

GLOSSARY OF CRITICAL THINKING TERMS

Core definition

Critical Thinking — The disciplined habit of *analyzing, evaluating, and improving* our own and others' thinking by applying clear standards (e.g., clarity, accuracy, relevance, logic), using sound evidence, and staying intellectually honest and open to revision.

Elements of Thought (Paul–Elder) — What good thinkers keep in view: **Purpose, Question, Information, Interpretation/Inference, Concepts, Assumptions, Implications/Consequences, Point of View.**

Intellectual Standards — Benchmarks to test thinking: **Clarity, Accuracy, Precision, Relevance, Depth, Breadth, Logic, Significance, Fairness.**

Socratic Questioning — Purposeful probing to clarify terms, test assumptions, examine evidence, explore alternatives, and trace implications.

Toulmin Argument Model — A practical map of arguments: **Claim, Data/Evidence, Warrant** (why the data support the claim), **Backing** (support for the warrant), **Qualifier** (strength/limits), **Rebuttal** (counter-cases).

A–Z Glossary:

A

- **Abductive Reasoning** — Inference to the best explanation among competing possibilities. *Ask: Which explanation best fits all the facts with fewest leaps? (see: Occam's Razor)*
- **Ad Hominem** — Attacking the person instead of their argument. $\neq$ **Refuting evidence.**
- **Ad Hoc** — A fix or explanation added *after the fact* to rescue a weak claim, without independent support.
- **Ambiguity** — A word/phrase with multiple meanings that can mislead if not clarified. (*see: Equivocation*)
- **Analogy (Argument from)** — Reasoning from similarity. Sound only if the similarities are *relevant and robust*. (*see: Weak Analogy*)
- **Anecdotal Evidence** — Single stories or personal experiences. Useful for hypotheses, weak for general conclusions.
- **Appeal to Authority** — Using an expert to support a claim. Strong *only* when the authority is credible in the field, evidence aligns, and consensus exists.
- **Appeal to Emotion** — Using feelings (fear, pity, pride) to persuade where reasons are needed.
- **Appeal to Ignorance** — “No one has proven it false, so it's true” (or vice versa). Ignorance is not evidence.
- **Appeal to Popularity (Bandwagon)** — “Everyone believes it, so it must be true.” Commonness $\neq$ correctness.
- **Argument** — A set of claims where **premises** aim to support a **conclusion**.
- **Argument Map** — A visual diagram showing claims, reasons, objections, and rebuttals.

- **Assumption** — An unstated belief taken for granted. *Ask: What am I assuming—and should I?*
- **Attribution Error (Fundamental)** — Over-blaming personal traits and under-weighting context for others' actions.
- **Availability Heuristic** — Judging likelihood by how easily examples come to mind, not by real frequencies.

B

- **Backfire Effect** — Evidence against our belief can sometimes strengthen that belief (motivated reasoning).
- **Base Rate** — The prior/common frequency of an event in the population; often neglected in judgment.
- **Bayesian Reasoning** — Updating belief strength by combining prior probability with new evidence.
- **Begging the Question (Circular Reasoning)** — The conclusion is assumed in the premise.
- **Bias (Cognitive)** — Systematic tilt in judgment/thinking that deviates from accuracy.
- **Burden of Proof** — The responsibility to provide adequate reasons/evidence for a claim.

C

- **Causal Inference** — Judging whether X *causes* Y (not just correlates). Needs mechanism, temporality, and ruling out alternatives. (*see: Confounder*)
- **Causation $\neq$ Correlation** — Co-movement doesn't establish cause. (*see: Spurious Correlation*)
- **Cherry-Picking** — Selecting only supporting data and ignoring contrary evidence.
- **Clarification** — Making terms and claims precise before evaluating them.
- **Cognitive Dissonance** — Discomfort from holding conflicting beliefs, often resolved by rationalization rather than revision.
- **Composition/Division Fallacies** — Assuming the whole shares properties of parts (or vice versa) without warrant.
- **Confirmation Bias** — Seeking or interpreting data to confirm existing beliefs. *Antidote: Actively seek disconfirmation.*
- **Confounder** — A hidden factor related to both cause and effect that can create a false association.
- **Conjunction Fallacy** — Judging specific combined scenarios as more likely than general ones.
- **Consequence, Implication** — What follows if a claim is true. *Ask: If this holds, what then?*
- **Consistency (Logical)** — Claims that can all be true at the same time (non-contradiction).
- **Construct Validity** — How well a measure captures the concept it intends to measure.
- **Controlled Experiment** — A test that isolates variables to identify effects (often via randomization).
- **Counterexample** — A single case that shows a general claim is false.
- **Counterfactual** — What would have happened if conditions were different; used to reason about causation.

