

# The Rationality Skills Summary

## White Paper

*An All-in-One Guide to High-Quality Thinking, Clear Beliefs, and Better Decisions*

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## Rationality Skill Stack (Infographic)

A one-page overview of the skill priority stack. Use it as a roadmap.

# Rationality Skill Stack

Priority-ordered capabilities that support high-quality thinking and decisions

### Level 0: Foundations

- Map-Territory discipline
- Epistemic humility + uncertainty comfort
- Attention + question control

### Level 1: Clarity Tools

- Conceptual precision
- Argument structure (claims/reasons/evidence/assumptions)

### Level 2: Valid Inference

- Logic basics (valid vs sound; necessary/sufficient)
- Fallacy + contradiction detection

### Level 3: Quantitative Reality Contact

- Base rates, conditional probability, expected value
- Statistical literacy + uncertainty

### Level 4: Causality and Mechanisms

- Confounding, selection, mediation, collider
- Causal models + identification discipline

### Level 5: Complexity and Dynamics

- Stocks/flows, feedback, delays, nonlinearity
- Modeling discipline (scope, validation, error bars)

### Level 6: Decision Quality

- Trade-offs, robustness, reversibility
- Decision hygiene (premortems, checklists)

### Level 7: Social Rationality

- Incentives, Goodhart/Campbell effects
- Group epistemics (independent estimates, red-teaming)

### Level 8: Advanced Integration

- DMAP (CPRT quadrants + thought-forms)
- Wisdom practices (values, stewardship, moral uncertainty)

Use the simplest level that solves the problem; escalate only when needed.

## Executive Summary

Rationality is the discipline of aligning your beliefs with reality and aligning your actions with your goals, under uncertainty and constraints.

Modern rationality is not just intelligence. It is a trainable stack of thinking skills that reduces error, improves calibration, and produces better decisions in messy real-world conditions.

This paper provides (1) a priority-ordered rationality skill stack, (2) basic rules for logic, systems thinking, and model ("map") discipline, (3) a practical catalog of big-data failure modes, and (4) an extensive bias and fallacy catalog with short examples and countermeasures.

Important correction: the "highest level" of thinking is not maximum complexity. It is the highest-quality thinking per unit effort, using the simplest tools that reliably work, and escalating to heavier methods only when the problem warrants it.

## How to Use This Paper as a Self-Assessment Checklist

This white paper is designed to be used, not merely admired. You can treat it as a checklist to identify which rationality skills you already use reliably and which ones you mostly "know about" but do not operationalize. If you are a manager or an executive at a think tank or a national intelligence agency, this white paper could be a hiring or firing checklist for analysts. It can give you a very quick idea of what level of advanced thinking skills they have mastered.

A simple method:

### Checklist Method (10–15 minutes)

- Skim the Rationality Skill Stack levels and mark each skill as: (A) habit, (B) occasional, or (C) missing.
- Pick one skill from the lowest level where you are "C" and commit to practicing it for two weeks.
- Use small, repeatable behaviors (logs, checklists, templates) rather than willpower.
- Re-check monthly: rationality improves fastest when you measure it (especially calibration).

**Example:** If you rarely use base rates, start with a base-rate line in every estimate: "Historically, this succeeds about X% of the time."

**Example:** If you argue often, add one rule: steelman the opposite view in writing before defending your own.

## 1. What Rationality Is (and Is Not)

### 1.1 Definitions

**Definition:** Epistemic rationality: forming beliefs that track reality (evidence-weighting, good models, calibrated confidence).

**Example:** You estimate a project has a 60% chance of shipping on time; after tracking ten similar forecasts, you are right about 6 out of 10 times.

**Definition:** Instrumental rationality: choosing actions that best achieve your goals given constraints and uncertainty (trade-offs, robustness, reversibility).

**Example:** You choose a slightly slower but reversible rollout because it protects against catastrophic failure while you learn from early users.

**Definition:** Bounded rationality: humans have limited time, attention, and computation; rationality means reducing error under constraints, not perfect optimization.

**Example:** You use a checklist for high-stakes decisions instead of trying to "think harder" while stressed and time-pressured.

**Definition:** Ecological rationality: some heuristics are rational in specific environments; the failure is using the wrong heuristic for the environment.

