The Fundamentals of Argument Analysis

Essays on Logic as
The Art of Reasoning Well

Richard L. Epstein

The Fundamentals of Argument Analysis

Essays on Logic as the Art of Reasoning Well

Richard L. Epstein

Advanced Reasoning Forum

Names, characters, and incidents relating to any of the characters in this text are used fictitiously, and any resemblance to actual persons, living or dead, is entirely coincidental. *Honi soit qui mal y pense*.

The moral rights of the author have been asserted.

No cats were harmed in the making of this book.

For more information contact:
Advanced Reasoning Forum
P. O. Box 635
Socorro, NM 87801 USA
www.ARFbooks.org

paperback ISBN 978-0-9834521-4-0
e-book ISBN 978-1-938421-06-8

The Fundamentals of Argument Analysis

Essays on Logic as the Art of Reasoning Well

Richard L. Epstein

There is no end but only a continual beginning.

Essays on Logic as the Art of Reasoning Well

Dedicated to

William S. "Bill" Robinson

with much gratitude for his criticisms,
encouragement, and friendship for many years

Preface

This series of books presents the fundamentals of logic in a style accessible to both students and scholars. The text of each essay presents a story, the main line of development of the ideas, while the notes and appendices place the research within a larger scholarly context. The essays overlap, forming a unified analysis of logic as the art of reasoning well. In order that they may be read independently there is some repetition among them.

The question addressed in this volume is how we can justify our beliefs through reasoning.

The first essay, "Arguments," investigates what it is that we call true or false and how we reason toward truths through arguments. A general theory of argument analysis is set out on the basis of what we can assume about those with whom we reason. This essay serves as background for all the succeeding ones.

The next essay, "Fallacies," explains how the classification of an argument as a fallacy can be used within that general approach to argument analysis. In contrast, there is no agreement on what the terms "induction" and "deduction" mean, and, as discussed in "Induction and Deduction," they are not useful in evaluating arguments.

In reasoning to truths we must take some claims as basic, not requiring any justification for accepting them. How we choose those and how they affect our reasoning is examined in "Base Claims."

The essay "Analogies" considers how comparisons can be used as the basis for arguments, arguing from similar situations to similar conclusions. An important use of analogies is in reasoning about the mental life of other people and things, which is studied in "Subjective Claims," written with Fred Kroon and William S. Robinson.

"Generalizing" examines how to argue from a part of a collection or mass to the whole or a larger part. The large question there is whether we are ever justified in accepting such an argument as good.

"Probabilities" sets out the three main ways probability statements have been interpreted: the logical relation view, the frequency view, and the subjective degree of belief view. Each of those is shown to

be inadequate to make precise the scale of plausibility of claims and the scale of the likelihood of a possibility.

Many discussions of how to reason well and what constitutes good reason are given in terms of who or what is rational. In the final essay, "Rationality," it's shown that what we mean by the idea of someone being rational is of very little use in evaluating reasoning or actions.

I hope in this book to give a clearer idea of how to reason well, setting out methods of evaluation that are motivated in terms of our abilities and interests. At the ground of our reasoning, though, are metaphysical assumptions, too basic and too much needed in our reasoning for us to try to reason to them. But we can try to uncover those metaphysical assumptions to see how they are important and what depends on them, as I do throughout this volume.

Acknowledgments

Many people have helped me over the nearly twenty years I have been working on this material, and I fear that I cannot recall all whom I should thank. But William S. Robinson and Fred Kroon have given much of their time and thought to suggestions that have improved all these essays; much of the discussion of rationality and emotions comes directly from conversations with Fred Kroon. They and the other members of the Advanced Reasoning Forum have helped me to understand the issues here. I am most grateful I to all of these. The mistakes, however, remain mine.

Publishing history of the essays in this volume

This is the first publication of "Subjective Claims" and "Base Claims."

"Rationality" was the keynote address of the first meeting of the Advanced Reasoning Forum in 1999. It was first published as an appendix to my *Five Ways of Saying* "*Therefore*". A discussion of the notion of rationality for actions has been added, and the notes have been expanded to include comparisons to more views of rationality.

The other essays are revisions of work that first appeared in either my *Critical Thinking* or *Five Ways of Saying* "*Therefore*".

BLANK PAGE

BLANK PAGE

Arguments

We reason as a means to many ends. One of those is to arrive at truths. This we do with arguments. Here we'll see what an argument is, set out criteria for what counts as a good argument, and then look at how to evaluate those conditions.

Claims

We use speech to communicate and to reason with each other. So it is speech we will focus on here.

