

THE MAIN TEXT — FREE SAMPLE

For the Love of Truth

Learning to Reason Well: An Introduction to Philalethic Logic

This sample includes the front matter, Chapter 1, and Chapter 18 of the complete 19-chapter text. Read the full text online, or purchase print and electronic editions, at philalethiclogic.com.

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Man judges rightly that by his intellect he surpasses the material universe, for he shares in the light of the divine mind. By relentlessly employing his talents through the ages he has indeed made progress in the practical sciences and in technology and the liberal arts. In our times he has won superlative victories, especially in his probing of the material world and in subjecting it to himself. Still he has always searched for more penetrating truths, and finds them. For his intelligence is not confined to observable data alone, but can with genuine certitude attain to reality itself as knowable, though in consequence of sin that certitude is partly obscured and weakened.

The intellectual nature of the human person is perfected by wisdom and needs to be, for wisdom gently attracts the mind of man to a quest and a love for what is true and good. Steeped in wisdom, man passes through visible realities to those which are unseen. Our era needs such wisdom more than bygone ages if the discoveries made by man are to be further humanized. For the future of the world stands in peril unless wiser men are forthcoming.

— Gaudium et Spes §15

The fear of the Lord is the beginning of wisdom.

— Proverbs 9:10 (Douay-Rheims)

Foreword

Nothing contributes more certainly to individual and collective human flourishing than reasoning well within the context of mutual, authentic love. This project focuses on the former, reasoning dimension. The latter and more important dimension is left to you.

For most of recorded history, scholarly formation—deliberate training in human excellence—was a rarity enjoyed by a privileged few. Such education emphasized reasoning (philosophy), reading, writing, speaking, history, mathematics, arts, cosmology and science, and similar humane fundamentals. Today, a formal education leading to basic, functional literacy is no longer rare, but the happy norm enjoyed by most. Some of the basic areas of study have developed dramatically, and new ones have been added, but some have also atrophied. A critical one that has almost entirely disappeared is direct training in reasoning.

Only about one in twenty contemporary students receive direct training in basic logic, critical thinking, or similar, and most of those courses teach a truncated, sterilized version of Aristotelian logic that has seen little or no substantive development since the late Middle Ages. A much smaller percentage of people, probably less than 1%, might be exposed to contemporary, symbolic logic in college—usually some version of Propositional, Predicate, Relational, or First Order logic. A microscopic percentage of students might go on to learn modal or alethic logic in graduate or postgraduate study. Most of these college-level courses present logic as something deeply abstract, mathematical, and generally impractical.

The lack of training to distinguish true claims from false, combined with the ability to produce audio, images, and videos that are practically indistinguishable from reality, leaves the average person and society as a whole in a new and profoundly vulnerable position. The same technology that has brought us unprecedented comforts, affluence, recreation, and luxuries is becoming an instrument of mass deception, manipulation, and control. The ability to discern truth despite what is right before our “lying eyes” might never have been more important than it is right now, nor less common.

This project aims to provide a practical introduction to the basic reasoning skills that used to be taught to and expected of every educated person. The goal is to help equip the learner with principles and practices that can help us more reliably discern truth. The complete system is called Philalethic Logic, and it has several important qualities: it is quantified, compound, modal, symbolic, and complete in the senses explained in Chapter 1. It also differs from other contemporary offerings by being couched in a greater metaphysical philosophy, emphasizing practical daily application, using more intuitive symbolic grammar, omitting axioms that don’t apply in real life, and reinterpreting compound operators as the alethic/modal claims that they factually are.

Suggestions for improvement are invited and welcome.

A Note for the Teacher

This project’s purpose is to manifest a formal logic system that more accurately expresses and allows the scrutiny of real world, human ideas. There is substantial overlap between it and other common formal logic systems, but also four important distinctives:

1. Philalethic Logic is not merely some abstract system without a practical, target application, but is grounded in how the human mind actually operates and in what our ideas intend (ideally).
2. Philalethic Logic has a simplified symbolic system and syntax (though it can be converted to First Order and other systems if needed).
3. Philalethic Logic implements compound operators like disjunction and implication in their full modal sense. This increases system complexity, but resolves the nagging problems and confusion in common truth-functional logic systems.
4. Philalethic Logic relies exclusively on truth-tree decomposition techniques for validation processes (though natural deduction would still work just fine).

