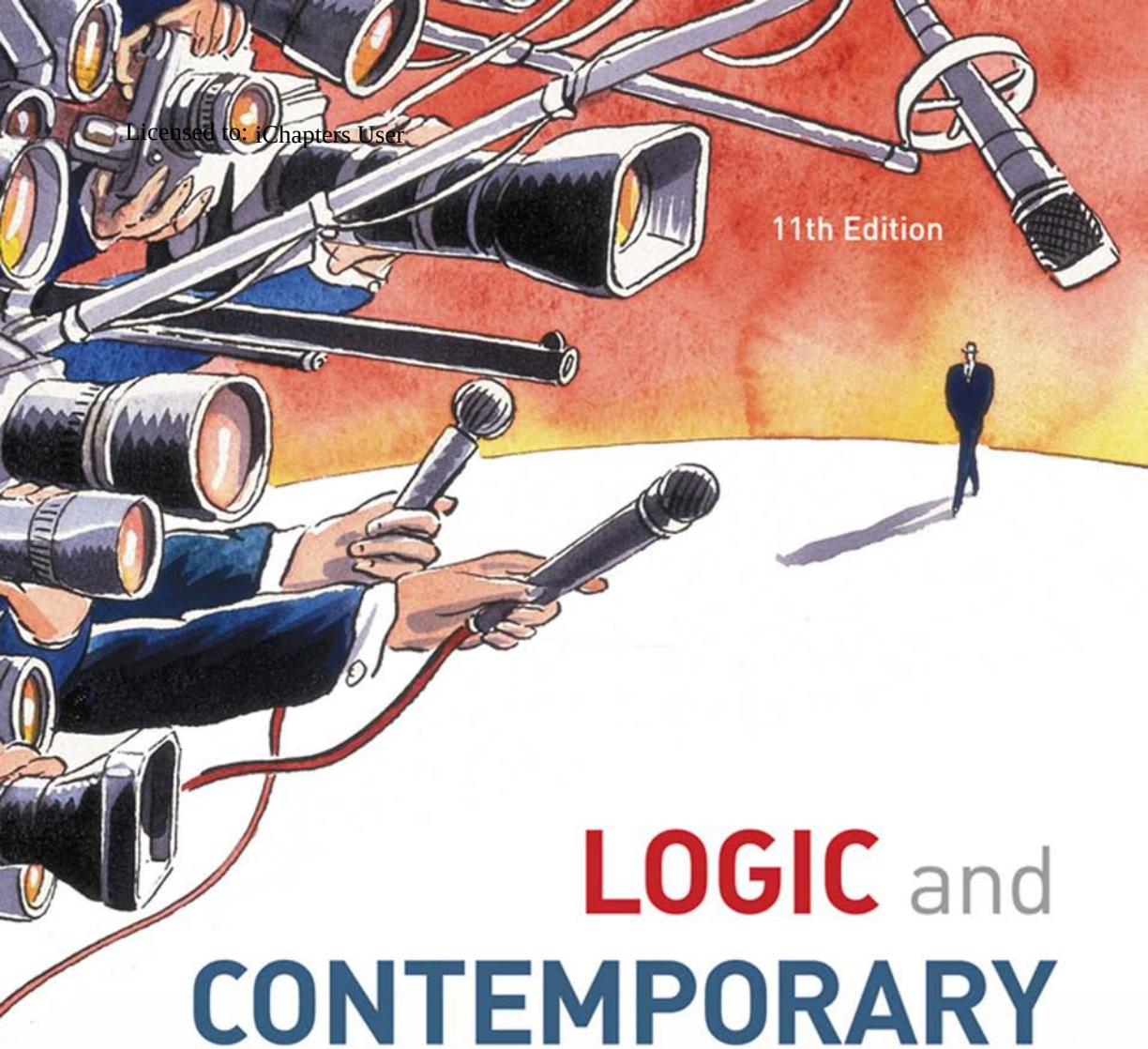

11th Edition

LOGIC and CONTEMPORARY RHETORIC

the use of reason in everyday life

Nancy M. Cavender | Howard Kahane

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It's much easier to do and die than it is to reason why.

—H. A. Studdert Kennedy

Read not to contradict and confute, nor to believe and take for granted . . . but to weigh and consider.

—Francis Bacon

You can lead a man up to the university, but you can't make him think.

—Finley Peter Dunne

You can lead me to college . . . but you can't make me think.

—Sweatshirt update seen at Duke University

Ignorance of reality provides no protection from it.

—Harold Gordon

Reason is logic, or reason is motive, or reason is a way of life.

—John Le Carré

Chapter 1

Good and Bad Reasoning

There is much truth to the old saying that life is just one problem after another. That's why problem solving is one of life's major preoccupations. **Reasoning** is the essential ingredient in problem solving. When confronted with a problem, those of us who are rational reason from what we already know, or have good reason to believe, or can find out, to new beliefs useful in solving that problem. The trick, of course, is to reason well. This book is about good reasoning—about how to reason well in everyday life—whether dealing with personal problems or those of a social or political nature.

Fortunately, no one is an island. We all have available to us a great deal of knowledge others have gained through experience and good reasoning—accurate information and well-intended advice available to anyone who reaches out for it. Unfortunately, not all information is created equal. Charlatans and fools can speak as loudly as saints or Nobel Prize winners. Self-interest often clouds the thinking of even the brightest individuals. The trick when evaluating the mountain of verbiage we all are exposed to is to separate the nourishing wheat from the expendable chaff. One way to become good at doing this is to think a bit about what makes reasoning good (cogent), as opposed to bad (fallacious).

1. Reasoning and Arguments

Here is a simple example of reasoning about the nature/nurture issue:

> Identical twins sometimes have different IQ test scores. Yet these twins inherit exactly the same genes. So environment must play some part in determining a person's IQ.

Logicians call this kind of reasoning an **argument.** In this case, the argument consists of three statements:

1. Identical twins often have different IQ test scores.
2. Identical twins inherit the same genes.
3. So environment must play some part in determining IQ.

The first two statements in this argument give reasons for accepting the third. In logic talk, they are said to be **premises** of the argument; and the third statement, which asserts the **claim** made by the argument, is called the argument's **conclusion.**

In everyday life, few of us bother to label premises or conclusions. We usually don't even bother to distinguish one argument from another. But we do sometimes give clues. Words such as *because, since,* and *for* usually indicate that what follows is a premise of an argument. *Therefore, thus, consequently,* and *so* generally signal conclusions. Similarly, expressions such as "It has been observed that . . . ," "In support of this . . . ," and "The relevant data are . . . " are used to introduce premises, while expressions such as "The point of all of this is . . . ," "The implication is . . . ," and "It follows that . . . " are used to signal conclusions. Here is a simple example:

> *Since* it's always wrong to kill a human being [premise], it *follows* that capital punishment is wrong [conclusion], *because* capital punishment takes the life of [kills] a human being [premise].

Put into textbook form, the argument looks like this:

1. It's always wrong to kill a human being.
2. Capital punishment takes the life of (kills) a human being.

∴3. Capital punishment is wrong.[1]

Of course, an argument may have any number of premises and may be surrounded by or embedded in other arguments or extraneous material.

In addition to using transitional words such as *since, because,* and *therefore,* we sometimes employ sentence order—the last sentence in a series stating an argument's conclusion—and occasionally even express a conclusion in the form of a question. When the Los Angeles Galaxy signed David Beckham, international soccer star, in 2007, an enthusiastic fan gave reasons that hiring him was the right thing to do—not just for the team but for Major League Soccer as well (which isn't nearly as popular in the United States as in other countries). Claiming that Beckham was one of the best players in the world and had star power to popularize the sport, she stated her conclusion in the form of a question: "Doesn't it make sense that he will be a major force in popularizing soccer in this country?"

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[1] The symbol ∴ often is used as shorthand for the word *therefore* and thus indicates that a conclusion follows.

We should also note that, in daily life, premises and even the conclusions of arguments sometimes are omitted as understood. Life is short, and we don't always bother to spell out matters that are obvious or not at issue or can be taken for granted. In the IQ example given earlier, for instance, the premise that IQ differences must be due either to genetic or to environmental factors was omitted as generally understood. When assessing arguments, we should by all means add omitted premises of this kind when they are relevant.

EXERCISE 1-1

Identify the premises and conclusions in the following arguments. (A few are from student exams—modestly edited.)[2] Remember, sometimes a premise or conclusion may be implied.

Example

Argument

The barometer is falling sharply, so the weather is going to change.

Argument Structure

Premise: The barometer is falling sharply.

Implied premise: Whenever the barometer falls sharply, the weather changes.

Conclusion: The weather is going to change.

1. Since everyone deserves health care, and more than 40 million Americans don't have medical insurance, the United States should institute national insurance.
2. Barry Bonds will never be the hero that Hank Aaron or Babe Ruth was, even though he set a new home run record. Everyone says he pumped himself up with steroids and tarnished his image forever. Aaron and Ruth got there on their own steam, without any boost from drugs.
3. *The Economist:* "It is difficult to gauge the pain felt by animals because pain is subjective and animals cannot talk."

*4. William Shakespeare: "Forbear to judge, for we are sinners all."

5. Aristotle: "The Earth has a spherical shape. For the night sky looks different in the northern and the southern parts of the Earth, and that would be the case if the Earth were spherical in shape."

