The Elements of REASONING

FOURTH EDITION

Ronald Munson | David Conway | Andrew Black

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Fourth Edition

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R.M.

To the memory of my father Callen Lemuel Munson

D.C.

To the memory of Harold Trezise—
great friend and amateur philosopher extraordinaire

A.B.

To the memory of my grandmother, Anne Duggan

CONTENTS

ORIENTATION

Reasoning is an ancient subject but an everyday practice.

We are all able to reason. Someone totally unable to assess claims and arrive at conclusions would believe anything and act in wild and arbitrary ways. That we usually don't behave in such a fashion shows how we rely on reasoning to guide our actions and ground our beliefs.

This book aims to improve reasoning skills and to enhance effective thinking. Although everyone is able to reason, this doesn't mean we always reason well. The skills of reasoning can be improved by experience, but they can also be improved by example and instruction. (Even a talented and experienced tennis player can become better through coaching.) We're concerned here with what we do when we reason well and with some of the ways we can go wrong. We're also concerned with what to look for when trying to understand and evaluate the reasoning of others. (How do we recognize an argument? How do we assess its worth?)

This book offers a set of intellectual tools to employ in the process of understanding, supporting, and testing claims. These tools are the principles, distinctions, and methods that have been developed by generations of philosophers, logicians, essayists, scientists, critics, and thinkers of all kinds.

Little here is new, but much is useful.

Basic Assumptions

Five basic assumptions have guided and shaped this book:

1. Everyone is already skilled to a degree in the rational process of analyzing, defending, and evaluating claims.
2. Everyone can improve such skills by becoming aware of the principles behind them and by doing deliberately what is usually done unreflectively.
3. The principles are not imposed from the outside but are implicit in the ordinary practices of defending and evaluating claims. We are rational creatures, even though we do not always act

rationally. We have found that these principles, when followed, produce the best overall results.

4. It is good to have some general guidelines in defending, analyzing, and evaluating claims—even if the guidelines are not always strictly accurate and reliable.
5. These guidelines can be presented in a brief but still useful way.

Organization

The book is structured so that it begins with a discussion of argument in general, moves through discussions of more specific kinds, then examines the ways in which arguments can be flawed. The final four chapters focus attention on the background of argument and on aspects of language useful in rational analysis and persuasive writing.

Arguments are the main instruments of rational persuasion, and it is crucial to be able to recognize them and distinguish them from similar forms of prose. In Chapter 1, we define the term *argument* and discuss ways of identifying an argument. In Chapter 2, we present ways of analyzing arguments and displaying their structure. In Chapter 3, we distinguish deductive from nondeductive arguments and present some general techniques for evaluating both. In Chapters 4 and 5, we introduce some valid argument forms and discuss constructing proofs of validity.

Chapter 6 focuses on causal arguments and analysis and discusses various meanings we assign to the word *cause*, depending on our interests. We sketch conditions for causal explanation and illustrate the four traditional methods of experimental analysis. Chapter 7 describes ways we argue from analogies and models and presents criteria for evaluating such arguments.

We conclude the focus on argument in Chapter 8, which is devoted to describing frequent errors in reasoning. We identify, illustrate, and name common fallacies.

In the next two chapters, we focus on language. Chapter 9 describes methods of defining and standards definitions should meet, while Chapter 10 describes ways vagueness and ambiguity may be identified and dealt with. In Chapter 11, *Reasonable Beliefs*, we face the question of how to establish the beliefs we use as premises in arguments and employ in assessing claims offered for our approval. Chapter 12, the last chapter, provides brief and candid advice about writing an argumentative essay. Writing a paper that argues clearly, fairly, and persuasively for a claim requires putting into practice most of what is discussed in the previous chapters.

Using This Book

The book may be read straight through, but each chapter can also be read by itself. Those not interested in technical matters may want to skip the chapters on valid argument forms, while those concerned mostly with rational arguments may wish to ignore the chapters on definition and on vagueness and ambiguity. The book does not presuppose any specialized knowledge. Each topic should be accessible to anyone, although some topics are inherently difficult and require more effort to understand than others. Technical terms are kept to a minimum and explained as they are introduced. References to additional discussions of a topic are scattered throughout the book.

