

RISK AND RESILIENCE

Fragility and Antifragility

Taleb · Sheffi · Hollnagel

PAPER 03 / 03

A Furtherance reference compendium on the intellectual traditions behind organisational design, leadership, execution, and culture.

IN THIS PAPER

The series closes on the unpredictable – the rare, extreme events that dominate outcomes, and how to build organisations that survive and even gain from them. The question it answers: when you cannot forecast the shock, how do you design a system that endures, recovers, and adapts?

Taleb reframes uncertainty around rare events and the fragile-antifragile spectrum; Sheffi makes resilience an operational, supply-chain discipline; Hollnagel recasts safety as the capacity to adapt, not merely to avoid failure.

Nassim Nicholas Taleb The Black Swan, 2007 · Antifragile, 2012

Uncertainty · tail risk

CORE THESIS

Rare, high-impact, unpredictable events – **black swans** – dominate history and markets, yet we explain them only in hindsight. Rather than predict them, build systems that are **antifragile**: that gain from disorder, rather than merely surviving it.

FRAMEWORK

Concept	Meaning
Black swan	Rare, extreme, retrospectively rationalised event
Fragile – robust – antifragile	Harmed by / unaffected by / improved by disorder
Via negativa	Gain by removing fragilities, not adding predictions
Optionality / barbell	Limit downside; keep exposure to large upside

METHODOLOGY

Probability, philosophy and markets, argued through essays rather than formal models.

SIGNIFICANCE AND CRITIQUE

A hugely influential reframing of uncertainty and tail risk. The critique, per the caveat: the style is polemical, and “antifragility” is easier to state than to operationalise precisely.

Yossi Sheffi The Resilient Enterprise, 2005

Operational and supply-chain resilience · MIT

CORE THESIS

Build enterprises and supply chains that can **absorb disruption and recover fast**. Resilience – through **redundancy** and, more efficiently, **flexibility** – is a competitive advantage, and it must be invested in before the crisis, not during it.

FRAMEWORK

Element	Meaning
The disruption profile	Prepare □ event □ first response □ recovery
Redundancy	Buffers and spare capacity – effective but costly
Flexibility	Adaptable capacity – resilience at lower standing cost
Resilience as advantage	Faster recovery wins share from stricken rivals

METHODOLOGY

Operations and supply-chain research across firms that faced major disruptions.

SIGNIFICANCE AND CRITIQUE

The practical authority on operational resilience – directly relevant to running a business. The critique: redundancy trades against efficiency, and the right balance is situational.

Erik Hollnagel *Safety-I and Safety-II, 2014*

Resilience engineering · adaptive capacity

CORE THESIS

Traditional safety (**Safety-I**) tries to stop things going wrong. But complex systems succeed largely because people **adapt** – so **Safety-II** focuses on ensuring things go right, understanding everyday performance and its variability. Resilience is the ability to adjust functioning under expected and unexpected conditions.

FRAMEWORK

Idea	Meaning
Safety-I vs Safety-II	Prevent failure vs ensure success and adaptation
Four cornerstones	Anticipate, monitor, respond, learn
Performance variability	Everyday adjustment is the source of both success and failure
Work-as-imagined vs -done	Procedures differ from how work is really performed

METHODOLOGY

Resilience engineering, developed from safety science in complex socio-technical systems.

SIGNIFICANCE AND CRITIQUE

Reframed safety around adaptive capacity rather than failure-avoidance alone. The critique: the ideas are abstract, and Safety-II is still maturing as an operational practice.

A NOTE ON EVIDENCE

A caveat on operationalising these ideas: antifragility and Safety-II are powerful lenses but resist precise measurement, and Taleb's work in particular is argued in a polemical register. Treat them as design principles – remove fragilities, keep cheap optionality, invest in recovery speed, and support the everyday adaptation that keeps systems running – rather than as formulae. Resilience has real costs; the discipline is choosing which to bear before the shock arrives.

Synthesis

Theorist	Lens	Key idea	Register
Taleb	Uncertainty	Black swans; antifragility	Philosophical / polemical
Sheffi	Operations	Redundancy and flexibility	Practical / supply chain
Hollnagel	Safety science	Safety-II; adaptive capacity	Engineering

FOR THE OPERATOR

Designing for the unpredictable means building for shocks you cannot forecast – systems that gain from disorder (Taleb), enterprises that absorb and recover fast (Sheffi), and safety understood as the capacity to adapt (Hollnagel). For the operator: remove fragilities, invest in recovery speed and flexibility before the crisis, and support the everyday adaptation that keeps the business running. That closes the Risk and Resilience series – frameworks, failure, and thriving amid uncertainty.