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*Chapter One*

# INTRODUCTION TO ARGUMENTS

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## I. INTRODUCTION

The popularity of television series about crime scene investigators (CSI) has made “evidence” a familiar term. In CSI shows, the opening scene usually focuses on the aftermath of some brutal crime, often a murder. A team of investigators descends on the scene to collect evidence that will help to identify the victim, to determine exactly why, where, and when the crime occurred, and in the end to find out who is responsible for the crime. One of the investigators takes photographs of various aspects of the scene, such as the body of the victim, and notes the position of the body in relationship to other features of the scene. Other members of the team might look for documents—a driver’s license, a car registration—that would help to identify the victim. If the victim was shot, the team searches for the murder weapon, or failing that, for shell casings. These and other bits of physical evidence are “bagged and tagged,” and taken back to a laboratory for further examination. Sometimes the temperature of the body, determined by the use of a thermometer, can fix the time of death. In other cases, if the victim has been dead for several days or weeks, life cycles of various insects that inhabit corpses can be used to set a time of death. Post-mortem examination can also determine whether the body was moved after death occurred. Investigators take notes about their findings and write reports on the basis of those notes. Notes and reports constitute verbal evidence. These various types of evidence, that is, physical evidence, including photographic evidence, and verbal evidence, can be used to support assertions such as

1. The victim was a 21-year-old female named Inez Cartwright.
2. She died at the scene two days before the body was found, as the result of a gunshot wound through the back of the head.
3. The weapon that killed her was a 45-caliber revolver, registered to Samuel W. Wallis.

Such evidence may be sufficient to indict Mr. Wallis for the crime of murder. If he is brought to trial, he and his lawyers may try to present evidence to show that the accusation is false. For example, the defense might argue that the gun had been stolen from Mr. Wallis four years prior to the murder, and that this theft had been reported to the police at the time. In addition, if reliable witnesses can testify that he was not in the city at the time of the victim’s death, this verbal evidence aids the defense.

The question of evidence arises not only in criminal investigations, however, but in many aspects of everyday life. Suppose, for example, that you want to go to a rock concert on the Fourth of July and plan to take a bus to the arena. Your father, who works near the arena, rides a bus to work regularly and tells you that the buses run every ten minutes. Because you would hate to miss any of the concert, you find a bus schedule with the exact times the bus stops near your house. You learn the buses run only once an hour on holidays. You have obtained verbal evidence from the bus schedule (written,

in this case, rather than spoken), but the new evidence fails to support the assertion made by your father. He was not lying—he did not intend to deceive you—he just forgot that the holiday bus schedule is different from the daily schedule.

Gathering evidence and determining whether it supports or undermines assertions are two aspects of **critical thinking**. Critical thinking also involves paying careful attention to what we hear and read so that we can understand and respond appropriately. We use language primarily to communicate with one another, and communication takes many forms. We engage in small talk just to “stay in touch” with others. We express our feelings of joy, sorrow, sympathy, anger, hope, and fear in language. We ask questions (“How old are you?”), make requests (“Please give me your phone number.”), and issue warnings (“Watch out for that car!”) and commands (“Do not write in this book.”). We also use language to convey information, often by asserting declarative sentences, such as “Thirty students are enrolled in the critical thinking class,” or “The college volleyball team has nine scheduled games this year, but only three of them are home games.”

We should seek evidence when it is important to know whether information is correct. In general, we prefer to be well informed instead of mistaken. But sometimes more is at stake than a desire to seek knowledge. We *act* on the basis of our beliefs, and our actions can have important consequences.

Knowing when to seek evidence requires sensitivity to the circumstances or context in which words are spoken or written. In some contexts, it is silly to ask for evidence. In casual conversation, for example, comments about unpleasant weather often serve to open a conversation or keep it alive. Asking for evidence in such circumstances could be done jokingly, but not seriously. In contrast, however, if you are planning to fly in a small plane, atmospheric conditions are a serious concern, and it is appropriate to seek evidence for the state of the weather.

When your close friend tells you that her head hurts or that chocolate ice cream is wonderful, she is expressing how she feels, and a request for evidence is not appropriate. In a different context, such as a survey conducted by a company selling pain killers or ice cream, seeking evidence to support what people say about their pains and preferences makes sense.

It is appropriate to request evidence when we want to be sure that our information is reliable. Questions, requests, directives, and commands do not usually require evidence. When someone at the dinner table asks for the salt, information may be conveyed (perhaps the food needs salt), but the person who requests salt does not *assert* that the food needs salt, and it would be odd to ask for evidence.

Even though information is often conveyed in songs and poetry, responding to these forms by seeking evidence is, in most contexts, not appropriate. When we read an epic poem, such as Homer’s *Iliad*, we normally do so to savor the poem’s language and its portrayal of the human condition.

That is to say, we are concerned with the expressive content of the poem rather than the information it presents about what might have happened in the eastern reaches of the Mediterranean some thirty-three hundred years ago. We can respond aesthetically to the poem without raising the question of whether Helen of Troy existed and whether her kidnapping by a Trojan prince caused a war between the Greeks and Trojans. The *Iliad* is a work of art and, as such, can be enjoyed and appraised in aesthetic terms without raising questions of factual accuracy.

When we do ask whether or not the events described in Homer's *Iliad* actually occurred, we can read the *Iliad* as a (possible) historical document, rather than—or in addition to—respond to it as epic poetry. In fact, many expeditions have been mounted to find evidence for the Trojan War, using Homer's work as a guide. Some physical evidence has been found, and a form of writing, Linear B, which may eventually yield verbal evidence for the Trojan War, has been deciphered. In the meantime, scholars continue to debate whether and to what extent the *Iliad* was based on actual historical events, and they use the poem as a set of clues to guide their research. These scholars are focusing on the information contained in the poem, rather than on its expressive features. In this sense, they are reading the *Iliad* as history rather than poetry. When the *Iliad* is treated as a historical document, it is reasonable to ask for evidence for the events described there.

As these examples show, context is all-important in determining when to seek evidence. Context also influences the amount and type of evidence that is required. If a stranger tells you there is a fire in the office building where you are working, you would probably not bother to acquire much evidence; you would get out of the building as soon as possible. If that same stranger tells you that a building where you used to work burned today, you might check it out before accepting what you have been told.

Evidence usually carries a price. Whereas being misinformed can result in costly mistakes, gathering evidence can also be costly. Costs can be measured in time, money, and even goodwill. We risk offending people, for example, by questioning their accuracy or invading their privacy. Before we decide whether to collect evidence, we have to balance the costs of doing so against the costs of being wrong.

In addition to the critical tasks already mentioned—namely, figuring out what language means in various contexts, determining when evidence is required to support assertions, and marshaling evidence when it is required—critical thinking also involves other abilities: thinking coherently, comprehending instructions and advice, formulating problems and solving them, judging whether bits of information are relevant to an issue, surveying possible outcomes of decisions and plans, and deciding how to make the best choices from those available. In this text, we are especially concerned with understanding the relationship between assertions and verbal evidence for those assertions, but we will also try to improve other critical thinking skills.

Although you have probably not studied critical thinking in a class before, you have surely engaged in critical thinking. At one time or another, for example, you have probably thought critically about advertising claims that promise quick and easy weight loss or guarantee to teach techniques that will make you irresistible to members of the opposite sex. If you are like most people, you distrust politicians' assertions about what they can accomplish if they are elected. You would probably not take the word of a used-car salesperson, without additional evidence, that the car you are interested in buying was owned by a little old lady who drove it only on Sundays.

A critical attitude is easy to adopt in the cases just mentioned, but we are less careful about seeking evidence when information comes from friends and various "authorities," such as teachers, television newscasters, and newspaper reporters. When we trust a source, we tend to accept what that source says. Trust, however, does not always override the need for further evidence, as the earlier example about the bus schedule showed. We should insist on evidence when we plan to act on the basis of the information and when our actions have important consequences, especially if the consequences are potentially harmful. If a trusted friend tells you that a powdered substance produces a feeling of euphoria and well-being when inhaled, with no unpleasant side effects, you—having heard of potential risks—will be wise to seek further evidence before trying it. The amount of evidence you require before you act depends in part on the type of consequences for you, or others, if the assertion turns out to be false.

To be critical thinkers, we need to understand the difference between *evidence* and other devices that people use to make us believe what they say. Advertising is notorious for persuasive claims about products. Some advertisements present physical evidence, such as washing dirty socks in different detergents and showing the results on television. Others describe tests performed by independent laboratories. These descriptions are verbal evidence for the value of the product. In other cases, advertisements present verbal evidence in the form of testimonials from satisfied customers.

Many advertisements, however, present no evidence for their claims. You have all seen ads that show beautiful, athletic, fashionably dressed people smoking the advertised cigarettes or drinking the advertised brand of gin. These ads employ psychological pressure in place of evidence to persuade us to use their product. The ads are designed to suggest that using these products will let us share the glamorous life portrayed in the ad.

Threats, which can either be subtle or blunt, are another nonevidential way to mold people's beliefs. Political campaigns often play on the fears of voters by showing scenes of violence and proclaiming that the candidate will reduce crime in the streets. This tactic exhibits the candidate's concern with crime. Pictures or descriptions of violent crime, however, are obviously not evidence that the candidate can do anything to reduce crime. Nevertheless, people are often convinced by such techniques that the candidate will stamp out crime.

Using means other than evidence to persuade people is not always wrong. It may be appropriate, for example, to appeal to people's sense of compassion to persuade them to aid victims of poverty or oppression. But it is not appropriate to believe, on the basis of such compassion alone, that a particular group is responsible for the oppression, that one type of aid is more appropriate than some other type, or that the democratic government of the impoverished people will collapse if the aid is withheld. Failure to distinguish between nonevidential persuasion and evidence that supports an assertion is a serious intellectual mistake. Such a mistake is called a *fallacy*. Avoiding fallacies is another aspect of critical thinking.

Defining the expression *critical thinking* is difficult because it refers to many different abilities and activities. Nevertheless, we can begin to understand what it means when we realize that thinking critically involves

1. analyzing what is said
2. assessing it carefully
3. seeking evidence when this is appropriate
4. putting various pieces of information together in a coherent way
5. attempting to avoid mistakes in thinking
6. questioning things that do not make sense
7. making decisions and plans in the light of the best available information

Sometimes, just being aware of the pitfalls of not thinking critically is enough to spur us to more careful thought. As in many other areas of life, however, practice and exercise are the best way to improve critical thinking skills.

### Exercise Set 1.1

These exercises are designed to raise your awareness of the distinction between unsupported assertions and those for which evidence is provided, as well as the need for evidence to support various sorts of claims.

1. Suppose a friend tells you about a special unadvertised sale of compact discs at a nearby store. She says that you can pick up some incredible bargains if you go quickly. You are not busy, you have a few dollars, and you share your friend's taste in music. Would you try to get evidence in support of your friend's assertion before shopping? Why or why not?
2. Some professors at your university have a reputation for being great teachers; others are regarded as so-so (or worse). On what sort of evidence are such reputations based?
3. Suppose you tell your professor that you missed an examination because you were ill. What sort of evidence is she likely to ask for in support of your claim?

4. Earning a high score on the SAT test is supposed to be evidence for what sorts of abilities? Discuss some of the costs of gathering this evidence. Who pays those costs?
5. You read the following in a nonfiction travel book, *Prospero's Cell*, about the Greek island Corcyra (Corfu):

Climb to Vigla in the time of cherries and look down. You will see that the island lies against the mainland roughly in the form of a sickle. On the landward side you have a great bay, noble and serene, and almost completely landlocked. Northward the tip of the sickle almost touches Albania and here the troubled blue of the Ionian is sucked harshly between ribs of limestone and spits of sand. Kalamai fronts the Albanian foothills, and into it the water races as into a swimming pool; a milky ferocious green when the north wind curdles it.

—L. Durrell

Durrell says that from a given vantage point (Vigla) in summer (the time of cherries), you can see the sickle shape of the island. He describes (makes further assertions about) Corcyra's location with respect to surrounding geographical features, states, and towns. His language is expressive (for example, "the troubled blue . . . is sucked harshly between ribs of limestone") and is designed to convey the feelings of both serenity and untamed beauty that the island has inspired.

- a. Does the author offer any evidence for the assertions he makes?
  - b. Suppose you are reading this book to acquire some information about the island because you hope to visit it as a tourist. Should you gather evidence to support the accuracy of Durrell's descriptions?
  - c. Suppose you are a military commander who plans an invasion of the island. Should you seek evidence for the truth of Durrell's descriptions?
6. You read the following account of *Amanita verna*, a type of wild mushroom, in *The Mushroom Hunter's Field Guide* by Professor A. H. Smith, a recognized expert on mushrooms. He says that this mushroom looks like the kind that you buy at the grocery. It is pure white (when fresh) and very beautiful. Then he says the following:  
Edibility: Deadly poisonous. The symptoms are delayed, making applications of first aid almost useless. Never eat a white *Amanita*.
    - a. What assertions does Dr. Smith make in the quoted passage?
    - b. Is "Never eat a white *Amanita*" an assertion?
    - c. Would you seek further evidence before following Dr. Smith's advice?

7. The method of shallow cultivation is offered as an alternative to the use of poisonous herbicides to control weeds.

Shallow cultivation is an effective way to control weeds. Experiments have shown that hoeing or tilling only the top 2–4 inches of soil *before seed sprouts can set* eventually exhausts most of the vast supply of weed seeds that lie dormant in the soil.

—P. H. Johnson, “Make Your Soil Smile,” *Organic Gardening*, March 1987

- What assertions does the author make?
- Is any evidence (physical or verbal) presented?
- If you are a backyard gardener who is trying to save money and avoid poisons, would you seek further evidence before trying shallow cultivation instead of herbicides to control weeds?
- If you are a truck farmer whose only income depends on the success of your crops, would you seek further evidence that shallow cultivation is an effective means of weed control?

- 8) Whatever your problem, I’ll solve it. Over two thousand men and women, doctors, lawyers, executives, have invested the time, money, and effort to create a breakthrough in business, career, social life.

—Taken from an ad for a management consultant firm

- What assertions are made here?
- Is any evidence offered? Should you seek any before you invest your time, money, and effort in a consultation with this firm? Can you suggest how to acquire evidence?

- 9) A comparison of annual rates of four major insurance companies reveals that the costs of identical automobile insurance policies for college students vary by as much as \$200. [The comparison, described later in the same story, consisted of telephone interviews with insurance agents from the four companies. The reporter inquired about rates for a twenty-year-old male college student who had no history of automobile accidents; the author of this story specified the automobile make, model, and year in each case.] So it pays to shop around and research the various types of coverage in order to get the best deal.

—Beverly Medlyn, *Arizona Daily Wildcat* (a college newspaper)

What evidence supports the author’s assertion that it pays to shop for the best deal in auto insurance?

10. Proponents of legalizing [marijuana] are apparently growing in number. They argue that it is less dangerous than alcohol, which kills thousands of Americans each year. No one becomes physically addicted to pot, they say, and it doesn’t kill anyone under its influence. Marijuana, they assert, is safer than smoking regular cigarettes.

—Alton Blakeslee, Associated Press Science Writer

- Describe what evidence, if any, is offered for the assertion that marijuana is less dangerous than alcohol.

- Describe what evidence, if any, is offered for the assertion that marijuana is safer than smoking regular cigarettes.
- If marijuana really is no more dangerous than alcohol or cigarettes, is that a good enough reason to believe that marijuana should be legalized? Why or why not?

11. The Commission on Reading recently reviewed decades of reading research and concluded that: “The single most important activity for building the knowledge required for eventual success in reading is reading aloud to children.” The experts also noted that this simple activity works as well or better than formal teaching of letters, sounds, and words. Parents who want to do right by their children will be glad to know that they can throw away those baby flashcards and preschool workbooks in favor of engaging storybooks, books which quickly endear themselves to both child and adult.

