

The Pocket Guide to
Critical Thinking
Fifth Edition

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Advanced Reasoning Forum

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Preface

Critical thinking is a set of skills that anyone can master. People who master these skills can see the consequences of what they and others say, they can formulate and communicate good arguments, and they can better make decisions.

Critical thinking is also the first step to writing well: first comes clear thinking, then comes clear writing.

The most important ideas and methods of critical thinking are presented here. But to reason well requires more than knowing definitions and rules and a few examples. It requires judgment and the ability to imagine possibilities. The practice you need for that can come from using these ideas every day while studying, watching television, reading the newspaper, browsing the Internet, working at your job, and talking to your friends and family.

Because your reasoning can be sharpened, you can understand more, you can avoid being duped. And, we hope, you will reason well with those you love and work with and need to convince, and you will make better decisions. But whether you will do so depends not just on method, not just on the tools of reasoning, but on your goals, your ends. And that depends on virtue.

Outline of the Book

Claims

We want to know truths from our reasoning. But to do that we need to know how to recognize whether a sentence could be true or false or is just nonsense, which is what we'll see in Chapter 1. In Chapter 2 we'll look at how to use definitions to clarify what we're talking about.

Arguments

In Chapter 3 we begin the study of reasoning by looking at arguments: attempts to convince someone that a claim is true in virtue of other claims being true. In Chapter 4 we'll see criteria for what counts as a good argument. And in Chapter 5 we'll see when we're justified in accepting a claim without an argument.

Most arguments we encounter aren't complete. That needn't mean they're bad, though, as we'll see in Chapter 6 when we set out criteria for repairing arguments. In Chapter 7 we'll see how to reply to objections with a counterargument. Sometimes, though, people try to get us to accept a claim by a fancy choice of words rather than reasoning, as we'll see in Chapter 8. In Chapter 9 we'll see that labeling certain kinds of arguments as fallacies can be a useful shortcut in evaluating arguments.

Special Kinds of Claims

Some kinds of claims require special skills to analyze in arguments. In Chapter 10 we'll look at claims that are made from other claims using "or," "not," and "if . . . then . . .". Especially important is learning how to formulate the contradictory of a claim. In Chapter 11 we'll look at claims about all or some part of a collection.

Claims that state not what is but what should be are crucial for reasoning about value and ethics, and we'll look at those in Chapter 12.

Numbers and Graphs

We use numbers to measure, summarize, and compare lots of information, and we'll see how to use those in our reasoning in Chapter 13. Graphs allow us to summarize many numerical claims, allowing for easier, visual comparisons, which we'll see in Chapter 14.

Reasoning about Experience

Comparisons are at the heart of our understanding of the world, and arguments that depend on those are called analogies, which we'll see how to evaluate in Chapter 15.

In Chapter 16 we'll see how to reason from our experience to arrive at true claims about a group from knowing about only a part of it.

We spend a lot of our time trying to figure out cause and effect in our lives, and in Chapter 17 we'll see how to do that well. In Chapter 18 we'll see how to analyze whether there is cause and effect by looking at studies of groups.

Reasoning in the Sciences

Reasoning in the sciences involves some distinctions and methods that supplement critical thinking skills. In Chapter 19 we'll see a method for looking for a cause. In Chapter 20 we'll see how scientists establish evidence with experiments. Chapter 21 is about explanations: what they are and how to evaluate them, which is as important in our daily lives as in science. Chapter 22 explains what models and theories are and how to judge them.