For college-level or similar course pacing, the material can easily fit a 12-week term with two or three class sessions per week, one mid-term examination, one final examination, a couple of in-class quizzes, and some review days. “Lab” days are for general discussion, application to current events, and logic games.

The eighteen numbered chapters that follow map to eighteen class sessions. A representative 12-week, three-session-per-week schedule leaves room for review, quizzes, and exams around them. For an 8-week condensed course, or an 18-week extended one, chapters can be compressed two-per-week or spread one-per-week respectively; an independent learner can simply proceed at his own pace with no schedule at all. For a less intense approach, the material can easily be distributed over a full academic year.

Common supplemental materials for lab days include deductive logic puzzles, logic games, or the analysis of current news articles and advertisements—several exercises throughout this text are designed to plug directly into a lab-day discussion.

Chapter 1: Introduction to Philalethic Logic

Main points in this chapter:

- Philalethic Logic is a practical system for discerning truth—quantified, compound, modal, symbolic, and complete.
- An idea is an object of the mind. An assertoric idea (a claim) asserts that a subject has or lacks some quality, and, if sufficiently clear, has a truth value: true or false, never both, never neither.
- Three axioms underlie all reasoning: non-contradiction, excluded middle, and identity.
- Belief, knowledge, understanding, and wisdom are distinct, escalating relationships between a mind and the truth.

This chapter briefly presents the overall philosophy to which Philalethic Logic is anchored—concepts regarding the human person, agency, the mind, ideas, truth, and reality—before we start building the symbolic system itself in Chapter 2.

Origins and Destinations

There is a journey ahead of us, with a starting point, a goal, and stages we pass through to get there. The starting point is simply your present circumstance: a reasonably intelligent, sincere person, likely with little or no formal training in philosophy or logic. The goal is to better discern truth from error, and to recognize when you simply lack enough information to tell the difference. We begin with a brief introduction to philosophy, then move to symbolizing natural language, negating claims, and arranging them into arguments. From there we test whether arguments are valid, incorporate more complex ideas, and finally discuss what a sound argument is, common errors, and some practical advice for actually living this out.

Philosophy in General

Philosophy—from the Greek *philo* and *sophia*, “a friendly affection for wisdom”—is the practice of discerning and applying what is true about life and the universe. Philosophers have examined existence, truth, beauty, morality, the soul, meaning, and the nature (or existence) of God, among other things that move life beyond mere survival and pleasure-seeking.

We sometimes speak of “a philosophy”—a set of beliefs, values, and methods of reasoning. In this sense everyone is a quasi-philosopher, living out some philosophy whether they’re aware of its contents (or contradictions) or not. Some philosophies are simply better than others—more coherent, more in touch with reality—though discerning which is which takes real work.

Philosophy has traditionally been divided into several areas of inquiry:

- **Epistemology**—the mind, its operations, and what it means to know things. Concerned with what is true.
- **Ethics**—how we ought to believe and act, and why. Concerned with what is good.
- **Metaphysics**—whether there is any underlying reality or meaning to the universe. Concerned with what is real.
- **Aesthetics**—what is beautiful, and what that means.

This project concerns itself primarily with epistemology, though it touches the others—discerning what’s ethical, or what gives life meaning, both depend on first being able to judge what’s actually true.

The Human Mind and Ideas

You have a mind. We aren’t entirely sure how it works, or even precisely what it is, but it clearly does something: it produces, examines, and judges ideas. An idea does not exist independently—it’s an object of the mind, produced and sustained by a mind. Some ideas are about the world: an idea about how things are is an assertoric idea, an assertion. Such ideas claim that some identifiable thing (the subject) has or lacks a specific quality (the predicate):

“The dog is barking.”

“We have no bananas.”

“None of the stars were aligned that night.”

These assertoric ideas—and the process of generating, discerning, and judging them—are logic’s central concern, for a very practical reason: embracing false ideas (or rejecting true ones) tends toward suffering, while embracing true ideas tends toward peace and flourishing.