—E. Segal and J. B. Friedberg, “Don’t teach your children to read,” *Carnegie Magazine*, May–June 1987

- Do you think that the title “Don’t teach your children to read” accurately reflects the message in the article? (Is reading aloud a form of teaching?)
- What evidence is cited for the assertion that reading aloud to children is most important for eventual success in reading?

12. It is false to say that the institution of marriage is falling apart; it is true, I think, that people are demanding more of their marriage partners than they used to—which, in the long run, is a step forward despite the chaos it creates for our age. If marriage were *really* falling apart, divorced persons wouldn’t be as eager as they are to find another partner as speedily as possible.

—Taken from a *Chicago Daily News* story about the alleged decline of the institution of marriage

Here, the author says that divorced persons are eager to marry again as soon as possible and regards this as evidence against the assertion that the institution of marriage is falling apart. Could someone admit that divorced persons are eager to remarry but still believe that a high divorce rate is evidence that the institution of marriage is falling apart? (*Hint*: Are there several different possible meanings for the statement: “The institution of marriage is falling apart”?)

- 13) In a television commercial for a particular brand of travelers’ checks, a young American couple is on vacation in the Orient. The woman, who looks worried, tells her companion that she has lost her purse, which holds all their money, checks, and identification. Together they hurry to the tour director. After the tour director learns that their checks are the advertised brand, he assures them there is no need to worry because they can get help at a nearby office.

- a. What method is used to persuade the viewer that this brand of travelers' checks should be purchased?
- b. Is any evidence presented here that this brand of travelers' checks is superior to any other?

14 One definition of an investment bubble is a market that rises to unimaginable levels for inexplicable reasons. Is this the case with real estate? Not in the view of Richard Rosen, senior economist and economic advisor at the Chicago Fed. In his essay in the July 2005 *Chicago Fed Letter*, he shows that, on a national level, residential real estate appreciation in recent years largely can be explained by the decline in mortgage rates and the increase in median household income. He goes on to show that these two factors have kept housing affordability for the United States roughly constant as housing prices have increased. Rosen calculates that it took less than 16 percent of the median household's income to cover the monthly mortgage payment on a home with the median sale price last year. That compares with 20 percent in the mid-1980s and 18 percent in the early 1990s.

—*Investment Update*, Mellon Financial Corporation, July 2005

- a. Why does Rosen deny that the real estate market is in a bubble phase?
  - b. Do you agree that a fair measure of the affordability of housing is the percentage of a median household's income required to cover the monthly mortgage payments? Can you think of another way to determine whether housing is affordable?
15. In the last act of Shakespeare's *King Lear*, the lifeless body of Lear's daughter Cordelia is placed into his arms. He says the following:

I know when one is dead and when one lives; She's gone for ever.  
I know when one is dead and when one lives;  
She's dead as earth. Lend me a looking glass;  
If that her breath will mist or stain the stone,  
Why then she lives.

The grief-stricken Lear first admits Cordelia is dead and then hopes in vain that she is still alive. What evidence does he call for to settle the matter?

16. In a memo concerning whether commercial speech is protected by the First Amendment [which guarantees freedom of speech], Supreme Court Justice Harry Blackmun wrote

False or misleading advertising could be regulated "not because it is commercial or pecuniary in purpose but because it [i.e., regulation] prevents commercial injury and without it commerce would be impossible."

—Linda Greenhouse, *Becoming Justice Blackmun*

What reason does Justice Blackmun give for restricting false advertising? Can you clarify the reasoning involved?

17. It is a sobering thought that overexposure to lead was probably a factor in the decline of the Roman Empire. . . . Romans lined their bronze cooking, eating, and wine storage vessels with lead. They thus avoided the obvious and unpleasant taste and symptoms of copper poisoning. They traded them for the pleasant flavor and more subtle poisoning associated with lead. Lead was also common in Roman life in the form of paints, and lead pipes were often used to carry water. Examination of the bones of upper-class Romans of the classical period shows high concentrations of lead—possibly one cause of the famous decadence of Roman leadership. The lower classes lived more simply, drank less wine from lead-lined containers, and thus may have picked up far less lead.

—Dr. Paul R. Ehrlich, *The Population Bomb*

Ehrlich portrays a decadent upper class, suffering from lead poisoning, leading Rome to ruin. However, he does not say whether any bodies of lower-class Romans have been examined for levels of lead.

- a. Assume it is true that the lower classes lived more simply and drank less wine from lead-lined containers. Does this persuade you that they picked up far less lead than the upper classes? Why or why not?
  - b. What evidence might support the assertion that the lower classes were exposed to just as much lead? (*Hint: Who was mining the lead, working with lead paints and lead pipes, and manufacturing lead-lined containers for wine?*)
18. To deny the existence of Satan and the reality of evil spirits is to be more foolish than a soldier reconnoitering enemy territory without admitting that there is an enemy out there to do him harm.

—Taken from a United Press International newspaper story quoting Dr. L. Nelson Bell, a moderator of the Presbyterian Church

Acknowledging that the "unseen power" of evil spirits is a difficult concept for the modern mind, Dr. Bell added the following: Electricity is also mysterious, but we do not question its existence or its power.

We can be sure electricity is real, because we can see and feel the things it accomplishes, such as lighting and cooling homes.

But if pain, hatred, war, suspicion, racism and other evils are manifestations of the devil's work, who is to say there is any lack of evidence in the modern world for his reality?

Dr. Bell compares the devil with electricity in the following way: Both are "unseen powers" whose presence is detected by their observed effects.

- a. Do we have any evidence that lighting and cooling of houses are effects of electricity? (Could you demonstrate this to someone who doubts it?)
- b. Do we have any evidence that pain, hatred, war, and racism are the effects of the devil's work? (Could you give a similar sort of demonstration or provide other evidence?)

19. On a recent sports news show on television, a football player comments on whether college football players should be paid for playing ball:

Football players should be paid because they work five or six hours a day, and have to play—work again—on Saturdays. It is just like a real job.

- a. The player asserts that playing college football is just like a real job. Does he give any evidence for this?
- b. Can you think of any important differences between playing college football and working at a real job? (To answer this you may have to clarify the meaning of "real job.")
- c. Is it obvious that anyone who works five or six hours a day and again on Saturdays should be paid for that work?

## II. ARGUMENTS

Evidence, as we noted earlier, can be either verbal or physical. When you return damaged goods to a store to prove their condition, you are presenting physical evidence to support your claim that the goods are damaged. Some situations—such as requests for refunds—require physical evidence. Remember all those detective stories that say that without a body there is no evidence a murder was committed?

In this text, we are more concerned with verbal evidence than with physical evidence. Although in some situations physical evidence is absolutely necessary, in many others a description of the physical evidence will suffice and is more convenient to present. Verbal evidence may be oral or written and can include descriptions of physical evidence. A set of sentences consisting of an assertion to be supported and the verbal evidence for that assertion is called an **argument**. When we support sentences by offering verbal evidence for them, we are **arguing** for those sentences.

The terms *argument* and *arguing* are frequently used in another way: *argument* to refer to a dispute or disagreement and *arguing* to refer to the activity of disagreeing. The two ways of using the terms, while different, are not entirely unrelated, for when we are involved in a disagreement or dispute, we often try to show that our position is correct by stating evidence to support it.

In dealing with problems of critical thinking, the word *argument* most commonly refers to a set of sentences related in such a way that some of the sentences purport to provide evidence for one of the sentences, without any suggestion of dispute or disagreement.

**Logic** is the field of study concerned with analyzing arguments and appraising their correctness or incorrectness. The logician tries to discover and state general principles by which to decide whether the alleged evidence in an argument would, if it were true, support some assertion. Thus, logic is an important part of critical thinking.

In our study of arguments, it will be helpful to use special terms to refer to the separate parts of an argument. The sentences that assert the evidence are **premises**; and the sentence that is being argued for is **the conclusion**. An argument can have any number of premises, but (by definition) it can have only one conclusion.

The following argument has just one premiss:

Mary has a twin sister.

Therefore, Mary is not an only child.

The next argument has two premisses:

Abortion is the same as murder.

Murder is wrong.

Therefore, abortion is wrong.

Many arguments have more than two premisses. Charles Darwin once said that his entire book, *The Origin of Species*, was just one long argument for a single conclusion: the truth of evolution.

A sentence acquires status as a premiss or a conclusion according to the role it plays in a given argument. The sentence "Abortion is the same as murder," which is a premiss in the above argument, might be the conclusion of a different argument in which someone tried to establish *its* truth, as in, for example:

Abortion is the deliberate killing of a human fetus.

Human fetuses are persons.

Any deliberate killing of a person is murder.

Therefore, abortion is murder.

Of course, we might want to develop other arguments with new premisses to support any of the premisses of this argument, particularly if their truth is challenged.

Although it is always possible to question the premisses of an argument—and to ask for other arguments to support those premisses—this process normally ends when the interested parties find premisses that can be agreed on as a starting point. Sometimes this happens quickly, especially when premisses state what is easily observed to be true. But when the arguments concern important issues, such as the morality of abortion, it may be hard to agree on premisses any less controversial than the proposed conclusions. Sometimes, disagreements are so deep that it is not possible for opponents to find any acceptable premisses they can share.

Useful  
\*  
Usually, the point of an argument is to support the truth of its conclusion. Demonstrating the truth of a conclusion requires (1) that all premisses be true\* and (2) that the premisses provide the right type of support for the conclusion. Logic is concerned chiefly with the second point, namely, the relationship between the premisses and the conclusion. When we examine an argument in order to determine its *logical* strength, the question of whether the premisses are actually true may be set aside in favor of answering whether the premisses *would* support the conclusion if they were true.

Critical thinking is broader in scope than logic, for as critical thinkers we must always be concerned with whether the premisses are true and perhaps with the possibility of finding further arguments to support any questionable premisses. However, even though we are concerned with the truth of premisses, it is important to treat that question separately from that of whether the premisses, if true, would support the conclusion of a given argument.

Premisses and conclusions of arguments are usually stated in **declarative sentences**. These sentences are most commonly used for presenting information and making assertions. It is appropriate to ask whether declarative sentences are true or false.

Consider the following argument given by opponents of the legalization of marijuana:

Marijuana should not be legalized because it is potentially dangerous and not enough is known about its long-term effects, and because use of marijuana leads to use of hard drugs.

Even though this argument is stated in a single sentence, we can divide that sentence into parts that are themselves sentences and that stand in the relationship of premisses and conclusion. The conclusion of this argument is the declarative sentence: "Marijuana should not be legalized." The three assertions, conjoined in a compound declarative sentence, that serve as premisses are: "it is potentially dangerous," "not enough is known about its long-term effects," and "use of marijuana leads to use of hard drugs." Each of these component sentences is an assertion, the truth of which can be questioned. For this argument to establish the truth of its conclusion, all of these premisses must be true, *and* together they must provide reasons for accepting the conclusion.

Although premisses and conclusions of arguments are usually declarative sentences, occasionally other forms occur. The following argument, taken from an editorial in the *New York Times* (7/15/2005), argues against

using female American soldiers as sexual foils during interrogations at military prisons, as this practice was described in a Pentagon report.

Surely no one can approve of turning an American soldier into a pseudo lap-dancer or having another smear fake menstrual blood on an Arab man. These practices are as degrading to the women as they are to the prisoners. They violate American moral values—and they seem pointless.

Does anyone in the military believe that a cold-blooded terrorist who has withstood months of physical and psychological abuse will crack because a woman runs her fingers through his hair suggestively or watches him disrobe? If devout Muslims become terrorists because they believe Western civilization is depraved, does it make sense to try to unnerve them by having Western women behave like trollops?

In this argument several questions support the claim that such practices are pointless, that is to say, ineffective. But these are not ordinary questions. They are called *rhetorical questions* because the writer assumes that the questions demand resounding negative answers. Thus, these questions, unlike ordinary questions, are used to "state the facts." Using rhetorical questions instead of declarative sentences to present premisses or conclusions of arguments is a dramatic and often persuasive way to make a point. Ref

### III. RECOGNIZING ARGUMENTS

Before beginning our detailed study of different types of arguments and their evaluation, we want to be able to recognize arguments as they occur in ordinary speech and writing. That is to say, we want to distinguish cases in which a sentence is merely being asserted from those in which the sentence is supported by other sentences. It makes no sense to accuse someone of presenting a poor argument for a case if no argument at all is offered. The most we can reasonably do in such circumstances is to say that an argument *should* be given to support the assertion. ل

When we are trying to identify an argument, the first question to ask is what point the author or speaker is trying to make. When we have identified the sentence that makes the point (the conclusion, if it is an argument), then we can ask what assertions, if any, are intended as support or evidence for that point (the premisses). ل

#### Example

Cigarette smoking is a serious health hazard. Statistical studies show that cigarette smokers are not only at much greater risk for contracting lung cancer, but also have higher incidence of emphysema and heart disease.

\*An exception to this requirement for true premisses occurs in a form of reasoning called indirect argument.



In this example, the claim that cigarette smoking is a serious health hazard is the conclusion, and it is supported by referring to the statistical studies that show that smokers have higher rates of certain types of serious illness than nonsmokers.

Recognizing arguments is sometimes aided by the presence of special words, called *indicator words*, that signal the presence of either premisses or conclusions of arguments. In several of the arguments presented already, the word *therefore* served to introduce conclusions. This is such a common use of the term in English that whenever *therefore* occurs, we should look for an argument. Other terms that often introduce conclusions of arguments are *thus*, *and so*, *consequently*, *necessarily*, *hence*, *it follows that*, and *for that reason*. Words that frequently indicate premisses are *because*, *since*, *for*, and *for the reason that*.

In the following arguments, the **indicator words** are italicized:

1. Taken from an ad paid for by a major oil company:

*Since* private business is the most effective instrument of economic change, the government should utilize the resources of private business in its economic planning and decision making.

The main point here is stated in the sentence that follows the comma: "the government should utilize the resources of private business in its economic planning and decision making." The premiss that is offered in support of this conclusion is signaled by the indicator word *since*: "business is the most effective instrument of economic change."

2. Taken from a newspaper story:

Women office workers work just as hard as men office workers, and are just as productive. *Therefore* women office workers should receive the same pay as men in comparable positions.

In this argument for equalizing pay between men and women office workers, the indicator word *therefore* introduces the conclusion of the argument. The premisses are stated before the conclusion.

3. From a book, *The Vietnam War and the Right of Resistance*:

Those who opposed the war by resistance to Selective Service may not fairly be charged with violating their moral obligation to obey the law of the land. *For* a condition of that obligation has been violated by government, and in so doing, government has forfeited its moral right to call upon citizens for obedience in this area.

—J. G. Murphy

Murphy states the conclusion first and follows it with two supporting premisses introduced by *for*.

Although these indicator words often signal the premisses or conclusions of arguments, they have other uses as well. Thus, when we see these words, we cannot take it for granted that we have identified an argument. *Since*, for example, is sometimes used to indicate passage of time, as in "Since Harry has been away at college, he has been receiving his hometown paper in the mail."

*Because* is frequently used to express a causal connection between two events rather than to offer evidence that one of those events occurred. An example occurs in the sentence "President Clinton was impeached because members of Congress believed that he lied under oath about an affair with Monica Lewinsky." Here, no attempt is made to prove that Clinton was impeached. Presumably, that is so widely known that it needs no support. The sentence asserts, but does not argue, that the statements Clinton made under oath about his relationship with Lewinsky led to his impeachment. If we want to *argue* that lying about the affair was the cause of Clinton's impeachment, we would present evidence that Clinton's statements about the affair were regarded by many members of Congress as an impeachable offense. For example, we might try to show that Clinton's denials, made under oath, were contradicted by other evidence. We might gather evidence about the congressional hearings that led to the decision to impeach and look at the charges brought against Clinton in the impeachment proceedings. Or the argument might try to eliminate other possible causes for impeachment, such as an accusation of bribery concocted by Clinton's political enemies.