*6. The government thinks 18-year-olds are responsible enough to vote and mature enough to fight a war, so why can't they drink alcohol?

7. Human activities have become the major source of global warming. Over the past 200 years, they have been responsible for the rising carbon dioxide levels from burning fossil fuels and for increased concentrations of other greenhouse gases like methane and nitrous oxide.
8. America is a society that values its freedoms. Censorship clearly has no place in a society that values its freedoms. It curtails independent thought, and it discourages people from examining societal problems.

[2] Starred (*) items are answered in a section at the back of the book.

9. College costs big bucks. When you put out that kind of money, you should be able to decide where your money goes. Students shouldn't have to take introductory courses if they don't want to. Besides, you don't need those basic courses for lots of careers.

10. Giving illegal aliens driver's licenses would undermine our immigration laws. After all, they are here illegally to begin with. Besides, there is the security issue. If anyone can get a license, so can terrorists, and that means they can fly anywhere in the country with just a license for an ID. Who knows how many planes they might blow up?

2. Exposition and Argument

Of course, only those groups of statements that provide reasons for believing something form arguments. Thus, anecdotes are not usually arguments, nor are most other forms of **exposition.** But even in these cases, arguments often are implied. Here is a sales clerk talking about the difference between two digital cameras, an Olympus and a Kodak. "Well, the Olympus has 4.1 megapixels and the Kodak has only 2.2. They both have terrific image quality, but the Olympus is better for cropping and enlarging your prints. The Kodak is $300 less, but it's not as high-powered." Although the clerk's remarks contain no specific argument because no conclusion is drawn, a conclusion is definitely implied. You should choose the Olympus if you want a more high-powered camera; otherwise you should choose the Kodak.

The point is that talk generally is not aimless. A good deal of everyday talk, even gossip, is intended to influence the beliefs and actions of others and thus constitutes a kind of argument. In the camera example, the clerk provided information intended to convince the customer to draw either the conclusion, "I'll buy the Olympus because the range of options is worth the extra $300 to me," or the conclusion, "I'll buy the Kodak because high-powered options aren't worth $300 more to me." In other words, the point of the clerk's chatter was to sell a camera. Similarly, advertisements often just provide product information rather than advance explicit arguments, yet clearly every such ad has an implied conclusion—that you should buy the advertised product.

Nevertheless, it is important to understand the difference between rhetoric that is primarily expository and discourse that is basically argumentative. An argument makes the claim, explicit or implicit, that one of its statements follows from some of its other statements. It at least implies that acceptance of its conclusion is justified if one accepts its premises. A passage that is purely expository gives us no reason to accept any "facts" it may contain (other than the implied authority of the writer or speaker, as, for example, when a friend tells us that she had a good time at the beach).

Exercise 1-2

Here are several passages. (Some are from student papers—again, modestly edited.) Indicate which contain arguments and which do not, label the premises and conclusions of those passages that do (as you did in the previous exercise), and explain why you think the other passages do not contain arguments.

Example

Passage from an Agatha Christie novel: "M. Hercule Poirot, having nothing better to do, amused himself by studying her without appearing to do so. She was, he judged, the kind of young woman who could take care of herself with perfect ease wherever she went. . . . He rather liked the severe regularity of her features and the delicate pallor of her skin. He liked the burnished black head with its neat waves of hair, and her eyes—cool, impersonal and gray."

Evaluation: This is not an argument. The author says Poirot judged (reasoned) that the woman could take care of herself but does not describe his reasoning. And the rest of the passage simply says that Poirot liked certain features of the young woman.

*1. If we keep burning so much coal and oil, the greenhouse effect will continue to get worse. But it will be a disaster if that happens. So we've got to reduce dependency on these fossil fuels.

2. We are never going to find a cure for diabetes, cancer, Alzheimer's and a lot of other diseases unless we use the most promising research available. Stem cell research is the way to go.

3. Tuition for state colleges should be lowered. Lots of students drop out of school because they can't afford it and there's not enough financial aid to go around. If they go to school and work, it takes them forever to get their degrees.

*4. My summer vacation was spent working in Las Vegas. I worked as a waitress at the Desert Inn and made tons of money. But I guess I got addicted to the slots and didn't save too much. Next summer my friend Hal and I are going to work in Reno, if we can find jobs there.

5. Legalizing prostitution is bound to increase sexually transmitted diseases. And look what it would do to women. It can't help but lead to their degradation. Besides, most people don't like the idea, anyway.

6. The U.S. Census Bureau estimated that 18 million students were enrolled in the nation's 4,300 institutions of higher learning in fall 2007. The average cost of tuition, room, and board for in-state students at four-year public colleges and universities was $13,425 and at private schools, $36,510. Half the full-time college students were employed.

7. Some people in the field of medicine are keen on embedding computer chips inside the body, but I've got a problem with that. True, the chips could provide helpful medical information if I'm unconscious or something, which I guess is the main reason for doing it, but I don't want to make that kind of information available to the government or anyone else, for that matter, who might want to invade my privacy.

8. Why is there so much opposition to using animals for medical research? We know medical research saves the lives of humans. True, some animals suffer in the process, but it's worth it in the long run. After all, most people value the lives of humans more than animals.

*9. Descartes: "Good sense is of all things in the world the most equally distributed, for everybody thinks himself so abundantly provided with it, that even those most difficult to please in all other matters do not commonly desire more of it than they already possess."

10. Quarterback Michael Vick shouldn't have been sentenced for running a dogfighting operation from his property. It's punishment enough that the Atlanta Falcons suspended him indefinitely. True, he did admit to financing the operation and being involved in killing the dogs that didn't perform well, but the felony charges were trumped up against him. No other first-time offender has been convicted on the charge of sponsoring a dog in a fight or on the conspiracy charges brought against him. Besides, he admitted he made a mistake and said he was sorry.

11. Why shouldn't public schools take donations from private business? The government doesn't expend enough money to repair the buildings, let alone pay teachers a decent salary. Besides, big business would demand more for its money—like higher standards and better discipline.

12. Alexis de Tocqueville, *Democracy in America:* "Men will never establish any equality with which they will be contented. . . . When equality of condition is the common law of society, the most marked inequalities do not strike the eye: when everything is nearly on the same level, the slightest are marked enough to hurt it.

    Hence the desire for equality always becomes more insatiable in proportion as equality is more complete."

3. Cogent Reasoning

Reasoning can be either **cogent** (good) or **fallacious** (bad). We reason cogently when we satisfy the following conditions:

1. The premises of our reasoning are believable (**warranted,** justified), given what we already know or believe.
2. We consider all likely relevant information.[3]
3. Our reasoning is **valid,** or **correct,** which means that the premises we employ provide good grounds for accepting the conclusion we draw.[4]

When all three of these conditions of cogent reasoning are not satisfied, reasoning is said to be *fallacious*. Note, by the way, that in daily life, we often speak of arguments as being

[3] Satisfying this extremely stringent requirement is usually beyond the ability of most of us most of the time. The point is that good reasoners try to come as close as possible to satisfying it, taking into account the importance of drawing the right conclusion and the cost (in time, effort, or money) of obtaining or recalling relevant information. (One of the marks of genius is the ability to recognize that information is relevant when the rest of us fail to notice.)

[4] Provided we know nothing else relevant to the conclusion. Note that reasoning from an unjustified premise may still be cogent if it also employs justified premises that sufficiently support its conclusion. Note also that the term *valid* sometimes is used more broadly than we have used it here.

fallacious or cogent, even though, strictly speaking, it is reasoners—individuals—who reason either fallaciously or cogently. Life is short, and we often speak imprecisely when context makes clear what is intended.

Believable Premises

The first condition of cogent reasoning requires that we bring to bear whatever we already know or believe—our relevant **background beliefs** and information—to determine whether we should or shouldn't accept the premises of an argument being evaluated. Take, for instance, the first premise of the capital punishment argument discussed earlier—the premise making the claim that taking the life of a human being always is wrong. Most of us are not pacifists—we don't believe that it always is wrong to take a human life. Bringing that background belief to bear thus should make us see the first premise of the capital punishment argument as questionable. So we should not accept the conclusion of that argument unless further reasons are presented in its support. (On the other hand, those of us who *are* pacifists obviously should reason differently.)

By way of contrast, consider the stated premise of the following argument:

> Venus Williams must be a terrific tennis player. She won the Wimbledon championship in 2008. (The implied premise is that anyone who took a first at Wimbledon must be an outstanding athlete.)

Tennis fans know that the Wimbledon grand slam championship is one of the most demanding tennis competitions in the world, and acceptance of the stated premise (that Williams won the tournament) was warranted by plenty of background information.

It's interesting to notice that, in effect, evaluating a premise of an argument by bringing background beliefs to bear entails constructing another argument whose conclusion is either that the premise in question is believable or that it isn't. For example, when evaluating the capital punishment argument discussed before, someone who is not a pacifist might construct the following argument: "I believe that it isn't wrong to kill in self-defense, or in wartime, or to kill those guilty of murder. So I should reject the premise that taking a human life always is wrong."

This brings to mind the fact that in daily life we often are exposed to assertions, or claims, that are not supported by reasons or arguments. Clearly, it is not rational to accept these assertions without evaluating them for believability, and, obviously, their correct evaluation requires us to do exactly what we do when evaluating the believability of the premises of an argument—namely, bring to bear what we already know or believe. Evaluating unsupported assertions thus involves just part of what is done when we evaluate arguments.