**Example:** Trusting expert consensus can be rational in mature domains (bridge engineering), but risky in fast-moving, low-feedback domains (trend investing).

## 1.2 What Rationality Is Not

- Not emotionlessness. Rationality uses emotions as data, not as dictators.
- Not "winning arguments." Rationality is winning contact with reality.
- Not permanent skepticism. Skepticism without updating becomes cynicism.
- Not maximum complexity. Overthinking can increase error and fragility.

**Example:** If a chart conflicts with an anecdote you like, rationality means re-checking the chart before you retell the anecdote as proof.

## 2. The Rationality Skill Stack (Priority Order)

This is a recommended learning order. Later skills depend on earlier ones. The goal is to build a stack that produces reliable judgments in real-world settings.

### Level 0: Foundations (non-negotiable)

- Map–Territory Discipline: your beliefs are maps; reality is the territory.
- Epistemic humility and uncertainty comfort: "I might be wrong" is operational, not decorative.
- Attention and question control: what you notice and ask determines what you can learn.

**Example:** Before debating an issue, write down what evidence would change your mind. If nothing would, you are not reasoning, you are performing.

### Level 1: Clarity Tools

- Conceptual precision: define terms; reduce ambiguity; avoid category errors.
- Argument structure: separate claims, reasons, evidence, and assumptions.

**Example:** Replace "it works" with a measurable claim: "it reduces churn by 10% over 8 weeks compared to baseline."

### Level 2: Valid Inference

- Logic basics: validity vs soundness; necessity vs sufficiency; quantifiers.
- Fallacy detection: spotting errors that produce confident nonsense.

**Example:** If someone says, "If it's effective, it will be popular. It's popular, therefore it's effective," you flag affirming the consequent.

### Level 3: Quantitative Reality Contact

- Probability intuition: base rates; conditional probability; expected value.
- Statistical literacy: variance, sampling, uncertainty intervals.
- Calibration: confidence tracking; forecast scoring.

**Example:** When diagnosing a rare disease, you start with the base rate before you overreact to a single symptom.

### Level 4: Causality and Mechanisms

- Causal reasoning: confounding, selection, mediation, and collider bias.
- Evidence hierarchy: what can justify what (experiments, quasi-experiments, triangulation).

**Example:** You avoid concluding "remote work lowers productivity" from a dataset where only struggling teams were forced to work remotely (selection bias).

### Level 5: Complexity and Dynamics

- Systems thinking: feedback loops, delays, nonlinearity, leverage points.
- Modeling discipline: purpose, scope, validation, and error bars.

**Example:** A rent cap can reduce new supply over time; the delay between policy and outcome hides the feedback loop.

### Level 6: Decision Quality

- Decision theory lite: expected value, risk, robustness, reversibility.
- Trade-off clarity: opportunity cost, second-order effects.

**Example:** You treat an irreversible acquisition decision as higher rigor than a reversible A/B test.

### Level 7: Social and Institutional Rationality

- Incentive analysis: principal-agent problems, moral hazard, Goodhart effects.
- Group epistemics: how teams distort reality; how to fix it.

**Example:** You require independent estimates before a meeting so the first speaker doesn't anchor the whole room.

### Level 8: Advanced Integration

- DMAP (dialectical meta-systemic analysis and problem-solving): using CPRT quadrants and thought forms to handle evolving, multi-causal systems.
- Wisdom practices: value clarity, long-horizon stewardship, moral uncertainty.

**Example:** You analyze a policy using Process (dynamics), Context (constraints), Relationship (stakeholder links), and Transformation (phase shifts over time).

## 3. Logic: Basic Rules (with Examples)

Logic is the discipline of valid inference: when conclusions follow from premises. Rationality uses logic to prevent self-contradiction and to distinguish what follows from what merely feels persuasive.

### 3.1 Core Distinctions

**Definition:** Validity: if the premises were true, the conclusion must be true (structure).

**Example:** "All mammals are warm-blooded; whales are mammals; therefore whales are warm-blooded" is valid.

**Definition:** Soundness: the argument is valid and the premises are true (structure + reality).

**Example:** "All birds can fly; penguins are birds; therefore penguins can fly" is valid but not sound.

**Definition:** Deduction vs induction vs abduction: deduction preserves truth; induction generalizes; abduction infers best explanation.