When the subject matter is unfamiliar, it may be difficult to distinguish a causal assertion from an argument. If, for example, someone were to tell me that the National Collegiate Athletic Association (NCAA) will soon rule that football players can be paid by colleges for playing ball *because* there has been so much pressure in favor of this move, I would not know whether she was presenting evidence for the assertion that the rule will be changed or whether she was presenting an assertion about why the rule will be changed. Because I don't keep up with football news, I don't know what rulings have been made or are being contemplated.

If I am being told that pressure for paying players is a *reason to believe* that the ruling will change, the passage is intended as an argument. If I am being told that the new rule going into effect is a result of pressure that was exerted, the passage is a causal explanation. In many cases, we must ask questions, examine the context for clues, or make "educated guesses" about the intent of a set of sentences before we can decide whether it argues for a conclusion or makes a causal assertion.

The indicator terms *for*, *since*, *thus*, and *therefore* are also used in causal explanations of why something happened: "He was invited to the wedding since he's my mother's favorite cousin." "My dog ran away; therefore, I am putting up this sign to ask for help in finding him." "She sets high goals for herself; thus, she was disappointed to place third in the marathon."

Although sentences that assert a causal connection between two events are not themselves arguments, they can be premisses or conclusions of arguments, as in the following example.

Improper handling of raw poultry is a major cause of salmonella poisoning. Salmonella can be controlled by cooking poultry thoroughly and disinfecting or cleaning with hot soapy water any surfaces that have been in contact with raw poultry.

Therefore, if you want to avoid infecting your family with salmonella poison, you will clean all surfaces that have been in contact with raw poultry.

In addition to their use in causal claims, *thus* and *therefore* sometimes introduce an example of some important point, as in “Not all mammals give birth to live young. *Thus* the platypus is an egg-laying mammal.” Closely related to this meaning of *thus* is its use as a synonym for “in this way”: “Every day during the last school term, I read over what I had written the previous day, crossed out the rough parts, and rewrote bits of it. *Thus* I learned to write a decent essay.”

Because *therefore*, *since*, and the other indicator words have several uses, they are not absolutely reliable argument indicators. Another problem in recognizing arguments is that some arguments lack any indicator words. In these cases, we depend on the context as well as the meanings of the sentences to determine whether someone is presenting an argument or a series of assertions, none of which supports any of the others.

Here is an argument that has no indicator words. It is taken from a decision by the United States District Court of Appeals (District of Columbia; Bazelon, *Washington v. United States*):

A judgment of acquittal by reason of insanity is appropriate only when a jury verdict of guilty would violate the law or the facts. We cannot say that this was the situation in Washington’s case. The district court did not err in its refusal to enter a judgment of acquittal by reason of insanity.

The context (a decision by a court of appeals) is helpful in determining that this is an argument, because court rulings are supposed to be supported by reasons. The last sentence of the passage asserts that the district court’s judgment was not in error, and the reasons for this (the premisses) are given in the first two sentences. To decide whether an argument is present, we should ask ourselves (1) “What point is being made?” and (2) “What evidence is offered to support it?” In this case, we can spot the conclusion if we know that it is the business of district courts of appeals to decide whether lower court rulings are correct. Without background knowledge, however, it may be difficult to decide whether a given sentence is intended to be a premiss or conclusion.

When no indicator words are present, try to insert them (premiss indicators before suspected premisses and conclusion indicators before conclusions) to see whether the passage makes sense when it is reconstructed in this

way. This method will not always work, because if we are very unclear about the context, we may be unable to see whether one way of constructing the passage makes more sense than another. Assuming that the district court of appeals was ruling on whether the lower court was correct, if we insert indicator words in the previous example, it reads like this:

*Since* a judgment of acquittal by reason of insanity is appropriate only when a jury verdict of guilty would violate the law or the facts and *since* we cannot say that this was the situation in Washington’s case, *therefore* the district court did not err in its refusal to enter a judgment of acquittal by reason of insanity.

The meaning of the original passage is not changed when the indicator words are inserted; this supports our view that an argument is presented and that we have identified its premisses and conclusion correctly.

When we insert indicator words to mark the premisses and conclusion of an argument, we must pay attention to stylistic variations in the way arguments are presented in ordinary language. Frequently, for emphasis, the conclusion of an argument is stated before the premisses, but it is stylistically awkward to begin an argument with *therefore*. If we want to insert indicator words and at the same time have the passage retain correct English style, we sometimes have to reorder the sentences, putting the conclusion sentence last.

In summary, it is helpful, when trying to decide whether an argument is present, to consider the context carefully and to ask the following:

1. What point is the speaker or writer trying to make?
2. Is the speaker or writer presenting evidence to support the truth of some assertion?
3. Is the speaker or writer trying to explain why something happened when the fact that it did happen is not in question?
4. Is an example or illustration—rather than an argument—being presented?

### Exercise Set 1.2

Part One. In each of the following arguments, use the indicator words to help identify the premisses and the conclusion. Rewrite the argument in *standard form*. That is to say, write each premiss on a line by itself. Underneath the last premiss, draw a line, and write the conclusion beneath the line. Although in standard form premisses are written above the conclusion, it is advisable to identify the conclusion first. Consider the following example. The conclusion is enclosed in parentheses, and each premiss is underlined:

(The earth is spherical in shape.) For the night sky looks different in the northern and southern parts of the earth, and this would be so if the earth were spherical in shape.

In standard form, the argument, which has two premisses, looks like this:

The night sky looks different in the northern and southern parts of the earth.  
 This would be so if the earth were spherical in shape.  
 —————  
 The earth is spherical in shape.

1. Since identical twins, who have the same genes, are more likely to have the same blood pressure than fraternal twins, who share half the same genes, we can conclude that high blood pressure is inherited.
- ② Nuclear power plants violate principles of fairness because people who live close to them would suffer more in the case of an accident and they do not receive extra benefits to compensate for the increased risk.
3. In England under the blasphemy laws it is illegal to express disbelief in the Christian religion. It is also illegal to teach what Christ taught on the subject of non-resistance. Therefore, whoever wishes to avoid being a criminal must profess to agree with Christ's teachings but must avoid saying what that teaching was.  
 —B. Russell, *Skeptical Essays*
- ④ A coin has been tossed twelve times and has shown a "head" each time. Thus it is very likely that the next time this coin is tossed it will also show a "head."
5. In poker, a flush beats a straight, and a full house beats a flush, so a full house beats a straight.
- ⑥ All seventy students who ate dinner at the fraternity house on Friday became ill during the night. None of the students who live at the house but who didn't dine there that night became ill, so the illness must have been food poisoning caused by something served for dinner at the house on Friday.
7. Since the exercise, training and development of our powers of discriminating among works of art are plainly aesthetic activities, the aesthetic properties of a picture plainly include not only those found by looking at it but also those that determine how it is to be looked at.  
 —N. Goodman, "Art and Authenticity"
8. We can suspect that the inventor [of eyeglasses] was not an academic, for professors delight in boasting of their inventions, and before the thirteenth century we have no record by any such self-styled inventor.  
 —D. J. Boorstin, *The Discoverers*
- ⑨ Over a period of two years now, I have tested my instrument [the newly invented telescope] (or rather dozens of my instruments) by hundreds and thousands of experiments involving thousands and thousands of objects, near and far, large and small, bright and dark; hence I do not see how it can enter the mind of anyone that I have simply remained deceived in my observation.  
 —Galileo, quoted by Boorstin in *The Discoverers*

10. Since creationism can be discussed effectively as a scientific model, and since evolutionism is fundamentally a religious philosophy rather than a science, it is clearly unsound educational practice and even unconstitutional for evolution to be taught and promoted in the public schools to the exclusion or detriment of special creation.  
 —H. Morris, *Introducing Creationism in the Public Schools*

⑪ Evolutionary theory merits a place among the sciences for . . . [i]t offers a unified set of problem-solving strategies that can be applied, by means of independently testable assumptions, to answer a myriad of questions about the characteristics of organisms, their interrelationships, and their distributions.

—P. Kitcher, *Abusing Science*

12. The integrated effect [of the Chernobyl nuclear power-plant accident] on the health of the world's population can be described by adding up all the calculated cancers, leading to a prediction of many thousand cancer deaths. But the effect is probably less than that caused by burning fossil fuels for 1 year in the Soviet Union. If, therefore, the average public health is the sole objective, and a Chernobyl accident happens less than once a year, the RBMK reactors in the Soviet Union can be considered less hazardous than coal-fired plants of similar size.  
 —R. Wilson, "A Visit to Chernobyl," *Science* 236 (1987):1636

13. The [Great Fire of London (1666)] and rebuilding made little improvement in the sanitary and moral conditions of the slum populations. For the seat and origin of the plague had always been in the "Liberties" outside the City, where the poorest dwelt. Now as these districts were not burnt down they were not rebuilt and in 1722 . . . "they were still in the same condition as they were before." It is therefore evident that the "rebuilding of London" due to the Fire was not the main reason why the plague disappeared from London after its last great effort [of 1666].  
 —G. M. Trevelyan, *English Social History*

14. Last night how they'd [FBI agents searching for a kidnapped baby] figured it was: People who buy babies black market don't talk about it. But, okay, eventually they do have to buy things. So, if the Graves baby is alive, somewhere, maybe in Ohio, maybe far from Pittsburgh—could be in Switzerland, for God's sake—it got handed over or is about to be handed over to someone who might buy a stroller or some health insurance.  
 —Kathleen George, *Taken*

Part Two. In each of the following arguments, the conclusion is enclosed in parentheses. Try to insert appropriate indicator words before sentences that are premisses or conclusions, and see whether the passage makes sense. With some choices of indicator words, the sentences need to be rearranged.

1. Women tend to do better on essay tests than on timed multiple-choice tests. Men tend to do better on timed multiple-choice tests than on essay tests. SAT tests are timed multiple-choice tests. (SAT tests are biased in favor of men.)

2. (The human mind is not the same thing as the human brain.) The human body, including the brain, is a material thing. The human mind is a spiritual thing. Nothing is both a material thing and a spiritual thing.  
—K. Campbell, *Body and Mind*
3. (The year 1859 is perhaps the most important one in the history of biology to date.) In that year Charles Darwin published his theory of evolution by natural selection, which has deeply affected not only biology, but other branches of human thought as well.  
—L. C. Dunn and T. H. Dobshansky, *Heredity, Race and Society*
4. (A mortgage-backed security has a prepayment risk.) If a homeowner decides to pay off a mortgage ahead of schedule, i.e., prepay the mortgage, the mortgage-backed security containing that particular mortgage does not receive all the anticipated interest payments.  
—*Investment Forum*
5. With no legal, regulated disposal facilities available, illegal dumping becomes more attractive. Far more damage will be done to the environment from illegal dumping than from regulated, legal disposal. (Hazardous-waste disposal facilities are essential to the protection of Pennsylvania's environment.)  
—F. Kury, *Pittsburgh Post-Gazette*
6. After so much lying, even for purposes [Lt. Col. Oliver] North considered patriotic, (his protestations that now he only wants to tell the truth aren't worth much). Why should he be considered believable, even under oath, when he testified under oath that he had so often considered other values more important than truth?  
—T. Wicker, *The New York Times*
7. Since women tend to live longer than men, and, on average earn less than men and have less pension coverage than men, women need to invest more for retirement.
8. (Poker is one of the finest exercises for keeping gray matter alive.) "Poker involves mathematics, planning, and strategy—all complicated mental processes—and these are exactly what imparts the benefit of producing more brain neurons," says Paul D. Nussbaum, Ph. D., a neuropsychologist and an expert in Alzheimer's disease at the University of Pittsburgh School of Medicine. Further, a regular activity must be both novel and mentally challenging to prevent dementia, and poker can provide both forms of brain stimulation.  
—Richard Lederer, "We All Speak Poker,"  
*AARP Magazine*, July–August 2005

Part Three. In each of the following, the "indicator words" are italicized. Try to determine whether an argument is offered or whether the "indicator words" are used as part of a causal explanation, to indicate passage of time, or for some other purpose.

1. In some parts of the country, parents have objected to high school classes requiring students to read Shakespeare's *Romeo and Juliet* *because* it portrays teen lust, drug use, and suicide.

2. It is not fair of course to judge a book by whether its title is apt or not. All the more so, *because* often it is the publisher who decides the matter.  
—A. Margalit, "The Birth of a Tragedy,"  
*New York Review of Books* 33:16
3. President Nixon resigned *because* of the scandal associated with the Watergate break-in and his desire to avoid impeachment.
4. *Since* Princess Diana died, there have been many tributes to her memory.
5. You're perfect, Raleigh. You're so perfect, you're going to lend me this money *because* rotten as I am, I'm still your brother and you've got to come through for me. That's what it's going to cost you to keep on being good old perfect old Raleigh.  
—M. Malone, *Handling Sin*
6. This promotion of colleges to universities is consistent with the long-honored American custom of "raising" a thing by adding to the number of syllables used to describe it. For example, rain is raised to precipitation. College has only two syllables, and even seminary only four. But university, with five syllables, adds distinction. *Thus*: University of Montevallo, Alabama . . . Upper Iowa University . . . Midwestern University, Texas.  
—P. Fussell, *Class*
7. Rock [music], Bloom says, "ruins the imagination," *so* it is difficult for students to have a relationship with the art and thought that are the substance of liberal education.  
—"Insight," *The Washington Times*
8. Most professors are specialists, concerned only with their own fields, interested in the advancement of those fields in their own terms, or in their own personal advancement in a world where all the rewards are on the side of professional distinction. They have been entirely emancipated from the old structure of the university, which at least helped to indicate that they are incomplete, only parts of an unexamined and undiscovered whole. *So* the student must navigate among a collection of carnival barkers, each trying to lure him into a particular sideshow.  
—A. Bloom, *The Closing of the American Mind*
9. In Richard Strauss's tragic opera *Elektra*, Elektra is obsessed with revenge against her mother Klytämēnstra and her mother's lover Aegisth, because the two of them murdered Elektra's father. She waits for her brother Orest to return home to help her, but when she hears that he is dead, she seeks the help of her younger sister, Chrysothemis. Chrysothemis shrinks from the deed, but Elektra says (sings):  
You must help me kill Klytämēnstra *because* she murdered our father.
10. In the same scene of the opera, Elektra also sings:  
You must help me kill Klytämēnstra *because* Orest is not here to help me do it.

## IV. EXTENDED ARGUMENTS

Thus far, we have looked at arguments that offer one or more premisses in support of a single conclusion. Frequently, however, in real life, we meet not only arguments like this but also a series of interrelated arguments—sometimes in a single paragraph or even a single sentence. We call these **extended arguments**. Some extended arguments attempt to establish a conclusion by stating premisses and, in addition, by producing evidence for those premisses. Thus, the premisses of the main argument are conclusions of the subsidiary arguments. Some arguments display both the pros and cons of a position and present arguments for each side before selecting one conclusion. Other extended arguments present several different arguments in support of the same conclusion. Still others argue for several closely related conclusions. The techniques for analyzing these more complicated extended arguments, that is, for identifying premisses and conclusions, are just the same as for simpler arguments, with slight “bookkeeping” modifications.

- ① First of all, as before, it is helpful to try to discover the main point the speaker or writer is trying to make and to identify the reasons offered in support of that point. Then we can begin to investigate whether any of the premisses of that argument are supported by reasons. If they are, we can say that the main argument contains subarguments, which can be investigated as well. This procedure can be messy. But our goal is to understand complicated arguments by reducing them to simpler parts.

**Example**

Women need to invest more for retirement, for several reasons.

1. Women tend to live longer than men. In 1998, the average life expectancy for U.S. women at age 65 was 19.2 years, compared with 15.7 years for men.
2. On average, women earn less than men. In 1996, women who worked full-time, year-round earned only 74 cents for every dollar earned by men.
3. Women have less pension coverage than men. A 1997 survey found that 49 percent of women had employer-sponsored pensions compared with 70 percent of men, and only 45 percent of women had 401(k) retirement plans compared with 59 percent of men.

—Participant (May 2000)

In this extended argument, the main conclusion is stated first, followed by three reasons for accepting the conclusion. Each of the reasons is supported by statistical evidence taken from information provided by the U.S. Social Security Administration and the Census Bureau.