Ideas, Clarity, and Truth

An idea’s origin is often mysterious—a vague feeling, a whisper, something suddenly and fully formed. Eventually, an idea reaches enough clarity that we can reliably discern what it’s about—we call this being sufficiently clear, or simply clear. A clear idea doesn’t need to be comprehensive; “a cat is sitting on the dining table” doesn’t specify the cat’s breed or exact posture, but its essence is discernible.

A clear idea has a truth value. A true idea is one that has the perfection of corresponding to reality, to the facts. A false idea lacks that correspondence. Our ability to confirm an idea’s truth is a good sign, but truth doesn’t depend on our ability to confirm it—“there are sentient beings in the Alpha Centauri system who like chocolate peanut butter ice cream” has a truth value whether or not anyone could ever verify it.

Ideas and Claims

The written or spoken expression of an assertoric idea goes by many names: statement, assertion, proposition, claim. For our purposes we’ll generally treat an idea and its (accurate) expression as the same thing, and speak of claims going forward.

Beliefs, Knowledge, Understanding, and Wisdom

A belief is an idea one holds to be true. Everyone believes things that later turn out to be false, and everyone currently believes at least some false things right now—this is simply the human condition, not a special personal failing. There’s an important, easily-blurred distinction between judging a claim false and merely not believing it. Given a claim, you have three real options: judge it true, judge it false, or withhold judgment. Confusing (2) and (3)—treating “I don’t believe that” as identical to “that’s false”—is a common and avoidable error.

Knowledge, classically, is justified true belief: to know something means to believe it, to have real evidence of its truth, and for it to actually be true. If any piece is missing, it isn’t knowledge, however confidently it’s claimed. Understanding goes further—integrating many known facts about something into a coherent whole rather than a mere pile of trivia. Wisdom, further still, applies understanding within the context of love—willing the genuine good of another, grounded in truth and aimed at real flourishing.

Basic Axioms of Logic

Proper reasoning rests on three fundamental axioms—rules that other rules depend on, but which don’t themselves derive from anything prior:

- **Non-contradiction:** It is impossible for a sufficiently clear idea to be both true and false at the same time and in the same way. (Chapter 9 covers this at length, since it becomes the engine of our whole validation method.)
- **Excluded middle:** Any sufficiently clear assertoric idea has a truth value; it is true or false, with no intermediate or “true for me” option. (This doesn’t mean we can always discern which—“I don’t know” is often the honest answer—and it applies to individual claims, not to complex systems as a whole; “my religion is the one true one, therefore all others are false” quietly smuggles a category error, treating a complex system as if it were a single simple claim.)
- **Identity:** A thing is what it is. Also, if two apparently distinct things are alike in every respect except their names, they are in fact one thing: $R = Q$. We won’t lean on this much yet; it matters more in Volume 2.

Getting a Little Technical

A fact is anything that exists—a thing, a property, a relationship. Facts simply are; they aren't true or false. Reality (the universe) is the set of all facts: $\Omega = \{f_1, f_2, f_3, \dots, f_n\}$. A situation is some minimal, coherent, relevant subset of facts and their configuration—"a cat is sitting on the dining table" describes a situation involving a cat, a table, and their arrangement.

An idea, X , about a situation S is true if X is sufficiently clear and corresponds to S . To indicate that X is held to be true, Philalethic Logic simply writes the symbol: X . Prepending a tilde negates the entire claim: $\sim X$ indicates that X is false. Chapter 4 introduces a separate, more precise notation for negating only part of a claim—its subject or its predicate alone, rather than the whole thing—using underlining (or, when writing on a keyboard, an underscore).

In Summary

The capacity to reason well is a key part of what makes us human, distinct from other animals. Exercised within genuine love, it's a power for real good. Most people can dramatically improve their reasoning through deliberate training and practice—that's the entire point of what follows.