**Example:** A detective uses abduction to infer the most likely suspect; later evidence can overturn it.

### 3.2 High-Impact Rules

- Non-contradiction: A and not-A cannot both be true in the same sense at the same time.
- Identity: terms must keep stable meanings across the argument.
- Modus ponens: If P implies Q; P; therefore Q.
- Modus tollens: If P implies Q; not Q; therefore not P.
- Necessary vs sufficient: avoid swapping them.
- Quantifiers matter: some vs most vs all changes the claim.

**Example:** Necessary vs sufficient: Oxygen is necessary for fire, but not sufficient; you also need fuel and ignition.

**Example:** Quantifiers: "Some studies" is not "most studies"; treat them differently.

### 3.3 Common Logical Failure Modes

- Equivocation: switching meanings mid-argument.
- Category errors: treating abstractions as concrete entities.

- Affirming the consequent and denying the antecedent.
- Motte-and-bailey: advancing a strong claim and retreating to a weaker one under criticism.

**Example:** Equivocation: using "theory" to mean "guess" and later "well-tested explanation" in the same debate.

**Example:** Motte-and-bailey: "This policy will definitely fix the economy" becomes "I only meant it might help" when challenged.

## 4. The Map: Model Thinking and Epistemic Rules (with Examples)

Your beliefs and models are maps. Reality is the territory. The map is useful only if it helps you predict and navigate the territory.

### 4.1 Basic Rules of Maps

- If the map conflicts with reality, reality wins.
- Every map has a purpose; fitness for purpose beats universal truth.
- Models have scope; do not generalize outside the data-generating conditions.
- Track uncertainty explicitly (ranges, distributions, or confidence levels).
- Separate observation from inference ("I saw X" vs "X means Y").
- Prefer testable predictions and retrodictions.

**Example:** Scope: A model trained on pre-2020 consumer behavior may fail post-2020 due to structural shifts.

**Example:** Observation vs inference: "Sales dropped 12%" is not the same as "customers hate us now."

### 4.2 A Practical Epistemic Workflow

- Define: the claim and what would change your mind.
- Model: mechanism and predictions.
- Measure: data, reliability, and confounders.
- Compare: predictions vs observations; map failure points.
- Update: revise confidence and document why.

**Example:** Before adopting a new KPI, you predict how it could be gamed, then you track gaming indicators after rollout (Goodhart defense).

## 5. Probability, Statistics, and Calibration (with Examples)

### 5.1 Probability Rules That Matter Daily

- Base rates: start with prior frequency before stories seduce you.

- Conditional probability:  $P(A|B)$  is not  $P(B|A)$ .
- Independence: don't multiply probabilities without justification.
- Regression to the mean: extremes often drift toward average.
- Expected value: decisions often depend on EV, not the most-likely outcome.

**Example:** Base rate: If only 1% of emails are scams, a scary-looking email is still probably not a scam unless evidence is strong.

**Example:** Regression: A star quarter is often followed by a merely good quarter without any "curse."

## 5.2 Statistical Rules That Prevent Embarrassment

- Correlation is not causation.
- Small samples lie easily.
- Multiple comparisons inflate false positives.
- Measurement error can dominate signal.
- Effect sizes matter more than p-values.

**Example:** If you test 20 marketing messages and only report the one that 'worked,' you likely found noise.

## 5.3 Calibration (Underrated, High-Leverage)

Calibration means your stated confidence matches your observed accuracy over time. It is one of the most direct upgrades to epistemic rationality.

- Keep a forecast log with probabilities.
- Review outcomes monthly.
- Use a proper scoring rule (e.g., Brier score) or simple frequency checks.

**Example:** If you say 80% often, you should be right ~8 out of 10 times. If you are right only 5 out of 10, you are overconfident.

## 6. Causal Reasoning (with Examples)

Causal reasoning distinguishes what predicts from what produces. Many real-world mistakes come from treating correlation as causation.

- Confounding: a third variable causes both X and Y and fakes causation.
- Selection bias: how data enters your dataset creates fake effects.
- Mediation: controlling for intermediates can delete the causal pathway.
- Collider bias: conditioning on a shared effect can create a fake correlation.

- Counterfactual thinking: causation implies 'if X were different, Y would change.'