**Example**

Since there can be no talk of an independent ideology formulated by the working masses themselves in the process of their movement, (the only

choice is either bourgeois or socialist ideology). There is no middle course. Hence {to belittle the socialist ideology *in any way, to turn aside from it in the slightest degree* means to strengthen the bourgeois ideology}.

—V. I. Lenin, *What Is to Be Done?*

In this extended argument, the main conclusion is stated last, following the conclusion indicator word *hence*. The premiss that supports this conclusion is enclosed in parentheses and is itself supported by the sentence following the premiss indicator word *since*. In this example, as in many extended arguments, after a conclusion of a preliminary argument has been stated, it is restated in simpler terms (“There is no middle course”) when it is used as the premiss of the next argument.

**Exercise Set 1.3**

Isolate the component arguments in each of the following passages and identify their premisses and conclusions. Write each component argument in standard form.

1. Nuclear fuel is cleaner than fossil fuels since its normal waste products do not cause significant atmospheric or water pollution. But the waste that nuclear fuels do produce is very dangerous and lasts for centuries. This fact, combined with the possibility of dramatic pollution from escaped radiation, such as occurred at Chernobyl, leads to the conclusion that fossil fuels are cleaner than nuclear fuel.
- ② Because publishers are aiming at a national market, the number-one criterion for any textbook is avoidance of controversy. Since they must respond to a variety of specific criteria from their buyers, this has resulted in what has been called the “dumbing down” of textbooks.  
—C. Holden, “Textbook controversy intensifies nationwide,”  
*Science* 235 (1987):19
3. Apart from managing the estate, which required special attention in the spring, apart from reading, Levin had also begun that winter to write a work on farming, the basis of which was that the character of the worker had to be taken as an absolute given in farming, like climate and soil, and that, consequently, all propositions in the science of farming ought to be deduced not from the givens of soil and climate alone, but also from the known, immutable character of the worker.  
—Leo Tolstoy, *Anna Karenina*
4. Through analytic techniques of diverse kinds, through group therapies and encounter groups, by means of hypnosis, drug therapy, and brain stimulation, self-disclosure [the revealing of personal secrets] is aided and interpreted. But the therapeutic value of any one of these techniques is far from established; and the need for caution in choosing persons best qualified to listen to personal revelation is increasingly clear.  
The caution is well founded. One cannot trust all who listen to confessions to be either discreet or especially capable of bringing solace or help.

In addition, the act of confessing can in itself increase the vulnerability of persons who expose their secrets, especially in institutionalized practices. Studies have shown that when self-revelation flows in one direction only, it increases the authority of the listener while decreasing that of the speaker. In ordinary practices of confiding, the flow of personal information is reciprocal, as the revelations of one person call forth those of another; but in institutionalized practices, there is no such reciprocity. On the contrary, therapists and others who receive personal confidences are often taught to restrain their natural impulse to respond in kind.

—S. Bok, *Secrets*

- 5 The grouping of these drugs [LSD, DOM, DMT, psilocybin, mescaline, and their congeners as hallucinogenic] is not arbitrary or simply for the sake of convenience. They can be considered members of the same drug class for two important reasons. First, they elicit a common set of effects: sensory perceptual (distorted time sense; altered sensations of colors, sounds, and shapes, ultimately developing into complex, often multimodal hallucinations; and synesthesia, or mixing of the senses); psychic (dreamlike feelings; depersonalization; and rapid and often profound alternations of affect such as depression or elation); and somatic (dizziness, tingling skin, weakness, tremor, nausea, and increased reflexes). Second, and perhaps more important, these drugs display cross-tolerance—that is, a decreased efficacy of one drug taken shortly after another drug. Thus, if a person has a full-blown hallucinatory experience following ingestion of LSD, the normal hallucinatory response to mescaline or DOM taken the next day will be dramatically blunted or abolished. Therefore, even though it may be argued, and perhaps correctly so, that drugs such as marijuana and PCP should also be classified as hallucinogenic, they do not belong to the class of LSD-like drugs since they show no evidence of cross-tolerance with them.

—B. L. Jacobs, "How hallucinogenic drugs work,"  
*American Scientist* 75 (July–August 1987):386

6. Background information: Victims of Guam disease (Guam ALS/P-D) exhibit symptoms of ALS (Lou Gehrig's disease), Parkinson's disease, and dementia. The study discussed here provides new evidence that all of these diseases could be triggered by some environmental factor.

Scientists fed monkeys moderate amounts of amino acid [beta-methylamino-L-alanine], and found that the animals developed severe nerve disorders similar to those in ALS. The severity of the disease and the time it took for symptoms to develop depended on the amount the animals ate.

The chemical is found in the seeds of a cycad, the "false sago palm." During the wartime occupation of Guam by the Japanese, the seeds were used as nourishment and even medicine.

After the war an unusual number of cases involving nerve degeneration began to appear among Guam's native inhabitants. . . . At the height of the outbreak in the early 1950s, it accounted for one death in five among natives over the age of 25.

In more recent years, the Guam ALS has become much less common, indicating that the source of nerve damage is no longer present and suggesting to scientists that a slow-acting environmental cause was previously at work. Furthermore, the age at which patients developed symptoms has risen steadily, another strong indication of a causative factor that was present years ago but has since disappeared. After World War II, use of the cycad seed dwindled as other sources of food and medicine were made available.

—H. M. Schmeck, *The New York Times*

## V. RECONSTRUCTING ARGUMENTS

### 1. INCOMPLETELY STATED ARGUMENTS

We have already considered the problem of identifying premisses and conclusions when there are no indicator words to help us recognize the parts of the argument. In addition to this problem, many arguments in English are incompletely stated, which is to say that some premisses, or even the conclusion, of an argument may be omitted. Once we recognize the presence of an argument, we frequently have to reconstruct it by supplying missing parts before we can evaluate its strength.

In ordinary language, arguments may be stated incompletely to avoid boring the listener or reader with the obvious.

Suppose you are wondering whether Jeb, your lab partner in a chemistry class, who was worried about paying a tuition bill, settled his account. Another friend who works in the registrar's office says, "Jeb must have come up with the money, since his application to graduate on Sunday has been approved." The approval of Jeb's application to graduate convinces you that his bill has been paid, because, as every student knows, degrees are not granted to those with unpaid tuition bills. Even though "No student with an unpaid bill can be graduated," is unstated, it is a part of the argument that supports the conclusion that Jeb's tuition was paid. Otherwise, it would not be at all clear what the connection between bill paying and graduation is. Since you and your friend are both aware of the relevance and the truth of this premiss, however, there was no need to mention it.

Many, but not all, unstated premisses are, like the one just mentioned, **generalizations**. Sentences that say that **all** or **no** members of one class are members of another class are **universal generalizations**. "No student with an unpaid bill can be graduated" is an example of a (negative) universal generalization. "All students know that tuition bills must be paid before graduation" is an example of an affirmative universal generalization.

"The Washingtons are probably wealthy, since they drive a new Cadillac" is another example of an argument with a missing—but presumably obvious—premiss: "Most families who drive new Cadillacs are wealthy." Generalizations that state that some proportion of members of one class are members of another class are **statistical generalizations**. The universal

generalization “All families who drive new Cadillacs are wealthy” would not be a good choice for the missing premiss in this argument since driving an expensive automobile is not an infallible mark of wealth. “Most families who drive new Cadillacs are wealthy” is more likely to be true than “All families who drive new Cadillacs are wealthy.” An indication—not always present—that a statistical generalization is implicit in the above argument is the word *probably*, which modifies the conclusion.

Statistical generalizations are sometimes stated numerically, as in “Forty-nine percent of American voters voted for Gore in the 2000 presidential election,” or “Fourteen infants out of one hundred born to mothers with HIV are also infected with HIV.” Universal generalizations can be thought of as limiting cases of statistical generalizations. That is to say, a generalization is statistical if the percentage is greater than 0 percent and less than 100 percent; otherwise the generalization is universal. As we have seen, not all statistical generalizations are stated numerically; *most, usually, seldom, frequently, and rarely* can indicate a statistical generalization. Statistical generalizations, like universal generalizations, provide a link between the particular facts mentioned in the stated premisses of an argument (“the Washingtons drive a new Cadillac”) and the conclusion (“the Washingtons are wealthy”).

In the context of an ordinary conversation or informal presentation of an argument, it is appropriate to omit premisses that are obviously true. However, if we are concerned with checking the correctness of an argument, we may want to see that the argument is stated as completely as possible. This means that we must occasionally spell out even what is obvious to everyone.

Another reason for searching out the implicit or assumed, but unstated, premisses in an argument is that when some hidden premisses are exposed, they turn out not to be obvious after all. Consider the following extended argument offered by a student who is trying to persuade a classmate of the benefits of nuclear power:

Well, I’m for it because, first of all, we’re eventually going to use up all our fossil fuels. And, if we don’t do that soon, we’re going to have really bad problems with acid rain, which we already have. The Canadians definitely feel the effects of acid rain. But we don’t think about that because we [in the United States] don’t feel the effects right now. And eventually we’re not going to have an ozone layer left. Even though there are definite costs to nuclear power—I mean a disaster like there was at Chernobyl would be a nightmare—but if the plants were safely managed and operated, then a disaster like that would be less likely. . . .

At this point, the other student in the discussion interrupted to point out that fossil fuels are not the only alternative to nuclear power. Other sources

of power, such as wind, hydroelectric, and solar, are available, she said. In this discussion (which was recorded in a study of how students reason in ordinary conversation), the first student had not said anything like “The only choice is between fossil fuels and nuclear power,” but the second student correctly understood that this was a hidden premiss in her argument. The first student’s argument for the use of nuclear power focused on problems with fossil fuels, but this line of reasoning would support nuclear power only if other alternatives were not available or were not adequate to meet our energy needs.

After the hidden premiss (which in this case was not a generalization) was pointed out and challenged, the first student revised her argument. She conceded the point that solar, wind, and hydroelectric power may eventually be feasible alternatives to nuclear power and fossil fuels but said that, at the present stage of technological development, the alternatives could not supply the nation’s energy needs.

In the give and take of conversation, which is where most of us learn to develop our skills at critical thinking, premisses that are implicit (unstated) are most easily recognized when they are not shared by all participants in the conversation. The first student in the conversation knew about wind, solar, and hydroelectric power, but she did not consider them real alternatives to nuclear and fossil fuels. The second student was more optimistic about the development and use of the alternate power sources, and so she was unwilling to accept the unstated premiss of the first student that one has to choose between the dangers of nuclear power and the depletion of fossil fuels and the pollution caused by their use.

The mistake of basing arguments on a premiss (either stated or unstated) that only two choices are available when a wider range of alternatives exists is common enough to be labeled a *fallacy*. The fallacy has several names (*black-and-white thinking, false choice, false dilemma, and false dichotomy*) and is especially insidious when the premiss concerning choice of alternatives is not stated.

Unstated premisses that are shared by participants in a conversation can sometimes be recognized by noting that the unstated premiss is referred to later in the conversation as if it had been stated. For example, in another recorded discussion of nuclear power, one student argued for nuclear power on the basis that it costs less than fossil fuels. While this stated premiss was challenged by another student, he did not challenge the unstated assumption (which they both shared) that the least costly alternative **should** be chosen. Later, however, when the second student had pointed out that nuclear power costs more when the costs of nuclear waste disposal (currently borne by the U.S. government) are included, he remarked that because the first student thought that the least costly alternative should be adopted, he should not support nuclear power. Although the first student had not actually said that the least costly alternative should be adopted, he accepted the second student’s remark as if he had said it, indicating that this



was indeed an unstated premiss in his argument for the use of nuclear power.

The following two arguments depend on unstated generalizations that are somewhat more difficult to detect than the unstated premisses in the examples just mentioned.

The first argument is taken from *Crime and the Criminal Law*, by Barbara Wootton, one of the first women members of the British Parliament.

To punish people merely for what they have done would be unjust, for the forbidden act might have been an accident for which the person who did it cannot be held to blame.

The conclusion of Wootton's argument is that it would be unjust to punish people without taking into account their intentions as well as their actions. The reason she offers for this conclusion is that the forbidden act may have been a blameless accident. The unstated premiss, required to connect actions for which persons are not to blame with actions for which they should not be punished, is a generalization: No one should be punished for acts for which they do not deserve to be blamed.

Is this general principle correct? In the British system of law, and in our own, actions committed with an evil intent or a "guilty mind" (*mens rea*) are distinguished from accidental actions. Most of us would agree that people should be *blamed* only for acts they intended to do, or at least were negligent in preventing. But both the American and British legal systems sometimes do punish people for "accidental" acts, even when no blame is warranted.

### Example

If you are caught in an elevator between floors in an office building for an hour and, as a result, find a parking ticket when you return to your car, you are not to blame for overparking. Nevertheless, you will still have to pay the fine because the law treats this as a case of **strict liability**, or, in other words, the law recognizes no excuses. Many considerations can be offered to justify strict liability laws. In the case of parking fines, strict liability is justified by appealing to the good use the city makes of the money collected from this source, the minor nuisance of paying a small fine even when the violator is not to blame, and the excessive court costs of allowing defenses for simple parking violations.

If we accept the principle of strict liability for some kinds of action, we cannot accept the general principle that connects punishment with blame in an unqualified way. The apparent conflict between strict liability and the principle that conduct should be punished only if it is blameworthy can be resolved by restricting the application of strict liability to **noncriminal** cases. Wootton's book, *Crime and the Criminal Law*, is clearly concerned with criminal

justice, and her remarks can be taken to apply to this context. The principle connecting punishment with blameworthiness is well established in Anglo-American criminal law.

### Example

The second example is taken from *A Treatise of Human Nature* by David Hume: R.S.

Since reason alone can never *produce* any action or give rise to volition [desire], I infer that the same faculty [reason] is incapable of *preventing* volition or of disputing the preference with any passion or emotion.

Hume, writing in the eighteenth century, was concerned with the nonrational aspect of human life—the area of feelings and emotion. One of his famous sayings is "Reason is and ought only to be the slave of the passions." Hume's words are less startling when we realize that "passions" in those days referred in a general way to human feelings, not specifically to sexual passion. Hume believed that human morality must be founded on the sort of goodness that human beings—with all their biological limitations, natural feelings, and sympathies—are able to achieve, rather than on some intellectual view of an ideal form of goodness.

In this argument for "natural morality," Hume's conclusion is "reason is incapable of preventing volition or of disputing the preference with any passion or emotion." The words "I infer that" indicate a conclusion is being drawn. Hume offers as evidence the claim that "reason" (the human intellect) cannot by itself produce or cause our desires and wishes. The hidden premiss in this argument seems to be the claim that a general connection exists between the lack of power to cause something and the lack of power to prevent that same thing:

Nothing that is powerless to cause an activity or event of a certain sort is powerful enough to prevent that activity or event.

Does this premiss seem obviously true to you? A wall can stop a rolling ball, but it cannot set the ball in motion. Sometimes it seems that just looking the wrong way at machines prevents them from operating properly, when only a trained repair person can cause those same machines to work the way they should. You can prevent your antique watch from operating by dropping it into dishwasher, but you probably cannot build a new watch or repair the damaged one.

Perhaps we could restate or qualify Hume's missing premiss so that it appears more plausible. If, for example, Hume was referring not to individual human capacities but to what humans in general can do, the example concerning your watch is no longer applicable, because human beings can both produce and destroy watches. Can you think of a case in which humans



in general have no power to cause or produce something but do have the power to prevent its operation?

When we are reconstructing arguments, as when we are determining whether an argument is being offered, careful attention to context—written, spoken, or implied—is crucial. If we intend to deal seriously with Hume's or Wootton's arguments, we must consider them in the larger context of these authors' works and use whatever information we can gather to supply missing premisses. When we are engaged in a discussion with another person who presents an argument, we should ask questions to clarify any unstated premisses. When we are presenting arguments of our own, we should be aware of any hidden premisses that could undermine our arguments.

