

**METHODOLOGY AND RIGOR
HOW ‘FALSE PROPHETS’ PUSHED FIRMS TO
THE DOT.COM CLIFF**

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Research science is a hard to do, expensive, time consuming and not very natural to the human psyche. Loren Eiseley, essayist and historian reminds us that science “has to be learned, consciously practiced, stripped out of the sea of emotions, prejudices, and wishes in which our daily lives are steeped.”

Truth is, we all like to push the facts away when it serves us. We recall, years ago, out for a run in the hills of Oakland, California overlooking the Bay area, when a friend began to comment on ordinary things, such as how many inhabitants lived in the Bay area. We bandied around some numbers, we passionately argued for 100,000 more, 100,000 less, until it occurred to one of us to suggest that we could actually look the number up. In a second, our pleasure at debating our half-baked opinions was gone and we were trapped by the knowledge that there was a truth larger than us.

The moral of the story is simple: we all like to cheat a bit on the facts. Few of us can resist the temptation, especially when the economic rewards for eliminating rigorous methodological rules can be enormous.

In an major editorial in the September issue of the prestigious Journal of the American Medical Association, the chief editors of thirteen independent medical journals joined together to warn of the severe dangers that arise from permitting pharmaceutical companies to test new drugs in company-selected, research laboratories and gain FDA approval without publishing their results in peer-reviewed, independent, academic journals.

Admittedly, the non-scientist this sounds rather complicated. What’s wrong with companies hiring testing laboratories? What does academic publication have to do with drug testing? Isn’t science just science?

The answer lies in understanding why pharmaceutical firms have altered the traditional process of depending on independent academic evaluation supported by publication in academic journals in favor of a faster process using research laboratories controlled in large part by industry. Perhaps the most telling evidence, the editorial argues, is the decision by those pharmaceutical companies that continue to work with academic institutions to maintain a veto over the publishing of research results in refereed academic journals.

In short, the answer to our question is obvious. Without an independent academic community committed to sustaining the arduous and costly methodology of serious research the can be no real science.

The attack, we would point out, is not limited to the pharmaceutical industry. Our concern is a completely different arena: the management literature. Or maybe not so different... after all, both natural and social scientists follow the same path when it comes to research. The process is very simple and arduous: first, one needs to get appropriate training at an accredited university in order to be able to do research. This training, in the social sciences, is known as a Ph.D. or Doctorate. During the “Ph.D. experience”, candidates learn what research is all about. They study how to formulate a good research question, how to state hypotheses, and how to use complex statistical methods to test those hypotheses. These Ph.D. candidates write research papers, which

are criticized – or shall we say, completely taken apart – by their advisors and peers, and they must learn how to interpret tough criticism and resolve the issues raised.

Once the young researcher has received his certification, the really hard work begins. The 5-7 year path to tenure at a research university mean producing work able to stand up to the scrutiny of anonymous reviewers assigned by an academic journal. The Journal of American Medical Association is one such journal. So are MIS Quarterly, Academy of Management Review, Administrative Science Quarterly or Strategic Management Journal. Business administration is like any other academic discipline.

If it is such hard work, why bother? There are, of course, significant rewards for academics: prestige, satisfaction, and, on occasion, wealth, especially when this work is repackaged in a book or an article in a way businessmen and practitioner can easily understand it.

Let us return then the issue at hand: science and management. What happens in management when we forget the rules of science? The risk in the medical sciences is clear: patients may be harmed or even killed when the complex rules of inductive reasoning are violated. But what harm can there be in business? After all, isn't business all about taking quick decisions based on limited information?

Perhaps, then, we ought to reconsider our experience with Internet. In the first blush of intense business activity, several “research” firms realized that in their fervor to understand what's going on managers were willing to pay quite a lot for reliable information on what's happening. These researchers contacted some friends, and asked them to answer some questions about things that either start with an “e” or have a “2” in between two capital letters. They put together something that is usually called, in scientific terms, a “convenience sample”. Obviously, the probability of having a group of friends who share some common thoughts and visions is high, so the homogeneity is higher and many discordant opinions are very likely to be left apart. Scientists call this phenomenon “sample bias”. Then, they collected the results, calculated some averages, and reported them as “the findings”.