**Example:** Confounding: Ice cream sales correlate with drowning because both rise in summer.

**Example:** Collider: If you only study admitted applicants, you can create false negative correlations between credentials that helped admission.

## 7. Systems Thinking: Basic Rules (with Examples)

Systems thinking is rationality for interacting parts, feedback loops, and time. It prevents single-cause explanations of multi-causal problems.

### 7.1 Core Concepts

**Definition:** System boundary: what is inside vs outside your analysis.

**Example:** A hospital's system may include staffing, supply chain, insurance rules, and patient behavior, not just doctors.

**Definition:** Stocks and flows: accumulations and rates that change them.

**Example:** Customer base is a stock; signups and churn are flows.

**Definition:** Feedback loops: reinforcing (R) and balancing (B) loops.

**Example:** Word-of-mouth growth is reinforcing; limited inventory is balancing.

**Definition:** Delays: causes and effects separated in time create oscillations.

**Example:** Training new staff takes months; short-term understaffing cannot be fixed instantly by hiring.

**Definition:** Nonlinearity: thresholds and phase shifts are common.

**Example:** A power grid can be stable until it hits a load threshold, then cascading failure occurs.

### 7.2 Practical Rules

- Define the system function (what it tends to produce), not just its stated purpose.
- Find feedback loops before proposing fixes.
- Expect unintended consequences and second-order effects.
- Look for bottlenecks and constraints; leverage points often live there.
- Model delays explicitly to avoid policy resistance.
- Beware Goodhart's Law: when a measure becomes a target, it stops measuring well.

**Example:** Goodhart: If you pay teachers solely on test scores, some schools will teach to the test or manipulate reporting, degrading the metric.

## 8. Decision-Making and Judgment (with Examples)

- Clarify the decision: what exactly is being chosen, by when?
- Clarify values: what does 'better' mean, and for whom?
- List options and opportunity costs.
- Use expected value when uncertainties are quantifiable; use robustness when they are not.
- Treat reversibility as a key variable: irreversible decisions deserve higher rigor.
- Separate probability from preference: 'I dislike it' is not 'it won't happen.'

**Example:** A reversible product UI change can be tested rapidly; an irreversible data-migration should require pre-mortems, staged rollout, and rollback plans.

## 9. Big Data Analysis: Common Failure Modes (with Examples)

Big data does not guarantee big truth. It often guarantees big confidence in big mistakes unless you control for data quality, selection effects, and incentives.

### 9.1 Data and Measurement Problems

- GIGO: dirty inputs produce precise nonsense.
- Label errors and subjective ground truth.
- Missing data (MCAR/MAR/MNAR confusion).
- Proxy variables that do not track the construct (Goodhart magnets).
- Instrument drift and changing definitions over time.

**Example:** If your 'customer satisfaction' label is a noisy survey response with low response rates, the model may learn 'who answers surveys' rather than satisfaction.

### 9.2 Sampling and Selection Problems

- Selection bias (who shows up in the data).
- Survivorship bias (failed cases disappear).
- Simpson's paradox (aggregation reverses trends).

**Example:** Simpson: A treatment looks better overall but worse in every age group because the treated group is younger on average.

### 9.3 Statistical Inference Problems

- Multiple comparisons and p-hacking.
- Overfitting and hyperparameter fishing.
- Data leakage (train/test contamination).

- Non-stationarity and concept drift (today's patterns die tomorrow).
- Misleading metrics (e.g., accuracy on imbalanced classes).

**Example:** A fraud detector with 99% accuracy can be useless if fraud is 0.1% and it never flags anything.

## 9.4 Human and Organizational Problems

- Incentives: analysis finds what leadership rewards.
- Narrative stapling: stories attached to weak evidence.
- Reproducibility gaps: undocumented pipelines.
- Model opacity: explanations are post-hoc rather than causal.

**Example:** A dashboard 'improves' after redefining the metric; nothing in reality changed, only the story.

## 10. Cognitive Biases and Thinking Traps (with Examples and Countermeasures)

Bias awareness alone is weak. Real debiasing comes from systems of correction: checklists, independent estimates, calibration logs, and incentive-aligned review.

This catalog is extensive but not metaphysically complete. Humans invent new ways to be wrong faster than anyone can number them.