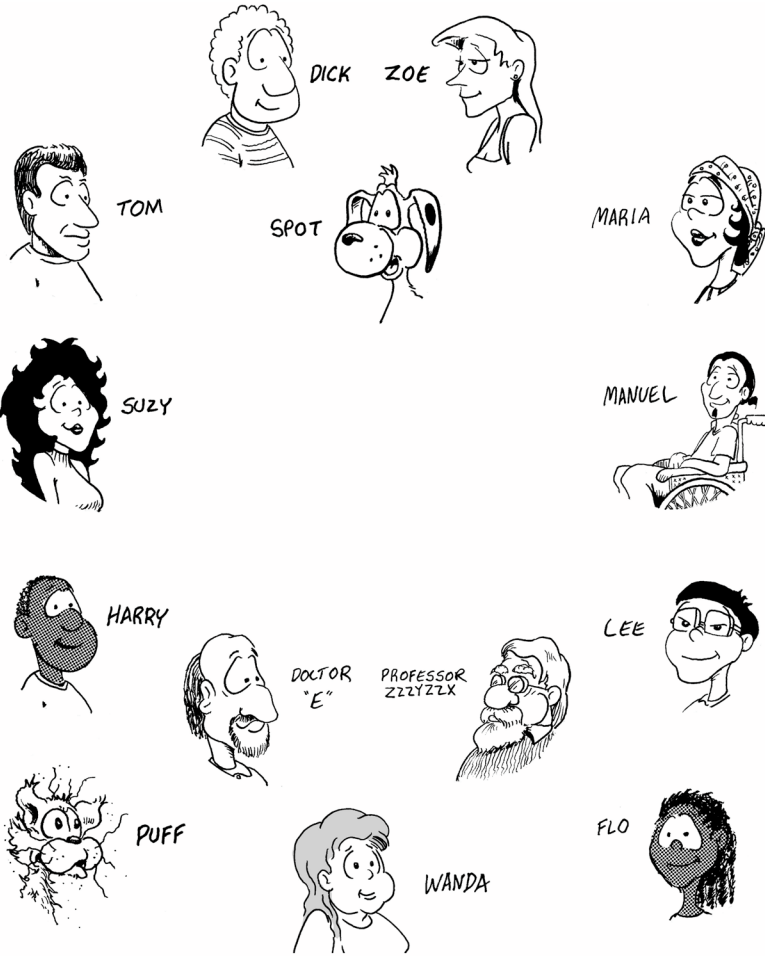
Risk and Making Decisions

A choice about what to do can be framed as an argument to convince yourself that a particular claim is true. To evaluate such reasoning, we need to be able to evaluate the risk as well as any benefit that might come from a choice of action, as we'll see in Chapters 23 and 24.

Writing Well

Knowing how to evaluate claims, arguments, cause and effect, and explanations can help us write better. We can judge our own work as we would another's, applying all we've learned here.

Cast of Characters



Claims

1 Claims

We want to know what's true. But first we have to recognize if a sentence even could be true or false.

Claims A *claim* is a declarative sentence used in such a way that it is either true or false, but not both.

Example 1 Dogs are mammals.

Analysis This is a claim.

Example 2 $2 + 2 = 5$

Analysis This is a claim, a false claim.

Example 3 Dick is a student.

Analysis This is a claim, even if we don't know if it's true.

Example 4 How can anyone be so dumb to think cats can reason?

Analysis This is not a claim. Questions are not claims.

Example 5 Never use gasoline to clean a hot stove.

Analysis Instructions and commands are not claims.

Example 6 I wish I could get a job.

Analysis Whether this is a claim depends on how it's used. If Maria, who's been trying to get a job for three weeks says this to herself, it's not a claim—we don't say that a wish is true or false. But if Dick's parents are berating him for not getting a job, he might say, "It's not that I'm not trying. I wish I could get a job." Since he could be lying, in that context it's a claim.

Vagueness

Often what people say is *too vague* to take as a claim: there's no single obvious way to understand the words. Vagueness can create worthless disagreements and mislead.

Example 7 People who are disabled are just as good as people who aren't.