What about these findings? Let us suppose that these research firms interviewed friends at six firms and that three of them said that they engaged in B2B transactions. Our researchers can now report “50% of firms have adopted B2B”. Unfortunately, the probability of getting these results just by chance is substantially high. Scientists usually call this measure “standard error”.

Despite such limitations, the research firm must move ahead and sell its valuable information. Here the key to success is the “social dynamics” of the sale process. Success requires that “everyone” in the industry buys the report for the modest price of, shall we say, \$2,000. Clearly, something as insightful as this “major new report” has to be necessarily very expensive. But surely less expensive than if the competition has this information and you don't, and it turns out to be right and the competition gets a competitive advantage. Are you going to say to the CEO or the shareholders that you didn't know what was going to happen because you did have “*The Report*”.

What happens if “*The Report*” turns out to be wrong? The research firm chalks up the error to experience, part of the learning process. “You can't get them all right,” they

say, “You know, it’s hard to predict things in this environment... trust me on the next one.” They take their cue from stock market analysts who have an extraordinary capacity to forget the principle of the “random walk”, the scientific truth that ups and downs in the financial markets do not follow a predictable pattern.

Why does this system work, or should we say, fail? Let us consider for a moment, once again, what goes into doing real science. First of all, there is a lack of the adequate training. Check the websites of research firms and see who is actually doing the research there: mostly MBAs. We have deep respect for MBAs. In fact, we have been teaching them for decades all over the world. They are brilliant, goal-oriented, agile-minded, determined and indefatigable workers. We are quite certain about this. But we also know for sure they are not research scientists. They are a different breed. They pursue objectives, and they get them, usually in a very efficient way. But scientific research is different. When you do research, you frequently discover that you have a high number of cases where you simply don’t have anything to report. Your hypotheses hence cannot be tested, and you have start all over again. When this happens, you cannot even say, “I have not been able to test my hypotheses, then the opposite is true”, since a shortfall of evidence is not necessarily evidence of anything other than a failed research design. Scientific researchers know what we talking about. And sometimes is very frustrating. But that’s what research is all about, trying to test hypotheses following a rigid set of principles and rules. Such principles and rules are called “the scientific method”, and we all know it works with frustrating efficiency.

Not surprisingly, MBA’s don’t want to cope with the typical failure rate of scientific research. They are eager to produce results and present them in elaborated reports. They feel the pressure for results, and, best of all, no independent scientists are around to review these reports and tell them their methodologies are inadequate. The result is that the research firms over promise and under deliver. They promise they will tell everyone what’s going on in such a new and slippery area, but they fail to use a sound methodology. Therefore, their results may not be true. However, as they claim to be the only ones doing research on the Internet, they are successful in establishing themselves as “the oracles of the New Economy”, and they release juicy parts of their reports to the press who publish these results because “it is all the information they have”. The result: firms are anxious to put their hands on one of these reports. No one seems overly concerned if those results are rigorous descriptions of reality. And unfortunately, in short order, most of these reports turn out to be dead wrong. In fact, some of these wrong results pushed firms and individual investors to the dot.com cliff.

Are we being fair to these “research firms”? Aren’t they just providing a service for willing customers? For the moment, let us give them the benefit of the doubt: Let the buyer be beware! Our job, as scientist is to warn those buyers. Buyers, ask yourselves, how many of these reports are later published in a serious academic journal? How many prestigious academic researchers have you seen collaborating with these firms?

It is difficult to imagine one of these reports passing through a peer-review process. So remember, statistics are a powerful weapon. Benjamin Disraeli, the 19th century British Statesman, is credited for having said, “There are three kinds of lies: lies, damned lies, and statistics.” Statistics are powerful weapons in the hands of people who don’t know how to use them. As with all dangerous materials, one has to know the proper procedures for their manipulation: one has to comply with strict rules to draw successful

conclusions out of regressions, cluster analyses or time series. In the absence of methodological rigor, we prove that the earth is flat, that the stock market is a zero sum game, that pyramid schemes make everyone rich and that economic cycles have disappeared forever.

Fortunately for us, we now know the truth. We be forewarned, it to be forearmed. Adam Smith said it best: "Science is the great antidote to the poison of enthusiasm and superstition."

The alternative is simple. Next time the truth sellers knock on the door, save your money. Look into a crystal ball, consult the stars, or read the bottom of a coffee cup. Your chances of getting the right answer are pretty much the same.