### Attention and Salience Biases

**Availability heuristic:** You overestimate plane-crash risk after seeing a news story. *Countermeasure:* Check base rates; compare to driving risk.

**Salience bias:** A dramatic KPI swing overrides the long-term trend. *Countermeasure:* Plot longer windows; use moving averages.

**Recency effect:** The last meeting dominates your evaluation of a quarter. *Countermeasure:* Use written criteria and full-period data.

**Primacy effect:** First impressions anchor hiring decisions. *Countermeasure:* Structured interviews; independent scoring.

**Negativity bias:** One complaint outweighs ten compliments. *Countermeasure:* Count frequencies; weight by severity, not emotion.

**Mere exposure effect:** A repeated claim feels truer over time. *Countermeasure:* Demand sources; re-check evidence fresh.

### Memory and Reconstruction Biases

**Hindsight bias:** After a crash, you insist it was obvious. *Countermeasure:* Keep prediction logs; review priors.

**Consistency bias:** You rewrite past beliefs to match current ones. *Countermeasure:* Date-stamp opinions; keep a decision journal.

**Peak-end rule:** You judge a trip by one great day and the last day. *Countermeasure: Review the whole timeline; use summaries.*

**Telescoping:** You misplace events as more recent than they were. *Countermeasure: Use calendars/records for timelines.*

## Belief Formation and Confirmation

**Confirmation bias:** You search for articles that agree with you. *Countermeasure: Consider the opposite; steelman the other side.*

**Motivated reasoning:** Identity decides the conclusion before evidence. *Countermeasure: Separate truth from team; use blind review.*

**Belief perseverance:** A claim persists after disproof. *Countermeasure: Write what would change your mind beforehand.*

**Authority bias:** You treat prestige as proof. *Countermeasure: Ask for mechanism, data, and replication.*

**Illusion of explanatory depth:** You think you understand until asked to explain. *Countermeasure: Try teaching it; write a mechanism model.*

## Overconfidence and Self-Assessment

**Overconfidence bias:** You give too-narrow confidence intervals. *Countermeasure: Use historical error; widen intervals; calibrate.*

**Planning fallacy:** Projects take longer than predicted. *Countermeasure: Reference class forecasting; add buffers.*

**Illusion of control:** You overestimate how much you can steer outcomes. *Countermeasure: Separate controllables from externals; run scenarios.*

**Self-serving bias:** Success = skill; failure = bad luck. *Countermeasure: Postmortems with symmetric standards.*

## Probability and Numeracy Traps

**Base-rate neglect:** You ignore how rare an event is. *Countermeasure: Start with priors; update with likelihood.*

**Conjunction fallacy:** A detailed story seems more probable than a broad one. *Countermeasure: Remember: A and B cannot exceed A alone.*

**Anchoring:** First number quoted shapes your estimate. *Countermeasure: Generate independent estimate first.*

**Outcome bias:** A lucky decision is judged good because it worked. *Countermeasure: Evaluate decision process, not outcome alone.*

**Regression neglect:** You treat rebound as caused by your intervention. *Countermeasure: Compare to baseline; look for controls.*

## Causal Inference Errors

**Post hoc ergo propter hoc:** After X, therefore because of X. *Countermeasure: Look for confounders; test counterfactuals.*

**Confounding neglect:** You miss a third variable driving both. *Countermeasure: Draw a DAG; identify backdoor paths.*

**Selection bias:** You study only survivors and infer causes. *Countermeasure: Ask what got excluded and why.*

**Collider bias:** Conditioning on a shared effect creates correlation. *Countermeasure: Re-check conditioning variables; use causal diagram.*

## Social and Group Biases

**In-group bias:** You trust your team more than outsiders. *Countermeasure: Use the same evidence standard both ways.*

**Groupthink:** Consensus pressure blocks dissent. *Countermeasure: Assign a red team; require independent pre-reads.*

**Social desirability bias:** People answer to look good. *Countermeasure: Anonymize surveys; use behavioral measures.*

**Just-world hypothesis:** Victims are blamed to keep the world 'fair.' *Countermeasure: Separate moral judgment from causal explanation.*