- **Credibility** — Trustworthiness of a source (expertise, track record, transparency, independence).

D

- **Deductive Reasoning** — If premises are true and the form is valid, the conclusion must be true. (*see: Modus Ponens/Tollens*)
- **Denial of the Antecedent** — Invalid form: If P then Q; not P; therefore not Q.
- **Deontology / Consequentialism / Virtue Ethics** — Major ethical frameworks for judging right action.
- **Devil's Advocate** — Arguing the other side to test the strength of a position.
- **Disconfirmation** — Seeking evidence that could falsify your hypothesis. (*see: Falsifiability*)
- **Dunning-Kruger Effect** — Low skill can inflate self-confidence; expertise often humbles.

E

- **Effect Size** — Practical magnitude of a relationship/effect, beyond mere statistical significance.
- **Empirical** — Based on observation/measurement rather than pure theory.
- **Enthymeme** — An argument with an unstated premise the audience is expected to supply.
- **Equivocation** — Shifting meanings of the same word within an argument to mislead.
- **Evidence** — Observations, data, or reasons that support or refute a claim's truth or strength.
- **Expertise** — Domain-specific knowledge and practice; genuine experts show transparency, boundaries, and cite evidence.
- **Explanatory Power** — How well a theory accounts for the facts simply and coherently.

F

- **Fallacy (Formal/Informal)** — A flaw in reasoning: *formal* = invalid logical form; *informal* = content/usage problems.
- **False Cause (Post Hoc)** — Mistaking sequence (after this) for cause (because of this).
- **False Dilemma** — Presenting only two options when more exist.
- **Falsifiability** — A claim is scientific only if it could in principle be proven false by evidence.
- **Framing Effect** — Choices change based on how information is presented (gain vs. loss frames).

G

- **Gambler's Fallacy** — Thinking past random events change the odds of independent future ones.
- **Generalization (Hasty)** — Drawing a broad conclusion from too few or unrepresentative cases.
- **Genetic Fallacy** — Judging a claim solely by its origin rather than its merits.

- **Goalpost Moving** — Demanding new/stricter proof once prior standards are met.
- **Groupthink** — Suppressing dissent to preserve harmony; undermines reality-testing.

H

- **Halo/Horn Effect** — One positive/negative trait spills into judgments of unrelated traits.
- **Hindsight Bias** — “I knew it all along” after learning the outcome.
- **Hypothesis** — A testable, specific expectation derived from a theory.

I

- **Ideological Turing Test** — Can you state the opposing view so fairly its adherents agree? (*see: Steelman*)
- **Inductive Reasoning** — From specific observations to general conclusions; always probabilistic.
- **Inference** — The step from evidence to conclusion.
- **Information Literacy** — Skills to find, evaluate, and use information ethically and effectively.
- **In-Group / Out-Group Bias** — Favoring one’s own group; distrusting outsiders.
- **Intellectual Humility** — Recognizing knowledge limits; being correctable by evidence.
- **Internal/External Validity** — Internal: are causal conclusions warranted? External: do results generalize?

J

- **Just-World Hypothesis** — Belief that people get what they deserve; can distort causal explanations.

K

- **Knowledge (Working)** — Justified, true belief that actually connects to reality and withstands scrutiny.

L

- **Law of Large Numbers** — Averages stabilize with larger samples; small samples are noisy.
- **Loaded Question** — A question that presupposes guilt/assumption (“When did you stop...?”).
- **Logic (Formal)** — Rules of valid inference; tests argument *structure*.
- **Logical Soundness** — Valid form *and* true premises.
- **Logical Validity** — If premises were true, the conclusion would follow.

M

- **Margin of Error** — Expected sampling uncertainty around an estimate (often in polls).