When we are reconstructing arguments in situations that provide inadequate contextual information, we should supply the missing premisses that are the most plausible under the circumstances. This means that the missing premisses should have "the ring of truth." They should be premisses that, although they may not actually *be* true, at least are not known to be false or are not wildly unbelievable. The missing premisses should also be sentences we could reasonably expect the proponent of the argument to accept.

Identifying and exposing the missing premisses of arguments is a fussy business, complicated by the need to understand the context in which an argument occurs, the information available to the person who presents the argument, the intentions of that person, the purpose of the argument, and so on. As we learn more about the structure of different types of arguments, our task of finding missing premisses will be aided by a knowledge of some typical forms of argument.

#### Exercise Set 1.4

Part One. Identify each of the following sentences as a universal generalization or a statistical generalization. In some of the exercises, you must depend on common sense or general background knowledge to determine the correct interpretation.

1. Few college baseball players make it to the major leagues.
2. College graduates earn more than those who have never been to college.
3. Fifty-five percent of students on the Dean's List are women.
4. Most hockey players are missing at least one tooth.
5. Soldiers are brave.
6. Zero percent of the ingredients of Brand X breakfast cereal are toxic.
7. Whales are mammals.

8. Politicians are honest.
9. Babies are not Olympic swimmers.
10. Computer programs have bugs.

Part Two. In each of the following, an unstated generalization is required to complete the premisses of the argument. Write the argument as stated in standard form. Try to supply a plausible generalization to complete each argument. If no plausible generalization will make the argument succeed, try to explain why.

1. Women office workers work just as hard as men office workers and are just as productive. Therefore, women office workers should receive the same pay as men in comparable positions.
2. Nuclear power should not be used, because it is unfair to those who live close to nuclear plants.
3. Nuclear power should be used because it is less threatening to the environment than fossil fuels.
4. According to William Bennet, "Using drugs is wrong because people addicted to drugs neglect their duties."
5. Marijuana should be legalized, because it is no more dangerous than alcohol, which is already legal.
6. Marijuana should be legalized because the laws against it are not respected and this breeds contempt for law in general.
7. Marijuana should not be legalized, because it leads to the use of harder drugs, such as heroin.
8. Tomatoes will be expensive in late winter, since growers in Florida were hit by a hard freeze in December.
9. Joseph failed his exam this morning because he was up all night.
10. Your tires should hold out for the coast-to-coast drive, since they have made it six times before without any trouble.
11. A head will show on the next toss of the coin, for the past six tosses have been heads.
12. Snowdrops are members of the amaryllis family of bulbs and are thus unattractive to rodents.

#### 2. CONTEXTUAL CLUES FOR RECONSTRUCTING ARGUMENTS

We will return to the problem of missing premisses after we have had more to say about evaluating different forms of arguments. Now we turn to the question of sorting out the premisses and conclusions of arguments in contexts that contain additional material.

Sometimes an argument is framed in a context of background information that tells us something about the quality of the evidence, how it was

gathered, or why it is relevant to the conclusion. Consider the following passage, taken from *Sexual Politics* by Kate Millett:

A witty experiment by Philip Goldberg proves what everyone knows, that having internalized the disesteem in which they are held, women despise both themselves and each other. This simple test consisted of asking women undergraduates to respond to the scholarship in an essay signed alternately by one John McKay and one Joan McKay. In making their assessments, the students generally agreed that John was a remarkable thinker, Joan an unimpressive mind. Yet the articles were identical; the reaction was dependent on the sex of the supposed author.

Our first clue that this passage contains an argument is the assertion in the opening sentence that something is being proved. To *prove* something is to produce evidence that shows it is true. The conclusion of the argument (the sentence that is proved) is "having internalized the disesteem in which they are held, women despise both themselves and each other." The evidence for this conclusion is contained in the premiss: "the reaction [to the essays that were identical except for the sex of the supposed author] was dependent on the sex of the supposed author." Millett's premiss is in turn supported by (is a conclusion drawn from) the outcome of Goldberg's experiment:

Women undergraduates evaluated identical essays, which differed only in the sexually distinctive names of the supposed authors, as being the work of a remarkable thinker when the supposed author was male, and an ordinary thinker when the supposed author was female.

Additional background information provided in Millett's passage assures us that the conclusion was something already widely known and that the experiment was witty. We are also told that the experiment was a simple test. None of this information is evidence to support the truth of the conclusion, but it does tell us something about the *quality* of the evidence presented and helps us to understand the author's point of view.

Here is another argument stated in a context that contains additional information. This example is taken from a newspaper column entitled "How to Spot Rich People" by social commentator Andy Rooney:

Another way to tell a rich person from a poor person is one I learned years ago when I worked for a morning news broadcast. We often had important people on it as guests and I began to notice one thing that the rich men had in common. They never wore overcoats.

Nelson Rockefeller must have been on the show five times on different winter days and he never wore an overcoat or carried one. It was a long while before I realized he was so rich he

didn't need one. He was never out in the cold because all he did was walk the 10 feet from his chauffeur-driven limousine to the building and anyone can stand that much cold. For all I know Rockefeller didn't even own a raincoat or an umbrella. Most of the restaurants a rich person like him would eat in have canopies extended to the street.

The conclusion of Rooney's argument is "They [rich men] never wear overcoats." His premisses state that the sample of rich men he observed never wore overcoats. This evidence is strengthened by his suggestion concerning why rich men do not need overcoats. The rest of the passage contains information about how Rooney gathered his sample and humorous speculation about rich men's ability to dispense with rain gear as well as overcoats.

Sometimes the context of an argument provides information that indicates something is true, while the argument itself attempts to establish that the situation is a good one or a bad one. In the following argument, philosopher Bertrand Russell, after telling us that rats behave a certain way toward food, argues that rats are sensible to do so.

Rats will eat food that contains rat poison. But if, before eating, they were to subject their food to scientific analysis, they would die of hunger meanwhile, and so they are well advised to take the risk.

Examples that illustrate a point often occur in the context of arguments. Such illustrations are neither premisses nor the conclusion, but they clarify points and aid understanding by making general ideas concrete. Patrick Lord Devlin does this in the following passage from *The Enforcement of Morals*:

No society can do without intolerance, indignation, and disgust: they are the forces behind the moral law, and indeed it can be argued that if they or something like them are not present, the feelings of society cannot be weighty enough to deprive the individual of freedom of choice. I suppose that there is hardly anyone nowadays who would not be disgusted by the thought of cruelty to animals.

Devlin supports his conclusion, which is underlined, with the premisses that follow it in the same sentence. (His argument also depends on a generalization that Devlin does not state here but tries to establish elsewhere in his book: No society can live without morals.) Devlin's concrete example of disgust is provided in the last sentence of the quoted passage.

In addition to background information and examples that serve to illustrate and clarify points, arguments often contain remarks that are intended to put the reader or listener in a *properly receptive frame of mind* to accept their conclusions. Such additional material might convey an atmosphere of

humor, fear, seriousness, or any number of other moods. Millett does this, in the argument quoted earlier, when she tells us that Goldberg's experiment proves "what everyone knows." Such a remark may intimidate a reader who feels inclined to disagree with Millett, because it suggests that anyone who does not agree with her conclusion is disputing common wisdom. This sort of claim can distract the reader from a critical examination of the argument for that claim.

When we examine the support that the evidence provides for a conclusion, we should separate carefully any additional material from the actual evidence. The extra material may appeal to our emotions and discourage us from taking a close critical look at the central issue: Does the alleged evidence support the conclusion?

Sometimes arguments repeat, in slightly different words, points that already have been made in a premiss or in the conclusion of the argument. When a conclusion is stated at the beginning of a passage and is followed by reasons for accepting that conclusion, the conclusion may be restated for emphasis at the end of the argument. Restating points when arguments are long and complicated can clarify a presentation by keeping track of where the argument has been and where it is leading. Repetition can help ensure that the reader or listener does not fail to get the point.

Less savory motives, however, also inspire repetition. As advertisers have taught us, repeated exposure to an assertion can convince people that it is true, even when only flimsy evidence, or no evidence at all, has been offered. Thus, an advertising campaign for Brand X soap might call for billboard signs, newspaper and magazine ads, television and radio spots, all flooding the market with the message "Brand X is the best soap."

A different use of repetition is found when the conclusion of an argument is repeated but modified slightly to make it stronger or weaker.

Consider the following passage, taken from *The Odd Woman*, a novel by George Gissing, and try to decide what use is served by repeating the conclusion at the end of the argument after stating it initially:

It is the duty of every man, who has sufficient means, to maintain a wife. The life of an unmarried woman is a wretched one; every man who is able ought to save one of them from that fate.

### Exercise Set 1.5

Note: These exercises are demanding. Teachers may wish to defer assigning them until later in the term when various forms of arguments, including categorical syllogisms, have been analyzed.

Each of the following passages contains at least one argument. Rewrite each argument in standard form. Discuss the role of any additional material in the passages.

1. "I cannot allow," Sergei Ivanovich said with his usual clarity and precision of expression and elegance of diction, "I can by no means agree with Keiss

that my whole notion of the external world stems from sense impressions. The fundamental concept of *being* itself is not received through the senses, for there exists no special organ [such as the eye for visual sense impressions or the ear for sense impressions of sound] for conveying that concept."

"Yes, [the professor answered] but they will reply to you that your consciousness of being comes from the totality of your sense impressions, that this consciousness of being is the result of sensations. Wurst even says directly that where there are no sensations, there is no concept of being." "I would say the reverse," Sergei Ivanovich began . . .

—Leo Tolstoy, *Anna Karenina*

2. In the past there has been much argument whether, in the strategy of inflation control, one should seek to come to grips with the level of demand or whether one should seek to deal with the wage-price spiral. . . . The proper answer is that both are important. Inflation could be controlled by a sufficiently heavy reduction in the level of demand. It could also be controlled with a less drastic reduction if something could be done to arrest the interactions of wages and prices, or, to speak more precisely, of wages, profits, and prices.

—John Kenneth Galbraith, *The Affluent Society*

3. Discrimination—refusing to admit someone to a public place or business on grounds of race, sex, or religion—is against federal law. However, the law also respects the rights of people to associate privately with whomever they wish.

Last year [the national organization of Jaycees] voted to kick out the women members they had previously recruited. They even voted to kick out the chapters who wouldn't kick out the women they had previously invited. (Who says that chauvinists are chivalrous?)

But in Minnesota, the courts ruled that the Jaycees were actually operating as a public business. They were soliciting memberships, and open to anyone so long as that anyone was a male. So, this duly designated public business was forbidden to discriminate.

—Ellen Goodman's newspaper column

4. If you live in a country like the United States, it is easy to say that population is the major problem [for preserving the environment]. But if you think about it a little more deeply, you could rapidly come to understand that consumption and the kinds of technology that we use are also very important in setting the stage for the world of the future.

For example, people in rural Brazil or rural Indonesia [like most of their counterparts in developing countries] live at about one-fortieth of the consumption level of people in the United States. If you consider that we've added 135 million people to the population of the United States since the end of World War II, then you realize that the impact of the extra people in the United States on the world—in terms of levels of consumption, levels of pollution, uses of inappropriate technologies that may themselves be destructive—is about equal to the impact on the world of all the entire population of developing countries—4.2 billion people. It is not

justifiable to say that population is the only factor. It's our lifestyle and our way of dealing with the world that is truly significant.

—Peter Raven, *Bulletin of the American Academy*, Spring 2005

5. "Most people wear some sign and don't know what it's saying. Choose your sign according to your audience," Malloy said. "A good dark suit, white shirt and conservative tie are a young man's best wardrobe friends, if he's applying for a white collar job in a big range of business and professional categories. They're authority symbols. It's that simple," he said.

—"Fashion," *Chicago Daily News*

6. Envy is, I should say, one of the most universal and deep-seated of human passions. It is very noticeable in children before they are a year old, and has to be treated with the most tender respect by every educator. The slightest appearance of favoring one child at the expense of another is instantly observed and resented. Distributive justice, absolute, rigid, and unvarying, must be observed by anyone who has children to deal with. But children are only slightly more open in their expressions of envy, and of jealousy (which is a special form of envy) than are grown-up people. The emotion is just as prevalent among adults as among children.

—B. Russell, *The Conquest of Happiness*

7. "A woman knows very well that all the talk about elevated subjects is just talk, but that what a man wants is her body and all that presents it in the most deceptive but alluring light; and she acts accordingly. If we only throw aside our familiarity with this indecency, which has become second nature to us, and look at the life of our upper classes as it is, in all its shamelessness—why it is simply a brothel. . . . You don't agree? Allow me, I'll prove it," he said, interrupting me. "You say that the women of our society have other interests in life than prostitutes have, but I say no, and will prove it. If people differ in the aims of their lives, by the inner context of their lives, this difference will necessarily be reflected in externals and their externals will be different. But look at those unfortunate despised women and the highest society ladies: the same costumes, the same fashions, the same perfumes, the same exposure of arms, shoulders, and breasts, the same tight skirts over prominent bustles, the same passion for little stones, for costly glittering objects, the same amusements, dances, music, and singing. As the former employ all means to allure, so do these others."

—L. Tolstoy, "The Kreutzer Sonata"

8. Other physicists, notably Arthur Holly Compton at the University of Chicago, contended that the cosmic rays were particles. There was a way to investigate the question. If they were charged particles, they should be deflected by the earth's magnetic field as they approached the earth from outer space. Compton studied the measurements of cosmic radiation at various latitudes and found that it did indeed curve with the magnetic field; it was weakest near the magnetic equator and strongest near the poles, where the magnetic lines of force dipped down to the earth.

—I. Asimov, *The Intelligent Man's Guide to the Physical Sciences*

9. Theories, such as those of Peter Tompkins in his book *Mysteries of the Mexican Pyramids*, that link the pyramids of Egypt and Mexico also find little support in the available archaeological data. In fact, the last of the great

pyramids at Giza on the Nile were built nearly 3,000 years before the great pyramids of the Sun and Moon at Teotihuacan [Mexico], or the well-known pyramids in the Maya Lowlands. As Kurt Mendelssohn has pointed out, it is difficult to imagine a boatload of ancient Egyptians arriving in Mexico and introducing a monumental activity that had not been practiced in their homeland for millennia. Moreover, as many writers have argued, it is much more likely that a boatload of foreigners with no nearby support and no clear military or technological advantage would be killed before they got far from the beach rather than that they would be able to introduce a new architectural style all over ancient Mexico. In addition, the structures have major functional differences: the Egyptian pyramids come to a point and serve as tombs, while the Mexican ones are truncated and serve as foundations for temples, although they sometimes housed tombs as well.

—J. Sabloff, *The Cities of Ancient Mexico: Reconstructing a Lost World*

10. Inevitably historians are involved in selecting from the available sources the material they deem significant in the light of the problems under scrutiny. They never have access to all the facts anyway, and even those to which they do have access are selected to suit their own purposes. There is no history on a mortuary table. The "facts" therefore do not simply "speak for themselves"; the historian stage-manages their performance on the contemporary scene.

Selection, then, is inescapable.

—D. Livingstone, *The Geographical Tradition*

## VI. REVIEW

The purpose of this chapter was to introduce the subject matter of logic and critical thinking. This is a prelude to more detailed attention to various aspects of reasoning that will empower students to better assess the thinking of others and improve their own reasoning abilities. Some skills that contribute to critical thinking are the following:

1. Sensitivity to different uses of language
2. The ability to recognize when evidence is required to support an assertion
3. Awareness of the distinction between the truth of sentences and the support they would provide for some other sentence *if* they were true
4. The ability to recognize arguments, to identify their parts, to supply missing premisses that are unstated, and to sort the premisses and conclusion of an argument from the context in which it is stated
5. The logical skill of evaluating an argument in terms of how well the premisses support the conclusion

All of these critical-thinking skills are useful and important in our everyday lives. Our language reflects what is important in human culture, and, as with other vitally interesting aspects of human life, a special vocabulary has developed for discussing issues in logic and critical thinking. Because some

of this vocabulary may be new to you, it will be helpful to review the definitions of the most important terms:

**Argument** A set of sentences related in such a way that some of the sentences are presented as evidence for another sentence in the set.

