A Simple
Solution to
Complex
Problems

SOLVABLE

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Praise for *Solvable*

'Central to business is problem solving, and the types of problems businesses face are increasingly complex and ill defined. To solve problems, we increasingly need therefore to think explicitly about the problem of how to best solve the problem and to hone our problem solving skills. The authors provide an accessible and pragmatic framework for doing so, covering the whole cycle of solving problems including framing, assessing, deciding, engaging, and implementing. It will be a welcome addition to any manager's armoury.'

Martin Reeves, Chairman, BCG Henderson Institute

'*Solvable* is an evidence-based guide to making good decisions. In an uncertain world, the essence of good decision making is informed reflection. This book walks the reader through the process of reflection – thinking about how we think about decisions, what to pay attention to, and how to bring the necessary resources together in doing so. Step by step, it lays out evidence-based processes for scoping the decision (and the problem to be solved), gathering information, making the decision and acting on it. Full of examples showing the good, the bad, and the ugly in modern decision making, *Solvable* builds the decision maker's confidence and competence. I am singing its praises to my students and colleagues!'

Denise M. Rousseau, H. J. Heinz II University Professor of Organizational Behavior and Public Policy; Director, Project on Evidence-based Organizational Practices, Heinz College and Tepper School of Business, Carnegie Mellon University

'Every manager strives to make good decisions for the organisation—yet, all too often biases, false assumptions or oversimplifications hamper their ability to do just that! By drawing on scientific insights and their vast personal experience, Chevallier and Enders guide you through three main steps (frame, explore, decide) that are indispensable for solving complex problems. In short: A 'must read' for current and aspiring managers!'

Marc Gruber, Professor of Entrepreneurship & Technology Commercialization, École Polytechnique Fédérale de Lausanne

Attempting to pack too much information into a frame is one of the most common and detrimental pitfalls we encounter. Time and again we see even seasoned executives present massive amounts of information in slides labelled 'background' with no clear reason why it is shown (see below).

Jerry gives too much information

Jerry, a sales manager for a large insurance company, participated in one of our programmes. He wanted to help his company sell more policies to millennial clients. During the project kick-off, his task was to introduce his challenge to the other programme participants in two minutes. He started by talking about the company's history, told his peers about how re-insurance processes worked, and went into details about the company's org chart and its successes and failures expanding internationally. During his expansive introduction, he kept buying a little more attention from his audience by telling them: 'Bear with me, this is all important background information.' As he ran out of time, Jerry hurriedly introduced his quest, which focused on making his company be more present on social media – something that he had not mentioned until then.

Jerry's presentation was well structured; he had clearly segmented each part of his presentation. But as he introduced wave after wave of information, most of which only contained only peripheral details, he drowned his audience, whose most polite members were trying to continue to swim along while most others were checking their emails. Jerry's frame had far too much information. He had brought a satellite photo to navigate the London Tube and, in doing so, he left his audience scratching their heads wondering: 'Where is he going with all of this?'

Of course, giving background information to your audience is important, but that doesn't give you licence to throw everything and the kitchen sink at them, expecting them to sort out what is relevant and what is not in real time while you present. Instead, *you* must decide what to show, very much like Beck did with the London Tube map. Crafting a frame, then, entails making decisions, which management scholar Richard Rumelt aptly captures, noting that 'an important duty of any leader is to absorb a large

part of [the] complexity and ambiguity, passing on to the organization a simpler problem—one that is solvable'.[5]

So, how do you avoid overfilling your frame? The *backpack rule* reminds you to include just what you need. It states that all *meaningful* information in one part of the frame must appear again at least once in another part.[6] If, in the hero, you mention that your company's revenues have been stable for the last ten years, you need to pick this up later, in the treasure, the dragon or the quest. Otherwise, that information probably doesn't belong to the frame.