No Relevant Information Passed Over

The second criterion of cogent reasoning requires that we not pass over relevant information. In particular, it tells us to resist the temptation to neglect evidence contrary to what we want to believe.

Here, for instance, is the substance of remarks made in fall 2006, by a young woman who just bought a condo with a subprime loan.

> Now is the time to buy a condo. I got a loan without even making a down payment. And interest rates are so cheap. A two-year loan goes for under 5 percent, and I can refinance it later for even less. Besides, I was tired of renting an apartment and wanted a place of my own. It's just money down the drain to rent. The price of condos has really gone up the past few years, so I'm bound to make a profit when I sell. I may be scraping by now, but I can always run up a few credit cards to get along.

Here is the implied argument.

1. This is a good time to buy a condo.
2. Financially it's a good deal since I don't have to make a down payment, and interest rates on short-term loans are low.
3. Real estate will continue to appreciate, and I'll make a profit when I sell.

Alas, this home buyer and thousands like her went into bankruptcy when the housing bubble burst, real estate prices fell, and short-term loans could only be refinanced at higher interest rates than many buyers could afford. Her reasoning neglected to consider her own financial situation and evidence that a little research might have unearthed.

1. The housing market was at an all-time high, and there was bound to be a correction in the market. Past experience shows that housing booms end and prices decline.
2. Short-term loans at very low introductory rates (known as *subprimes* because they are below the prime rate) are just teasers that loan sharks use to lure consumers into taking out mortgages. Subprimes are hyped to people with sketchy credit histories and low incomes, in other words, people without the usual qualifications for buying real estate. When the time comes to refinance, usually two years later, the rates shoot up as much as 3 percentage points.
3. Buyers with sufficient incomes who make down payments and qualify for conventional prime rate loans can usually ride out a dip in the market, but not lower income buyers who finance everything on credit. When money is tight, as it began to be in 2007, loan companies refuse to lend to high-risk buyers, who may have to resort to selling at a loss or face foreclosure and possibly bankruptcy.

Hindsight is certainly better than foresight, but with a realistic understanding of one's own financial situation, a little research into the nature of housing markets in general and the shady practices of loan sharks in particular, these points can be figured out by an intelligent person who thinks carefully about the matter. While it is understandable that the young woman wanted a home of her own, too often common sense gives way to magical thinking.

Valid Reasoning

The third criterion of cogent reasoning requires that the premises of an argument genuinely support its conclusion; or, as logicians like to say, it requires that an argument be valid, or correct. It is vitally important to understand that the validity of an argument has nothing whatever to do with the truth of its premises or conclusion. Validity concerns the nature of the *connection* between the premises and conclusion of an argument, not the truth or believability of its premises. Determining that an argument is valid tells us

that *if* we are justified in believing in its premises, *then* we also are justified in believing in the truth of its conclusion. It doesn't tell us *whether* its premises are true. An argument thus can be perfectly valid and have completely false premises, and even have a false conclusion. Here is an example:

1. The Cleveland Indians have won more World Series games than any other major league team. (false premise, alas!)
∴2. They have won more World Series games than the New York Yankees. (false conclusion)

The argument is valid because if the beloved Indians *had* won more World Series games than any other Major League team, then, obviously (well, it's obvious to baseball fans), they would have won more World Series games than the Yankees. The argument is valid, even though its premise and conclusion both are false. It's valid because anyone who is justified in believing its premise is justified in believing its conclusion.

4. Two Basic Kinds of Valid Arguments

Premises may correctly support conclusions in two fundamentally different ways. The first way yields *deductively valid* arguments; the second, *inductively valid* (or inductively strong) arguments.[5]

Deductive Validity

The fundamental property of a **deductively valid** argument is this: If all of its premises are true, then its conclusion must be true also, because the claim asserted by its conclusion already has been stated in its premises, although usually only implicitly.

Here is an example of a very simple deductively valid argument:

1. If this wire is made of copper, then it will conduct electricity. (premise)
2. This wire is made of copper. (premise)
∴3. This wire will conduct electricity. (conclusion)

Taken alone, neither premise makes the claim that the wire will conduct electricity; but taken together, they do. We cannot imagine what it would be like for both premises of this argument to be true, yet its conclusion turn out to be false. Indeed, it would be contradictory to assert both of its premises and then to deny its conclusion.

It is important to see that it is the **form** of this argument—namely:

1. If some sentence, then a second sentence.
2. The first sentence.
∴3. The second sentence.

[5] Some authorities believe that there is at least one other kind of legitimate argument—namely, the kind in which various alternatives are evaluated. The authors of this text incline to the view that evaluative arguments fall into one or the other of the two basic kinds about to be mentioned. Note also that some authorities restrict the use of the term *valid* so that it refers only to deductively good arguments, even though in everyday life inductively strong arguments generally are said to be valid. In addition, note that the reasoning process called "mathematical induction" happens to be a kind of deductive reasoning. (Terminology sometimes is misleading.)

that makes it deductively valid, not the truth values of its statements. Letting the capital letter *A* stand for the first sentence and *B* for the second sentence, the *form* of the argument can be stated this way:

1. If *A* then *B*.
2. *A*.

∴3. *B*.

Clearly, every argument having this form is deductively valid, another example being this argument:

1. If Sonia reads *Vogue* magazine, then she's up on the latest fashions.
2. Sonia reads *Vogue* magazine.
3. She's up on the latest fashions.

Logicians, by the way, call the form of this argument, and every argument having this form, ***modus ponens.***

It's very important to clearly understand that the deductive validity of an argument guarantees that its conclusion is true *only if* its premises are true. Determining that an argument is deductively valid thus tells us just that *if* its premises are true, *then* its conclusion must be true also; it doesn't tell us *whether* its premises are true and thus doesn't tell us *whether* its conclusion is true.

Here, for instance, is a deductively valid argument having the form *modus ponens* that contains one true and one very likely false premise and thus does not guarantee the truth of its conclusion:

1. If more people read Agatha Christie's mystery novels than read Shakespeare's plays, then her novels must be better than his plays. (false premise?)
2. Her novels have been read by more people than have Shakespeare's plays. (true premise)

∴3. Her novels must be better than his plays. (false conclusion?)

Of course, a deductively valid argument that contains a false premise may, luckily, have a true conclusion. But that would be a matter of luck, not of good reasoning.

The fact that a deductively valid argument cannot move from true premises to a false conclusion constitutes its chief characteristic and great virtue. But deductive arguments are limited. They cannot yield conclusions that are not at least implicit in the premises from which they are derived. **Induction** is needed to perform this task.

Inductive Validity

Inductively valid (inductively strong) arguments, unlike deductively valid ones, have conclusions that go beyond what is contained in their premises. The idea behind valid induction is that of *learning from experience.* We often observe patterns, resemblances, and other kinds of regularities in our experiences, some quite simple (sugar sweetening coffee), some very complicated (objects moving according to Newton's laws—well, Newton noticed this, anyway). Valid inductions simply project regularities of this kind observed in our experiences so far onto other possible experiences.[6]

[6]This includes those experiences we can't have but might have if we had lived millions of years ago or if, say, we could go into the interior of the sun without being incinerated.

Here is a simple example of an inductively valid argument, of the kind sometimes called *induction by enumeration,* expressed by a rather smart child in Jacksonville, Florida, explaining why he is doubtful about the existence of Santa Claus:

> The tooth fairy turned out not to be real. The Easter Bunny turned out not to be real. So I'm beginning to wonder about Santa.

Admittedly this is a small sample, but perhaps not for a 4-year-old with a limited range of experience.

We use inductive reasoning so frequently in everyday life that its nature generally goes unnoticed. Being informed about induction is a bit like being told that we've been speaking prose all our lives. We start drawing perfectly good inferences of this kind (and some klinkers) at a very early age. By age 5 or 6, the use of induction has taught us a great many of the basic truths that guide everyday behavior—for instance, that some foods taste good and some don't, the sun rises every morning and sets every evening, very hot things burn the skin, some people are trustworthy and some aren't (something most of us seem to need to relearn over and over), and so on.

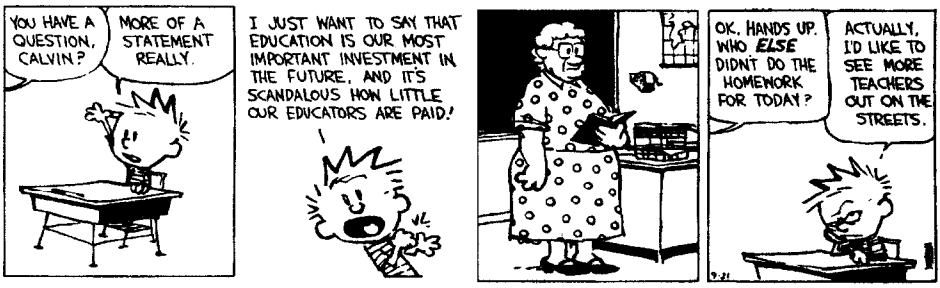
The great virtue of inductive reasoning is that it provides us with a way of reasoning to genuinely new beliefs, not just to psychologically new ones that are implicit in what we already know, as in the case of valid deductions. However, this benefit is purchased at the cost of an increase in the possibility of error. As remarked before, the truth of the premises of a deductively valid argument guarantees the truth of its conclusion; but the premises of a perfectly good induction may all be true and yet its conclusion be false. Even the best "inductive leap" may lead us astray, because the patterns noticed in our experiences up to a given point may not turn out to be the exact patterns of the whole universe. This happens all too often in daily life—for example, when a restaurant that has served excellent food many times in the past fails us on a special occasion. But it sometimes happens even in the lofty realm of theoretical science. Physicists, for instance, believed for a long time that asbestos does not conduct electricity—a belief supported by very good, very strong inductive reasoning—but then discovered that all substances, including asbestos, conduct electricity when cooled down close to absolute zero.