**Conclusion** The sentence in an argument that is supposedly supported by the evidence.

**Declarative Sentence** Declarative sentences—as opposed to questions, commands, requests, and exclamations—assert that something is the case.

**Evidence** Evidence is support that is offered for some assertion. It may be physical evidence, as when damaged goods are presented to support the claim that they are defective; or it may be verbal, in which case some sentences are offered to support the truth of another sentence.

**Fallacy** A mistake in reasoning, in particular, of supposing evidence has been presented in support of an assertion—or pretending that it has been—when some form of nonevidential persuasion has been used instead.

**Fallacy of Black-and-White Thinking** A mistake in reasoning that occurs when it is supposed that only two alternatives are available although in fact other alternatives are possible. For example, “It cannot be white; therefore, it must be black” ignores the whole range of shades of gray.

**Indicator Words** Words commonly used to signal premisses or conclusions of arguments. Examples of premiss indicator words are *for*, *since*, *because*, and *for the reason that*. Examples of conclusion indicator words are *hence*, *thus*, *therefore*, and *so*, *it follows that*, and *for that reason*.

**Logic** The study devoted to analyzing and evaluating arguments and developing general principles for these tasks.

**Premiss** A sentence that is offered as evidence in an argument.

**Statistical Generalization** A sentence that states that some proportion of the members of one class are members of another class. Common forms of these sentences are: *Most . . . are . . .* and *Most . . . are not . . .*. Statistical generalizations may also be expressed numerically, as in “*x percent of . . . are . . .*”

**Universal Generalization** A sentence that states that all or none of the members of one class are members of another class. Common forms of these sentences are: *All . . . are . . .* and *No . . . are . . .*, where the blanks are filled in by terms that denote classes of individuals.

These terms in boldface above are the most important ones introduced in Chapter 1 and will be used throughout this text. Two other terms that are a part of the standard vocabulary of logic and critical thinking are so often misused that they should be mentioned here.

**Infer** To infer is to conclude from something known or assumed. This is a mental activity that may be—but need not be—expressed in language.

For example, on the basis of the dark circles under a friend’s eyes, you might *infer* that your friend did not get enough sleep last night but not say anything at all. If you *argue* that your friend did not get enough sleep, you *state* the evidence (cite the dark circles) and the conclusion. Arguing, unlike inferring, is an activity that requires the use of language. When you state your reasons for drawing an inference—when you express in language the premisses and the conclusion—you transform the inference into an argument.

**Imply** To imply is to provide a basis from which an inference may be drawn. Words, actions, looks, appearances may all “have implications”—that is, they may provide a basis for someone to infer something from them. It is also appropriate to speak of a person’s implying something, through words, silence, looks, or some other feature. *Imply* also has another special meaning, in the context of deductive logic. *Infer* is sometimes confused with *imply*, as in “Your scowls infer that you disapprove of Mary Ann.” A scowl can imply disapproval but not infer it. As Fowler, in his *Dictionary of Modern English Usage*, says of *imply* and *infer*: “Each word has its own job to do, one at the giving end and one at the receiving.”

The best way to review this type of subject matter is to work more exercises. If you can complete the exercises in the following section successfully, you will know that you have mastered the material covered in Chapter 1. Some of these exercises are difficult, so do not be discouraged if they require a lot of effort. Moreover, because these arguments are stated in ordinary language—which is not always as precise as we would like—and because the selected passages are all taken out of broader contexts, different interpretations of a given passage are possible. In a given case, for example, it may be unclear whether the author is providing an argument or a causal explanation or whether the author is providing just one argument or several. If a premiss seems to be missing, the most plausible missing premiss to supply may not be clearly identifiable. Whenever you think that more than one interpretation is plausible, mention this and give your reasons for each interpretation. If the skills of logic and critical thinking you are developing in this course are to be useful in the ordinary situations you encounter in everyday life, you must practice with examples taken from such contexts.

### Exercise Set 1.6

For each of the following passages,

- Indicate whether or not the passage contains an argument (or several arguments).
- Write the argument in standard form.

- (c) If the argument depends on a missing generalization as an implicit premiss, supply the generalization.
- (d) Discuss any cases in which nonevidence, such as a threat, might be mistaken for evidential support.
- (e) Indicate what role any additional material that is not part of the premisses or the conclusion plays in the passage.
- At best, though, there is very little chance of a longtime future in smoke-jumping. [Smoke jumpers fight forest fires by using parachutes to get close to the fire and attempting to quench it.] To start with, you are through jumping at forty, and for those who think of lasting that long there are only a few openings ahead, administrative or maintenance.  
—N. Maclean, *Young Men and Fire*
  - Throughout recorded history, most women have had little choice about becoming mothers. Married young, with no effective means of contraception or abortion, they had babies whether they wished to or not.  
—Mary Anne Warren, "Is IVF research a threat to women's autonomy?"
  - Scientifically, it [Captain James Cook's first voyage to the South Pacific] was a hugely successful venture. The transit of Venus was accurately observed and recorded, kangaroos were discovered, ethnographic studies of indigenous peoples carried out, the New Zealand coastline was charted, and a vast amount of material collected and shipped back to the Royal Society—thousands of plants, five hundred fish preserved in alcohol, five hundred bird skins and hundreds of mineral specimens.  
—D. Livingstone, *The Geographical Tradition*
  - "Your conversation *looks* more interesting than the others. . . . Can I join you? . . . Or is this a private argument?"  
"Not private, not even an argument, but trying to be. . . . Would you say our train robbers were professionals or amateurs?"  
"Never entered my head to doubt it—professionals. They've been very thorough. Amateurs *never* are."  
—A. Cornelisen, *Any Four Women Could Rob the Bank of Italy*
  - Poetry, indeed, cannot be translated, and therefore it is the poets who preserve languages; for we would not be at the trouble to learn a language when we can have all that is written in it just as well in translation. But, as we cannot have the beauties of poetry but in its original language, we learn it.  
—S. Johnson
  - Adam was led to sin by Eve and not Eve by Adam. Therefore it is just and right that woman accept as lord and master him whom she led to sin.  
—Saint Ambrose
  - Anti-divorce crusaders present themselves as defending women, whom they portray as dutiful homemakers who risk abandonment by novelty-seeking mates. But women have filed the majority of divorce petitions for decades now; sometimes the dutiful homemaker is the one who gets fed up. There are good reasons that historical advances in women's legal and

social equality, not to mention their self-esteem and longevity, go hand in hand with easier and more equal access to divorce.

With restrictive divorce laws, women would be bound more tightly to controlling and abusive men. It's not easy to prove in a court of law that your husband pushed you down the stairs if he insists that you just fell—especially if, like most wives, you have a limited amount of money for lawyers.

—K. Pollit, *The New York Times*

- [Some] Christians seem to think that they have a right to use the law to enforce Christian morality on divorce, abortion, contraception, assisted procreation, suicide and so on. I am myself a Christian and I have always thought that, while upholding their own moral values, Christians should also be especially concerned to uphold the value of personal autonomy. There has been a long tradition of Christian theological thought . . . which emphasizes the primacy of the individual "conscience." St. Thomas Aquinas says, for example, that it is a sin to go against the dictates of one's conscience. Again, it has always been a tenet of traditional Christianity that it is a sin to coerce non-Christians into the Christian Church, and one may legitimately infer that it is similarly against Christian faith to use the law to coerce non-believers in respect of moral matters.  
—Max Charlesworth, *Bioethics in a Liberal Society*, 1995
- [The] vision of a society of autonomous moral agents choosing freely for themselves, and willingly tolerating a situation of moral or ethical pluralism, on the basis of their commitment to the value of liberty or moral autonomy, has been subjected, over the last thirty years, to a sustained critique from various quarters. There have been, first, attacks on the notion of autonomy itself: for example that it grossly overestimates the capacity of people to make decisions for themselves and neglects the degree to which every human decision is influenced by both external and internal (psychological) factors. Thus it has been said that we are inescapably part of a particular community and that communal values and practices largely set our ethical goals for us. We discover them and do not directly choose them. This is especially the case in so-called "traditional" societies where the whole idea of autonomous individuals choosing their own life projects and engaging in what Mill calls their own "experiments in living" is, so it is claimed, absurd.  
—Max Charlesworth, *Bioethics in a Liberal Society*, 2005
- Hair analysis has been found to be a good test in screening large groups of people for exposure to toxic trace metals. It is not as widely used as blood analysis, but studies have shown that concentrations of lead, cadmium, arsenic, and mercury in hair provide a good record of exposure.  
Also, since the metal grows out with the hair, lengthwise sections of hair can show the approximate time when a short, intense exposure occurred.  
Chromium is essential for the hormone insulin to work properly. Thus, in time, it may be that measurements of chromium in hair will be useful in identifying people with diabetes and in monitoring the course of the disease.  
—Dr. J. Mayer and J. Goldberg, R.D., "Food for Thought"

11. My suggestion for a wine to accompany chocolate desserts is different [from wines made from the muscat grape]. I prefer a rich, slightly sweet red wine. Indeed, it was a chocolate dessert that led me to change my mind about late-harvest zinfandels.  
The proper use for those alcoholic, full-fruited wines with considerable residual sugar is with chocolate. The very strength of the wine cuts through the rich heaviness of the chocolate.  
—P. Machamer, "Wine," *Pittsburgh Post-Gazette*
12. "Public schools must improve or face extinction," says the president of the American Federation of Teachers.  
Albert Shanker, leader of the 600,000 member union, said here yesterday the future of public education is threatened by the prospect of tuition tax credits and vouchers for parents who send their children to private and parochial schools.  
With the student exodus, "Ultimately, we would have the end of public education in this country. Public schools could become like the poorhouse or the charity ward of a hospital. . . ."  
"Tuition tax credits is not a disease you feel right away. It's not like a toothache. . . . It's like a creeping cancer," Shanker said.  
Some of the problems with public education that would cause parents to choose nonpublic schools are discipline and academic standards, he said.  
—*Pittsburgh Press*
13. The thought tends to wrap itself in a joke because in this way it recommends itself to our attention and can seem more significant and more valuable, but above all because this wrapping bribes our powers of criticism and confuses them. We are inclined to give the *thought* the benefit of what has pleased us in the form of the joke; and we are no longer inclined to find anything wrong that has given us enjoyment and so spoil the source of the pleasure.  
—S. Freud, *Jokes and Their Relation to the Unconscious*
14. It is incontestable that sense perception plays a crucial role in the natural sciences. It serves as the sole means through which we can gather information about the world around us. Knowledge of general laws is posterior, in the empirical sciences, to knowledge of particular instances, and for the latter the evidence of the sense is required.  
—R. Swartz, *Perceiving, Sensing and Knowing*
15. If a person is known to lie occasionally, it is not reasonable to accept something *simply* on the ground that he testifies to it. Similarly, once the senses have been discovered to be capable of deception, it is not reasonable to regard a belief as solid or permanent *merely* because it is based on sensory evidence. For it may turn out that the occasion on which the senses provided the evidence for the belief was one on which the senses were deceptive; and then, of course, the belief would have to be abandoned. Despite this, however, it may still be reasonable to regard some sensory beliefs as permanent and indubitable, if occasions on which the senses are absolutely reliable can be distinguished from those on which they are likely to deceive.  
—H. Frankfurt, *Demons, Dreamers, and Madmen*
16. Noting the diversity of Paraguayan languages, Dobrzhoffer comments: "Truly admirable is their varied structure, of which no rational person can suppose these stupid savages to have been the architects and inventors. Led by this consideration I have often affirmed that the variety and artful construction of languages should be reckoned among the other arguments to prove the existence of an eternal and omniscient God."  
—M. Harris, *The Rise of Anthropological Theory*
17. If great art is a product of a great soul only a critic of spiritual stature can hope to recognize and appreciate artistic greatness when he sees it. To the trivial all things are trivial. A critic with limited powers of observation, a weak imagination, and a restricted scale of values must remain blind to artistic greatness and incapable of distinguishing artistic profundity from artistic triviality.  
—T. M. Greene, *The Arts and the Art of Criticism*
18. Rules and regulations of the Securities and Exchange Commission compel the prospectus to dwell on all the problems and all the shortcomings the company faces in its competitive battle for survival and success. This is true, and since this is undoubtedly the first and last public occasion on which a company will stress the negative aspects of its situation, and since this is the point of entry for many new stockholders, the value (for investors) of reading the prospectus is enormous.  
—J. Diamond, *The Fine Art of Making Money in the Stock Market*
19. Despite abundant literature on the subject, the occurrence of human cannibalism in Old World prehistory remains an open question. We are concerned here with dietary cannibalism—the use of humans by humans as food—evidence for which is found in patterns of bone modification and discard. The key features of dietary cannibalism involve close, detailed similarities in the treatment of animal and human remains. If it is accepted that the animal remains in question were processed as food items, then it can be suggested by analogy that the human remains, subjected to identical processing were also eaten.  
—P. Villa et al., "Cannibalism in the Neolithic," *Science* 233
20. Encouragement of contempt for laws is more dangerous to society than occasional use of marijuana. Severe laws against marijuana do not discourage use of marijuana, but rather breed this contempt not only for drug laws, but for laws in general. Therefore severe laws against marijuana are more dangerous to society than the activity which they are designed to prevent.  
—A. Blakeslee, "Should Marijuana Be Legalized?" *Associated Press*
21. So we have lots of uncertainty about [human cloning], and that is precisely why it is so problematic to justify a ban on harm-prevention grounds. The usual legal standard requires clear evidence of serious harm, at the least. Here we do not come close to meeting it. If we were to wait a bit, and see what happens, then we could form our judgments with greater knowledge as to how the practice did impact the lives of the newly cloned and their immediate families. At that point, we might learn things that support the worst fears of the opponents of cloning, and if so, then we can use hard



evidence, not abstract fears, to decide what form of ban (whole or partial, conditional or absolute) to impose on the practice.

—Richard A. Epstein, *Clones and Clones*

22. Referring to the island of Corsica, note the rhetorical questions.

What can be found so bare, what so rugged all around as this rock? What more barren of provisions? What more rude as to its inhabitants? What in the very situation of the place more horrible? What in climate more intemperate? Yet there are more foreigners than natives here. So far then, is a change of place from being disagreeable, that even this place hath brought some people away from their country.

—Seneca, *Ad Helviam de Consolatione*, quoted in J. Boswell, *Boswell on the Grand Tour*

23. Referring to a debate about whether humans have free will.

We were eating cold fruit-soup. The soup was served in a huge tureen. It was a beautiful piece of china, and Maria was particularly fond of it. She hated things being broken, even a Woolworth tumbler. The veranda was surrounded by large polished panels of glass. I got up, by now trembling with anger, and lifted the tureen up from the table. I said:

“Look, Maria, let us settle this problem in an empirical way, once and for all. If you continue to assert that I have a Free Will, you will thereby enrage me to the point when I cannot help smashing this tureen against the windowpane, for my actions are determined by your words. If you recognize that there is no such thing as a Free Will, the tureen will automatically be safe. But what is a tureen compared to the problem we are trying to settle?”

“It is *my* tureen,” Maria said, watching my hands with anguish.

“I give you ten seconds to decide.” I started counting—one-two-three, in a cold rage. . . . At the count of nine, Maria said:

“All right, you win, put it down.”

“You admit that I have no Free Will?” I asked, to make quite sure.

“You certainly haven’t.”

—A. Koestler, *The Invisible Writing*

24. [B]ecause the . . . rules are designed to benefit all and because the punishments prescribed for their violation are publicized and the defenses respected, there is some plausibility in the exaggerated claim that in choosing to do an act violative of the rules an individual has chosen to be punished.

—H. Morris, “Persons and Punishment”

25. And although it is utterly true that God’s existence is to be believed in because it is taught in the Holy Scriptures and, on the other hand, that the Holy Scriptures are to be believed because they have God as their source (because, since faith is a gift from God, the very same one who gives the grace that is necessary for believing the rest can also give us the grace to believe that he exists); nonetheless, this cannot be proposed to unbelievers because they would judge it to be a circle.