Claims A claim is a written or uttered piece of language that we agree to view as being either true or false.

In what follows, I'll use *utterance* for both written or uttered parts of speech, including silent talk to ourselves.

We don't have to make a judgment about whether a part of speech is true or is false in order to classify it as a claim. We need only judge that in the context in which it's uttered it's reasonable to assume that it is one or the other. A claim need not be an *assertion*: a piece of language put forward as true by someone.

The word "agree" suggests that it is a matter of convention whether we take a sentence to be a claim. But almost all our conventions, agreements, assumptions are implicit. Our agreements may be due to many different reasons or causes, compatible with many different assumptions about the nature of the world.

We normally identify utterances that look or sound the same, as when Dick says "Ralph is not a dog," and later when Suzy is convinced she says, "I agree. Ralph is not a dog," taking that to be the same claim he made. This does not require that we believe in abstract objects like types of sentences, but only that we have some method of identifying distinct utterances as equivalent for our purposes in reasoning.

These points are discussed more fully in "Truth and Reasoning" in *Prescriptive Reasoning*. Here I'll try to clarify them with examples.

Example 1 Dogs are mammals.

Analysis This is a claim, one we recognize as true.

Example 2 Two apples together with two more apples are five apples.

Analysis This is a claim, one we recognize as false.

Example 3 Zoe: Dick is upset.

Analysis Zoe said this in a whisper to Tom when she and Dick were visiting him. Tom might not know whether it's true or false, but he knows it's one or the other.

Example 4 Zoe (to Dick, while she's pointing): Look! Crows.

Analysis In this context Dick takes Zoe's exclamation "Crows" to be a claim. It's true or false, for it could be crows or it could be blackbirds she's pointing to. A claim need not be a sentence.

Example 5 Zoe: What did you think of Wanda's dancing?

Dick: Pee yew.

Analysis We all understand Dick to mean that he thinks Wanda's

dancing was "stinky," that is, very bad. We're justified in viewing the utterance as a claim. Speech can include not only regular parts of spoken languages, but also parts of signed languages, as well as gestures and interjections, though we'll focus here on ordinary language speech, and in particular sentences.[1]

Example 6 I wish I could get a job.

Analysis If Maria, who's been trying to get a job for three weeks, says this to herself late at night, then this isn't a claim. It's more like a prayer or an extended sigh.

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." That might be true, or it might be false, so the example would be a claim.

It is not a sentence type or an inscription devoid of context that is a claim. A claim is a specific piece of language in a specific context.

Example 7 $2 + 2 = 4$

Analysis Some say that this sentence is a claim and no context is necessary for us to know that. But that's highly debatable, as I explain in "Mathematics as the Art of Abstraction" in *Reasoning in Science and Mathematics* in this series of books.

Example 8 Dick (to Suzy): How can anyone be so dumb as to think that cats can reason?

Analysis We might think that Dick is asserting that cats can't reason. But that's not what he said. Without some further context we're not justified in viewing this as a claim.

Example 9 Zoe (to Dick): Shut the door.

Analysis A command is not true or false, so regardless of the context, this is not a claim.

Example 10 The United States is a free country.

Analysis This is too vague to classify as a claim, at least in any context in which what we mean by "free country" is not made explicit.

Example 11 Dick: My Lit professor showed up late for class today.

Zoe: What do you mean by late? 5 minutes? 30 seconds? How do you determine when she showed up? When she walked through the door? At exactly what point? When her nose crossed the threshold?

Analysis This is just silly. Zoe knows "what he meant," and the sentence isn't too vague for her to agree that it is true or false. The issue isn't whether a sentence or piece of language is vague, but whether it's *too vague*, given the context, for us to be justified in saying it is true or false.

Example 12 Wanda is fat.

Analysis Wanda weighs 120 kgs and is 1.7 m tall, so almost all of us would agree with this example. We take it to be a claim.

If Wanda weighed only 50 kgs, we'd all disagree with it, which shows that then we'd take it to be a claim, too.

But if she weighed 72 kgs, we'd be unsure. It isn't that we don't know what "fat" means, we just don't think the sentence is true of false. We don't classify it as a claim. It isn't that our notion of claim is vague: we're clear that we won't classify it as true or false. It's the sentence itself that is too vague in that context to classify as a claim.

But if there's no clear division between what we mean by someone being fat or not being fat, doesn't that mean that we don't have a clear notion of claim? No. That we cannot draw a line does not mean that there's no obvious difference in the extremes.