Nevertheless, rational people use induction in formulating their ideas about how things are going to turn out, whether in ordinary, everyday circumstances or in the rather special ones scientists bring about in the laboratory. Induction, thinking of Winston Churchill's famous remark about democracy, is the worst way to expand one's knowledge except for all of the other ways (guessing, wishful thinking, astrology, and so on).

Exercise 1-3

Which of the following passages (modestly edited to make them more straightforward than arguments often are in daily life) do you think are deductively valid? Inductively valid? Defend your answers, showing the structure of those you believe to be valid.

1. My doctor told me to take Tylenol (actually, acetaminophen, the active ingredient in Tylenol) when I get a headache, and I've done that. Well, the stuff has cured my headaches, but it also has made me feel drugged. I've apparently just been trading a headache for a drugged feeling. So I figure that if I take it again



Calvin is no match for Miss Wormwood, who easily reads between the lines of Calvin's attempts at ingratiation.

to cure this headache, the result will be the same. I'm switching back to aspirin.

2. If I buy these potato chips, I know I'm going to eat the whole bagful at one sitting. But if I do that, I'll upset my stomach. Well, then, if I buy this tempting item, my guts are going to get upset again. Satan, get thee behind me!
3. My father has always voted for Republican candidates, and my mother has also. Hah! Now that I'm old enough to vote, I'm going to vote Democratic. That'll show them.
4. According to statistics released by the U.S. Census Bureau for 2005, workers without high school degrees earned $19,915 a year; high school graduates, $24,448; college graduates with bachelor's degrees, $54,689; college graduates with advanced degrees, $79,946. Is college worth it? Absolutely.

5. Some Wrong Ideas about Cogent Reasoning

Having just presented three standards of cogent reasoning and having explained the nature of valid deduction and induction, perhaps we need to mention several recently voiced ideas about logic and good reasoning. According to these modestly trendy ways of looking at the topic, what counts as good reasoning is "culturally relative," or "gender-relative," or even (popular among students) "individually relative." We hear talk of "feminine logic," supposedly different from the "male logic" taught in logic classes (often by female logicians, but let that pass), and of "black intelligence," different from the "Eurocentric" variety foisted on us by white males, as though what makes reasoning

> A wise person hears one word and understands two.
>
> —Jewish proverb

Reading Between the Lines

The expression "reading between the lines" has several meanings. One captures the idea of grasping an intended thought that is not expressed, another of getting more information from a statement or argument than it explicitly—or even implicitly—contains, still another of noticing what rhetoric either deliberately or accidentally hides. Reading between the lines often is the essential ingredient in assessing a good deal of the everyday talk we all encounter, in particular political rhetoric and (interestingly) advertisements.

Take the Bufferin ad that states, "No regular aspirin product reduces fever better." Reading between the lines of this ad, we should conclude that Bufferin does *not* reduce fever better than some competing products, because if it did, the ad would make that stronger claim ("Bufferin reduces fever better than any other aspirin product") rather than the weaker one that none reduces fever better. The point is that our own background beliefs should lead us to expect an advertisement to make the strongest claim possible and thus lead us to at least tentatively conclude that a less strong claim is made because stronger claims would be false.

Reading between the lines is the linguistic equivalent of "sizing up" other people—for example, of gleaning information about their beliefs or likely actions from their overt behavior or way of saying something. A good poker player, for instance, looks for signs of bluffing—some players often unwittingly signal a bluff by increasing chatter or by nervous behavior; others do so by feigning lack of concern. Similarly, intelligent voters try to size up political candidates by looking for nonverbal clues and by reading between the lines of campaign rhetoric. (More will be said about campaign rhetoric in Chapters 7 and 10.)

good differs from group to group, race to race, or one sex to the other. We all too often hear students say things such as "That may well be true for you, but it isn't true for me" and listen to academics talk disparagingly of "Aristotelian linear reasoning," as opposed to a more "intuitive" type of reasoning, and so on.

But there is no truth to these ideas about what constitutes good reasoning. It is the height of folly to conclude, say, that an argument having the form *modus ponens* is not valid. Think, for example, what it means to assert seriously that all human beings have a right to life and then in the next breath to claim, equally seriously, that a particular human being, Smith, has no right to life. What sense is there in first saying that if Jones has been to China, then he's been to Asia, and then asserting that he has indeed been to China but not to Asia? Yet accepting reasonings that violate the standards of deductive logic means precisely accepting some sorts of contradictory assertions or other, because the point of the principles of valid deduction (including the valid principles of mathematics) is to assure that we do not contradict ourselves when we reason from one thing to another. (That's why, to take just one of a thousand examples, double-entry bookkeeping works.)

Similarly, what reason could there be for violating the standards of good inductive reasoning—for denying what experience teaches us? That a large majority of the

scientists who laid the groundwork in physics, chemistry, and biology were white males is totally irrelevant to the truth of their basic ideas and theories. *The way the world works does not differ depending on the race or sex of those trying to discover the way the world works!* That is why, to take an everyday example, it is foolish to toss away money on homeopathic medicines: Medical science has shown, over and over again, by means of inductive reasoning, to say nothing of very highly confirmed general biological principles, that homeopathy does not work. The point cannot be stressed too heavily. There simply is no truth whatsoever to the idea that standards of good reasoning differ from group to group, male to female, or person to person.

There is, however, a good deal of truth to three much different ideas. One is that self-interest, prejudice, and/or narrowmindedness do in fact often lead people to reason invalidly. Bigotry has a bad name for good reason. Another is that self-interest often motivates us to neglect the values or interests of others, even when we share those values, so that some groups or individuals find their interests frequently neglected. For instance, rich people who believe fairness requires that everyone ought to have an equal chance when starting out in life often forget about equality of opportunity when they argue for the elimination of all inheritance taxes; in families in which both parents work, husbands notoriously tend to paper over their failure to share household and child-rearing duties; in the business world, high executives, while asserting their belief in equal rights for all, frequently overlook the ways in which women, Latinos, and blacks are often passed over for corporate advancement. In all of these cases, the problem is not with the principles of good reasoning. It is with the fallacious nature of the ways in which these principles sometimes are employed.

Those who champion other sorts of "logics" than the standard variety thus may well be mistaken in their target. They attack the principles of good reasoning rather than the failure of their opponents to employ these perfectly good (indeed the *only* good) standards of reasoning correctly or to reason from acceptable moral or other kinds of values.

A good deal more will be said in later chapters on these matters, in particular about moral and other value claims. For now, the point is just that we must distinguish the principles of good reasoning, which are the same for all, from the ways in which these principles are employed (sometimes fallaciously), and from the differing values that enter into the premises of different reasonings.

6. Background Beliefs

Earlier, we characterized cogent reasoning in terms of three conditions: the validity of connections between premises and conclusions, the believability of premises, and the discovery and use of relevant information. Clearly, satisfaction of the last two of these three conditions requires the employment of background beliefs. That is why bringing one's background beliefs to bear often is the most important task in evaluating an argument for cogency.

Consider, for example, the argument frequently heard in the early 1980s that AIDS is essentially a gay plague inflicted on homosexuals as punishment for their perverse sexual conduct (a claim still occasionally heard). The key premise of this argument was that AIDS can be transmitted sexually only via homosexual conduct, a premise that was supported by the evidence that in the United States a large majority of those reported early on to have the disease were indeed homosexuals. But people with good background information did not accept this argument. For one thing, they knew that in other places around the world—for instance, in Haiti and parts of Africa—large numbers of heterosexuals also had contracted AIDS via sexual behavior. And for another, those familiar with some of the basic scientific ideas concerning disease had theoretical (which means higher-level inductive) reasons for believing that AIDS could be transmitted via heterosexual behavior, as are syphilis, hepatitis B, herpes, and so on.

Today most Americans know that AIDs is transmitted by both heterosexuals and homosexuals, but many people wrongly think that the disease is curable because they have heard about drugs used to treat HIV. In fact, these drugs suppress the viral infection but do not cure it, and no vaccine has been successfully developed to date. Unfortunately, many young people believe they can be cured if they become infected and thus fail to take adequate precautions. This mistaken belief in part accounts for the steep increase in HIV patients over the past decade in the United States.

The point is that contrary to the old saying, ignorance is *not* bliss. It just renders us incapable of intelligently evaluating claims, premises, arguments, and other sorts of rhetoric we all are subject to every day. When evaluating arguments and issues, we can't bring relevant beliefs to bear if we don't have them, and we cannot make good judgments if what we believe is off the mark.