Discussion Questions

1. What does it mean for an idea to be true?
2. Can an idea be "true for me" but not "true for you"? Why or why not?
3. What is the difference between an idea, an opinion, a belief, and knowledge?
4. Is it possible to know something that isn't actually true? Why or why not?
5. What are some strategies for navigating a disagreement with someone who believes differently than you do?
6. Can a claim be false while its corresponding idea is somehow still true? Why or why not?
7. Why does truth actually matter, practically, in daily life?

Exercise: Belief, Doubt, or Denial?

For each, decide whether the person is judging the claim true, judging it false, or withholding judgment—and note if they seem to be confusing two of these.

1. "I haven't seen any evidence either way, so I don't really have an opinion on whether the supplement works."
2. A juror tells a reporter, "I don't think the defendant did it," when asked point-blank whether she believes the defendant is innocent.
3. "I'm pretty sure my flight will be on time, but I wouldn't bet my connection on it."
4. Someone posts, "Well, science hasn't proven it's safe," as though that settles that it's unsafe.

Other Systems of Logic: Aristotle

Aristotle's Logic (spanning several works later collected as the *Organon*) is the earliest comprehensive system of logic we have records of—a natural language, quantified, modal logic. It recognized four basic claim structures, later labeled a, e, i, o:

- **a** — Universal Affirmative — "All dogs are animals"
- **e** — Universal Negative — "No dogs are cats"
- **i** — Particular Affirmative — "Some dogs are nice"
- **o** — Particular Negative — "Some cats are not friendly"

Aristotle also allowed modal qualification of any of these ("is necessary," "is possible," and so on), asserted the Principle of Non-Contradiction as logic's necessary foundation, and called structured arguments syllogisms, which varied in perfection (obviousness), not correctness—an improperly structured argument wasn't a flawed

syllogism, it simply wasn't a syllogism at all. A reduced version of Aristotle's system, filtered through the medieval period, remained the standard for education until the 1800s, and a further-truncated version is still taught at some traditional academies today.

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Chapter 18: Special Problems, Common Mistakes, and Informal Fallacies

Main points in this chapter:

- A few special situations deserve extra care during validation: claims about things that may not exist, claims about the past, and shifts in what a term actually means partway through an argument.
- Even a well-trained mind makes certain mistakes reliably—not through carelessness, but through predictable patterns worth naming so you can catch them in yourself.
- Informal fallacies are common, recognizable ways an argument fails to actually support its conclusion, even though it may sound persuasive. Naming them is one of the most immediately useful skills in this entire book.

Special Problems in Validation

The most common trouble in validating a real-world argument usually has nothing to do with decomposition itself—it's the work of getting a messy, ambiguous, real argument into a symbolized form that actually reflects what was meant. A few specific situations are worth flagging directly.

Modes of Existence

When you decompose (instantiate) a claim, you're implicitly asserting that some generic thing exists—at least for the purposes of the validation. Be careful here. If an argument concerns something whose existence is itself in question or long past (dodo birds, for instance), don't let your decomposition quietly smuggle in an assumption of present existence that the original argument never actually made. Likewise, don't let something shift modes of existence mid-argument—an idea that started out purely hypothetical shouldn't suddenly get treated as an established, actual fact partway through your decomposition, just because it's convenient. Keep the mode of existence consistent throughout.

Negating Conclusions About Imaginary or Nonexistent Things

Falsifying a conclusion works the same regardless of subject matter, but claims about imaginary or nonexistent things can feel strange once negated and decomposed. "Some unicorns are bad at poker" negates to "No unicorns are bad at poker"—perfectly valid as a formal move, even though unicorns don't exist. If this ever produces an uneasy feeling during validation, the unease is usually rooted in a mode-of-existence confusion (above), not in an actual error in the method.

Verb Tense and Stability

Claims about things from the past are perfectly legitimate, but keep in mind that an argument's validity (and especially its soundness) can be tied to the state of affairs that existed then, not necessarily now. "Dodo birds are flightless animals" doesn't sit well today, since there are no dodo birds left to have any qualities at all—but "Dodo birds were flightless animals" is fine, since it refers to a past state of affairs. When an argument or claim feels subtly off, check whether adjusting the tense resolves the discomfort before assuming something is logically wrong.