## Emotion-Driven Distortions

**Affect heuristic:** Feels bad becomes is risky. *Countermeasure: Quantify risk; compare to reference classes.*

**Loss aversion:** You avoid good bets because losses sting. *Countermeasure: Reframe in EV; use pre-commit rules.*

**Endowment effect:** You overvalue what you already own. *Countermeasure: Ask: Would I buy this at today's price?*

**Identifiable victim effect:** One face outweighs many statistics. *Countermeasure: Combine empathy with scale-aware metrics.*

## Commitment and Escalation

**Sunk cost fallacy:** You fund a failing project because you started it. *Countermeasure: Decide based on future value, not past spend.*

**Escalation of commitment:** You double down after negative evidence. *Countermeasure: Predefine stop-loss criteria and review gates.*

**Cognitive dissonance reduction:** Beliefs shift to reduce discomfort. *Countermeasure: Normalize being wrong; reward updating.*

## Measurement and Research Biases

**Publication bias:** Positive findings publish, negatives vanish. *Countermeasure: Seek preregistered and replicated results.*

**Selective reporting:** Only favorable metrics are shown. *Countermeasure: Require full metric set; audit trails.*

**P-hacking:** Try many analyses until one significant result appears. *Countermeasure: Correct for multiple tests; preregister.*

**HARKing:** Hypothesis invented after seeing data. *Countermeasure: Label exploratory vs confirmatory work.*

**Goodhart's Law:** Metric becomes target and gets gamed. *Countermeasure: Use multiple measures; monitor gaming signals.*

### Classic Reasoning Fallacies (Quick Hits)

**Straw man:** You refute a weaker version of the argument. *Countermeasure: Steelman first; restate opponent's view.*

**False dilemma:** Either A or B when C and D exist. *Countermeasure: Generate alternatives; search for both-and.*

**Circular reasoning:** Conclusion is smuggled into premise. *Countermeasure: Ask what independent evidence supports it.*

**Moving the goalposts:** Standards change after evidence appears. *Countermeasure: Fix criteria in advance; document them.*

## 11. Information Hygiene (with Examples)

Modern rationality must assume adversarial information environments: incentives distort claims, virality selects for persuasion, and many systems reward confident storytelling over accuracy.

- Separate primary evidence from commentary.
- Track source incentives and conflicts.
- Prefer falsifiable claims and prediction hooks.
- Triangulate across independent sources.
- Treat virality as anti-credibility until proven otherwise.
- Keep a belief-update log to reduce identity-driven flips.

**Example:** Before sharing a sensational claim, ask: Who benefits if I believe this? What would falsify it? What independent source confirms it?

## 12. Metacognition: The Human Factor (Expanded, DMAP Framing)

Metacognition is thinking about your thinking: noticing errors, managing attention, and upgrading models over time. A useful developmental lens is the subject-object shift: what used to control you (subject) becomes something you can examine and manage (object).

[DMAP \(dialectical meta-systemic analysis and problem-solving\)](#) is used here as a practical label for advanced dialectical cognition that integrates four recurring aspects of reality (CPRT) and a structured set of 28 thought forms drawn from Otto Laske's DTF taxonomy.

### 12.1 The Four DMAP Quadrants (CPRT)

**Definition:** Process: Focus on motion, emergence, development, and becoming over time.

**Example:** Instead of asking 'Is the program good?', ask 'How is it changing month-to-month, and what drives the change?'

**Definition:** Context: Focus on the larger whole, boundary conditions, structures, layers, and frames that shape what is possible.

**Example:** Analyze a team's performance in the context of hiring constraints, incentives, and technical debt.

**Definition:** Relationship: Focus on connections, mutual dependencies, common ground, and how parts co-constitute each other.

**Example:** Map how sales, product, and support create each other's bottlenecks through handoffs and incentives.

**Definition:** Transformation: Focus on systems-in-transformation: stability limits, conflict-driven development, phase shifts, and coordination across systems.

**Example:** Anticipate a reorg will trigger temporary instability and design transition governance to prevent collapse.

### 12.2 The 28 DMAP Thought-Forms (Brief Descriptions + Examples)

Below is a concise list of 28 thought forms (7 per quadrant) used in dialectical analysis. Names and ordering follow Laske's published DTF taxonomy; this paper labels them under DMAP for practical use.

#### 1. Unceasing motion, negativity

- Example: Treat 'stable' trends as provisional; look for change already underway.