7. Kinds of Background Beliefs

Background beliefs can be divided up in many different ways, an important one being a separation into beliefs about *matters of fact* and beliefs about values. It is a factual question, for example, whether capital punishment is practiced in every society (it isn't); it is a question of values whether capital punishment is morally justified (is it?). In dealing with most social or political issues, we need to separate claims that are about matters of fact from those concerning values, because these two different sorts of claims are defended, or justified, in different ways. The statement, for example, that a given state

> Knowledge not renewed quickly becomes ignorance.
>
> —Peter Drucker

> Those who do not remember the past are condemned to relive it.
>
> —George Santayana

has a death penalty is proved true, or false, by an examination of relevant government records; the judgment that capital punishment is, or isn't, morally justified as the punishment for heinous crimes is determined by bringing to bear an accepted moral code, or subjective intuitions.[7]

Background beliefs also can be divided into those that are *true* and (unfortunately) those that are *false.* Someone who believes, for example, that capital punishment exists as a practice in every society has a false belief; those who believe that every society punishes murderers in one way or another has a belief that is true. An important reason for regularly testing our background beliefs in terms of our experiences and of what we learn from others is precisely to weed out background beliefs that are false. Education consists in a lot more than simply learning a mountain of facts; it also has to do with weeding out beliefs that turn out to be false (or unjustified).

Beliefs also differ as to how firmly they are or should be held. We feel completely sure, completely confident, of some beliefs (for example, that the sun will rise tomorrow); less sure, but still quite confident, of others (for example, that the United States will still be in existence in the year 2050); and a good deal less sure, but still mildly confident, of others (for example, that we won't get killed some day in an auto accident). The trick is to believe firmly what should be believed, given the evidence, and believe less firmly, or not at all, what is less well supported by evidence.

All of this relates directly to decisions we have to make in everyday life. Wise individuals take into account the probability of one thing or another happening and thus of the confidence they should place in their beliefs about what to do. That's a large part of the truth behind familiar sayings such as "A bird in the hand is worth two in the bush."

8. Worldviews or Philosophies

As we grow up from childhood into adults, we tend to absorb the beliefs and standards of those in the world around us—our families, friends, and culture. It is no accident that so many of us have the same religious affiliation, or lack of same, as do our parents, that we accept the principles and standards of our own society, and so on.

These beliefs constitute an important part of our **worldviews** or **philosophies.**[8] They tend to be the most deeply ingrained and most resistant to amendment of all of our background beliefs. They become so much a part of us that we often appeal to them without consciously realizing we have done so. They are so intricately woven into the fabric of our belief systems that we often find it hard to isolate and examine individual strands.

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[7] Philosophers and others disagree seriously concerning the question whether there are such things as objective moral principles that all clear-minded, rational individuals are bound to see as correct, or whether moral right and wrong is a matter of subjective opinion—of feelings that can, and perhaps do, differ from person to person.

[8] This includes religious beliefs in the case of those who have religious convictions.

And when we do examine them, our natural tendency is to reaffirm them without thought and to disparage conflicting claims and evidence, quickly dismissing evidence that might count against them.

Most of these beliefs are general—for example, that killing always is morally wrong, that there is some good in virtually all human beings, or that we all die sooner or later. But not all are. Belief in a monotheistic deity, for instance, or rejection of such a belief, is a particular belief.

But in spite of the example just cited, more general beliefs usually (that is, generally!) are more important than beliefs that are particular, or less general, because they tell us about a wider range of cases and thus tend to be more useful in everyday life. Believing that it rarely rains in July in Los Angeles, for instance, clearly is more useful than believing merely that it won't rain there, say, on July 16, 2010. That is why most of the important beliefs in one's worldview are general and also why most important scientific pronouncements are general—indeed, often extremely general. (Newton's laws, for example, don't just tell us about apples falling from trees or even just about items of all kinds falling toward the Earth. They also tell us about the motion of the Earth around the sun, about the motion of all planets around the sun, about how tides rise and fall, and, in fact, about the motions of all objects whatsoever.) It also is why it is so important, and useful, to expand our worldviews to contain at least a few modestly well-founded beliefs about important scientific theories—for example, about the theory of the evolution of all life on Earth.

*The worldviews of political parties are implied in the words and phrases they use repeatedly in their discourse. University of California linguist George Lakoff came up with a list of words used over and over in the speeches and writings of conservatives and liberals. It's worth examining them to figure out the dominant worldviews reflected in the language.**

Conservatives: "character, virtue, discipline, tough it out, get tough, tough love, strong, self-reliance, individual responsibility, backbone, standards, authority, heritage, competition, earn, hard work, enterprise, property rights, reward, freedom, intrusion, interference, meddling, punishment, human nature, traditional, common sense, dependency, self-indulgent, elite, quotas, breakdown, corrupt, decay, rot, degenerate, deviant, lifestyle."

Liberals: "social forces, social responsibility, free expression, human rights, equal rights, concern, care, help, health, safety, nutrition, basic human dignity, oppression, diversity, deprivation, alienation, big corporations, corporate welfare, ecology, ecosystem, biodiversity, pollution, and so on."

What worldviews did you come up with?

*Taken from Lakoff's book *Moral Politics: How Liberals and Conservatives Think,* University of Chicago Press, 2002.

Compare the worldview reflected in this gem, excerpted from a 1950s women's magazine, to your worldview.

The Good Wife's Guide

- Prepare yourself. Take 15 minutes to rest so you'll be refreshed when he arrives. Touch up your make-up, put a ribbon in your hair and be fresh-looking. He has just been with a lot of work-weary people. . . .
- Listen to him. You may have a dozen important things to tell him, but the moment of his arrival is not the time. Let him talk first—remember, his topics of conversation are more important than yours. . . .
- Make the evening his. Never complain if he comes home late or goes out to dinner, or other places of entertainment without you. Instead, try to understand his world of strains and pressure and his very real need to be at home and relax. . . .
- Don't complain if he's late home for dinner or even if he stays out all night. Count this as minor compared to what he might have gone through that day. . . .
- Don't ask him questions about his actions or question his judgment or integrity. Remember, he is the master of the house and as such will always exercise his will with fairness and truthfulness. You have no right to question him. . . .
- A good wife always knows her place.

—*Housekeeping Monthly,* May 13, 1955

An astute reader noted that he couldn't find a history of this magazine and suspected it was a put-on. He may be right, but anyone raised in the 1950s will recognize the all-too-familiar worldview it reflects.

9. Insufficiently Grounded Beliefs

Most of us have strongly held beliefs about a great many controversial issues, and so we tend to respond automatically to arguments about these matters. We feel confident that we know whether marijuana or cocaine should be legalized, whether we should privatize Social Security, whether this candidate or that is more likely to serve all of the people equally if elected to office, and so on. We hold these beliefs, often very strongly, even though a good deal of the time we have insufficient justifying background knowledge and have engaged in too little thought to be able to support our beliefs intelligently or defend them against informed objections. What, for example, do we usually know about candidates running for seats in the U.S. House of Representatives? (In 2008, a significant number of voters did not even know the names of both major party candidates for congressional seats in their districts; fewer still could name both candidates for state legislatures in their districts. Could you?) Too often we base our vote on our party affiliation (that is, our political beliefs) not on the merit of individual candidates. Clearly,

It is worth noting here that widespread failure to revise worldviews often results in serious political and social unrest and injustice. E. M. Forster captures this poignantly in his novel *A Passage to India,* in which he depicts intense conflicts in colonial India between English masters and their conquered Indian subjects. Believing themselves socially and racially superior, the English relegate the Indians to subordinate positions, never allowing them equality under the British raj. The insensitivity of the British to the plight of their subjects is met with resentment, distrust, anger, and threats of violent retaliation by the Indians. (To make matters worse, the Indians are divided from one another by differing religious and cultural beliefs.) Very few of the British or Indians Forster depicts ever revise their biases and prejudices in the light of new information—for instance, in the light of obvious evidence about the competence of individual Indians or the glaring prejudice of English officials. The novel makes a compelling case for a widespread reexamination of worldviews and other background beliefs if human beings are to arrive at a peaceful, nonexploitative coexistence on planet Earth.

then, weeding out insufficiently grounded background information is vital if we are to improve our reasoning about important, to say nothing of relatively trivial, matters. (It also might be a good idea to find out something about candidates for various offices before stepping into a booth and casting our ballots.)

Having well-supported background beliefs is particularly important with respect to those basic background beliefs that make up our worldviews. Worldviews are like lenses that cause us to see the world in a particular way or filters through which we process all new ideas and information. Reasoning based on a grossly inaccurate or shallow worldview tends to yield grossly inaccurate, inappropriate, or self-defeating conclusions (except when we're just plain lucky), no matter how smart we otherwise may be. Sometimes the harm is relatively minor (gamblers who waste a few bucks playing "lucky" lottery numbers; astrology column readers who arrange vacation times to fit their sign), but at other times the harm can be more serious (people with an overly rosy view of human nature who get taken by sharp operators; misanthropes who miss out on the benefits and joys of trusting relationships).

Obviously, then, we need to examine our background beliefs, in particular, those that make up our worldviews, for consistency and believability, and we need to amend them so as to square with newly acquired information. The point is that having a good supply of background beliefs is not just a matter of filling up one's "tank" with gallons of facts. It is at least equally important to improve one's existing stock of beliefs by weeding out those that experience proves to be false, to sharpen vague beliefs, and to replace crude beliefs with those that are more sophisticated—beliefs that penetrate more deeply into the complexities of life and the world.