Common Thinking Mistakes

Beyond formal errors in structure, a few patterns of thought reliably lead people (including careful, trained people) toward error. Naming them doesn't make you immune, but it does make them easier to catch in yourself as much as in others.

The Mystery of Iniquity. A world with real agency—real freedom to choose—will always include the possibility of evil choices, since agency without the possibility of a wrong choice isn't really agency at all. This means evil remains an ever-present possibility in any world with free agents, no matter how much any of us improve individually. This isn't a reason for despair, but it is a reason for humility: don't expect a purely logical or

political solution to eliminate the possibility of evil altogether, and be especially wary of anyone promising to do exactly that through coercion—actions taken “for someone’s own good” without his genuine consent are very often just domination wearing a disguise.

Limited Information. Even a mind reasoning perfectly will still reach false conclusions if it’s working from incomplete or wrong information. This is unavoidable, and it happens to all of us, all the time. Accept it. The goal isn’t to never be wrong—that’s not on offer for any finite mind—the goal is to notice when you’re wrong as quickly as possible, and to minimize the damage in the meantime.

The Openness/Rigor Balance. People vary widely in how open they are to new or challenging ideas, and this varies with mood, who’s presenting the idea, and how it’s presented—none of which has anything to do with whether the idea is actually true. A useful discipline: apply the same standard of scrutiny to ideas you already hold as you apply to new ones being proposed to you. If you’re going to demand a sound argument from someone challenging your belief, hold your own belief to that same standard. Uncritical acceptance of everything and reflexive rejection of everything are both failure modes—the goal is consistency, applied evenhandedly in both directions.

Informal Fallacies

A fallacy is a common pattern of reasoning that fails to actually support its conclusion, even when it sounds persuasive—often especially when it sounds persuasive, since that’s exactly what makes a fallacy dangerous rather than merely wrong. Some fallacies are formal (an actual invalid structure, like the ones you’ve been learning to catch through decomposition). Others are informal—the structure might even look fine on the surface, but something about the content, the terms, or the framing quietly undermines the argument. Here are some of the most common you’ll encounter, again and again, in daily life:

- **Ad Hominem** (“to the person”). Attacking the person making an argument instead of the argument itself. “You can’t trust her opinion on the budget, she’s terrible with her own finances”—even if true, this says nothing about whether her budget argument is actually correct.
- **Straw Man.** Misrepresenting someone’s actual position as a weaker, easier-to-attack version, then knocking down that weaker version instead of the real one.
- **False Dilemma.** Presenting only two options as though they were the only possibilities, when in fact more exist. In Philalethic Logic’s own terms, this treats something as an exclusive disjunction ($X \parallel Y$) when the real situation is closer to an inclusive one, or when a third option exists entirely outside both.
- **Appeal to Authority.** Treating a claim as true simply because someone with credentials, fame, or a title said it—especially when that authority has no actual relevant expertise in the specific matter at hand.
- **Slippery Slope.** Asserting that one modest step will inevitably lead, through an unbroken chain, to an extreme and usually undesirable outcome, without actually establishing that each link in the chain really follows from the last.
- **Circular Reasoning (Begging the Question).** An argument whose conclusion is really just a restatement of one of its premises, dressed up to look like independent support.
- **Hasty Generalization.** Drawing a universal or near-universal conclusion from too small or unrepresentative a sample.
- **Appeal to Emotion.** Substituting an emotional reaction—fear, pity, outrage, flattery—for an actual reason to believe something.
- **Red Herring.** Introducing an irrelevant point to distract from the actual issue under discussion.
- **Equivocation.** Using a term with one meaning in one part of an argument, then quietly shifting to a different meaning later, so that the argument only appears valid.

Other Systems of Logic: Informal Logic

In the 1970s, philosophers Ralph Johnson and J. Anthony Blair, working at the University of Windsor, gave a name to a field that would come to be called informal logic: the study of real arguments as they actually appear in speeches, advertisements, and everyday conversation, evaluated on their own terms rather than translated

into the symbolic systems covered elsewhere in this book. Philalethic Logic and informal logic share a motivation—both exist because formal symbolic systems alone don’t reliably produce people who reason well outside the classroom—but they took different routes to it. This chapter’s material picks up exactly where formal validity leaves off: the cases where an argument is technically well-structured, or looks like it is, but still shouldn’t convince you.