The backpack rule takes its name from the careful selection process you (should!) undergo as you prepare for a long hike. You'd better plan carefully what you take along, because you will need to carry all of it throughout your adventure. One of us (Albrecht) vividly remembers one tour through the Swiss Alps where he brought a camping cooker that he ended up not using even once. But boy, was it heavy! So, pack as light as possible: bring everything you'll need, but nothing that you won't.

	Without the rule	With the rule
H+T	I work in NYC as the general manager of a startup. **We create software for kids to learn maths. We started with local kids, but we've seen a lot of traction in the UK and we've also found potential investors in the UK.** I want to go to London for a business trip.	I work in NYC as the general manager of a startup. I want to go to London for a business trip.
D	However, I don't know how I should go to London.	However, I don't know how I should go to London.
Q	How should I go from NYC to London for a business trip, given that I don't know how to go there? ✘	How should I go from NYC to London for a business trip, given that I don't know how to go there? ✔

Backpack
Include only what you need. If you introduce it in *H+T* or *D*, it must reappear later in the sequence

Effective frames work the same way – put in everything that is necessary, but no more. In essence, the backpack rule is a reformulation of the second half of Chekhov's gun principle, named after Russian playwright Anton Chekhov, that states that 'if a gun is clearly visible on the mantelpiece for two acts [of a play], it had better go off during the third'.[7]

AVOID SURPRISE APPEARANCES– THE RABBIT RULE

Coined by philosopher Neil Thomason, the rabbit rule is the mirror image of the backpack rule. It highlights that a magician cannot pull a rabbit out of a hat without first putting the rabbit in the hat.[8] The same applies in frames. Everything in your quest must have already appeared earlier in the frame; there are no late surprise appearances!

Note that Chekhov had also thought about this, as he advised 'if you have a gun going off in the third act of a play, it had better sit on the mantelpiece during the first two acts'.

In Jerry's presentation (see above), the challenge for the audience was not just staying afloat among the packets of information coming at them. It was also that Jerry's quest had a rabbit – being more present on social media – that had not appeared before, which confused the group even further.

The simplicity of the Hero-Treasure-Dragon-Quest sequence enables the executives we work with to quickly check if they follow the backpack and rabbit rules. They almost invariably find that their sequence needs a little (or a lot of!) streamlining but that this effort is well spent as it sharpens their understanding of the problem.

	Without the rule	With the rule
H+T	I work in NYC as the general manager of a startup.	I work in NYC as the general manager of a startup.
	I want to go to London.	I want to go to London for a **business trip**.
D	However, I don't know how I should go to London.	However, I don't know how I should go to London.
Q	How should I go from NYC to London for a **business trip**, given that I don't know how to go there? ✘	How should I go from NYC to London for a **business trip**, given that I don't know how to go there? ✔

Rabbit
No surprise appearances!
Include it in *Q*?
Include it in
H+T and/or *D*

CLONE YOUR LANGUAGE – THE DOLLY-THE-SHEEP RULE

Dolly was the first mammal successfully cloned. Applying the Dolly rule means referring to things in the same way throughout the frame rather than using synonyms or ambiguous pronouns.

The Dolly rule can be a little counterintuitive! We often see executives working on their frame rehashing memories of their English 101 college class where they were told not to be repetitive. But in problem solving, using synonyms for describing the same thing may confuse your audience. So, don't try to create a literary masterpiece out of your Hero-Treasure-Dragon-Quest sequence. Instead, aim for simplicity, clarity, and brevity. If that gets it to be branded boring by some, so be it. Besides, if it's brief enough, they won't have time to get bored!

	Without the rule	With the rule
H+T	I work in NYC as the general manager of a startup.	I work in NYC as the general manager of a startup.
	I want to go to **London** for a business trip.	I want to go to **London** for a business trip.
D	However, I don't know how I should go to **the UK**.	However, I don't know how I should go to **London**.
Q	How should I go **overseas** for a business trip, given that I don't know how to go there? ✗	How should I go from NYC to **London** for a business trip, given that I don't know how to go there? ✔
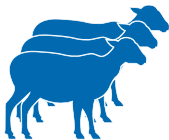
Dolly
Clone your language. Use the same terms. No synonyms or ambiguous pronouns!