#### 2. Preservative negation (include antithesis)

- Example: Keep the counter-argument in view rather than deleting it as wrong.

#### 3. Interpenetrating opposites, correlativity

- Example: See how 'freedom' and 'constraint' co-produce outcomes.

#### 4. Patterns of interaction

- Example: Identify recurring cycles like blame-avoidance loops in a team.

#### 5. Practical, active character of knowledge

- Example: Test ideas by action and feedback, not elegance alone.

#### 6. Critique of reification (arresting motion)

- Example: Reject 'the market wants X' as fixed; specify dynamics.

### **7. Embedding in process, movement**

- Example: Place events on timelines; ask what came before and what follows.

### **8. Contextualization of parts within a whole (emphasis on part)**

- Example: Evaluate a feature as one part of a product ecosystem.

### **9. Equilibrium of a whole (emphasis on whole)**

- Example: Optimize for system health, not just one department metric.

### **10. Structures, functions, layers, strata of a system**

- Example: Distinguish frontline behavior from structural incentives.

### **11. Hierarchical nature of layers systems comprise**

- Example: Separate individual, team, org, and market-level causes.

### **12. Stability of system functioning**

- Example: Identify what keeps a process stable (routines, checks, standards).

### **13. Intellectual systems: frames, traditions, ideologies**

- Example: Notice when ideology overrides evidence in debate.

### **14. Multiplicity of contexts (non-transformational)**

- Example: Compare how a rule works in startups vs government.

### **15. Limits of separation; value of relationship**

- Example: Don't treat departments as independent; map dependencies.

### **16. Value of bringing into relationship**

- Example: Create cross-functional feedback channels to reduce silo error.

### **17. Critique of reductionism; de-totalized entities**

- Example: Reject single-variable explanations for complex failure.

### **18. Relatedness of different value/judgment systems**

- Example: Translate across stakeholders with different 'success' definitions.

### **19. Structural aspects of relationship**

- Example: Identify formal reporting lines vs informal influence networks.

### **20. Patterns of interaction in relationships**

- Example: Track recurring conflict patterns and triggers between teams.

### **21. Constitutive, intrinsic relationships**

- Example: Recognize roles exist only relative to other roles (buyer/seller).

### **22. Limits of stability; quantitative into qualitative change**

- Example: Small load increases push a system past a tipping point.

### **23. Value of conflict leading developmentally**

- Example: Use conflict as data to improve rules, not as personal war.

### **24. Value of developmental potential to higher functioning**

- Example: Invest in learning loops that raise capability over time.

### **25. Evaluative comparison of systems in transformation**

- Example: Compare institutions in terms of how they adapt under stress.

### **26. Process of coordinating systems**

- Example: Build governance linking local actions to global goals.

### **27. Open, self-transforming systems**

- Example: Treat organizations as adaptive systems rather than machines.

### **28. Integration of multiple perspectives; critique of formalism**

- Example: Combine metrics, narratives, and causal models to define reality.

## **13. Practices That Improve Rational Thinking (Indirectly)**

Most failures of rationality are not caused by ignorance of concepts. They are caused by state: stress, time pressure, identity threat, attentional capture, and emotional hijack. The practices below improve rational thinking indirectly by improving attentional control, emotional regulation, and the ability to "step back" from thoughts and treat them as objects of analysis.

These practices are especially relevant at the systems-thinking and DMAP levels, where you must hold multiple perspectives, track feedback across time, and convert thoughts, emotions, and identity commitments from subjects (controlling you) into objects (things you can examine). This is closely aligned with Robert Kegan's subject-object framework in adult development.

### **13.1 Mindfulness of Thought (Noting and Letting Go)**

A simple meditation skill: notice a thought, label it ("planning," "worry," "judging"), and let it pass without following it. This reduces cognitive fusion: the tendency to treat thoughts as commands or facts.

- Practice: 5–10 minutes daily. Sit, focus on breath, and when thoughts arise, label and return.

- Rationality benefit: improved detection of motivated reasoning in real time ("I am defending," "I am avoiding").
- Transfer: use a 10-second 'label-and-return' pause before replying to provocative messages.

**Example:** When you feel certain and angry, you label "certainty/anger," pause, and ask: 'What evidence would change my mind?'