Exercises: Name the Fallacy

Identify the fallacy (or fallacies) at work in each passage below.

1. “I don’t need to defend my proposal in detail—everyone who actually understands economics already agrees with me.”
2. “Senator, you say we should raise the minimum wage. So you want to destroy every small business in this town?”
3. “If we allow students one retake on a quiz, next thing you know nobody will ever study for anything, and the whole grading system collapses.”
4. “This supplement must work—my neighbor took it and felt great within a week.”
5. “Don’t listen to his argument against the merger—he was fired from that company two years ago.”
6. “You’re either fully with us on every point of the platform, or you’re against everything we stand for.”
7. “The comedian’s new special is hilarious—trust me, everyone in my group chat has been quoting it all week.”
8. “Look, before we get into these emissions numbers, let’s talk about how many jobs this plant provides the town.”

Exercise: Name the Fallacy—Everyday Edition

1. “My personal trainer says this supplement is scientifically proven, and he’s been doing fitness for 15 years, so it must work.”
2. “If we let employees expense one working lunch, next month they’ll be expensing vacations to the Bahamas.”
3. “You’re worried about the new zoning law? Typical—you probably also think the city shouldn’t build anything, ever.”
4. “This diet works because everyone who really sticks to it loses weight—and if you didn’t lose weight, you obviously didn’t really stick to it.”
5. “Three people in my building got a package stolen last month. Package theft is clearly out of control in this city.”
6. “Before you criticize my parking, need I remind you that YOUR car still has last year’s registration sticker?”
7. “Look at this photo of the flooded street—how can anyone say climate policy doesn’t matter?”
8. “Either you support the new dress code exactly as written, or you don’t care about professionalism at all.”
9. “Studies show 90% of top CEOs wake up before 6am. If you want to be successful, you need to start waking up early too.”

Exercise: When Is It Even a Claim?

1. Is it true or false, right now, that “Blockbuster Video is a great place to rent movies”? Discuss why this is an awkward claim to evaluate in the present tense, and how rephrasing it in the past tense resolves the discomfort—the same move this chapter makes with dodo birds, just with a company instead of a species.

Answer Key

1. Appeal to Authority—a trainer isn’t a relevant scientific authority on supplement efficacy specifically.
2. Slippery Slope—asserts an extreme chain without showing any of the links actually follow.
3. Straw Man—swaps a specific concern for an absurd, unstated extreme.

4. Circular Reasoning—“really sticking to it” is defined by the outcome, making the claim unfalsifiable.
5. Hasty Generalization—three incidents in one building isn’t evidence about the whole city.
6. Ad Hominem (specifically the “tu quoque” / red-herring flavor)—attacks the critic’s own conduct instead of addressing the parking complaint.
7. Appeal to Emotion—a single dramatic image isn’t evidence about what any specific policy actually does.
8. False Dilemma—ignores every intermediate position between full support and not caring at all.
9. A correlation/causation mix-up dressed as a hasty generalization—early waking and success may both stem from some other cause (e.g., the demands of the role) rather than one causing the other.
10. Discussion item, no single right answer—the point is recognizing the tense problem itself, same lesson as the dodo-bird example, applied to something the reader has likely said or heard recently.

Exercise: Find It in the Wild

Locate a real advertisement, political speech, or opinion piece and identify at least one informal fallacy being used. Quote or paraphrase the relevant portion, name the fallacy, and explain specifically what the argument would need to actually establish its conclusion honestly.

Exercise: Audit One of Your Own Beliefs

Pick a belief you hold that you arrived at partly through persuasion—something someone convinced you of, rather than something you verified firsthand. Examine the argument (or advertisement, or conversation) that convinced you. Is there a fallacy hiding in it? Does this change how confident you should be in the belief itself, or just in the particular argument that first sold you on it?

Reflection

Which of the fallacies in this chapter do you find yourself most tempted to use, in your own arguments, especially when you’re already confident you’re right? Which one are you most often fooled by, from others?