The book's compact size should make it possible for someone to gain a quick grasp of a wide range of topics connected with rational analysis and argument. The book aims to be accurate as well as brief. Yet keep in mind that each topic discussed has been the sole subject of more than one book, and many important distinctions and qualifications have been passed over silently.

The justification for this approach is simple and powerful: This is a book intended to be useful in an immediate and practical way. It is more of a handbook than an encyclopedia.

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Chapter 1

RECOGNIZING ARGUMENTS

Arguments are the instruments we use in rational persuasion. Whenever we want to persuade someone of the reasonableness of a position we consider correct, we present arguments in its favor. We also use arguments to express our reasoning even when we have no concern with persuading others. In this chapter, we define the concept of an argument, explain how to recognize an argument, and introduce some standard terms for discussing arguments.

What Is an Argument?

To give an argument is to make a claim and to offer other claims as reasons for its acceptance. Thus, an **argument** is a set of claims, one of which is meant to be supported by the others.

This is not an argument:

> By the end of September in New England, the leaves are already changing to beautiful browns and reds. The nights are cooler, and the days are noticeably shorter. Some inhabitants begin to feel a sense of dread as they think of the long winter to come.

Several claims are made in this passage, but as no one of them is offered as a reason for any other, we have no argument.

This, however, is an argument:

> The only possible superpower in the world other than the United States is a unified Europe. But divisions and jealousies that date back centuries ensure that Europe will never present a truly unified front. Obviously, then, the United States will continue to be the world's only superpower.

This, too, is an argument:

> She's armed, so she's dangerous.

In both passages, some claims are offered as support for another claim. That means both contain arguments.

A **conclusion** is a claim meant to be supported by reasons offered in the argument. A **premise** is a claim put forth as a reason for a conclusion. Using these terms, we can say that an argument is a set of claims that can be divided into a conclusion and one or more premises. (Argument = conclusion + premises.)

The two arguments above are made up of premises and conclusions in the following ways:

PREMISE 1:	The only possible superpower in the world other than the United States is a united Europe.
PREMISE 2:	Divisions and jealousies that date back centuries ensure that Europe will never present a truly unified front.
CONCLUSION:	The United States will continue to be the world's only superpower.
PREMISE:	She's armed.
CONCLUSION:	She's dangerous.

These two arguments are presented here in a form that makes it quite clear which claims are the premises and which the conclusion in each case. In Chapter 2, we will be examining procedures for presenting arguments in this kind of clear pattern, which we will call "standard form." Each time we move from a premise or set of premises to a conclusion, we **infer** or make an **inference.** (The *move from* the premise(s) to the conclusion is the inference.) In the last example, an inference (a move) is made to "She's dangerous." In the first, we infer from premises 1 and 2 that "The United States will continue to be the world's only superpower." Each of these arguments involves a single inference.

Implying is different from *inferring,* though their meanings are often confused. Implication is a relation between statements. "This is a leap year" *implies* "this is an even-numbered year." Knowing it to be a leap year, a person may correctly *infer* that it is an even-numbered year. (Or she might incorrectly infer something mistaken, such as that it is an odd-numbered year.)

We do sometimes talk of a person implying something: the boss calls Bill into her office and tells him that his chronic tardiness has left him on thin ice at the firm. At home, Bill sadly reports, "The boss wasn't very explicit, but she implied that I would be fired if I kept arriving late for work." This is a way of saying that the boss's words implied (had the implication) that Bill is in danger of being fired. Bill infers that he is in danger of having his job terminated. *Statements imply; people infer.*

Three General Considerations

1. Length of Arguments

Our examples of arguments have been brief, but an argument may be any length. Some books are best regarded as giving one elaborate argument for a single conclusion. For instance, the whole point of some books is to make a case that the earth was visited by creatures from outer space thousands of years ago; others argue that capitalism is an evil economic system or that eating meat is immoral. Yet, despite its brevity, "She's armed, so she's dangerous" is no less an argument than these.