- **Media Literacy** — Spotting spin, checking sources, and recognizing frames, bots, and deepfakes.
- **Mediator / Moderator** — *Mediator*: mechanism by which X affects Y. *Moderator*: a factor that changes the strength/direction of X→Y.
- **Metacognition** — Thinking about your thinking; monitoring and improving it.
- **Methodology** — The logic of how research is designed and conducted.
- **Modus Ponens** — Valid: If P then Q; P; therefore Q.
- **Modus Tollens** — Valid: If P then Q; not Q; therefore not P.
- **Motivated Reasoning** — Letting desired conclusions drive how we search, interpret, or recall evidence.

N

- **Naturalistic Fallacy** — Deriving what *ought* to be from what *is*.
- **Necessary vs. Sufficient** — *Necessary*: must be present. *Sufficient*: by itself guarantees the outcome.
- **Negativity Bias** — Negative information weighs more heavily than positive.
- **Non Sequitur** — The conclusion doesn't logically follow from the premises.
- **Null Hypothesis (H₀)** — The “no effect/no difference” default in statistical testing.

O

- **Occam's Razor (Parsimony)** — Prefer the explanation that accounts for the facts with the fewest assumptions.
- **Open-Mindedness** — Willingness to revise beliefs when warranted; ≠ gullibility.
- **Operational Definition** — The concrete way a concept is measured/observed.
- **Outcome Bias** — Judging a decision by its result rather than by the quality of the process given what was known.

P

- **P-Hacking** — Tweaking analyses to find “statistical significance” (often spurious).
- **Peer Review** — Independent expert critique before publication; not perfect, but useful filter.
- **Plausibility** — Whether a claim coheres with established knowledge without special pleading.
- **Point of View** — The perspective or lens shaping interpretation; include multiple POVs for breadth.
- **Population vs. Sample** — The whole group of interest vs. the subset studied.
- **Post Hoc Ergo Propter Hoc** — After this, therefore because of this. (*see: False Cause*)
- **Practical vs. Statistical Significance** — Real-world importance vs. mathematical detectability.
- **Premise** — A supporting reason offered for a conclusion.
- **Pre-Registration** — Publicly fixing hypotheses/analyses before data collection to reduce bias.
- **Primary/Secondary/Tertiary Sources** — Original data/firsthand accounts; analyses/summaries; overviews/reference works.
- **Probability** — A quantified degree of belief or frequency of outcomes in the long run.

- **Projection Bias** — Assuming others think/feel like we do.
- **Pseudoscience** — Claims dressed as science lacking testability, openness to refutation, or cumulative evidence.

Q

- **Qualitative Evidence** — Text, interviews, observations capturing meaning and context.
- **Quantitative Evidence** — Numeric measures enabling statistical analysis.
- **Qualifier (Toulmin)** — A marker of strength/limits (“likely,” “in most cases”).
- **Quasi-Experiment** — A study with treatment and comparison but without full random assignment.

R

- **Randomization** — Assigning by chance to balance confounders.
- **Range / Variance / Standard Deviation** — Ways to describe spread around the average.
- **Red Herring** — Distracting from the main issue with an irrelevant topic.
- **Regression to the Mean** — Extreme values tend to move closer to average on re-measurement.
- **Relevance** — Bearing directly on the question asked.
- **Reliability** — Measurement consistency across time/raters/items.
- **Replicability/Reproducibility** — Whether findings can be re-shown with same/different data and methods.
- **Representativeness** — How well a sample mirrors the population.
- **Residual Confounding** — Uncontrolled or unknown confounders still bias results.
- **Root-Cause Analysis (Five Whys)** — Systematically tracing symptoms back to deeper causes.

S

- **Sampling Bias** — Systematic distortion from non-representative samples.
- **Sample Size (Power)** — Larger, well-designed samples give narrower uncertainty and higher detection power.
- **Satisficing** — Settling for a “good enough” option rather than optimizing; can be rational under constraints.
- **Scope Conditions** — The boundaries where a claim/theory applies (who, where, when).
- **Scientific Method (Hypothetico-Deductive)** — Propose hypotheses, deduce predictions, test, revise or reject.
- **Self-Serving Bias** — Success = me; failure = circumstances; distorts learning.
- **Signal vs. Noise** — Real patterns vs. random fluctuation.
- **Skepticism (Constructive)** — Withholding full assent until evidence suffices; open to being convinced.
- **Slippery Slope** — Claiming one step inevitably leads to extremes, without showing mechanism/likelihood.
- **Socrates’ Clarifiers** — “What do you mean by...?”, “Can you give an example?”, “How does that follow?”
- **Soundness** — An argument that is both valid and built on true premises.