### 13.2 Presence / Open Awareness (Wide-Angle Attention)

Presence practices train a broader attentional stance: instead of narrowing onto one verbal thread, you include sensations, emotions, and context. In practice, this supports the shift from purely linear analysis to an integrated view that can hold relationships and patterns.

Note: popular "left brain/right brain" language is often overstated. The credible claim is not a strict hemispheric switch, but the ability to flex between focused analytic attention and broader contextual awareness, recruiting multiple brain networks as needed (including DMN and executive control systems).

- Practice: 3–5 minutes. Open attention to sounds, body sensations, and visual field without grabbing any single object.
- Rationality benefit: better systems perception (relationships, constraints, second-order effects).
- Transfer: before complex modeling, do 60 seconds of wide-angle attention to reduce tunnel vision.

**Example:** Before diagnosing a system failure, you spend one minute scanning 'what else is in the system' rather than fixating on the first plausible cause.

### 13.3 Subject-Object Upgrades (Kegan-Compatible Habit)

Kegan's core developmental move is converting what you are embedded in (subject) into something you can reflect on (object). Rationality improves when you can do this with beliefs, emotions, and identity commitments.

- Practice: write 'I am having the thought that...' instead of 'This is true.'
- Practice: separate claim from identity: 'I believe X' instead of 'I am an X-person.'
- Practice: after a heated moment, do a 5-minute postmortem: triggers, story, evidence, alternatives.

**Example:** You notice 'they disrespected me' is a story, not a measurement, and you ask what observable facts support it.

### 13.4 Embodied Supports (Because Your Brain Is Not a Floating Spreadsheet)

- Sleep: the simplest cognitive upgrade most people refuse to do.
- Movement: short walks reduce rumination and improve perspective-shifting.
- Breath: slow exhale helps downshift arousal before making irreversible decisions.
- Environment design: reduce notification noise; create 'deep work' blocks for model building.

**Example:** If you are about to send a high-stakes email while angry, you walk for five minutes first. This is not spiritual. It's primitive nervous system engineering.

### 13.5 The Book *Superintelligence* by John Stewart

This book provides a detailed look into developing the advanced meta-systemic thinking skills described in this section.

## 14. Practice Plan (Upgraded)

You build rationality the same way you build strength: repeated, specific practice with feedback.

A simple cycle you can repeat:

### Daily (10–20 minutes)

- Make 1–2 probabilistic forecasts and log them (with confidence).
- Do one base-rate estimate for a real question.
- Run one consider-the-opposite exercise on a strong belief.

**Example:** There's a 70% chance the proposal is approved by Friday; record why; check outcome.

### Weekly (60–90 minutes)

- One pre-mortem for a real decision.
- One model audit (assumptions, scope, failure modes).
- One deliberate practice: fallacy spotting or calibration review.

**Example:** Pre-mortem: It's 6 months later and this project failed. List the top 10 reasons.

### Monthly (2–3 hours)

- Postmortem your biggest error and build a guardrail.
- Map one recurring problem as a system (stocks/flows/loops).

**Example:** If you underestimate timelines repeatedly, add a reference-class buffer and track improvement.

## 15. References (Selected)

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## Glossary of Abbreviations

A quick reference for abbreviations used in this paper.

**AI** - Artificial Intelligence

**Brier** - Brier score (proper scoring rule for probabilistic forecasts)

**CPRT** - Context, Process, Relationship, Transformation (quadrants used in dialectical analysis)

**DAG** - Directed Acyclic Graph (causal graph)

[DMAP - Dialectical Meta-systemic Analysis and Problem-solving](#) (used here as a practical label for CPRT + thought-form toolset)

**DMN** - Default Mode Network (a brain network often linked to self-referential thought; used here only as a shorthand label)

**DTF** - Dialectical Thought Forms (Laske's framework; source for the 28 thought forms)

**EV** - Expected Value

**GIGO** - Garbage In, Garbage Out

**HARKing** - Hypothesizing After Results are Known

**KPI** - Key Performance Indicator

**MAR** - Missing At Random

**MBSR** - Mindfulness-Based Stress Reduction

**MCAR** - Missing Completely At Random

**MNAR** - Missing Not At Random

**PDF** - Portable Document Format

**TOC** - Table of Contents

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