BIAS

#15 Planning Fallacy

We talked earlier about the *overconfidence* bias, an endemic problem in all businesses including the hydrocarbon industry. A consequence of that bias is the *planning fallacy* (see earlier blog article #12).

***PLANNING***

How often do you run into any of these situations in your daily life? It takes 15 minutes driving time to get to your destination. You walk out of the house 13 minutes before you are due to arrive, and so you are already a few minutes late. On the way, you run into traffic. Or you tell your colleague "Just give me 5 minutes and I'll get back to you", and the phone rings, delaying your response. Or the email that you expect to send out in a couple of minutes turns out to be much more complex than originally thought, and you are still working on it 30 minutes later.

We all make plans. For some, they are quite rigorous, preparing checklists with tasks and dates for completion; others are more subjective in their approach. In either case, we are often surprised how things take longer than expected. Unexpected events happen that we did not foresee derail our 'best laid plans'. Even professionals, who we expect to know what they are doing (such as a contractor remodeling your house), have delays and their projects are usually not completed as per the initial expectation. We often just shrug our shoulders and think that is just the way it is.

Let's look at an example of remodeling a room in a house. I imagine the contractor has a very good idea how long individual tasks take. But what about the external factors such as supply problems, delivery delays, workers' absences due to illness, weather, hazardous conditions … the list is pretty much endless. Then there are the internal factors such as running into an unanticipated problem (e.g., more complications). Usually, individuals chalk this up to events out of their control and don't blame their poor planning. However, contractors have seen these problems before and know that something inevitable will happen that causes the project to be delayed and costs go up. Yet, they don't include this in their planning.

What's going on?

***PLANNING FALLACY ….. WE THINK WE'VE GOT IT COVERED!***

The *planning fallacy* refers to one's tendency to underestimate the time for completion, cost, and/or risks associated with projects or tasks. This is known as a 'fallacy', rather than a 'bias', as it implies that one's plans are really a mistaken perception of reality! People systematically underestimate costs, time for completion, and project risks.

My view is that plans do not take longer than originally predicted; rather, often one's plans are overly ambitious in the first place and thus likely to not meet the prediction.

Why do we get it wrong so often? The *planning fallacy* stems from three primary factors: (a) overconfidence and overoptimism; (b) considering only one case; and (c) the desire to complete the

task quickly and efficiently. Most project plans (cost and time) are overly ambitious. Even after experience that your plans almost never go as planned, you persist with the same endeavours ("experience is inevitable, learning is not", Paul Shoemaker). We anchor (see earlier blog article #10) ourselves to our original plan, and struggle to deviate.

We focus too much on the desired project outcomes and overlook the external influences. Unexpected events will invariably lead to either increased costs or time for completion, or both. In other words, I like to say, "Stuff happens".

When we focus on the forecast, we tend to look at the individual elements, and unique features of the tasks that go into the project plan and allow us to successfully complete the project. 'Planning' for most people means to develop a series of specific steps that lead from beginning to a successful completion of the project. We may have a good understanding of the time and cost for each element, so we just add all the elements up, and now have the plan.

However, we generally fail to appreciate the many ways in which the future may unfold, including external influences, usually not in our control. Given the vast number of potential complications, people will usually encounter unexpected (or unplanned for) problems, delays, and interruptions. We do not consider that some of the tasks are done in series, and if there is one delay then the whole project gets delayed. We will also tend to be overconfident in our abilities, thinking we know more and will do better, thus predicting an overly optimistic forecast. When people focus narrowly on a plan for successful task completion, they neglect other sources of information—such as past completion times, competing priorities, and factors that may delay their progress—that could lead to more realistic predictions. Conducting systematic lookbacks on project performance would be a good technique to correct this behaviour.

Even if our experience is that our project almost never meets the predicted costs and schedule, we do not seem to use this knowledge. Researchers suggest that this is because we have a future orientation which prevents us from looking backwards. Another explanation is that we fail to incorporate this information into our predictions because we do not think it is relevant to our current plan.

***EXAMPLES OF THE PLANNING FALLACY***

In daily life, effective plans allow us to coordinate schedules with those of friends, family members, and co-workers. Usually, we get by when our plans do not materialise as expected, but often they can have serious economic, personal, and social costs. Governments and businesses all spend a considerable amount of time, money, and effort trying to forecast how long projects will take to complete. Underestimating project completion times and costs can have considerable implications.

The literature on this topic is littered with spectacular examples of project planning failures (e.g., building the Sydney Opera House and the Concorde).

It is not just mega-projects (see Merrow, 2012 for an excellent discussion on upstream oil and gas mega-projects poor track record) that fail to meet the planned schedule, but also 'small' projects such as drilling an exploration well, undertaking an appraisal programme, bringing a field online with production, or the acquisition of 3D seismic data. Usually these all end up over projected time for competition and/or cost.

I can share a few experiences where I could not believe what planners were doing. One group put together a probabilistic model of each element of the plan (so far, so good) and then decided to take the P40 (i.e., optimistic case) of the plan for each element of the plan, as they felt confident in their abilities (you do the math!). In another example, a well engineer also did probabilistic modelling (also

good) but decided they will achieve a 'stretch target', and thus their expected base case proposal for cost and drilling of the well was the P30! Another team had a hard deadline and therefore 'fit' all of the aspects required to carry out the project to completion, and then proceeded to regard this as the most likely plan!

***MITIGATIONS***

As noted above, the problem is less about projects not going according to plan, but rather that the plans are overly optimistic and simplistic. The Mitigating Bias, Blindness, and Illusion in E&P Decision Making course discusses in details mitigation techniques. For example, some strategies you can use to mitigate the *planning fallacy* include:

- Shift the focus from the internal aspects of the plan to consider external influences more fully
- When looking at the individual elements of a plan, break them into smaller sub-components as this may help you find issues or things that could go wrong
- Look at completion schedule and costs for comparable projects, and consider this a base rate
- Based on the above, ensure to include a buffer time and costs for unexpected events
    - You may not be able to identify them in advance, but they surely will happen!
- Carry out a probabilistic assessment of the plan, just as one would do when estimating hydrocarbon resources.
- Consider alternative scenarios, especially considering unfortunate but realistic outcomes
- Include review points in the plan where you can re-evaluate as the project progresses, rather than waiting until it is too late.
- Seek outside assurance of your prediction from people not directly involved in the project
    - Studies have shown that when people make predictions about others' tasks, rather than their own, they are less prone to underestimate completion times and can spot deficiencies in the proposed plan
- Based on lookbacks of project performance, consider the addition of contingency costs (and time) to estimates (e.g., if a review of several recent projects, regardless of size, indicates cost estimates average 20% below actuals, add 20% to the cost for future estimates)
- Conduct root-cause analysis for all projects where actuals exceed estimates by more than 10 to 20%, looking for similar root causes among projects and then develop methods to avoid in the future

Finally, avoid the motivational bias (see earlier blog article #7). Even if you have pressure (real or perceived) to put together an optimistic plan, don't! Instead, present your management with a realistic schedule using the mitigations described above. If you are faced with the requirement to meet an ambitious target, then present mitigations (e.g., more people to work project) that will give you a better chance to meet your target. This will cost more money but will help you meet target.

*References Cited*

Merrow, Edward, 2012, "Oil and Gas Industry Megaprojects: Our Recent Track Record", Oil and Gas Facilities, SPE 153695, pp. 38-42.

***UNTIL NEXT TIME***

The next article in the series will address bias from an engineer's perspective by interviewing two expert Rose & Associates engineers, Mark Schneider and Doug Weaver.

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