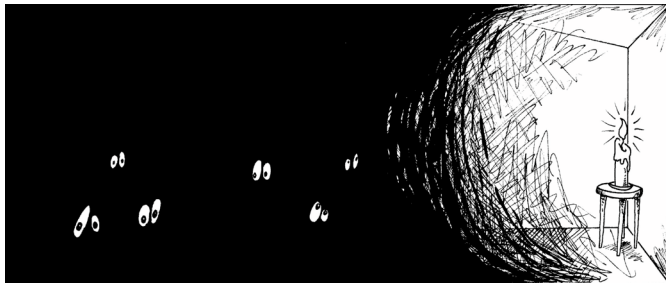
Analysis Lots of people take this to be true and important, but what does it mean? A deaf person is not as good as a hearing person at letting people know a smoke alarm is going off. This is too vague for us to agree that it's true or false.

Example 8 “Susan Shank, J.D., has joined Zia Trust Inc. as Senior Trust Officer. Shank has 20 years’ experience in the financial services industry including 13 years’ experience as a trust officer and seven years’ experience as a wealth strategist.”

Albuquerque Journal, 4/29/10 and the Zia Trust website

Analysis “Wealth strategist” looks very impressive. But when asked what it meant, Ms. Shank said, “It can have many meanings, whatever the person wants it to mean.” This is vagueness used to convince you she’s doing something important.

Still, everything we say is somewhat vague. After all, no two people have identical perceptions, and since the way we understand words depends on our experience, we all understand words a little differently. So it isn’t whether a sentence is vague, but whether it’s too vague, given the context, for us to be justified in saying it’s a claim. It’s a mistake, a *drawing the line fallacy*, to argue that if you can’t make the difference precise, there’s no difference. In a large auditorium lit by a single candle at one end, there’s no place where we can say it stops being light and starts being dark. But that doesn’t mean there’s no difference between light and dark.



Example 9 Tom: My English composition professor showed up late for class today.

Zoe: What do you mean by late? How do you determine when she showed up? When she walked through the door? When her nose crossed the threshold?

Analysis Zoe is asking for more precision than is needed. In ordinary talk what Tom said is clear enough to be a claim.

Example 10 If a suspect who is totally uncooperative is hit once by a policeman, that’s not unnecessary force. Nor twice, if he’s resisting. Possibly three times. If he’s still resisting, shouldn’t the policeman

have the right to hit him again? It would be dangerous not to allow that. So, you can't say exactly how many times a policeman has to hit a suspect before it's unnecessary force. So the policeman did not use unnecessary force.

Analysis This argument convinced a jury to acquit the policemen who beat up Rodney King in Los Angeles in the 1990s. But it's just an example of the drawing the line fallacy.

Example 11 Zoe: Those psychiatrists can't agree whether Wanda is crazy or not. One says she's clinically obsessive, and the other says she just likes to eat a lot. This psychiatry business is bunk.

Analysis Just because there are borderline cases doesn't mean there isn't a clear difference between people who are really insane and those who aren't.

Subjective claims

It's useful to distinguish between claims that are about the world outside us and those about thinking, believing, and feeling.

Subjective and objective claims A claim is *subjective* if whether it's true or whether it's false depends on what someone, or something, or some group thinks, believes, or feels. A claim that's not subjective is *objective*.

Example 12 All ravens are black.

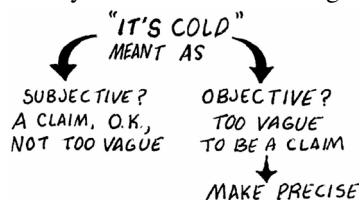
Analysis This is an objective claim.

Example 13 Dick: My dog Spot is hungry.

Analysis This is a subjective claim.

Example 14 Suzy: It's cold outside.

Analysis This is too vague to be an objective claim. But if Suzy means just that it seems cold to her, it's a subjective claim. A sentence that's too vague to be an objective claim might be perfectly all right as a subjective one if that's what the speaker intended. After all, we don't have very precise ways to describe our feelings.



Example 15 Lee: Calculus I is a really hard course.

