

The high cost of failing to fail

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A lot of my research and my company's work revolves around understanding the role of failure in accelerated learning. Whenever I try to explain to people how this works, I encounter considerable misunderstanding and overwhelming fear of failure. This is unfortunate; iterative trial and error is the only way to reach the highest levels of skill and fear of failure is possibly the most crippling force in companies trying to innovate, or even remain current. Fear of failure is actually a recipe for dramatic demise for businesses.

No one would expect an athlete to run a four minute mile the first time they tried or an Olympian to win a gold medal as a result of pre-planning on spreadsheets and a risk study. Doing it and doing it wrong, getting feedback and iterative refinement leads to success. The same is true for concert pianists, artists or scientists. These professions accept that setting a goal and iterative trial and error is the path to advancing your game.

At the same time, many highly accomplished people in business – when asked how they developed the instincts of success – will tell stories about difficult challenges and how there were overcome through trial and error. More to the point, they are highly aware of how these challenges made them who they are.

Then why in business, is failure is something to be avoided at all costs?

Failure is associated with shame, embarrassment and political suicide. Managers feel pressure to appear confident, all-knowing or even clairvoyant. And yet cognitive scientists know that this flies in the face of what is required to be truly accomplished. In truth, managers fear disasters. Embracing failure is actually a way to avoid disasters.

Perhaps a better understanding of “failure” and its role in cognition and learning will help.



What is failure from the brain's point of view? *At its core, failure is really nothing more than an unexpected result.* It can feel unpleasant or painful but only markedly so when the unexpected outcome is tied to other consequences. When there are no painful consequences, it's engaging and interesting. Because the brain doesn't like to have flawed theories, it also leads automatically to corrections and refinements.

- **Trial and error is how we learn; we can't avoid it.**
- **Feedback that shows us the error in our thinking works best when it's immediate.**
- **Learning from trial and error does not require conscious awareness; engaging in activity that exposes us to the mis-matches in our thinking will result in learning, even if that was not our intention.**

The instinct to explore our environment and test our theories about cause and effect is something we are born with and a feature of our way of thinking. It's what makes puzzles and games fun, mystery novels absorbing and the reason we take pleasure in challenging work and avocations. It is very deep in our DNA; anyone who has taken care of small children knows that one way to distract a distressed child is to give her something unexpected to figure out, something novel and interesting with an unexpected result, such a toy with a surprise inside or a jack in the box. This drive to iteratively explore, test theories and construct an understanding of our world is instinctive and is the primary mechanism underlying learning. It leads to learning and in depth understanding. Further, learning is accelerated if the cycles of trial and error are increased.

Controlled failure prevents catastrophes

Catastrophic errors in business are the result of decisions made with flawed theories of how things work, or how things work "now" when the world of business changes. Catastrophes are painful and the risks are real, but mostly they do not have to happen. If we build trial and error in along the way we have the opportunity to find flaws in our thinking while they are still "interesting" and not catastrophic. The key to this is constructing ways to know when our theory has problems before there is a catastrophe.

- **Whenever approaching an issue, such as a marketing plan or a strategy for your business, assume that you have a lot of flaws in your thinking.**
- **Assume that established truth is probably not true either.**
- **Design a set of questions or metrics that will uncover the flaws. Design trial and error into your work that is daily and granular.**
- **Look for early signs that you are wrong. Don't ignore them; make corrections**
- **Treat the corrected approach the same way; assume you are missing something.**

Harnessing failure in order to win

I will end with a story about a mid-west foundry that we worked with many years ago. After having gone bankrupt and repossessed by a bank to which they owed millions, the workers began to regroup after the owner suddenly died. Through a series of exercises designed by our company, they pull out of their trouble and recovered, becoming a foundry of choice for special industrial castings that required a lot of skill and which could be sold for a premium price.



After two years we visited them to see how they were doing. Remarkably they had found a way to reduce the scrap rate of multi-ton castings far below what was thought possible given the physics of large molds. We asked them how they did it, especially since at one time their scrap rate was far above the industry standard.

They said they had been so wrong about the best market for their products, they must be wrong about many things. They started to look for problems and ways to find out their causes. They started with the minimum possible scrap rate, (which meant the whole industry might also be wrong). They decided to treat the scrap problem as the “scrap puzzle” and endeavored to solve it. They took detailed digital pictures of every scrapped casting and attached them to the bills of material in their ERP system. This allowed the data to be analyzed continuously for patterns. It turned out that certain products had high scrap rates, skewing the averages. When these parts were taken out of the data, the scrap rate approached zero. Further analysis showed that the problems were very often the same kind. Changes in the casting process for those part numbers brought down the scrap rate overall. The point here is that harnessing the natural trial and error process led to extraordinary understanding of a complex event and much better performance.

Their next puzzle was the minimum time to produce a large specialty casting. Once assumed to require six weeks, they were producing them in two weeks the last time we checked in. Being the only foundry of its kind to survive the 2008 market crisis, they had the problem of increased demand and had to find a way to shorten production times.

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