Drawing the line fallacy It's bad reasoning to argue that if you can't make the difference precise, then there's no difference.

Inferences

Often we don't know whether a claim is true or whether it's false, but we want to investigate what follows from it or whether it follows from some other claims.

Inferences An *inference* is a collection of claims, one of which is designated the ***conclusion*** and the others the ***premises***, which is intended by the person who sets it out either to show that the conclusion follows from the premises or to investigate whether that is the case.

Example 13 Tom: Ralph is a dog. All dogs bark. So Ralph barks.

Analysis This is an inference with premises "Ralph is a dog" and "All dogs bark" and conclusion "Ralph barks." The word "so" is not part of the inference; it is used to indicate that the claims are meant to be taken as an inference and that "Ralph barks" is the conclusion.

Example 14 Flo: Ralph is a dog. All dogs barks. So probably Ralph barks.

Analysis This is an inference with the same premises and conclusion as the last example. The word "probably" indicates Flo's attitude toward the conclusion; it is not part of the conclusion itself.

Indicator words An *indicator word* is a word that is used to indicate the role of a claim in an inference or the speaker's attitude about whether the claim is true or false. It is not part of the inference.

Example 15 You may own stocks or securities which are selling at a lower price than when purchased. Tax considerations might call for a sale of such securities in order to produce a currently deductible tax loss. However, if it is desired to still own the securities while producing a tax loss, you can't just sell securities at a loss and then buy them right back. Any purchase of the same securities within 30 days before or after the sale negates any losses. To get around this restriction, you can purchase similar but not identical securities to the ones sold. Or, in the case of bonds, you can achieve the same result by making a swap through a brokerage house. *Tax Guide for College Teachers*, 1994

Analysis This collection of claims is not an inference, for there is no intent to show that one of them follows from one or more of the rest.

There are various uses of inferences in reasoning: arguments, explanations, mathematical proofs, conditional inferences, and causal inferences are examined in this series of books. What counts as a good inference depends on which kind we're evaluating. Here we'll look at arguments.

Arguments

Arguments An *argument* is an inference that is intended by the person who sets it out to convince someone, possibly himself or herself, that the conclusion is true.

An argument is not an abstract thing; it is a linguistic utterance used for a purpose. The premises of an argument are asserted as leading to, or supporting, or establishing that the conclusion is true.

In classifying a collection of claims as an argument we must take into account (what we think is) the intent of the speaker.[2]

Example 16 Lee (to Suzy): Ralph is not a dog. I've seen him. He's a puppet.

Analysis Lee is trying to convince Suzy that "Ralph is not a dog" is true. He uses as evidence for that the claims "I (Lee) have seen him" and "He (Ralph) is a puppet." These constitute an inference, though there's no indicator word. We interpret Lee's intent in making these utterances.

Example 17 Dick (to Harry): Sheep are the dumbest animals. If the one in front walks off a cliff, all the rest will follow. And if they get rolled over on their backs, they can't right themselves.

Analysis Dick is trying to convince Harry that "Sheep are the dumbest animals" is true. He's given two reasons, that is, premises, for believing that.[3]

Example 18 Dick (to a policeman): I'm telling you I'm not at fault. How could I be? She hit me from the rear. Anytime you get rear-ended it's not your fault.

Analysis Dick is trying to convince the policeman that "I'm not at fault" is true. He uses two claims as premises which he thinks show that the claim is true.

Example 19 Zoe's mother (to Zoe): How come you don't call me? What's wrong? You don't love your mother? Where did I go wrong?

Analysis Zoe's mother is trying to convince Zoe, but she's not trying to convince her that a particular claim is true. She's trying to convince Zoe to call her. This is not an argument.

Example 20 Suzy (to Zoe): How can you go to the movies with Wanda and not me? Don't you remember how I took care of Spot when you and Dick were gone?

Analysis It seems that Suzy is trying to convince Zoe that "You should go to the movies with me instead of Wanda" is true by using the premise "I took care of Spot when you and Dick were gone." But before we begin interpreting questions as claims we should have a clearer idea of how to evaluate arguments.

What counts as a good argument? It's not that the argument succeeds in convincing, for an argument that Dick gives to Tom and Suzy that cats are dangerous is not bad because Tom's sleepy and can't follow it and Suzy loves cats too much to accept its conclusion. Though arguments are meant to convince, we need criteria we can use to evaluate them that do not depend wholly on how a particular person responds to it.[4] We take as our basic criterion the following.

Good argument An argument is good if it gives good reason to believe that its conclusion is true.

