

It Ain't What You Don't Know That Gets You Into Trouble.

“It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so.” So says Mark Twain. There's some truth in that. In fact, I think there's a lot of truth in that.

The human brain is wired with some fundamental flaws. Collecting data can help, but without a good understanding of what to do with it, we just compound the problem. As Stuart laid out in his article [Thinking about Thinking](#), our biases creep in and we can find ourselves only looking at information that supports our initial conclusions.

Modern business is a complicated affair, and it isn't easy to find solutions to our most complex problems. But it can be done. The simplification tools of Lean and the analysis tools of Six Sigma are very powerful ways to address those issues that the human mind doesn't handle well. This is the reason we started Sigma Done Simply. There are methods of dealing with these complex business problems. Use them. We can help if you need it.

Dietrich Dorner, in his book *The Logic of Failure*, examines how people think about problems, and the decisions they make to correct them. When asked to help the poor inhabitants of the fictional Tanaland in computer simulations, study participants immediately went into action. Well, some did anyway. Others collected data about the situation first. It really didn't matter, as nearly all of the participants made the situation worse. Other simulations explored various aspects of problem solving, often with similar results. Dorner's conclusion? We're just not good at some kinds of thinking.

This is where Six Sigma and Lean can help. Dorner's simulations were relatively straightforward. The algorithms used were fairly simple. The participants didn't have to deal with any problems in implementing their solutions. The real world isn't like that; superimposed on the problem we're addressing is a multitude of other issues and just general chaos. This is where Lean can shine, by bringing order to the chaos. Tools such as 5S remove the clutter while Kai Zen, the use of small improvement projects takes care of the easy fixes.

Six Sigma is the tool of choice for the more complex problems. Dorner identified a number of things that people consistently don't handle well. For example, we tend to think linearly, but many real world problems act exponentially. For example, many businesses will post their safety performance in terms of the time since last lost workday. Milestones such as number of years, or 1,000,000 man-hours are celebrated. But at what point does an injury free workplace really mean that there's been an improvement in performance? Mathematically, time between injuries follow an exponential decay distribution. By working with logarithms rather than raw data, we can see when there has been an unusually long stretch of injury free performance appropriate for celebration or answer other important questions. Doing this is far from intuitive, but can be very effective.

Another area Dorner identified is multiple overlapping cause and effect relationships. We're pretty good at seeing when one thing affects another. We're terrible at understanding what's going on when there are multiple interrelated causes. I was once asked for an example where a simple statistical test like a t-test was used to solve a problem. I couldn't think of one. It's not because the t-test doesn't work, it's because if there is a single cause and effect, we either already know about it, or a simple graph of the data shows it. We don't need statistics to know. On the other hand, there are many times when a multiple regression analysis uncovered several unsuspected factors lurking in the process. We just

aren't equipped to see them without proper use of the data. Or as H.L. Mencken said, "For every complex problem, there is a solution that is clear, simple and wrong".