—R. Descartes, “Letter to the Dean and Doctors of the Faculty of Sacred Theology of Paris”

## Chapter Two

# PAYING SPECIAL ATTENTION TO THE LANGUAGE OF ARGUMENTS

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## I. INTRODUCTION

Understanding arguments requires paying special attention to the language in which the arguments are cast. Before we can decide whether or not the premisses of an argument support its conclusion, we must understand what the premisses and the conclusion mean.

The problem of linguistic meaning is complex. Linguists, philosophers, scholars of literature, historians, and poets all study aspects of meaning. A sense of marvel at the power and effectiveness of language as an instrument of communication challenges us to understand how languages originated and developed as well as how meanings are captured, transmitted, preserved, and lost in language. Experts disagree about even such basic matters as which elements of language are the primary bearers of meaning—words, phrases, sentences, or longer texts. In this chapter, we consider only a small sample of the problems concerning this vast subject matter. We focus on problems that are most likely to interfere with understanding and evaluating arguments.

## II. AMBIGUITY

Many words, phrases, and sentences have more than one meaning. **Ambiguity**—the capacity of being understood in two or more ways—can occur at any meaningful level of language. Words, phrases, sentences, paragraphs, and longer works, such as poems and plays, can all be ambiguous. Because language is a relatively compact instrument for expressing meanings, the quality of having two or more distinct meanings is a valuable feature of its components. In literature, particularly poetry and drama, ambiguity allows for the richness of multiple interpretations and readings. Consider, for example, Shakespeare's popular *Twelfth Night*. This frequently performed play has been adapted to other media, including musical comedy. Ambiguities begin when the principal characters, twins Viola and Sebastian, are separated in a shipwreck. Viola, disguised as a male, enters the local duke's service, falls in love with him, but is set to the task of wooing Olivia, on the Duke's behalf. Olivia is not interested in the Duke but is attracted to his agent Viola, whom she takes to be a young man. The language that the two women use with one another is loaded with amusing ambiguities that reflect this situation. In the end, Viola weds the Duke, and Olivia ends up with Sebastian, a more suitable mate than his twin sister. Less fortunate is Olivia's steward Malvolio, who can be interpreted as either a self-deceiving fool or a tragic character. The ambiguous language in a forged letter causes Malvolio to think that Olivia is in love with him. The letter persuades him to wear strange clothes and engage in odd behavior. Olivia, unaware of the letter, interprets his strange behavior as an illness and suggests that he go to bed.

Malvolio interprets the suggestion as a lover's invitation, and so it goes until he finds himself in prison. Because of the subtlety and rich texture of Shakespeare's language, the play as a whole and the speeches of all of the play's characters can be given various readings. This heightens enjoyment of the work of art.

Despite the enormous value of ambiguity for works of art, the same feature of language can be detrimental to communicating information. We do not appreciate ambiguity in directions for finding locations, cooking food, or operating machinery. Yet we are aware that when we ourselves give directions, we can slip into ambiguity or fail to recognize it.

The presence of ambiguities complicates our task of understanding the language of arguments. In English, for example, the word *pen* is ambiguous. *Pen* can be used to refer to an instrument for writing, an enclosure for animals, or a penitentiary. Normally, the sentence in which the word occurs clarifies its meaning. Sometimes, however, a broader context—several sentences or an account of the circumstances in which the sentence is uttered or written—is needed to resolve an ambiguity. In the sentence "Mark's pen won't write," *pen* clearly refers to a writing instrument. However, the sentence "Mark couldn't get out of the pen" requires a broader context to determine whether the pen is an animal enclosure or a penitentiary.

When we examine arguments, we should note whether expressions have the same sense each time they occur in the argument. Using an ambiguous expression in more than one way in the context of a single argument compromises the ability of the premisses to support the conclusion. Consider the following argument, written in standard form:

Mad men should not be permitted to make important decisions concerning the lives of others.

My father is mad.

---

My father should not be permitted to make important decisions concerning the lives of others.

Suppose that this argument is offered in the following context: My father is mad at (angry with) me because I took a curve at a reckless speed and wrecked his car. He has refused to let me drive his car in the future.

The first premiss is plausible only if the term *mad* is understood in the sense of *not mentally competent*. But if the second premiss is to be taken as true, the meaning of *mad* must be different. In the second premiss, *mad* means the same as *angry*. In this argument, the term *mad* is supposed to be the crucial link between the two premisses (the technical name for this link is "the third term"), but it fails because "mad" refers to one property in the first premiss and a different property in the second premiss. The mistake in reasoning in this argument is humorously transparent, but more problematic examples of the mistake occur.

Using multiple meanings of an ambiguous term to confuse or deceive is called *equivocation*. The **fallacy of equivocation** occurs when the force of an

argument depends on such shifts of meaning, even when there is no intent to deceive. Bertrand Russell in *Problems of Philosophy*, for example, accuses Bishop Berkeley of committing this fallacy. Berkeley is famous for his idealist arguments that things can exist only in the mind of a perceiver. His work is the source of the puzzle that asks whether a tree falling in the forest really makes a sound if there is no one around to hear it crash. Russell says that Berkeley fails to recognize that *idea* is ambiguous. Because of this, Berkeley does not distinguish between an idea as something perceived and an idea as an act of perception. This leads Berkeley to think that things must be ideas in the mind of a perceiver in order to exist.

In the preceding examples, equivocation occurs on a single ambiguous word—*mad* in the first case and *idea* in the second. The possibility of equivocation, however, can also involve the ambiguity of a whole sentence or larger unit of language. Consider the following extract from the *Journal* of John Wesley, the founder of the Methodist religion.

1751. London. I was carried to the Foundery and preached, kneeling (as I could not stand) on part of the Twenty-third Psalm.

Wesley had sprained his ankle and preached in a kneeling position. His text was the Twenty-third Psalm. However, the sentence could be understood to mean that he knelt on a copy of the Psalm as he preached.

The ambiguity in Wesley's sentence is an **amphiboly**, which is the result of ambiguous sentence structure instead of a single ambiguous term. Amphibolies can occur when commas or modifiers are omitted or misplaced. For example, "He has two grown sons and a daughter in the nunnery" is a puzzling sentence for it suggests that the sons as well as the daughter are in the nunnery. The ambiguity is resolved when a comma is placed after *sons*. Another example is "The guards and prisoners who refused to join in the prison break were tied and left behind," which sounds as if there were guards who refused to break out of prison. Commas surrounding the phrase "and prisoners who refused to join in the prison break" would help to clarify the meaning of the sentence. Another ambiguous sentence is "They have brown and green eyes." This could mean that the persons referred to have multicolored eyes, but it is probably an attempt to express "Some of them have brown eyes, and some have green eyes."

Sometimes ambiguities arise through the use of adjectives and adverbs that are **relative terms**, such as *small* and *large*. Although the terms themselves do not have more than one meaning, the context determines how to understand them. A large mouse is not a large animal. A small skyscraper is probably not a small building.

Ambiguity can also result from shifting the **accent** or emphasis on certain words when a passage is read or spoken. Boswell, in his *Journal*, criticized a fellow lawyer for inferring that it was all right to lie *for* his client

on the grounds that the Ninth Commandment, which is usually interpreted as a prohibition of lying, actually says "Thou shalt not bear false witness against thy neighbor."

No recipes exist for detecting and avoiding fallacies of equivocation; but awareness that words can have more than one meaning, that grammatical constructions can be misleading, and that shifts in emphasis can change the meaning of a passage provides some defense against the most serious mistakes. Some situations require defining the meaning of an ambiguous term to prevent misunderstanding. (Techniques for definition will be discussed later in this chapter.)

When our primary purpose is to present or to evaluate evidence, it is advisable to resolve ambiguities and to make all claims as precise as the context demands. It is also important to avoid ambiguity when giving or receiving instructions. In general, we should try to reduce ambiguity in the transfer of information.

Nevertheless, conveying information is not the only purpose of language. In other uses of language, ambiguities play important and valuable roles. We have already looked at Shakespeare's use of ambiguities. Poets use ambiguous words and expressions to evoke a number of different images and to convey several meanings. The expressive power of poetry depends on such compact use of language. Puns and other forms of humor also depend on ambiguity. Our language would be greatly impoverished without such ambiguities.

### Exercise Set 2.1

Discuss the ambiguities on which the following six arguments depend.

1. Mary is a person who is a good dancer. Therefore, Mary is a good person.
2. Jumbo is a small elephant. Therefore, Jumbo is a small animal.
3. All women are not feminists. The president of the National Organization for Women is a woman. Therefore, she is not a feminist.
4. Only man is capable of producing great art. Helen Frankenthaler is not a man. Therefore, Helen Frankenthaler is not capable of producing great art.
5. There are no solid objects in the world, because physics teaches us that there are spaces within and between the atoms and molecules that make up every material object.
6. God must exist, because only God can perform miracles, and it is a miracle that I passed my physics exam.
7. In antiquity, the oracle at Delphi was consulted for advice about important undertakings. Croesus the Rich, king of Lydia, asked the oracle if he would succeed in a war against Persia.

The only answer the Greek holy of holies gave him was that by going to war he would destroy a great empire. It happened to be his own, but, as the priestess pointed out, she was not responsible for his lack of wit.

—Edith Hamilton, *The Greek Way*

Discuss the ambiguity on which Croesus's inference depended.

8. An ambiguity in the term *normal*, which can mean either "average or usual" or "healthy, correct, without fault," is sometimes the basis for fallacies of equivocation. Consider the following argument for the safety of nuclear power and decide whether it depends on this ambiguity.

All of us are exposed to a certain amount of background radiation from natural causes. Such background radiation forms part of normal atmospheric conditions which humans have lived with for ages. Thus, since nuclear power plants are responsible for increasing atmospheric radiation only by a factor of two, this is within the range of the normal and should not be condemned.

9. How does ambiguity figure in the following conversation?

*Algernon:* I don't think there is much likelihood, Jack, of you and Miss Fairfax being united.

*Jack:* Well, that is no business of yours.

*Algernon:* If it was my business, I wouldn't talk about it. It is very vulgar to talk about one's business. Only people like stockbrokers do that, and then merely at dinner parties.

—Oscar Wilde, *The Importance of Being Earnest*

10. Do the ambiguities in the following involve an amphiboly or a single word with more than one meaning?
- A young woman told Groucho Marx that she went to a college for girls. He replied "That's the reason I'd want to go too."
  - Michael saw a dog running through the field with his binoculars.
11. The ethical theory called *Psychological Egoism* claims that people always act selfishly so as to seek their own satisfaction or good. Consider the following argument for this claim:
- Yes, we do things for others, but we get satisfaction out of doing them, and this satisfaction is our end for doing them. Doing them is only a means to this satisfaction. Hence, even in doing "altruistic" things for others, like taking them to see the ocean, we are seeking our own good.
- W. Frankena, *Ethics*
- Discuss whether this argument of the egoist depends on an ambiguity.
12. Many popular songs have ambiguous titles and contain lines that are ambiguous. For example, consider the Beatles' "Lucy in the Sky with Diamonds." Find an example of an ambiguous line or song title and discuss its several meanings.

13. Politicians often exploit the ambiguity of specific campaign idioms, such as "law and order," "traditional values," and "political insider." Obviously the meanings that voters assign to such terms depends heavily on their past experiences. Discuss some circumstances in which a promise to restore "law and order" would either appeal to or repel a voter.

### III. VAGUENESS

Vagueness occurs in several different forms; we consider three.

1. An expression is **vague** if borderline cases for its application occur.

#### Example

While the term *middle-aged* definitely applies to someone who is fifty years old, it is less clear whether the expression is applicable to someone who is forty. Most thirty-nine-year-olds would say "No."

Vagueness differs from ambiguity in that an ambiguous term has at least two distinct, *nonoverlapping* meanings. Many English words, such as *kid*, are both ambiguous and vague. *Kid* is ambiguous because it can refer to a young goat or a young child. In the first sense, *kid* is not vague, for goats are no longer kids when they reach their first birthday. However, no clear cutoff point determines when a person is no longer considered a kid. In this section, we ignore possible ambiguities of the terms discussed so that we can concentrate on vagueness.

Another standard example of a vague term with borderline cases of application is *bald*. A person with no hair at all is bald; a person with a full head of hair is not bald. But there are cases in which it is unclear whether the term *bald* is applicable. Other examples of terms that are vague in this sense are *old*, *happy*, *rich*, and *thin*. Most color terms (for example, *mauve*) are also vague.

2. Vagueness also arises when several criteria exist for application of a term, with no specification of how many of the criteria have to be fulfilled or to what degree. When a term is vague in this sense, it is similar to an ambiguous term in having more than one meaning but is distinct from ambiguous terms in that the meanings overlap.

#### Example

Consider the expression "Terry is a good friend." What are the criteria for being a good friend? Can a good friend let you down sometimes? How often or in what ways can someone let you down and still be a friend? Can a good friend take something from you without permission? Some would say yes, but others would not agree, and most would say "It depends . . ."

Vague terms, like ambiguous terms, can cause difficulties in arguments. For example, consider the argument that concludes a person who seldom attends religious services is therefore not religious. The argument fails because the term *religious* has several, overlapping meanings. Criteria for being religious include attending services, but a person can be religious even if he or she does not attend regularly—or ever. Other criteria for being religious include belief in a supernatural being; membership in an organized religion; adoption of an ethical code or set of altruistic values; performance of acts of devotion or piety; and a sense of reverence toward fellow humans, other living things, or the universe. It is appropriate to call a person “religious” when all, or only some, of these criteria are applicable.

Because *religious* is a vague term, it is unclear just how many of these criteria must be met in order to say that someone is religious. If all of them are applicable to a particular person, that person is religious. If none of the criteria that constitute being religious apply, the person is not religious. Evidence that someone does not attend religious services appeals to only one of the criteria and does not strongly support the conclusion that the person is not religious.

3. A third form of vagueness is more appropriately called *lack of specificity*. This form occurs when information is given in general terms rather than specifics. Suppose, for example, that you ask a friend where Larson lives, and your friend answers “Ohio,” without specifying the city, street, house number, and zip code. If you are interested only in the state of residence—for example, if you want to see that certain states are represented in a meeting of delegates—this answer is adequate. If however, you want to send a letter to Larson or go to her house for a party, you need more specific information.

Vagueness is a pervasive, important, and useful feature of language, and it would be foolish—if not impossible—to eliminate all vague terms. Ordinary social conversation would be severely hampered without such comfortable but vague expressions as “See you soon” or “I’ll call you sometime,” or “How have you been?—Just fine.” International diplomacy depends heavily on vague language. Diplomats can convey strong disapproval by using such vague expressions as “The government has warned that it will take strong measures if its territorial waters are violated” without giving away any secrets or risking loss of face.

In some circumstances, however, we need to reduce vagueness. For example, although the vagueness of the term *religious* is unproblematic in most contexts, some situations demand a precise definition of this term.

### Example

For a long time in the United States, conscientious objectors to military service who were members of some religion were treated differently from

conscientious objectors who were not. Religious objectors were assigned to alternate nonmilitary service. Nonreligious objectors went to jail.

Leaving aside the question of whether any religious test should be applied to conscientious objectors, when something as serious as a prison sentence is at stake, it is important to state precisely the conditions under which someone will be assigned to prison. In this situation, we need a definition of *religion* to reduce its vagueness. In the next section, various techniques for defining terms as well as several types and purposes of definition, including definitions to reduce vagueness, will be discussed.

### Exercise Set 2.2

1. Have you ever argued with anyone about whether a tomato is a fruit or a vegetable? What are the criteria for whether something is a vegetable or a fruit? Can you think of a situation in which it would be important to clarify these vague terms?
2. Discuss any elements of vagueness (not ambiguity) in each of the following terms:

- a. student
- b. bachelor
- c. aristocrat
- d. tree
- e. war crime

3. Can you think of any common nouns in the English language that are not at all vague?
4. What role does vagueness play in the following argument?