Arguments may occur in any context and involve any subject matter. We find arguments in mathematical treatises, newspaper editorials, and sociological, philosophical, or literary journals, as well as in barroom conversations, exchanges between sports fans, familial discussions about how to budget a limited income, and other everyday situations. Further, the subject matter can be trivial ("You better get your feet off the coffee table. Mother's coming.") or profound ("Innocent children suffer and die every day in this world. That shows life has no meaning.").

2. Arguments and Disputes

An argument in our sense is not a dispute. ("Neighbors called the police because the newlyweds were having a terrible argument.") People disputing might use arguments in an attempt to bring about agreement (or they might just yell), but the *arguments* they might offer would not be the same thing as the *dispute* they are having.

3. Arguments and Bad Arguments

An argument can fail for any number of reasons. Its premises may be false, or irrelevant, or provide inadequate support for the conclusion. For example, the premises in this argument give little or no support for its conclusion:

> It hasn't rained in weeks. That means it is sure to rain tomorrow.

In later chapters we discuss ways in which arguments can be flawed. For now we want to emphasize only that whenever a set of claims is given, one of which is meant to be supported by the others, then an argument is given. If the claims offered as support are false or if they do not support the intended conclusion very well, the argument is a bad one. The argument may be so bad that we are led to exclaim, "That's not an argument at all!" Nevertheless, a bad argument is just as much an argument as a bad egg is an egg.

Recognizing Arguments

We first consider in this section some useful markers for identifying premises and conclusions. These help us both in recognizing arguments and in analyzing them. We then show how parts of arguments may be implicit, intended even though not explicitly stated. Finally, we consider the role that questions, commands, and other nondeclarative sentences can play in arguments.

Inference Indicators

Our definition of "argument" tells us that the claims that constitute premises are *meant* to support the conclusion. This means that an argument is a matter of intention. Taking the claims by themselves, it is not necessarily clear when this intention is present. Consider this example:

> Today is the 5th. Yesterday was the 4th.

Is this an argument? If it is, what is the premise and what is the conclusion? No straightforward answers are possible because the passage can be understood in three different ways.

1. The first sentence might be meant as a premise and the second as a conclusion:

   PREMISE: Today is the 5th.
   CONCLUSION: Yesterday was the 4th.

2. The first sentence might be meant as a conclusion and the second as a premise:

   PREMISE: Yesterday was the 4th.
   CONCLUSION: Today is the 5th.

3. The sentences might be meant as just two related observations with no inference intended:

   > Today is the 5th, and yesterday was the 4th.

Many cases are of this sort. Here is a more serious one: "All people are corrupt by nature. Everyone around me is corrupt." Is the first claim meant as a reason for the second or the second as a reason for the first? Or perhaps there is not any argument here and neither claim is intended as a reason for the other.

In both these examples, unless we are given more to go on, we have no grounds for choosing among the different interpretations. All we can do is note the possible interpretations and leave matters at that.

Suppose the first example said: "Today is the 5th. *So* yesterday was the 4th." Or this: "*Since* today is the 5th, yesterday was the 4th." Either of these additions makes clear that an argument is being offered and that "Yesterday was the 4th" is its conclusion.

Similarly, the second passage would not be puzzling if it said "All people are corrupt by nature. *Thus*, everyone around me is corrupt." Nor would there be a problem if it said "*Because* all people are corrupt by nature, everyone around me is corrupt." Here too the added words remove the ambiguity. We do have an argument, the first sentence being the premise, the second the conclusion.

The words we added help by "flagging" premises or conclusions. Words or phrases that do this are called **inference indicators**. There are two sorts of inference indicators. **Conclusion indicators** are words used to indicate that a conclusion is about to be drawn. In the examples in the last three paragraphs, the italicized words *so* and *thus* play this role. **Premise indicators** are words used to indicate that a premise is about to be given. In our examples, *since* and *because* are premise indicators.

