Reverse Thinking

Idea In Short

Some problems yield only when you turn them upside down. Reverse thinking, also called inversion, asks how to cause the opposite of what you want, or what would have to be true for your plan to fail. The habit goes back to the mathematician Carl Jacobi, whose maxim was to invert, always invert, and it became famous in business through Charlie Munger. Gary Klein's premortem applies the same logic to projects by asking a team to imagine failure and explain it. Use inversion to find hidden risks, to question assumptions, and to define what to avoid. Take your most important goal this week and write ten ways to guarantee that you miss it.

Forward thinking asks how to succeed. It produces plans, targets, and strategies, and it tends to produce optimism along with them. Reverse thinking asks the opposite question, and the answer often shows what the forward plan missed. This article explains where the method comes from, how practitioners use it, and how a team can apply it to real decisions without becoming negative.

A mathematician's maxim

The idea traces to Carl Gustav Jacob Jacobi, a German mathematician known for his work on elliptic functions. Farnam Street, a site devoted to mental models, reports that Jacobi often solved difficult problems by following a simple strategy, summed up in the phrase man muss immer umkehren, which means invert, always invert.1 The advice applies to mathematics because many problems become clearer when restated in the opposite direction.

A familiar example comes from the proof that the square root of two is irrational. The argument assumes the opposite, that the number can be written as a fraction, and shows that this assumption leads to a contradiction. A Stockopedia article on the maxim notes that Munger used this proof as an example of inversion.2

From mathematics to business

Charlie Munger, Warren Buffett's partner at Berkshire Hathaway, made inversion a signature habit. A podcast summary of his approach describes it as turning a problem or question upside down and thinking differently, and it traces his thinking to Jacobi.3 Munger joked that he wanted to know where he would die so that he would never go there. The line captures the core logic: study the causes of failure and avoid them.

The same habit shows in his account of how he developed judgment. He sought good judgment mostly by collecting instances of bad judgment and then thinking about ways to avoid such outcomes. For managers, the lesson is that a catalog of failures can be as valuable as a catalog of successes, and often easier to learn from.

Why avoiding errors pays

Farnam Street offers a further argument. It claims that thinking forward increases the odds of causing harm through well-meant interventions, a problem that doctors call iatrogenics, whereas thinking backward, which it calls subtractive avoidance or inversion, is less likely to cause harm.4 The argument is that people achieve more by avoiding obvious stupidity than by chasing brilliance, since avoiding stupidity is easier.

The claim should be read with care, because it is an argument and not a measured result. Even so, it matches a common experience in organizations. Many failures come from avoidable errors, such as ignoring a known risk, overcommitting resources, or relying on a single supplier. A method that targets these errors can pay for itself quickly.

The premortem

Gary Klein described a project premortem in the Harvard Business Review in 2007. The technique asks a team to assume that a project has failed, and then to write down the reasons why. The exercise gives people permission to voice doubts that group enthusiasm would otherwise suppress, and it turns the doubts into specific risks that the team can address.5

The premortem is inversion applied to projects. Instead of asking whether the plan will work, the team assumes it did not work and reasons backward. The shift in perspective changes

the tone of the discussion. People compete to find plausible causes of failure, and the plan improves as a result.

Two forms of inversion

Practitioners use inversion in two main forms. The first inverts the goal: instead of asking how to increase customer loyalty, ask how to guarantee that customers leave. The list of answers includes slow response, hidden fees, and unreliable products, and each item points to a standard to meet. The second inverts the assumption: instead of asking how to win with a given strategy, ask what would have to be true for the strategy to fail, and then check whether any of those conditions hold.

Both forms produce concrete lists. The first yields a set of behaviors to avoid, and the second yields a set of assumptions to test. Teams can use the lists to design safeguards, assign owners, and set early warning signs. Inversion therefore serves both as a creative technique and as a risk management discipline, and the two roles reinforce each other.

A five-step routine

A team can run the exercise in thirty minutes:

1. State the goal in one sentence
2. Ask how to guarantee failure and write answers silently for five minutes
3. Group the answers and rank them by likelihood and damage
4. Turn the top items into safeguards, with owners and dates
5. Return to the forward plan and revise it

The silent writing step keeps senior voices from dominating, and the ranking step keeps the list manageable. The final step is the point of the exercise: the plan must change as a result, or the time was wasted. Facilitators should also record the original list of failure modes, because the record becomes a reference for later projects and a check on whether the safeguards worked. When a similar project begins, the team can start from the old list and add new items instead of beginning from nothing. Organizations that repeat the routine across projects build an institutional memory of how their own plans tend to fail, which is among the most valuable forms of organizational knowledge.

Inverting strategic assumptions

Strategic plans rest on assumptions about customers, competitors, technology, and the company's own capabilities, and most of these assumptions are never stated. Inversion brings them into the open. A leadership team can list the five assumptions on which its strategy depends and write the opposite of each: customers will not value our main feature, competitors will respond within six months, our supplier will not deliver on schedule, our people will not adopt the new process, and the regulatory environment will tighten.

Each inverted statement raises an investigative question about how likely it is and what the company would do if it turned out to be true. The answers help leaders decide where to gather evidence, where to build flexibility, and where to avoid irreversible commitments. Teams often find that one or two assumptions carry most of the risk and that the others matter far less than anyone expected.

A hypothetical example

Imagine a company launching a new subscription service. The team asks how to guarantee that it fails within a year. The answers include a confusing sign-up process, no plan for customers who cancel, a pricing change soon after launch, weak support during the first month, and a product release schedule that outpaces testing.

The team ranks the answers and chooses four safeguards. It will test the sign-up flow with ten new users before launch, set a cancellation survey, commit to a price for twelve months, and staff support at a higher level for the first month. Each safeguard has an owner. The forward plan now includes tasks that the optimistic version omitted, and the risk of an avoidable failure has dropped.

Limits of the method

Inversion has limits. It tells a team what to avoid but not what to pursue, so it complements positive planning and does not replace it. It can also make a group gloomy, especially if the facilitator allows the discussion to run on without a clear outcome. Keep the exercise short, end with safeguards, and thank participants for raising uncomfortable points.

Finally, check the results against evidence. Not every imagined failure is likely, and a team

can waste resources guarding against remote risks. Rank by likelihood and damage, and review the list again after each major milestone.

- 1Inversion
- 2Invert, always invert
- 3Munger: invert, always invert
- 4Inversion and the power of avoiding stupidity
- 5Performing a project premortem

Summary

Reverse thinking replaces a forward search for brilliance with a backward search for failure. The method has roots in mathematics, where proofs by contradiction start by assuming the opposite, and it has proven useful in investing and project management, where avoiding errors often matters more than finding clever moves. Inversion exposes assumptions, reveals risks that optimism hides, and sharpens a plan by defining what must not happen. It works best alongside forward planning, not in place of it, and it needs a facilitator who keeps the exercise practical. Choose one decision, list the ways it could fail, and turn each failure mode into a safeguard.