurry to "fix" a problem. The bigger the issue, the more the hurry — the exact opposite of what it should be! Doing studies and experiments take time, so very few bother to do a real **scientific assessment** of answers that are "intuitive." **Soon the "obvious" solution becomes accepted as "fact."**

To assume the intuitive, flies in the face of one of the fundamentals of science: *skepticism*. If necessary, read up on Descartes to see what that is all about.

Secondly there appears to be a genetic predisposition that after we *buy into something* — i.e. get into a mindset — it becomes *extremely* difficult for most people to change their position.

Social psychologist Leon Festinger first proposed the theory of **cognitive dissonance** in 1957 after he observed the counter-intuitive belief persistence of members of a UFO doomsday cult and their *increased* proselytization after the leader's prophecy **failed**.

> The failed message of earth's destruction (purportedly sent by aliens to a woman in 1956), became a *disconfirmed expectancy* that increased dissension between differing awarenesses, causing most members of the impromptu cult to lessen the internal conflict by accepting a new prophecy: *that the aliens had instead spared the planet for their sake.*

So cognitive dissonance is the tendency for people to resist information that they don't want to think about, because if they did it would conflict with *an **illusion** they have bought into* — and perhaps require them to act in ways that are out of their comfort zone.

The result is that such afflicted persons maintain *logically incompatible beliefs*, or *reject reasonable behavior*, just to avoid their own intellectual discomfort. Those afflicted with cognitive dissonance have at least partial awareness of the information they are having problems processing, and are thus in a state of denial about it. This "irrational inability to incorporate rational information" is the most common element of cognitive dissonance.

> A current related example is people who insist that the fate of mankind is at stake due to Global Warming, unless we take drastic action *immediately* — yet they also say that a legitimate solution (e.g. nuclear power which emits essentially no greenhouse gasses) is unacceptable because of some *potentially* undesirable side effects (like a terrorist attack).
>
> The fact that there never has been such a terrorist attack (in some THIRTEEN THOUSAND operational years!) is illogically and incomprehensibly rejected as irrelevant.
>
> The fact that even if there WAS a terrorist attack, and a worst case scenario came about where a million people died, that this would be a very reasonable tradeoff to save the lives of seven Billion people, is likewise illogically rejected as unacceptable.
>
> In other words they are saying that it makes sense to them to avoid a less than 1% risk that will likely prevent an almost 100% guaranteed annihilation of seven Billion people.

One final element cements together this fallacious thinking: *anyone who dares challenge them is labeled a **heretic*** (“anti-green” in this case). This known result has the desired effect of discouraging most people from speaking openly about differing ideas — some of which may be extremely beneficial.

“A set of beliefs is called an orthodoxy when it becomes the official line of those who have the power to say where the official line is to be drawn. An orthodoxy might be thought of as ‘a publicly-shared official belief system’. ‘Heresy’ can be defined most simply as a challenge to orthodoxy.”

> In **science** (e.g. technical areas like alternative sources of energy), no orthodoxy is sacred, or above question — *there should always be a healthy exploration of alternatives.*
>
> On the other hand, in **politics** (e.g. making financial decisions on areas like alternative sources of energy), the orthodoxy is positioned as being *sacred* and *above question*. [This is what is going on in the Sierra Club and the Union of Concerned Scientists.]

Why is it sacred? Because ***questions*** might expose ***the underlying incompetence*** and/or ***inappropriate motivations*** of the orthodoxy promoters**,** which (in turn) ***might jeopardize their hold on authority and power.*** To minimize this, questioners are labeled heretics.

But aren't the environmentalists (e.g. the McKibbens of the world) well-intentioned?

Let's give them the benefit of the doubt and say yes. But the proponents of earth as the center of the solar system, and the believers that heavier than air machines couldn't fly, and the advocates of stress being the main cause of ulcers were likewise all well-intentioned.

Conclusion: Well-intentioned doesn't equate to being right.

But aren't their arguments persuasive?

Indeed they can be. If a reader wasn't educated on energy (what they are counting on), and didn't ask hard questions (what they are also counting on), their writings could be very convincing. Look back on the three cases I cited and you will see impressive credentialed people also making eloquent and persuasive arguments against Galileo, the Wright Brothers, and about the purported cause of ulcers.

