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APPENDICES

The Thinking Process

THE THINKING PROCESS was developed by Eli Goldratt as a series of tools that complement his Theory of Constraints. Personally, I think of the process as an invitation to the kind of ‘slow thinking’ espoused by Nobel laureate Daniel Kahneman in *Thinking, Fast and Slow*—the reason-based kind that our emotions so often like to circumvent, often to our later regret.

The trees that follow are simplified samples that aim to give you a taste of what the output of logical thinking looks like. The trees are based on Eli Goldratt’s insights but have since been developed further by Bill Dettmer.

For (a lot) more detail on logic trees, I refer to you to his excellent book, *The Logical Thinking Process*.

Appendix A: Sample Goal Tree

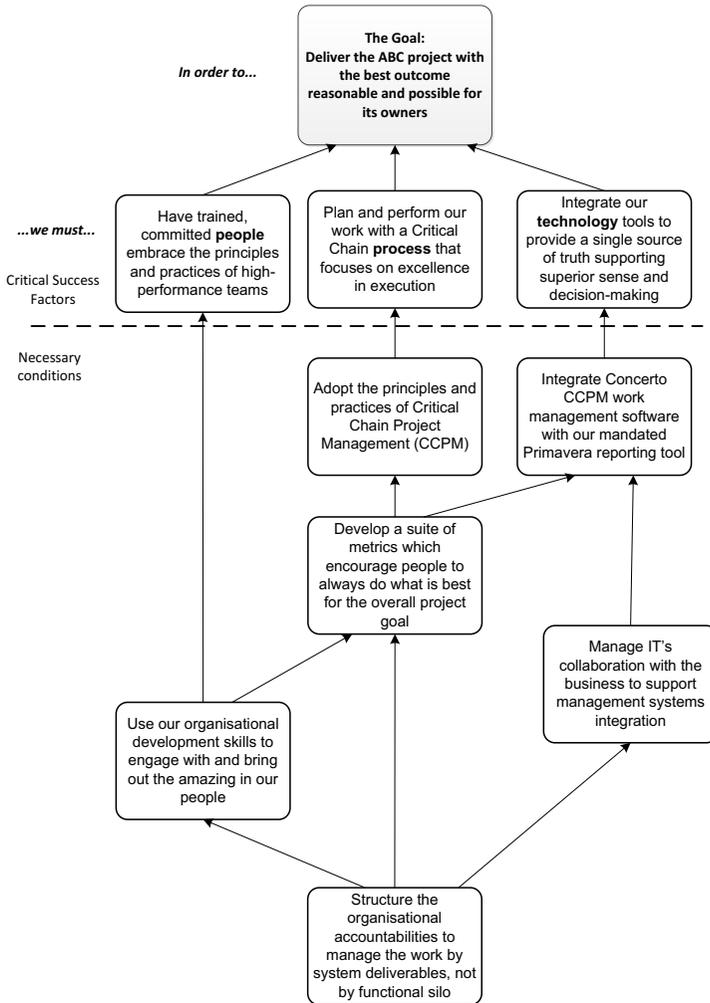
A Goal Tree is a graphical representation of a system's goal, critical success factors and the necessary conditions for achieving them. These elements are arrayed in a logically connected hierarchy, with the goal at the top, the success factors immediately below it, and the supporting conditions below them.

(Dettmer, 68)

You read the Goal Tree from the top down: In order to... {_____} we must... {_____} and so on.

Goal Trees are a practical and highly effective way of gaining consensus among the system's team around the core goal—and how to go about achieving it. They help you focus on what really brings the most leverage as well as not overlook certain aspects that you may have been taking for granted. In retrospect, the Goal Tree can seem so obvious that people forget how hard it was to focus on what really matters for the system as a whole, rather than on the smaller needs of the various silos within the organisation.

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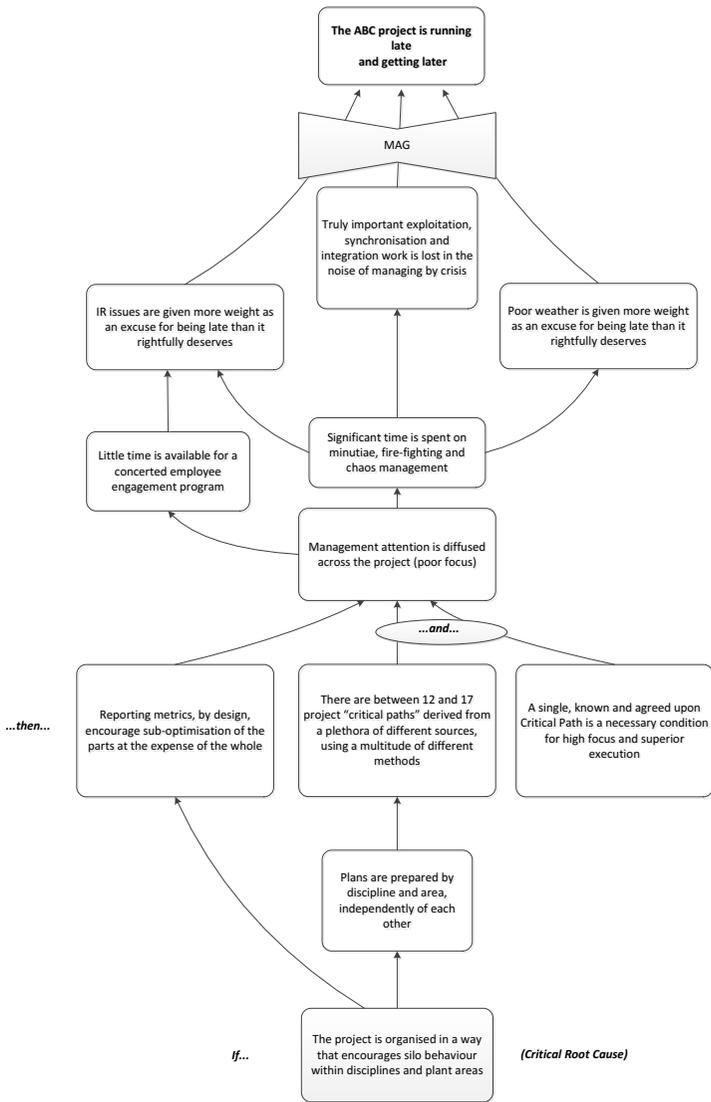
Appendix B: The Current Reality Tree