Some other common CONCLUSION indicators are:

Therefore	Hence
Consequently	We may conclude
It follows that	This entails that
Which shows that	Here are some of the reasons why

Other PREMISE indicators include:

Since	Because
For	The reason is that
Seeing as	As is implied by
The reason is that	On account of the fact that

Many words and phrases just join sentences and should not be mistaken for inference indicators. Examples are:

And	But
Also	Nevertheless
Besides	In addition

These words can equally introduce claims that are premises, conclusions, or not any part of an argument at all.
These lists are not exhaustive, and generally we must rely on our knowledge of language to recognize when other inference indicators are present.

Also note that the occurrence of a listed word is not an infallible indication that an inference is being drawn. For example:

> *Since* lightning struck his bedroom, he has been acting peculiarly.

> Starting with the Ace, she played next the King, then the Queen. *Thus*, she played the entire suit until the deuce was reached and the game was won.

Since and *thus* do not serve as inference indicators in these cases. *Since* as used here means "ever since" and tells us about a temporal relationship. The *thus* in the second case means something like "in this way," rather than "therefore." Indicator words help, but sensitivity to language and context is always necessary for recognizing when an argument is intended.

Unstated (Implicit) Premises and Conclusions

In the absence of indicator words, the context in which an argument is presented often serves to make it clear what is intended as premise and what as conclusion, or indeed whether an argument is intended at all. Context and our knowledge of language can also help with another problem in recognizing arguments. Arguments can have premises or conclusions that are implicit—that is, not openly or explicitly stated. An implicit premise or conclusion is a genuine part of an argument if it is clear that the person giving the argument *meant* it to be understood this way. Arguments that have implicit premises or conclusions are called **enthymemes.**

Realizing when a sentence is implicit is seldom difficult. Consider this advertisement:

> The bigger the burger the better the burger.
>
> The burgers are bigger at Burger King.

The intended but unstated conclusion is obvious:

> The burgers are better at Burger King.

Advertising copywriters count on our being able to see the unstated conclusion, and they are right to do so.

Similarly, suppose someone argues that

> Herman cannot be the person who robbed the lingerie emporium, because Herman does not have a snake tattoo on his left arm.

We can be sure the unstated premise is

> The robber of the emporium has a snake tattoo on his left arm.

At times we cannot be sure if there is an unstated premise or conclusion. At other times we are sure *something* is intended, but we cannot be sure what that something is. In either case, we simply consider the argument as it is explicitly stated. The job of the author of the argument is to make it tolerably clear what her intentions are.

Questions, Commands, Exclamations, and Exhortations

Arguments are sets of *claims*, so questions, commands, exclamations, and exhortations cannot be parts of arguments because they make no claims. A claim is an assertion of fact, and ordinarily we express claims by uttering declarative sentences—the kinds of sentences that can be true or false. "It is now 2 o'clock" is a declarative sentence expressing a claim. You can easily check whether this sentence is true or false. However, the sentence "What time is it?" expresses a question and is neither true nor false. Nevertheless, we need to be aware that in everyday language grammatical questions, commands, and so on may have the force of making claims. You ask a friend to meet you at the beach at 3 A.M. to watch the underwater submarine races and the friend indignantly replies, "What kind of a fool do you think I am?" This is not really a question. (*You* would look the fool if you tried to give a serious answer.) It is a statement denying being a fool or being the sort of fool who would fall for such a suggestion. When a football player makes one incredible play after another and a fan shouts out, "What a great quarterback!" the fan is saying that the player *is* a great quarterback.

This means that passages like the following should be recognized as giving arguments:

> Clouds are rolling in, and the wind is picking up. Go check the boat *now!*

> Don't you know that no decent poetry has been written since T. S. Eliot died, and even he wasn't in the same class as Yeats? How can you possibly say that poetry is getting better?

In any ordinary situation, each of these cases would be understood as offering reasons for a claim. It would be natural and correct to represent them this way:

PREMISE 1:	Clouds are rolling in.
PREMISE 2:	The wind is picking up.
CONCLUSION:	You should go check the boat *now*.