Analysis What standard is Lee using for classifying a course as really hard? If he means that Calculus I is difficult for him, then the claim is subjective. If Lee has in mind that about 40% of students fail Calculus I, which is twice as many as in any other course, then the claim is objective. Or Lee might have no criteria in mind, in which case what he's said is too vague to be taken as a claim. *If it's not clear what criteria are being invoked, then the sentence is too vague to be classified as a claim.*

Example 16 Lee: I felt sick yesterday, and that's why I didn't hand in my work.

Analysis Lee didn't feel sick yesterday—he left his critical thinking writing assignment to the last minute and couldn't finish it before class. This is a subjective claim, but a false one.

Example 17 Wanda weighs 215 pounds.

Analysis This is an objective claim. Registering a number on a scale is an objective criterion.

Example 18 Nurse: Dr. E, tell me on a scale of 1 to 10 how much your back hurts.

Dr. E: It's about a 7.

Analysis This is a scale, but one that only Dr. E knows. Dr. E's claim is subjective.

Example 19 Dick: Wanda is fat.

Analysis This is a subjective claim. Whether it's true depends on Dick's feeling about what is fat. But what if Wanda is so obese that everyone would consider her fat? It's still subjective, but we ought to note that agreement. A subjective claim is *intersubjective* if (almost) everyone agrees that it's true or (almost) everyone agrees that it's false.

Example 20 God exists.

Analysis Often people think that a lot of disagreement about whether a claim is true means the claim is subjective. But that's a confusion, the *subjectivist fallacy*. Whatever we mean by "God" it's supposed to be something that exists independently of people. So the example is objective: whether it's true or false doesn't depend on what anyone thinks or feels. "God exists" ≠ "I believe that God exists."

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Example 21 There are an even number of stars in the sky.

Analysis This claim is objective, but no one knows how to find out whether it's true or false, and it's not likely we'll ever know.

Example 22 There is enough oil available for extraction by current means to fulfill the world's needs for the next 43 years at the current rate of use.

Analysis This is objective. People disagree about it because there's not enough evidence one way or the other.

Example 23 Zoe (to Dick): Tom loves Suzy.

Dick: I don't think so.

Analysis Dick and Zoe disagree about whether this subjective claim is true, but it's not for lack of evidence. There's plenty; the problem is how to interpret it.

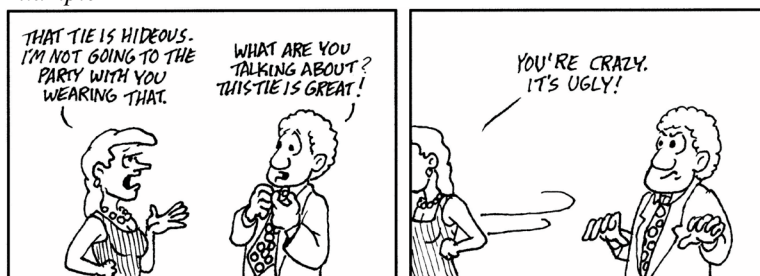
Whether a claim is objective or subjective does not depend on:

- How many people believe it.
- Whether it's true or false.
- Whether anyone can know whether it's true or whether it's false.

To evaluate any claim we have to use our judgment. When we reckon that too much judgment is needed, it's usually because the sentence is too vague to be a claim.

Confusing whether a claim is objective or subjective can lead to pointless disagreements.

Example 24



Analysis Dick and Zoe are treating a subjective claim as objective. There's no sense in arguing about taste.

Example 25 Lee: I deserve a higher mark in this course.

Dr. E: No you don't. Here's the record of your exams and papers.
Summing them all up, you earned a C.

Lee: That's just your opinion.

Analysis Lee is treating an objective claim, "I deserve a higher mark," as if it were subjective. But if it really were subjective, there would be no point in arguing about it with Dr. E any more than arguing about whether Dr. E feels hungry.

Often it's reasonable to question whether a claim is really objective. But sometimes it's just a confusion. All too often people insist that a claim is subjective ("That's just your opinion") when they are unwilling to examine their beliefs or engage in dialogue.



2 Definitions

To reason well we need to understand the words that we and others use.

Definitions A *definition* is an explanation or stipulation of how to use a word or phrase.