The rest of this essay, indeed the rest of this book will be concerned with trying to make clear what we mean by good reason to believe a claim.

Plausible claims

If an argument is to give us good reason to believe its conclusion we should have good reason to believe its premises, for from a false claim we can as easily reason to a false conclusion as a true one. Consider:

> The Prime Minister of England is a dog. All dogs have fur.
> So the Prime Minister of England has fur.
> (false premise, false conclusion)

> The Prime Minister of England is a dog. All dogs have a liver.
> So the Prime Minister of England has a liver.
> (false premise, true conclusion)

Example 21 Tom: Almost all wombats bark. So the new wombat at the zoo barks.

Dick: "Almost all wombats bark"? Why should I believe that?

Analysis Tom's argument would certainly give Dick good reason to believe the conclusion if Dick had good reason to believe the premise. But he hasn't, and he responds by asking for just that.

For an argument to be good, we have to have good reason to believe its premises. But we also need to recognize that we have good reason to believe them and actually believe them. These are distinct conditions.

Example 22 Dick (to Suzy) Cats are the most dangerous common pet.

Suzy: I don't believe that.

Analysis Dick has good reason to believe this claim: he's read about all the diseases that cats can give people, including, it's now suspected, schizophrenia. He sets out to convince Suzy. He presents all the evidence he has. He comes back again the next day and gives her more evidence, all from authoritative sources. He reminds her of people she knows who are ill from cat allergies. She accepts all that yet she still says, "I don't believe it." We may say she is irrational, but nonetheless we can't deny that it's possible to have good reason to believe a claim, recognize that you do, and still not believe it.

Example 23 Tom: People who are poor just don't want to work hard.

Analysis Tom has no good reason to believe this claim, yet he believes it.

Example 24 The earth is not flat.

Analysis Dick believes this and reckons he has good reason to believe it: he's seen pictures of the earth taken from satellites, and he trusts the sources of those. He didn't have good reason to believe it when he was five years old.

Harry believes this and has good reason to believe it because he's seen reasoning that leads to it in his physics course.

Suzy has good reason to believe the claim because she's heard people say it and she trusts them as authorities, as indeed they are. And she believes it.

A woman living in a stone age culture in the Amazon basin of Brazil who never considered the claim before has no good reason to believe it, and might not believe it.

Plausible claims A claim is *plausible* to a particular person at a particular time if:

- The person has good reason to believe it.
- The person recognizes that he or she has good reason to believe it.
- The person believes it.

Plausibility is not an either-or classification. We have an informal scale for each of the conditions, from better reason to believe to worse reason to believe, from recognizing clearly to being oblivious, from believing strongly to strongly disbelieving. Combined, we have an informal scale from the least plausible to the most implausible.

Example 25

a. All dogs bark.

b. A meteor larger than 1,000 km in diameter will hit the earth by the end of next week.

c. It will not freeze in July in New York City next year.

d. No human can survive for more than two hours with body temperature above 113 degrees Fahrenheit (45 degrees Celsius).

e. Two apples plus two more apples are four apples.

Analysis We know that (a) is false: Basenjis can't bark, and some dogs have had their vocal cords cut. We rate it the lowest on the scale of plausibility. Claim (b) is implausible, too, since we suspect that any meteor of that size would be spotted by astronomers were it that close to earth, and we would have heard about it. Claim (c) seems more plausible, but it could freeze in New York in July even though it never has in recorded history and all we know about weather suggests it won't, at least in our lifetime. Claim (d) seems very plausible, though not certain. And claim (e) is clearly true.

Can we can make this scale of plausibility more precise?

We can say that each claim in this list is more plausible than the preceding one. But what we cannot seem to do, except for the first and last, is assign numbers to these claims from 0 for clearly false to 1 for clearly true that accurately reflect our judgments. Is claim (c) plausible to degree 0.7? Or 0.8? Is claim (d) plausible to degree 0.98 or only 0.91? Any assignment of numbers as measures of the plausibility of these claims seems arbitrary, though perhaps useful as markers to remind us of our comparative judgments.

Example 26 Compare:

Most dogs bark.

Most dogs are pets.

Analysis Though both of these are plausible, there doesn't seem to be any way to decide which is more plausible. Though we can compare the plausibility of many claims, it seems highly unlikely that we can compare the plausibility of any two claims. This and the last example suggest that we cannot replace the informal scale of plausibility with a precise mathematical one based on a theory of probability, as I discuss further in "Probabilities" in this volume.