People who hold different worldviews often clash on a personal level, but when cultures or nations have conflicting worldviews, they can create tension and spark antagonism internationally. One recent example involved a controversy over whether an Afghan should be sentenced to death because he converted from Islam to Christianity. Under Sharia law, a Muslim who rejects Islam may be tried and executed. So when it became known that the man had converted to Christianity, he was put on trial by the

Afghan government, whose constitution allows prosecution under Sharia law. When Muslim clerics demanded that he be sentenced to death, prominent leaders in the Western world urged the government to honor human rights principles and free him. The conflicting worldviews caused an uproar on both sides. When the Afghan government looked for ways to drop the case in order to comply with international pressure, the clerics warned that if the man were freed, the people of Afghanistan would kill him. (The government resolved this dilemma by declaring him mentally unfit and citing "investigative gaps" in the case.) When clashes like this multiply and escalate, they may give rise to violence on a large scale. It is probably no exaggeration to say that major conflicts in worldviews are at the heart of most wars.

Socrates is said to have claimed that the unexamined life is not worth living. While clearly an exaggeration, there surely is a great deal of truth in this idea. By the same token, there is a large dose of truth in the idea that an unexamined worldview is not likely to be worth holding, in particular because it will contain little more than an accumulation of the ideas and prejudices of others. Examining worldviews allows us to take control of our lives by actively sorting out our fundamental beliefs, testing them against ideas and information that point to conclusions contrary to what we already believe, and making whatever revisions are indicated in the light of what we have learned. *Doing this helps us to become our own person rather than just a passive follower of others!*

Unfortunately it is no easy matter for us to examine our worldviews objectively. Psychological studies show that people hold on to their beliefs for dear life, ignoring evidence that undermines them and dredging up weak evidence to support them. This obstacle to rational thought is compounded by our natural tendency to take short-cuts in reasoning that reduce our mental effort, allowing us to slide past unwelcome evidence and leap to hasty conclusions that support our existing beliefs. All this makes rational self-analysis difficult to say the least—but not impossible. To reason cogently we need to fight this human tendency (discussed further in Chapter 6).

EXERCISE 1-4

1. Using the Internet, go to Google and search for "I have a dream" under the exact phrase option. Figure out which parts of the speech state or imply Martin Luther King's philosophy and explain his worldview.

2. Here is a Japanese bar association official, Koji Yanase (quoted in *Newsweek,* February 26, 1996), explaining why there are only half as many lawyers in his country as there are in the greater Washington, D.C., area alone: "If an American is hit on the head by a ball at the ballpark, he sues. If a Japanese person is hit on the head he says, 'It's my honor. It's my fault. I shouldn't have been standing there.'" Explain the two different worldviews implied in Yanase's observation.

3. Find at least one item on the Internet or in the mass media (a newspaper or magazine article or a television program) that seems to be based on a worldview contrary to the one you yourself hold. Explain your choice.

4. Find at least one item on the Internet or in the mass media that reflects a typically American point of view you happen to share, and explain what makes it typically American. (This is not as easy to do as it sounds. Recalling the content of the box on E. M. Forster's novel may help prod your memory.)

5. Describe a situation in which you changed your mind on some more or less fundamental belief, and explain what convinced you to do so. (This is a very difficult question for many people to answer, another bit of evidence for the fact that much of what goes on in the accumulation and emendation of important background beliefs happens only on the edge of consciousness.)

Exercise 1-5

1. When Barack Obama and Hillary Rodham Clinton ran for the Democratic presidential nomination in 2008, many people thought that the time had come to elect an African American or a woman as president. Never in our history had two candidates from these politically underrepresented groups come so close to leading the nation. What changes in worldviews are reflected in voters' willingness to elect a woman or an African American to the highest position in the country? Compare the worldviews voters might have held before this historic shift to those they hold now.

2. The tax bill passed by Congress in the spring of 2003 was the second large tax break in three years. The Bush administration claimed that the average tax cut would be $1,000, but that was because tax breaks to the rich were so large. As Laura Tyson, dean of the London Business School, pointed out (in *Business Week,* August 11, 2003), "Payroll taxes that pose the heaviest burden for most American families have been left untouched while the top marginal income tax rate, the capital-gains tax, and the dividend tax [all of which benefit the wealthy] have been reduced." Nevertheless, the bill was popular with lots of lower-income taxpayers who liked it because they thought it would probably cut their own tax bills. Bring your background beliefs to bear and reason about whether these people were right in thinking the bill benefited them. Did you modify your beliefs in 2008 when the country slid into a major recession?

*3. A *Time* magazine story headlined "China's Arms Race: The World's Most Populous Country Wants the World's Best Military" claimed that "Beijing [China's capital, for those whose grasp of geography is not up to snuff] is buying and spying its way to superpower status." It listed China's annual military budget as $10.9 billion. What figures do you need to know, even if just approximately, to evaluate *Time*'s spin on the story? If you have this knowledge, what is your judgment? If you don't, a tiny bit of research will be in order here.

Exercise 1-6

Sex scandals involving politicians have hit the media with increasing frequency in recent years. The most famous, of course, was Bill Clinton's extramarital affairs that eventually led to his impeachment. Then there was the governor of New Jersey, James McGreevey, who came out as a gay man and admitted to having an affair with a male employee, and Eliot Spitzer, who resigned as governor of New York when he was nailed for patronizing a high-priced prostitution service. These are but a few of the many sex scandals involving politicians, and in each case the wives stood by them in front of the cameras as they made their excruciating public confession and apologized. Inevitably, now that women feel increasingly liberated, these wives have drawn fire

for standing by their men, following what some critics call an outmoded tradition. But others argue that wives are part of the political team and should provide support no matter how devastating the ordeal. Still others think that the men should make the decision themselves and refuse to implicate their wives. (As one writer put it: "You want to be an alpha male with extra helpings of testosterone and appetites that can't be denied? Fine, but if you get caught, Be. A. Man. Don't drag your wife in front of the cameras to prove how strong your marriage is.[9])

This is obviously a personal decision, but given your worldview, do you think that the men should take the responsibility to got it alone and not involve their wives? If they are reluctant to do so, should the wives stand by them, or should they refuse and let their husbands hang out to dry? (The answer is more complex than it seems when you consider, for instance, the effect on the couples' children.)

EXERCISE 1-7

How do the ideas expressed in the following excerpt from an essay by British philosopher Bertrand Russell compare with those in your own worldview and other background beliefs?

> The aesthetic indictment of industrialism is perhaps the least serious. A much more serious feature is the way in which it forces men, women, and children to live a life against instinct, unnatural, unspontaneous, artificial. Where industry is thoroughly developed, men are deprived of the sight of green fields and the smell of earth after rain; they are cooped together in irksome proximity, surrounded by noise and dirt, compelled to spend many hours a day performing some utterly uninteresting and monotonous mechanical task. Women are, for the most part, obliged to work in factories, and to leave to others the care of their children. The children themselves, if they are preserved from work in the factories, are kept at work in school, with an intensity that is especially damaging to the best brains. The result of this life against instinct is that industrial populations tend to be listless and trivial, in constant search of excitement, delighted by a murder, and still more delighted by a war.

Russell's essay, by the way, appeared in the June 1921 issue of the *Atlantic Monthly.* (The more things change, the more they remain the same?)

EXERCISE 1-8

Here is an excerpt from a speech delivered to the Utah chapter of NOW in May 1997 by Elizabeth Joseph in which she argues that polygamy is beneficial to women in the modern world:

> I've often said that if polygamy didn't exist the modern American career woman would have invented it. Because, despite its reputation, polygamy is the one lifestyle that offers an independent woman a real chance to "have it all." . . .

[9]Katha Pollitt, "Eliot Spitzer: John Q. Public," *The Nation,* March 31, 2008.

> As a journalist, I work many unpredictable hours in a fast-paced environment. The news determines my schedule. . . . Because of my plural marriage arrangement, I don't have to worry [about coming home late]. I know that when I have to work late my daughter will be surrounded by loving adults with whom she is comfortable and who know her schedule without my telling them. My eight-year-old has never seen the inside of a day-care center, and my husband has never eaten a TV dinner. And I know that when I get home from work, if I'm dog-tired and stressed-out, I can be alone and guilt free. It's a rare day when all eight of my husband's wives are tired and stressed at the same time.
>
> It's helpful to think of polygamy in terms of a free-market approach to marriage. Why shouldn't you or your daughters have the opportunity to marry the best man available, regardless of his marital status? . . .
>
> Polygamy is an empowering lifestyle for women. It provides me the environment and opportunity to maximize my female potential without all the tradeoffs and compromises that attend monogamy. The women in my family are friends. You don't share two decades of experience, and a man, without those friendships becoming very special. . . . [P]olygamy [is] the ultimate feminist lifestyle.