- **Source Evaluation (CRAAP)** — Currency, Relevance, Authority, Accuracy, Purpose.
- **Steelman** — Charitably strengthening an opposing view before critiquing it. (*see: Straw Man*)
- **Straw Man** — Misrepresenting an opponent's view to make it easier to attack.
- **Strict vs. Loose Use** — Using terms in their precise technical sense vs. everyday sense; clarify which.
- **Survivorship Bias** — Focusing on “winners” and missing the unseen “losers,” skewing conclusions.

T

- **Theory** — A well-supported explanatory framework that unifies findings and predicts new ones; ≠ “mere guess.”
- **Thought Experiment** — A carefully described hypothetical to test principles or logic.
- **Token vs. Type** — Specific instance vs. general category; avoid mixing them in arguments.
- **Toxic Certainty** — Unwillingness to entertain doubt; immune to counter-evidence.
- **Transparency** — Clear methods, data access, and disclosure of limits/conflicts.
- **Tu Quoque** — “You too” — accusing hypocrisy instead of addressing the argument.
- **Type I/II Errors** — False positive vs. false negative in hypothesis tests.
- **Tversky & Kahneman's Dual-Process** — **System 1** (fast, intuitive) vs. **System 2** (slow, analytical).

U

- **Uncertainty** — The inescapable spread of possible values/outcomes; should be quantified or clearly described.
- **Under-Determination** — Evidence that fits multiple competing explanations; ask what extra test would discriminate.
- **Unfalsifiable Claim** — Structured so it cannot be tested (e.g., ad hoc escape hatches); not scientific.

V

- **Validity (Measurement)** — Does the instrument measure what it claims to? (*see: Construct Validity*)
- **Values-Laden Language** — Terms carrying approval/disapproval (“progressive,” “traditional”) that can smuggle assumptions.
- **Value of Information** — Whether getting more data is worth the time/cost.
- **Venn Diagram** — A visual logic tool for sets/overlaps to test syllogisms.

W

- **Warrant (Toulmin)** — The logic/principle connecting evidence to claim (“From *this kind of data, this conclusion follows*”).
- **Weak Analogy** — Comparing things that differ in crucial, relevant ways; misleads.
- **Weight of Evidence** — Considering *all* high-quality evidence together, not isolated points.

- **Worldview** — The deep framework of beliefs shaping interpretation; knowing yours helps you spot blind spots.

Y

- **Yes-Bias (Acquiescence)** — Tendency to agree with statements/questions; guard with balanced wording and checks.

Z

- **Zero-Sum Thinking** — Assuming gains for one must be losses for another; often false in cooperative contexts.

Common informal fallacies (quick list): To be discussed separately.

Ad hominem • Straw man • Red herring • False dilemma • Slippery slope • Appeal to authority/popularity/emotion/ignorance/tradition • Hasty generalization • Post hoc • Circular reasoning • Loaded question • Equivocation • Special pleading • No True Scotsman • Genetic fallacy • Cherry-picking • Texas sharpshooter • Middle ground • Composition/division • Tu quoque.

Common cognitive biases (quick list): To be discussed separately

Anchoring • Availability • Confirmation • Overconfidence • Dunning–Kruger • Hindsight • Representativeness • Base-rate neglect • Framing • Negativity • Status quo • Optimism/pessimism • Self-serving • In-group/out-group • Halo/horn • Sunk cost • Survivorship • Outcome • Projection • Authority • Recency.

Handy “critical checks”

- **Clarity** — “What exactly do you mean? Can we rephrase in one sentence?”
- **Evidence** — “What’s the strongest *independent* support? Any high-quality counter-evidence?”
- **Assumptions** — “What must be true for this to work? Are those justified?”
- **Alternatives** — “What else could explain this? Which fits best?”
- **Implications** — “If we adopt this, what follows—for whom, when, where?”
- **Fairness** — “Have we represented opposing views in their strongest form (steelmanned)?”