A definition is not a claim. A definition is not true or false, but good or bad, right or wrong. Definitions tell us what we're talking about.

Example 1 "Exogenous" means "developing from without."

Analysis This is a definition, not a claim. It's an explanation of how to use the word "exogenous."

Example 2 Puce is the color of a flea, purple-brown or brownish-purple.

Analysis This is a definition, not a claim.

Example 3 Lee: Maria's so rich, she can afford to buy you dinner.

Tom: What do you mean by "rich"?

Lee: She's got a Mercedes.

Analysis This is not a definition—or it's a very bad one. Some people who have a Mercedes aren't rich, and some people who are rich don't own a Mercedes. That Maria has a Mercedes might be some evidence that she's rich.

Example 4 "Fasting and very low calorie diets (diets below 500 calories) cause a loss of nitrogen and potassium in the body, a loss which is believed to trigger a mechanism in the body that causes us to hold on to our fat stores and to turn to muscle protein for energy instead."
Jane Fonda's New Workout and Weight Loss Program

Analysis Definitions aren't always labeled but are often made in passing, as with this good definition of "very low calorie diet."

What's a good definition?

Example 5 "Intuition is perception via the unconscious."

Carl G. Jung

Analysis This is a definition, but a bad one. The words doing the defining are no clearer than what's being defined.

Example 6 A car is a vehicle with a motor that can carry people.

Analysis This is a bad definition because it's **too broad**: it covers cases that it shouldn't. In this case, a golf cart would be classified as a car. So we can't use the words doing the defining in place of the word being defined.

Example 7 Dogs are mammals.

Analysis This is not a definition but a claim. We can't use "mammal" in place of "dog" in our reasoning.

Example 8 Dogs are domesticated canines that obey humans.

Analysis This is a bad definition because it's **too narrow**: it doesn't cover cases it should, like feral dogs in India.

Good definition For a definition to be good:

- The words doing the defining are clear and better understood than the word or phrase being defined.
- It would be correct to use the words doing the defining in place of the word or phrase being defined. That is, the definition is neither too broad nor too narrow.

Example 9 Abortion is the murder of unborn children.

Analysis Here what should be debated—whether abortion is murder—is being assumed as if it were a definition. A **persuasive definition** is a contentious claim masquerading as a definition.

Example 10 A feminist is someone who thinks that women are better than men.

Analysis This is a persuasive definition.

"If you call a tail a leg, how many legs has a dog? Five?
No, calling a tail a leg don't *make* it a leg."

Attributed to Abraham Lincoln

Example 11 "Absurdity: A statement of belief manifestly inconsistent with one's own opinion." Ambrose Bierce, *The Devil's Dictionary*

Analysis Whether you classify this as persuasive depends on how much faith you have in people.

To make a good definition we need to look for examples where the definition does or does not apply to make sure it's not too broad or too narrow.

Example 12 Suppose we want to define “school cafeteria.” That’s something a lawmaker might need in order to write a law to disburse funds for a food program. As a first go, we might try “A place in a school where students eat.” But that’s too broad, since that would include a room with no food service where students can take their meals. So we could try “A place in a school where students can buy a meal.” But that’s also too broad, since it would include a room where students could buy a sandwich from a vending machine. How about “A room in a school where students can buy a hot meal that is served on a tray”? But if there’s a fast-food restaurant like Burger King at the school, that would qualify. So it looks like we need “A room in a school where students can buy a hot meal that is served on a tray, and the school is responsible for the preparation and selling of the food.” This looks better, though if adopted as a definition in a law it might keep schools that want money from the legislature from contracting out the preparation of their food. Whether the definition is too narrow will depend on how the lawmakers intend the money to be spent.

Steps in making a good definition

- Show the need for a definition.
- State the definition.
- Make sure the words make sense and are clear.
- Give examples where the definition applies.
- Give examples where the definition does not apply.
- If necessary, contrast it with other likely definitions.
- If necessary, revise it.