Compare Joseph's view to your own on marital arrangements. Do you find her ideas persuasive? Does your worldview jibe with hers? Why or why not? Most of us think of monogamy as "natural," yet polygamy has been common throughout the world at different times in history. (Although Utah outlawed the practice in the nineteenth century as a condition of statehood, the antibigamist law is rarely enforced in that state. Estimates put the number of polygamists in Utah in the tens of thousands, even though it's impossible to verify the statistics, given the illegal nature of the activity.) Portions of Joseph's speech were reprinted in the February 1998 issue of *Harper's.*

10. Two Vital Kinds of Background Beliefs

Background beliefs obviously differ greatly in their importance. Two kinds that are extremely important concern the *nature of human nature* and the *reliability of information sources.*

The Nature of Human Nature

Good beliefs about what we ourselves and other people are like constitute a vital part of everyone's worldview. They are crucial in applying what we know to the problems encountered in everyday life, whether of a personal or a social nature. When can we trust our friends? Is an instructor to be believed who says that students are graded solely on the quality of their exams and not on agreement with the instructor's personal opinions? Will people be sufficiently motivated to work diligently under a socialistic system? Are large numbers of elected officials motivated by selfish interests that frequently override their sense of duty to those who have elected them?

Fortunately, we don't have to start constructing theories about human nature from scratch, since other people, including some of the great writers (Shakespeare, Aristotle, Darwin, Freud) have been at the task for some time now. (Of course, tapping these

sources has its risks. Freud, for instance, had some way-off-target ideas on the subject to go along with some extremely penetrating ones.) But even common everyday sayings contain a mother lode of wisdom. Blood *is* thicker than water, and power *does* tend to corrupt, even if it is doubtful that the female of the species is any more vain than the male.

The Reliability of Information Sources

Thoughts about the accuracy, sufficiency, and truthfulness of information sources constitute another vital kind of background belief. As with computers, so also with the human mind: "Garbage in, garbage out." We therefore need constantly to reassess the reliability of important information sources—television, newspapers, magazines, friends, the Internet, teachers, textbooks, and so on. Under what conditions are these sources likely to provide truthful or, at least, sensible information or opinions? When are alleged experts likely even to possess the truth, much less be motivated to tell it to us straight? When are they likely to be prejudiced in ways that may cloud their judgment? We can't assume automatically that a source is reliable without some *reason* for believing this. As lamented a while back, many people seem to think that if they read it in print or hear it on the TV evening news, then it must be true. Sophisticated reasoners, however, realize that these information sources do not always furnish "the truth, the whole truth, and nothing but the truth"; they don't necessarily provide us with "All the news that's fit to print" (the *New York Times* motto), instead sometimes shaving matters either out of ignorance or from self-serving motives. Intelligent viewers of the scene thus try to determine when these sources are likely to be reliable and when not. That is why a whole chapter in this text, Chapter 10, deals with advertising as an information source; Chapter 11 with the reliability of the media; and another chapter, Chapter 12, with public school textbooks as information sources.

11. Science to the Rescue

The mention of Darwin and Freud a while back brings to mind the central place that science plays in modern life and in the construction of accurate stocks of background beliefs—in particular, in the formulation of sensible worldviews. Although no information source is absolutely reliable and no theory exempt from at least a small measure of doubt, the most reliable, the most accurate information comes from the well-established sciences of physics, chemistry, biology, and, to a lesser extent, psychology, the social sciences, and the applied sciences such as engineering. The scientific enterprise is an organized, ongoing, worldwide activity that builds and corrects from generation to generation. The method of science is just the rigorous, systematic, dogged application of cogent inductive reasoning, mixed with all sorts of deductive—including mathematical—reasoning from what has so far been observed over many centuries to theories about how the universe and the many things in it have functioned and are likely to function. Theories falsified by experience are tossed out, no matter whose pet ideas happen to get stepped on. Absolutely no one, starting from scratch, could hope to obtain in one lifetime anything remotely resembling the sophisticated and accurate conclusions of any of the sciences, even if that person were a Galileo, Newton, Darwin, and Einstein all rolled into one. *It is foolish indeed to dismiss what*

science has to say on any topic without very careful thought and without having extremely important reasons for doing so![10]

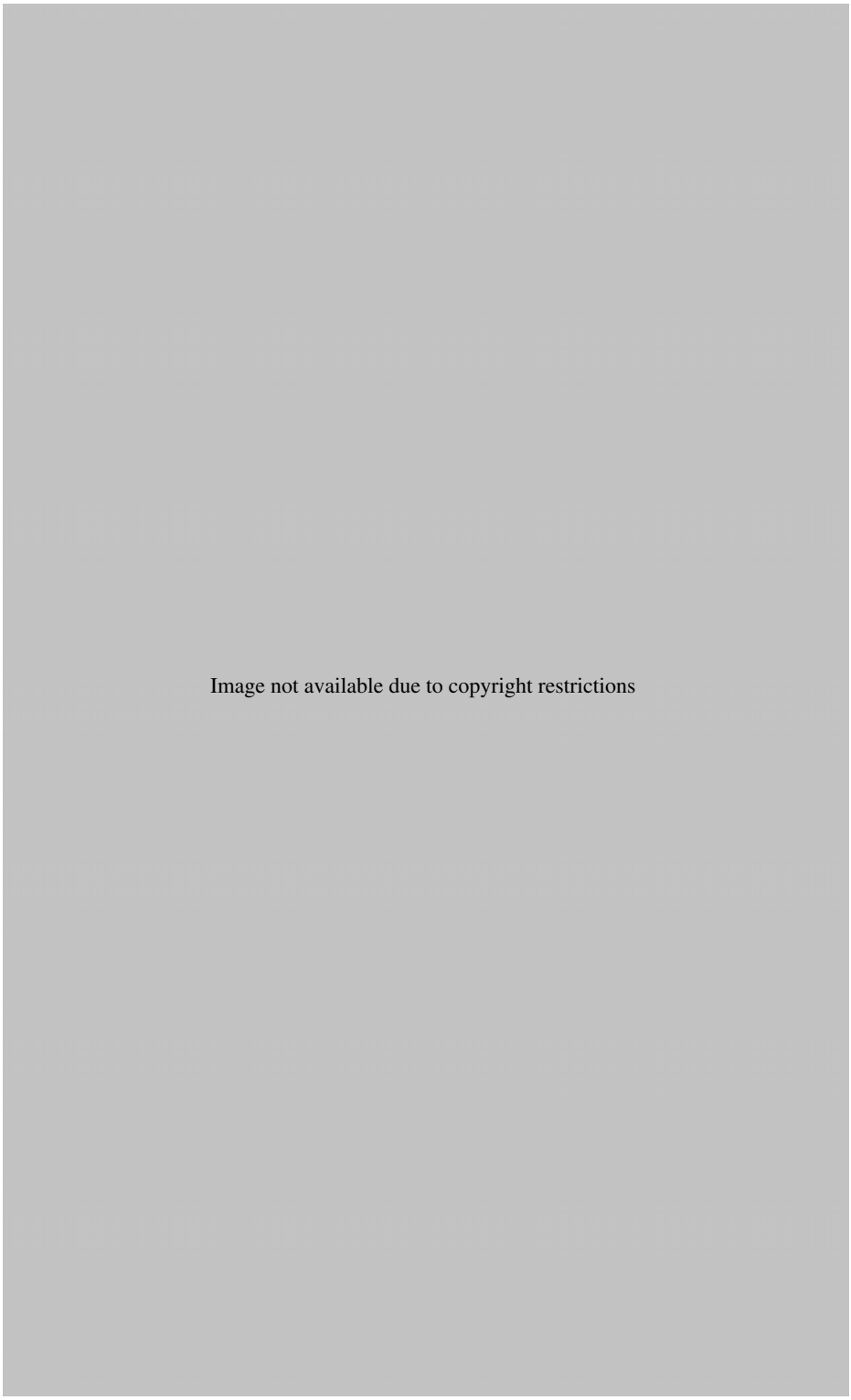
Indeed, one justification for requiring all high school students to take at least one course in a physical or biological science is to allow them to gain an understanding of the great rigor with which scientific principles are tested and proved. But another, easier way to come to understand the power of science as compared to other ways of finding about the world is to think carefully about the thousands of everyday items available to us today that did not exist 300 years ago, products that owe their existence to the tremendous advances in scientific theory that have been made since the days of Galileo and Newton. Without science, there would be no automobiles, no airplanes (not to mention spacecraft), no telephones, electric lightbulbs, air conditioning, or other electric devices of any kind (certainly no computers!), no batteries, no aspirin or other common painkillers, no anesthetics (alcohol used to be the painkiller used during amputations), no antibiotics (or even knowledge of the existence of microbes and thus the extreme importance of cleanliness), no ways to purify drinking water, no indoor plumbing, no eyeglasses, no insulin for diabetics, . . . the list goes on and on. Instead there were plenty of mosquitoes and flies (and fly paper) everywhere on summer days, and people made do with commodes, outhouses, and well-drawn drinking and washing water. In those days, doctors could cure only a handful of ailments, horse dung and its foul smell were everywhere in every city and town, lighting after dark was furnished by candles or oil lamps, and so on. Before the existence of the scientific, modern, industrial world, the average life span almost everywhere was less than 50 years, much less in most societies.

Of course, to avoid having beliefs contradicted by scientific theory or to successfully apply scientific principles in dealing with everyday problems, one does have to have at least a casual acquaintance with what science has to say on various topics. The problem is that large numbers of people have no idea what science is up to and have only the tiniest stock of scientific facts about the nature of the world.