Note that you might feel compelled to refer to something in two different manners. When that happens, in addition to cursing Dolly, ask yourself why you feel compelled to use different terms. This introspection will likely help you gain additional insight into your problem, exposing a detail that you hadn't considered up to now.

EXAMINE YOUR ASSUMPTIONS – THE WATSON RULE

In 2014, the French rail operator SNCF ordered 341 new trains at a cost of €15 billion. A few years later, when the trains started to be delivered, the company realised that they were too wide for some 1300 platforms at train stations across the country. Altering those came at a cost of another €50 million.[9] The source of this costly and embarrassing mistake was that the engineers who designed the trains relied on the measures of platforms built less than 30 years ago. What they overlooked was that many of France's regional train station platforms were built over 50 years before . . . when trains were a little narrower. The engineers assumed that the newer platforms were representative of all platforms when they weren't.

The Watson rule reminds you to check all the assumptions in your frame. It is a wink to Sherlock Holmes' sidekick. When the duo investigated a challenging mystery, Watson often failed to crack the case because he overlooked a critical clue. A good check that you've followed the Watson rule is to validate that you can justify all the claims in your frame.

	Without the rule	With the rule
H+T	I work in NYC as the general manager of a startup.	I work in NYC as the general manager of a startup.
	I want to go to London for a business trip.	I want to go to London for a business trip.
D	However, I don't know **which plane to take**.	However, I don't know how I should go to London.
Q	How should I go from NYC to London for a business trip, given that i don't know **which plane to take**? ✘	How should I go from NYC to London for a business trip, given that I don't know how to go there? ✔

Watson
Examine all your assumptions!

Following the Watson rule might help you refocus your efforts. For instance, it might lead you to identify that some of the constraints that you thought you had to accommodate could in fact be relaxed (see below). In fact, checking your assumptions is so important that the entire next chapter is devoted to this topic.

Do we really need more sales agents?

Albrecht serves on the board of Agathon, a mid-sized Swiss manufacturing company. Agathon's high-tech grinding machines enable tool manufacturers to grind ultra-high-precision tools for turning and milling parts to a precision of a few micrometres. In addition, Agathon operates a business unit that produces guiding systems which are used, for instance, in moulding and punching tools. Here again, precision is critical to ensure that stamped sheet metal and moulded plastic pieces, like a Swatch wristband or med tech parts like syringes are produced to exact specifications. Because of its capabilities to produce the most exact guiding systems, Agathon is widely recognised as a global technology leader in this niche B2B market – a true hidden champion.

On the downside, Agathon has very limited market reach, a result of the high price of its products, especially compared to Asian competitors, and the set-up of its salesforce. For historical reasons, Agathon primarily operates through a small network of independent sales agents who sell both Agathon products and parts from other companies to die-and-mould builders, primarily in Europe.

During a strategy workshop, the top team and a group of more junior people explored how to increase sales for guiding systems throughout Europe, and particularly in Germany. The obvious quests that came to everyone's mind was how to increase the number of sales agents or how to ensure that they would spend more time promoting Agathon's products instead of other manufacturers' parts. The underlying assumption was that there was no other way to sell than through the sales agents, as it would be too costly to cover large sales areas and thousands of customers with an internal salesforce.

As the discussions progressed, however, one of the young talents offered to use a web-based sales platform as a way to inform customers about Agathon products. This idea, in turn, caused the team to broaden the quest. Instead of asking how to increase the number of sales agents or make each individual agent more productive, they now expanded it to 'how can we increase sales in Germany through different types of sales channels?' This in turn helped the team think differently about the overall framing of the challenge, which opened up a much broader solution space. Michael Merkel, CEO of Agathon, commented on this initiative: 'The fundamentally new