



Aaron Brown

# Risk Intelligence

Ignoring real risks and worrying about imaginary ones...

One thing almost everyone seems to agree on is that people are bad at dealing with risk. We panic, choke, freeze up, go to pieces, have a fit, lose it, stampede – and those are just a few of the words and phrases to describe loud mishandling of risk. I know only one common antonym phrase, “be calm.” And “calm” doesn’t mean we are making the right choices – just that we are not obviously making dramatically wrong ones.

It’s worse than that. For every loud over-reaction to risk we have many quieter errors of under-reaction. We ignore real risks and worry about imaginary ones. We buy insurance and lottery tickets both. We turn down sensible risks we would be well paid to accept, and embrace silly risks for zero or even negative compensation.

The evidence is not all anecdotal. Psychologist Philip Tetlock did a 20-year study in which 284 experts in many different fields were asked to make 28,000 predictions. The result, which has been corroborated many times by other researchers, is that the experts’ answers were either near or worse than chance (and much worse than a simple computer algorithm), but that the experts expressed high confidence in their guesses. Moreover, their performance in their fields of expertise was no better than their performance in other fields, although their confidence was much higher. Perhaps worst of all, the more famous the forecaster, the worse the results. Of course, none of this is surprising to people familiar with tests of financial asset managers.

Philosopher Dylan Evans has written a fasci-



nating new book, *Risk Intelligence: How to Live with Uncertainty*, that claims the problem is one of cognitive processing, that most people have poor risk intelligence. In his words:

*Picture your mind as a lightbulb shining in an otherwise dark room. Some nearby objects are fully illuminated; you can see them in every detail, present and identifiable. They are the things you know very well: the names of your friends, what you had for breakfast this morning, how many sides a triangle has, and so on. The objects on the other side of the room are completely shrouded in darkness. They are the things about which you know nothing: the five thousandth digit of pi, the composition of dark matter, King Nebuchadnezzar's favorite color. Between the light and the darkness, however, lies a gray area in which the level of illumination gradually shades away.*

*In this twilight zone, the objects are not fully illuminated, but neither are they completely invisible. You know something about these things, but your knowledge is patchy and incomplete – the law of the land (unless you are a lawyer), the evidence for climate change (unless you are a climatologist), the causes of the credit crunch (even economists are still arguing about this). The question is, how much do you know about these things? How good are you at judging the precise level of illumination at different points in the twilight zone?*

Now I happen to know that the five thousandth digit of pi is 2, and feel I have some basis to guess the composition of dark matter (monopoles are more likely than green cheese) and Nebby's favorite color (Akkadian did not have abstract color words, only words that are also names of objects like "orange" or "rose," so he probably wouldn't understand the question, or perhaps would answer, "gold"). But I get the idea, that in order to make good decisions under uncertainty, you first have to figure out how uncertain you are.

This is something that can be measured, and Professor Evans set out to do just that. He put together a list of 50 statements and asked people to indicate how likely they thought it was that the

statement was true. You answered "zero" if you were sure it was false, "100 percent" if you were sure it was true, and intermediate values for uncertainty. One issue with this is that "50 percent" can mean either complete uncertainty (like the examples in the quote) or certainty that the probability is 50 percent (like the flip of a fair coin).

However, for the purposes of this test that distinction doesn't matter. Half the statements someone with perfect risk intelligence marks at 50 percent should be true, and 70 percent of the ones she marks at 70 percent, and so on. Of course, with 50 questions there is room for statistical noise, but it's still possible to define a score based on deviations from the indicated values. Moreover, you can measure over-confidence (too many extreme marks near zero or 100 percent),

under-confidence (too many marks near 50 percent that are on the right side), and other biases.

It turns out that there are a few groups that demonstrate excellent risk intelligence. Expert horse handicappers for one, and expert bridge players as well. One fascinating finding is that US weather forecasters are near perfect, while UK weather forecasters are no better than average people. The difference is likely explained by the fact that US weather forecasters are required to give probability estimates ("20 percent chance of rain") and have their accuracy monitored, while UK forecasters give qualitative forecasts ("rain is possible but unlikely") without formal backtesting. A scary finding is that doctors have severely miscalibrated probability estimation curves. In a study asking doctors to estimate the probability that a patient had pneumonia based on an examination, only 15 percent of the patients doctors rated as 90 percent likely to have the disease, actually had it, while 5 percent of the patients doctors rated with 0 percent chance were actually sick.

One obvious conclusion is that constant quantitative feedback teaches probability estimation accuracy, and without that feedback, almost everyone's probability judgments are worthless.

One specific miscalibration that causes a lot of trouble is paranoid or worst-case thinking. Evans quotes Dick Cheney, US Vice President at the time, as saying:

*If there's a 1 percent chance that Pakistani scientists are helping al-Qaeda build or develop a nuclear weapon, we have to treat it as a certainty in terms of our response. It's not about our analysis... It's about our response.*

The trouble with treating every remote possibility as a certainty, or even as a plausible event,

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is that you engage in foolishly costly responses to non-threats. Security expert Bruce Schneier claims that Homeland Security measures seem designed to foil specific disaster movie plots rather than rationally weighing costs and benefits of precautions. The same tendency can be observed in the home, as parents take strong measures to protect their children from highly unlikely dangers, and overmedicate minor symptoms like fevers.

*Risk Intelligence* delves into the many documented reasons people make poor risk decisions: all-or-nothing thinking, confirmation bias, madness of crowds, innumeracy, inability to remember mistakes, the mind-reader illusion, and others. However, Evans also seeks out successful risk takers who have learned to overcome these biases, at great personal profit. The book is entertaining, but is no less deep for being readable. Anyone who takes risks, that is, anyone who is alive, should read this book (and it won't hurt dead people either).