Unfortunately, it isn't just the average person (or average college graduate?) who is more or less illiterate when it comes to science. Even those who need to know about specific scientific results in order to do their jobs adequately are frequently remiss in this way. During a quite severe drought in California, one government official defended his inaction by stating that "One problem [in deciding whether to enact water rationing measures] is that we have only 110 years of [precipitation] records. Our statistics [on California droughts] aren't very good." Yet, just prior to that time, a U.S. Geological Survey study of giant sequoia tree rings had yielded a record going back more than 2,000 years.

Students sometimes defend their ignorance of science by arguing that they only need to know the science, if any, that is relevant to the job they will perform after graduation from college. But this is a serious mistake. For one thing, it isn't possible to know now what basic scientific ideas will be relevant to a job held several years down the pike. (It isn't really possible, except in unusual cases, to know what sort of job it will *be,* much less what kinds of knowledge are going to be relevant to it.) In this

[10]Note, however, that psychology has just recently come out of its infancy. Note also that there is more chicanery in medical research (because of the profit motive?) than in most other areas of science.



increasingly technological age, more and more jobs require at least a general idea of what science has to say about various topics.

More to the point, a rudimentary understanding of science also is of immeasurable value when dealing with all sorts of everyday problems that aren't related to earning a living. Consumers spend millions of dollars every year on over-the-counter nostrums that don't work, or may even be harmful, because they don't know simple scientific facts—for instance, that no remedies they can buy will cure the flulike infections common in winter. (A friend of ours who had a hearing problem wasted six months having his back manipulated by a chiropractor before going to a physician who removed wax from his ear and restored normal hearing.[11]) Every day, people throw their money away on get-rich-quick schemes that defy the most basic principles of economics. Large sums are wasted on fortune tellers, mediums, and other charlatans who science has proved over and over again cannot deliver the promised goods. (This point is discussed a bit more in Chapter 6.)

Students often are put off science by the sheer complexity of the subject matter. Biology, for example, has to be an extremely complicated science, given that the human body contains trillions of cells, each one of which contains millions of atoms and subatomic particles (did you know this?). So the bad news is that every science quickly gets over the heads of almost all laypeople. But the good news is that with only modest perseverance, people who are reasonably intelligent can learn enough about science to greatly improve their everyday reasoning and thus their chances of success in everyday life. (Clearly, similar remarks apply to mathematics, particularly to arithmetic and simple algebra—note the confusion that occasionally results in supermarkets when the power goes out and clerks need to actually add and subtract to figure out what is owed.)

Exercise 1-9

A quiz was given to determine how much American adults know about the nature of the world. Answer the following true/false questions that were part of this quiz.

1. Lasers work by focusing sound waves.
2. Antibiotics kill viruses as well as bacteria.
3. The earliest human beings lived at the same time as the dinosaurs.
4. Human beings developed from earlier species of animals.

If some of these are a bit difficult for you to answer, you might take comfort in the fact that only the following percentages of the adult Americans answered the questions correctly:

1. 45
2. 51
3. 48
4. 53

Summary of Chapter 1

Reasoning is the essential ingredient in solving life's problems. This chapter discusses some of the fundamentals of good reasoning and presents an overview of the material to be covered later on the topic of reasoning well in everyday life.

[11]The point is not to knock all chiropractors but to stress the need for care when consulting experts of any kind.

1. *Reasoning* can be cast into *arguments,* which consist of one or more *premises* (reasons) offered in support of a *conclusion.* In real life (as opposed to in textbooks), arguments usually are not labeled and divided from surrounding rhetoric, nor are their premises and conclusions neatly specified. But clues generally are given. Words such as *because, since,* and *for* usually signal premises; *hence, therefore,* and *so,* conclusions.

2. Not all groups of sentences form arguments. They may be anecdotes or other types of *exposition* or *explanation.*

3. Reasoning is either *cogent* (good) or *fallacious* (bad). Cogent reasoning must satisfy three criteria: It must (1) start with justified (warranted, believable) premises, (2) include all likely relevant information, and (3) be *valid* (correct).

4. There are two basic kinds of valid reasoning: *deductive* and *inductive.* The fundamental property of a *deductively valid* argument is this: If its premises are true, then its conclusion must be true also. This is so because the conclusion of a deductively valid argument already is contained in its premises, although usually implicitly, not explicitly. (Note that a deductively valid argument may have false premises. What makes it valid is that *if* its premises are true, then its conclusion must be also.) Unlike deductively valid arguments, those that are *inductively valid* (correct, strong) have conclusions that go beyond the claims made by their premises, projecting patterns stated in the premises onto additional cases.

5. There is no truth to claims about there being such things as "feminine logic," different from "male logic." Logic is not "gender-relative." Similarly, there is no truth to the idea that something exists called "black logic," different from the "Eurocentric" variety espoused by white male teachers. Good reasoning does not differ from sex to sex or race to race; it is not in any way tied to ethnicity. Furthermore, with respect to facts, at any rate, the idea embodied in the idea that "It may well be true for you, but it isn't true for me" is without merit, as is the academic talk of there being something called "Aristotelian linear reasoning," different from a more "intuitive" type of reasoning. (But more needs to be said, and will be, about beliefs concerning values. The point made in this chapter is that, however we may arrive at value beliefs, reasoning from those beliefs must employ the same principles of logic as does reasoning about purely factual matters.)

6. Background beliefs can be divided in many ways, one being into beliefs about *matters of fact* (snow is white) and beliefs about *values* (Jane Austen's novels are better than those of Stephen King). (Note that when speaking of beliefs here, we have in mind a broad sense covering everything accepted as true, or very likely true, and all value judgments and convictions.)

7. Beliefs also, of course, can be divided into those that happen to be true and those that are false. They also can be differentiated in terms of how firmly they are or should be held, and with respect to whether they concern particular events (Jones went to the show last Wednesday) or those that are general (Copper conducts electricity).

8. Our most important beliefs, taken together, make up our *worldviews* or *philosophies.* They are particularly important because they enter into decisions of all kinds—about what to do or what to believe—that we need to make in everyday life. *Examples:* We all die sooner or later; it's always wrong to betray a friend; the best way to find out about how things work is to use induction and deduction. Note that, although most beliefs in our worldviews are general—even extremely general—a few are not. *Example:* We don't know whether there is or isn't a God (part of the worldviews of agnostics).

9. Unfortunately, we all tend at least sometimes to hold a belief without sufficient reason for doing so—for example, when complicated social or political issues are discussed. This is true even with respect to some of the beliefs that make up our worldviews. But worldviews, just as any beliefs, need to be carefully examined: Does evidence support them? Do we really value this more than that? Having an accurate supply of background beliefs is not just a matter of regularly acquiring more beliefs but also of pruning those we already have.

   We tend to absorb the beliefs of those around us as we mature from children into adults. Our worldviews, in particular, tend to grow out of family values, religious training, peer group attitudes, cultural heritages, and so on. We often hold these vital beliefs uncritically—indeed, often without realizing that we hold them. Good critical reasoners, on the contrary, try to become aware of and to critically evaluate their background beliefs, especially those making up their worldviews.

10. Beliefs about human nature are of vital importance when reasoning in daily life, because the success or failure of everyday interactions depends on them. Whether we can trust this sort of person or that is an example. That is one reason why reading the writings of great literary and scientific figures is so useful (in addition to being entertaining).

    Beliefs about the accuracy and truthfulness of information sources also are of great importance, because, as the saying goes, "Garbage in, garbage out." We can't reason well from poor or false information. That is why later chapters in this book deal with several important information sources.

11. Because science plays such an important part in everyone's life these days, it behooves us to become as well acquainted as we can, and as time permits, with the scientific view of the world and with the ways in which scientists come to their conclusions. No one on their own could possibly discover even a tiny fraction of what scientists have learned over hundreds of years about the way the world works. (Those who don't see the importance of science in their own lives should reflect on how much we depend, every day, on the fruits of scientific investigations. *Examples:* Electrical devices, painkillers and other modern medicines, toilet paper.) Unfortunately, most people do not have even a reasonably good grasp of what science is up to.

Answers to Starred Exercise Items

These answers certainly are not presented as revealed truth. They represent the authors' thoughts on the matter, which it is hoped will prove useful to the reader.

Exercise 1-1 (pp. 3–4)

4. *Premise:* We are sinners all.
   Implied premise: All sinners should forbear to judge (others).
   Conclusion: We all should forbear to judge (others).
6. *Premise:* Since 18-year-olds are legally allowed to vote,
   Premise: Since they can be drafted into war,
   Conclusion: Eighteen-year-olds should be allowed to drink alcoholic beverages.

Exercise 1-2 (pp. 4–6)

1. *Premise:* If we keep burning so much coal and oil, the greenhouse effect will continue to get worse.
   Premise: But it will be a disaster if it happens.
   Conclusion: So we've got to reduce our dependency on those fossil fuels.
4. No argument. Just a narrative of summer activities.
9. *Premise:* We all think ourselves so abundantly provided with good sense that we don't desire any more.
   Implied premise: If everyone is satisfied with the amount of good sense he has, then good sense must be equally distributed.
   Conclusion: Good sense is equally distributed.

   (The bit about it being the most equally distributed item is, we can assume, a rhetorical flourish. By the way, do you suppose Descartes was being a bit ironic?)

Exercise 1-5 (p. 21)

3. $10.9 billion is a drop in the bucket these days for military expenditures. The United States spends a great many times more than that every year on the military.

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