Conclusion: Eloquent arguments don't make them right.

But, you say, *I've seen this support for wind power everywhere, and repeatedly! For instance, Mr. Pickens is all over the place!*

For certain. But, again, The same situation existed in the three historical examples I've cited. (And, BTW, Mr. Pickens has one over-riding motivation: 25%+ profit.)

Conclusion: Being persistent and repetitive doesn't make them right.

All of these elements can be moving (and seductively compelling) to the uninformed, but they belie the fact that their position is **not scientifically sound.**

OK, so we now understand that it doesn't matter one whit how many people are promoting a position, right? What matters in a technical area like wind power is what an *independent* and *objective* scientific evaluation concludes.

Maybe it has been too long since I got out of graduate school, but my recollection of how science is *supposed* to work is this:

> **When a new idea is proposed as a potential solution of a problem, it is up to the solution proponents to PROVE its efficacy — *not the other way around.***

Here we have businessmen and investors *proposing* wind power as part of an energy "solution" to Global Warming. So the ball is in their court to provide independent, objective **proof** that wind power **is** indeed a viable solution from **all** pertinent perspectives. THIS HAS NOT YET HAPPENED.

An analysis of industrial wind power would, as a minimum, include:

1) an objective valuation as to whether it is a *consequential* contributor towards helping with Global Warming. and
2) its commercially viability as a source of energy *on its own*, and
3) a complete environmental impact assessment from manufacture thru decommissioning.

All independent information to date says that wind power fails on all three counts.

Those three basic criteria haven't been selected to make wind power look bad, but are what should be used to evaluate the legitimacy of **any** proposed new alternative source of energy.

So, the Big Picture of what should be done regarding our energy crisis is:
1 - aggressively research alternatives and renewables, in a **scientific manner**,
2 - mandate nothing (e.g. RPS) until they pass the three part **scientific methodology** test,
3 - actively work on solving issues with conventional sources of power,
4 - thoroughly investigate avenues to improve delivered efficiency (e.g. Casten), and
5 - take meaningful steps regarding conservation.

Using our heads here will avoid our being just another example that future historians will refer back to and say "what fools !!".

This brings us full circle, back to the early 1600s when a certain Galileo made an insightful observation that sounds like it could have been uttered in 2008:

> "I do not feel obliged to believe that the same God who has endowed us with sense, reason and intellect has intended us to forgo their use."

John Droz, jr.

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8/27/08; rev 11/8/08

— Some References —

Galileo <<http://www.lucidcafe.com/library/96feb/galileo.html>>

F. Kelly, The Wright Brothers: A Biography Authorized by Orville Wright, (Harcourt, Brace and Company, New York, 1943), p. 116, describing Simon Newcomb

The History of Ulcers <<http://www.cdc.gov/ulcer/history.htm>>

Descartes <<http://tinyurl.com/6qruvu>>

Nuclear power world-wide <<http://tinyurl.com/6f9uxa>

Cognitive Dissonance <<http://en.wikipedia.org/wiki/Cognitive_dissonance>>

Heresies <<http://www.philosophynow.org/issue56/56bartley.htm>>

"What Was I Thinking?" <<http://tinyurl.com/2pjtvh>>

Casten: Waste Heat to Power (2007) <<http://tinyurl.com/389k3o>>.

For some scientific wind power information <<http://www.WindPowerFacts.Info>>

Some other related areas of interest:

Behavioral Economics emerged largely in response to work done in the nineteen-seventies by the Israeli-American psychologists Amos Tversky and Daniel Kahneman. When they examined *how people deal with uncertainty*, they found that there were consistent biases to the responses, and that these biases could be traced to mental shortcuts, or what they called "heuristics." Some of these heuristics were pretty obvious — people tend to make inferences from their own experiences, so if they've recently seen wind turbines turning they will overestimate the usefulness of wind power, assuming that it *must* make sense or people wouldn't be doing it. See <<http://en.wikipedia.org/wiki/Behavioural_economics>>.

Here are some interesting books (reviewed by the *Wall Street Journal*) that examine the "**science of decision making**" (i.e. when faced with a choice, will people make a *rational* decision?): <<http://online.wsj.com/article/SB121426594353898543.html>>.