Optimum COMPLEXITY LTD

Making Predictions Based on Murphy's Laws

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The origin of the well-known Murphy's Laws may be traced to Edwards Air Force Base in 1949.

A few of the most popular of these laws:

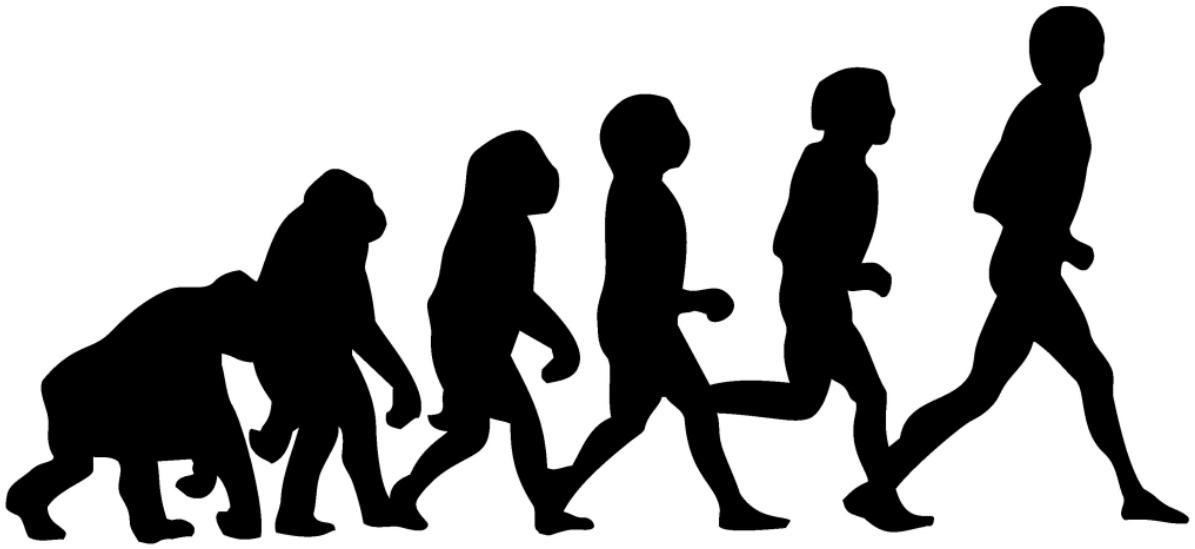
- If anything can go wrong, it will
- If there is a possibility of several things going wrong, the one that will cause the most damage will be the one to go wrong
- If you perceive that there are four possible ways in which something can go wrong, and circumvent these, then a fifth way, unprepared for, will promptly develop
- Left to themselves, things tend to go from bad to worse
- Everything goes wrong all at once.
- Nothing ever gets built on schedule or within budget.
- Nothing is as easy as it looks.
- Everything takes longer than you think.
- It is simple to make something complex, and complex to make it simple.

Murphy's Laws may sound funny but most of us will agree that they correctly reflect the reality more than simple anecdotes. Because of this, one may see behind Murphy's Laws the hand of Nature. Consequently, we may attempt to come up with a "scientific interpretation" of these laws. There are thousands of Murphy's Laws and we will not get into the details of any single one of them. However, we can state that they essentially point in the following direction:

Things tend to become more complex and not simpler

In other words, Murphy's Laws state that, when given a chance, complexity will go up rather than go down. In effect, when we say that a "situation is bad" or has "gotten worse" we often imply that it has become more complex. Highly complex situations are difficult to assess and to manage and frequently spawn unexpected behavior and this is why humans prefer to avoid them. In other words, Murphy's Laws are saying just that.

Consider evolution in our biosphere. Organisms spontaneously tend to reach forms of higher complexity. This guarantees more functionality and helps survive better. This is why apes have evolved to humanoids and not towards the ameoba.



Evolution proceeds in the direction of increasing complexity but so does the economy, civilizations, societies, manufactured products, traffic systems, telecommunication, etc. Even the ancient Greeks knew that each generation leaves more chaos behind than it has found. Increasing complexity seems to be the leit-motif which we have been able to appreciate in the case of thousands of corporations and systems of which we have actually measured the trend in complexity.

What does this mean? And how can this fact be used to make forecasts? Making (business) decisions requires:

- some sort of model or scheme
- a mechanism to produce future scenarios, options or alternatives
- a means of selecting options based on cost, returns, risk, etc.

Now, what has complexity got to do with all this? Very simple. Suppose that your model has enabled you to generate a set of possible future scenarios (economic, geopolitical, etc.). With all things being equal (or, at least with many things being equal) if you don't know on which option to bet, go for the most complex one precisely because complexity tends to increase, not the other way around. In other words.

In the presence of multiple and equivalent options, the most complex one is probably the most likely one

This sounds a bit like the opposite to the popular (albeit slightly erroneous) interpretation of Ockham's razor (known as the law of parsimony or law of economy) and to a principle that we all tend to observe in life:

When given the choice, the simpler solution is the preferable one

This is why an experienced engineer will seek a simple solution to a design problem. This is also why a portfolio of lower complexity will exhibit a better degree of risk diversification than a more complex one. If you stimulate complexity, it will quickly get in your way.

So, in summary, design your business decisions and strategies based on the fact that, given a chance, the complexity of your business environment will most probably increase, not the other way around. In a non-stationary, non-linear regime (like our global economy) making predictions by extrapolating past history (statistics) is very dangerous, precisely because conventional forecasting techniques don't take complexity into account. And rapidly rising complexity happens to be the hallmark of our turbulent times.

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