As its name suggests, the Current Reality Tree shows you how your system is functioning (or not) today. It aims to drill down to root causes, as well as pointing out any undesirable effects as a result of the behaviour of the current system.

The ellipse shape shows how several causes combine to create an effect. The absence of any one of these would cancel the effect.

The bowtie shape (with MAG) indicates a ‘magnitudinal effect’, that is, two or more causes combine to produce an effect. Take one of the causes away and the effect would still be there—just to a lesser extent.

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Appendix C: The Evaporating Cloud

This diagram needs a little introduction. The core idea is that you want to achieve an objective that has two conflicting options. This presents a dilemma, since you can't do both.

The Evaporating Cloud is so named because it evaporates the contradiction and creates clarity.

To read the diagram, then, you start with the objective (the far-left box). Read the top half first:

In order to **deliver the best outcome**, I must **adopt innovative solutions** because...

You then move to the assumptions on the top left ('The project is already behind schedule...' etc.).

Now look at the necessary condition to achieve the first option:

In order to **adopt innovative solutions**, I must **integrate CCPM into the project** because...

Then move to the assumptions above ('CCPM is the highest leverage innovation...' etc.).

Although you read it from left to right, the arrows flow from right to left because they show the logic of the necessary conditions.

* * *

Now we look at the lower half of the diagram and read it in the same way, referring of course to the other assumptions for each box.

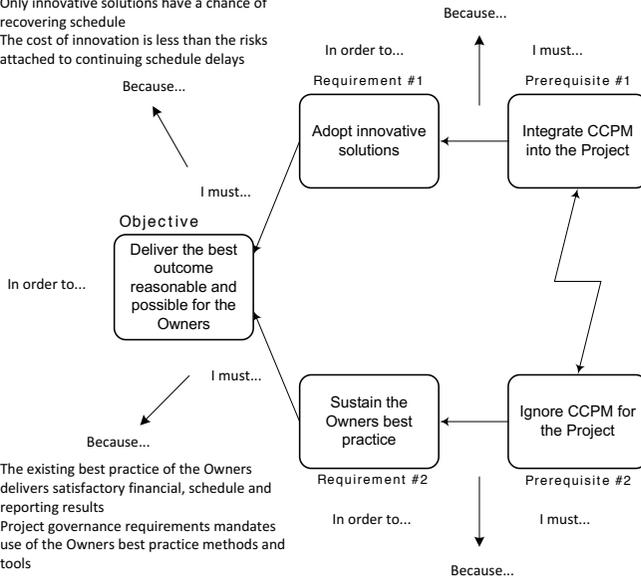
The two boxes on the right are connected with a jagged arrow. This shows our conflict: you can't both integrate and ignore CCPM in this case.

The conflict is broken by questioning all the assumptions. By surfacing every reason we can think of (positive or negative), we find the underlying causes of the problem. Often, there's an injection we can then make that makes the decision clear.

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- CCPM is the highest leverage innovation available to the Owners
- CCPM lends itself, by design, to the need to manage by system deliverable across functional boundaries
- Proven commercial software is available in the form of Concerto to rapidly integrate CCPM into the project
- The Owners can develop the capability to get the benefit from CCPM

- The Project is already behind schedule
- Only innovative solutions have a chance of recovering schedule
- The cost of innovation is less than the risks attached to continuing schedule delays



- The existing best practice of the Owners delivers satisfactory financial, schedule and reporting results
- Project governance requirements mandates use of the Owners best practice methods and tools

- CCPM is not in the existing solution set of the Owners
- CCPM cannot comply with the mandated governance requirements
- There is not sufficient time and/or money to do both the Owners best practice and CCPM
- There is a valid way to manage by system deliverables without using CCPM, within the timeframe demanded by the project

Appendix D: The Future Reality Tree

The Future Reality Tree is designed to show you what will happen after you make changes to the status quo.

Like the other trees, it is based on sufficiency-type logic. Looking at the bottom of the tree, you can imagine the effects (desirable and, sometimes, undesirable) that your injections into the system will have.

Taken together, I have found the logic trees to enable stakeholders to see the map of the terrain in front of them, even very large transformational projects. I believe they are an essential part of your toolkit that will enable you to dig deep into the real issues holding you back and define ways together that will chart a course to remarkable results.

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