Though we do not have precise measures of plausibility, we can often compare the plausibility of claims and by being explicit about our background we can usually agree on whether we accept them as plausible. If we did not think that we can share our judgments of what is plausible, we would have no motive for trying to reason together. In what follows, if I say a claim is *plausible* without specifying a particular person, I mean it's plausible to most of us now, as I'm writing: we have good reason to believe it, we recognize that we have good reason to believe it, and we do believe it. A claim is *implausible* or *dubious* if it is not plausible.

Contrary claims and suspending judgment

Example 27 Almost all dogs bark.

Analysis This is plausible to most of us. Dick in particular finds it plausible. So he knows he doesn't have good reason to believe "Almost all dogs don't bark" because that and the example can't both be true, though both could be false.

Contrary and contradictory claims Two claims are *contrary* if it's not possible for both of them to be true at the same time in the same way. Two claims are *contradictory* if any way the one could be true the other is false.

Note that contradictory claims are also contrary.

Example 28 Dick: Wow! Your cat Puff is definitely not healthy.
Suzy: No, he's healthy.
Dick: (*pointing to Puff*) You call that healthy?
Tom: I think both of you are right.

Analysis Tom finds both "Puff is healthy" and "Puff is not healthy" plausible. But that's because he reckons both of those are vague enough to talk that way. That's the only way he can accept "Puff is healthy and Puff is not healthy" as true, at least if he's using "not" in the way we usually do.

Absolutely fundamental to our reasoning is the idea that no claim is both true and false. If we don't accept that, then we have no filter, no way to distinguish good reasoning from bad.[5] Let's amend our definition of claim to make this explicit.

Claims A claim is a written or uttered piece of language that we agree to view as being either true or false *but not both*.

If we were to have good reason to believe both a claim and a contrary of it, we'd have good reason to believe both that the claim is true and that it's false. Whatever we mean by "good reason to believe a claim," it can't include that.

Good reason and contrary claims If someone has good reason to believe a claim, then he or she does not have good reason to believe a contrary of it.

Suspending judgment If someone does not have substantially better reason to believe a claim than to believe a contrary of it, then he or she does not have good reason to believe either of them. In that case he or she should suspend judgment on whether the claim is true.

These are prescriptive principles, circumscribing what we accept as good reason to believe a claim and what counts as a good argument. They don't rule out that people do believe contraries even when they recognize they're contraries. But they tell us that if they do, and if they accept an argument as good that has a premise that is contrary to one they find plausible, then they are not reasoning well.

Example 29 No medieval book on logic is known to have been written by a woman.

Analysis You probably have no reason to believe this. But you probably have no reason to believe "Some medieval book on logic is known to have been written by a woman." In that case, you have good reason to suspend judgment on whether the example is true or whether it is false.

Example 30 Harry: I've read what the economists and financiers have been saying, and it seems to me there's good reason to believe that the economy will recover from the current recession and start growing at more than 3% in the next twelve months. But looking at what the politicians are doing, and reading these other economists, it seems to me that there's good reason to believe that the economy won't grow at all through the next two years.

Analysis Harry seems to have good reason to believe both a claim and its contrary. But he knows he can't have good reason to believe them both. So he should suspend judgment.

Begging the question

Plausible premises are necessary for an argument to be good. But that's not enough.

Example 31 Suzy: God exists.
Harry: That's just superstition.
Suzy: But the Bible says so.
Harry: Why do you think that's true?
Suzy: Because God wrote the Bible.

Analysis Suzy is trying to convince Harry that "God exists" is true. But she takes as premise "God wrote the Bible," which is less plausible to Harry than "God exists." So her argument gives Harry no better reason to believe "God exists" than he had before he heard it.

Example 32 Suzy: Dr. E is mean.
Wanda: Why do you say that?
Suzy: Because he's not nice.

Analysis Suzy is trying to convince Wanda that "Dr. E is mean." But "Dr. E is not nice" is not more plausible to Wanda than "Dr. E is mean." Any reason she has to believe the one is already reason to believe the other. So Suzy's argument can't give her more reason to believe "Dr. E is mean" than she had without the argument.

Example 33 Maria (to Lee): Every dog has a soul, so you should treat dogs humanely.

Analysis The conclusion is plausible to Lee. He finds the premise plausible, too. But it's not more plausible to him than the conclusion. So Maria's argument gives him no more reason to believe the conclusion than he had before he heard her argument.

Begging the question An argument *begs the question* if it has a premise that is not more plausible than its conclusion.[6]

Example 34 Most dogs are pets. Virtually all dogs that are pets bark. So most dogs bark.