*Lord Caversham:* Good evening, Lady Chiltern! Has my good-for-nothing young son been here?

*Mabel Chiltern:* (coming up to Lord Caversham): Why do you call Lord Goring good-for-nothing?

*Lord Caversham:* Because he leads such an idle life.

*Mabel Chiltern:* How can you say such a thing? Why he rides in the Row at ten o’clock in the morning, goes to the Opera three times a week, changes his clothes at least five times a day, and dines out every night of the season. You don’t call that leading an idle life, do you?

—Oscar Wilde, *An Ideal Husband*

5. How does vagueness figure in the following somewhat plausible but actually *incorrect* argument?

Paint sample A looks the same color as paint sample B.

Paint sample B looks the same color as paint sample C.

Therefore, paint sample A looks the same color as paint sample C.

## IV. DEFINITIONS

In this section, we touch briefly on a small part of the fascinating subject of how to define words. Here, we are concerned primarily with the meanings of words insofar as their meanings affect the understanding and evaluation of arguments. Various ways of defining words (giving their meanings) are available and are suited for different purposes.

### 1. OSTENSIVE DEFINITION

Often the best way to define a term is to point to or display the objects to which the term applies or to use some other nonverbal method of drawing attention to the objects being defined. Parents teach many words to their infants by pointing to baby's eyes, nose, and ears, and so forth while uttering the words that refer to those things. This technique is called **ostensive definition**. It is fundamentally important not only because it is how we first learn language, but also because it establishes a link between words and objects that words denote.

Useful as it is, ostensive definition has limited power. Sometimes attention is directed to the wrong object. A baby may notice the pointing finger rather than the nose when the word *nose* is uttered. Or the baby may suppose that the whole face or the whole person is meant by *nose*. We can ostensively define general terms, such as *eye*, only by pointing to particular eyes, thus allowing the possibility that some special feature of the particular eyes, such as their color, will be mistakenly attached to the general term *eye*.

Definition by ostension is further limited when no objects of the right type for a definition are at hand. In midtown Manhattan, we can offer ostensive definitions of skyscrapers but not in the New Guinea highlands—unless some appropriate pictures are available. Moreover, we cannot define ostensively abstract objects, such as numbers, the gross national product, or the average worker. Abstract objects cannot be pointed to or displayed. Nevertheless, despite these limitations, ostensive definition is useful in many circumstances, and its fundamental importance should not be underrated.

### 2. VERBAL EXTENSIONAL DEFINITION

Ostensive definition is sometimes called **nonverbal extensional definition**. The **extension** of a term is the set of individuals, objects, or events to which the term can be correctly applied. For example, the extension of *boat* is the set of all boats; the extension of *dog* is the set of all dogs; the extension of *prizefighter* is the set of all prizefighters. In ostensive definition, as we have seen, some member or members of the set to which the term applies are pointed to, pictured, or displayed in some way.

**Verbal extensional definitions** also select members of the set to which the term applies, but they do this verbally by naming members of the set instead of pointing to them. For example, *prizefighter* might be defined by

naming some prizefighters, such as Muhammad Ali, Joe Louis, Evander Holyfield, and Sonny Liston.

Verbal extensional definitions, like ostensive definitions, have limitations. Common nouns, such as *prizefighter*, refer not only to all present and past prizefighters, but also to future prizefighters. In such cases, it is impossible to provide a complete verbal extensional definition that lists all members of the class. When only a partial listing is given, misunderstanding can occur because it is possible to focus on some property shared by all members of the list that is not the same as the term being defined. For example, Ali, Louis, Holyfield, and Liston are not only all prizefighters; each is also a heavyweight, a world champion, and an African American.

Another limitation of the technique of verbal extensional definition is the difficulty of listing members of sets when the members have no names. Sometimes subsets (instead of members) of the set that is the extension of a term can be listed, and this may suffice to convey the meaning of the term. For example, we could define *marsupial* extensionally by naming various kinds of marsupials, such as opossums, kangaroos, wallabies, and wombats. But it would be very difficult to formulate a verbal extensional definition of *kangaroo*. Few individual kangaroos have names, and various types of kangaroos are not known by terms sufficiently familiar to convey their meaning to someone who does not know already what a kangaroo is.

### 3. INTENSIONAL DEFINITION

The **intension** of a term is the set of all and only those properties that a thing must possess for that term to apply to it. For example, a person must possess the property of being a professional boxer for the term *prizefighter* to be correctly applicable. When a term is given an **explicit intensional definition**, a phrase equivalent in meaning to the term is stated, as in “prizefighter” means “a professional boxer.” All intensional definitions are verbal. We can distinguish several types of explicit intensional definitions by recognizing that definitions have various purposes.

#### i. Definitions That Show How a Word Is Commonly Used

Most dictionary definitions, such as the intensional definition of *prizefighter* just given, are of this type, called **lexical definitions**. *The Professor and the Madman*, by S. Winchester, a recent book about the construction of the massive *Oxford English Dictionary*, states the criteria for success:

Defining words properly is a fine and peculiar craft. There are rules—a word (to take a noun as an example) must first be defined according to the class of things to which it belongs (mammal, quadruped), and then differentiated from other members of that class (bovine, female). There must be no words in the definition that are more complicated or less likely to be known than the word being defined. The definition must say what

something is, and not what it is not. If there is a range of meanings of any one word—*cow* having a broad range of meanings, *cower* having essentially only one—then they must be listed. And all the words in the definition must be found elsewhere in the dictionary—a reader must never happen upon a word in the dictionary that he or she cannot discover elsewhere in it. If the definer contrives to follow all these rules, stirs into the mix an ever-present need for concision and elegance—and if he or she is true to the task, a proper definition will probably result.

In accord with the standards stated above, a lexical definition should be neither too narrow nor too broad. That is to say, the definition should state the set of properties possessed by all things to which the term applies, and only to those things. For example, the following definition:

“Knife” means “an instrument for cutting”

is too broad. Some instruments for cutting, namely scissors, are not knives. The definition

“Table” means “a piece of furniture consisting of a flat top set horizontally on four legs”

is too narrow. Some tables have fewer than four legs, and some tables have more.

A definition can be both too broad and too narrow. For example:

“Cat” means “domestic animal”

is too *broad*, because “domestic animal” applies to livestock, dogs, and various other pets as well. The definition is also too *narrow*, because many wild animals belong to the cat family.

In addition to being neither too broad nor too narrow, lexical definitions should not be circular. A **circular definition** incorporates the term being defined, or some variant of that term, in the definition. For example:

“Full-time student” means “a person who is enrolled full time in school”

is a circular definition. Such definitions do little to convey the meaning of a word. Sometimes circularity is not as apparent as it is in this example, because the circle is large enough to include several definitions. Consider the following pair of definitions, taken from a recently published dictionary (*not the Oxford English Dictionary*):

“Grazing” means “feeding on growing grass.”

“Grass” means “any of various green plants that are eaten by grazing animals.”

What we learn from these definitions is little more than that grazing animals feed on growing grass and grass is what is eaten by grazing animals. This pair of definitions comes close to being circular.

### Exercise Set 2.3

1. We have said that abstract objects such as numbers cannot be ostensively defined. But numerals, which are conventional representations of numbers, can be ostensively defined.
  - a. Give an ostensive definition of the Roman numeral that represents the number three.
  - b. Give an ostensive definition of the Arabic numeral (base 10) for the number seven.
  - c. Give an ostensive definition of the binary numeral (Arabic, base 2) for the number two.
2. Give a verbal extensional definition of either (1) “winners of the World Series (U.S. baseball) since 2004” or (2) “World Cup (soccer) winners since 2004.”
3. What is wrong with each of the following lexical definitions?
  - a. “Politically” means “in a politic manner.”
  - b. “Hamster” means “a small animal.”
  - c. “Fork” means “a utensil for eating foods.”
  - d. “Whale” means “an aquatic mammal.”
  - e. “Overture” means “the orchestral opening to a symphony.”
4. Many slang terms are on their way to becoming a standard part of a language. Because meanings of these terms are somewhat fluid, a dictionary does not always present the best account of current usage. Look up the meaning of the slang term “cool” in some dictionary (an online dictionary will probably offer the most up-to-date definition). Discuss whether the definition that you find accords with your sense of the term.

### ii. Definitions That Introduce a New Word into the Language

When new situations arise or our interests shift to features not previously noted as important, sometimes we need to introduce a new word into the language. The definitions that introduce new words are called **stipulative definitions**. For example, the term *astronaut* is a relatively recent introduction. At the time it was introduced, its meaning was stipulated:

“Astronaut” means “a person trained to make rocket flights to outer space.”

Before the middle of the twentieth century, no rockets flew to outer space and no persons were trained to make these flights. Thus, the language did not

require a special term to refer to such persons. New words can always be introduced into a language when salient features of the world make them applicable. Sometimes the words are taken over from another language, as when Europeans adopted the Nahuatl word for chocolate, a food which was unknown in Europe before Spaniards entered Mexico in the sixteenth century. Sometimes new words combine parts of old words (*astro* from the Latin word for "star" and *naut* from the Latin word for "sailor"). Sometimes, especially when connected with a new technology, the new words are fresh constructions (*byte*).

The **conventional** nature of language is most apparent in stipulative definitions. Expressions in a language do not acquire their meanings as a result of some natural connection between the words and the things in the world that the words denote. The connection between the word *thunder* and the meteorological phenomenon of thunder is conventional, unlike the natural connection between thunder and lightning. Words have the meanings they do as a result of the widespread acceptance of proposals to use them in a certain way. This is not to say that the first humans who used language stipulated the meanings of all of the original expressions in a manner similar to the stipulation of the meaning of *astronaut*. Such a scenario seems highly unlikely, even though the true origins of language remain shrouded in mystery. Nevertheless, given what we do know about the development of languages—the ways in which new words are added and words that are no longer useful are discarded—the conventional nature of language is indisputable. Different human languages use different vocabularies to refer to many of the same features of the world because the development of different languages involved the adoption of different conventions. No language is more correct or true to the world than another language, however.

Although new words can enter a language by stipulating their meanings, stipulative definitions must meet at least the following two requirements if they are to be acceptable:

1. A term that is stipulatively defined should not already have a widely accepted standard meaning.

In Lewis Carroll's *Through the Looking Glass*, Humpty Dumpty claims that he is the master of words—words mean what he wants them to mean. Alice protests because Humpty is stipulating new and different meanings for words that already have established senses. Alice is justified in her complaint. Confusion obviously results from Humpty Dumpty's attitude toward words with established usage.

2. A term that is stipulatively defined should be a useful addition to the language.

Making up new words and offering stipulative definitions for them may be an amusing pastime, but unless the new words serve some useful purpose, it is unlikely that they will become part of the language. Special interests, such as printmaking, often require the stipulation of a new vocabulary.

Space technology, which has prompted the introduction of many new terms besides *astronaut*, is another case in point. The danger looms, however, that mere **jargon**—terminology that is incomprehensible to those outside a special-interest group—may be substituted for ordinary language, even though the special interest requires no new concepts and could be expressed in language that has standard meaning. Stipulative definitions of this type are unfortunate because, while they might satisfy members of the special-interest group, they hinder rather than help successful communication with those outside the group.

### iii. Definitions That Reduce Vagueness

For some purposes, the meaning of a vague term must be clarified and made more precise. Definitions that do this are **precising definitions**. *Full-time university student* is a vague term. In ordinary usage, it means roughly "a person who devotes a major part of his or her energies to acquiring some type of knowledge or skill through university courses." However, the vagueness of the term poses a problem for universities that assign fees and benefits on the basis of whether students are full-time or part-time. Universities typically solve this problem by offering a precising definition of *full-time student* in their catalogs. Here is one university's definition of *full-time student*:

"Full-time student" means "student who is carrying a course load of at least twelve units a semester."

Note that this precising definition is not the same as a stipulative definition. It does not introduce a new term or assign a completely new meaning to a term already in use. This precising definition eliminates borderline cases of the vague expression *full-time student* for the special purpose at hand by making a course load of at least twelve hours per semester the criterion for being a full-time student (at that university). This definition sorts students at the university into just two categories: those who are full-time and those who are not full-time.

Another type of precising definition assigns a special or technical meaning to be used in a particular context. Our text contains many examples of such definitions that occur in the study of logic. *Argument* and *fallacy* are just two examples. In music, *beat* and *tempo* are technical terms; their technical meanings are different from the senses they carry in ordinary contexts. All disciplines employ some technical vocabulary that those who want to understand the field must master.

Not all cases of reducing vagueness are as simple as the precising definitions mentioned so far. When a term, such as *religion*, is vague because of a number of different criteria for its application, it can be difficult to specify just which criteria are most important or how many criteria must be met in order to apply the term. Recent debates concerning the definitions of *death of a person* and *beginning of life of a person* make us aware of the complexity of the problem. Even when the new definitions are set forth in judicial rulings that take into



account public debates and studies by experts, the definitions do not go unchallenged. This is because the proposed definitions have grave and far-reaching social consequences. The definitions in these cases not only reduce vagueness but also involve a theoretical account of what it means to be a person. As such, the definitions are appropriately classed as theoretical. **Theoretical definitions**, which are discussed in the next section, differ also from technical definitions. Although a technical definition specifies the meaning of a term as it is used in some area of study, a technical definition does not necessarily carry with it any commitment to the truth of a theory. Consider the term *sonnet*. The technical definition of the term is "a fixed verse form of Italian origin consisting of fourteen lines that are typically five-foot iambs rhyming according to a prescribed scheme" (*Merriam-Webster's Collegiate Dictionary, Tenth Edition*). This definition does not carry with it any commitment to a view of the nature of poetry in the way that the definition of *death of a person* carries a commitment to a theory of what it means to be a person.

#### Exercise Set 2.4

1. *Adult* (as applied to humans) is a vague term. For what purposes might a precisifying definition of *adult* be required? Discuss some of the problems that arise in formulating such a definition.
2. Most state universities charge residents and nonresidents of the state different tuition fees for the same educational programs. Suppose you are a state legislator assigned to a committee to define *resident* for the purpose of charging tuition fees. What considerations would guide your attempt? What definition would you propose? Alternatively, how is *resident* defined by state universities in your state?
3. What are some important technical terms in your major field of study (or a major you are thinking of choosing, if you have not yet done so)? Can you give an acceptable definition of one of these?
4. The term *green* in the sense of "ecologically friendly" is a recent introduction to the language. Does introducing this new meaning for the word *green* violate the rules for stipulative definitions? Why or why not?
5. Sometimes when celebrating a football championship with excess enthusiasm, students are arrested for disorderly conduct. What does "disorderly conduct" mean? What sort of definition of the term is required in these circumstances?

#### iv. Definitions for Theoretical Purposes

We have already introduced the concept of a theoretical definition in contrast to technical definitions. The term *theory* has several meanings, two of which concern us here. In one sense, *theory* refers to a general approach to, or belief

about, some subject matter that is expressed in a set of interrelated statements concerning the nature of the subject. In this sense, we can speak of a theory of justice. A theory of justice might include such statements as "Justice requires that all persons be treated similarly under similar circumstances," "Justice requires that individuals in a society be given equal opportunities and access to the good things in that society," "Justice demands that punishments should be tailored to the nature of the offense."

The definition

"Death of a person" means "cessation of that person's brain functions"

involves a theory in this sense, that is, a set of interrelated claims concerning the special character of human life. This theory is committed to the view that a human body that has totally and irreversibly lost the use of its brain is no longer a person, even if machines can maintain the body's circulatory, respiratory, and other systems. The term *vegetable* is sometimes applied in such situations to mark the transformation of the body from the time that it was the body of a person, capable of thoughts and feelings, to its passive state after loss of brain function. One who holds this theory of what it means for a person to die would, for example, probably agree that it is not immoral to remove a body that has lost all brain function from machines designed to maintain respiration. In addition, the theory supports the view that no harm is done to the *person* if vital organs from that body are removed for transplanting. (While the *person* lives, he or she may direct how his or her body is to be used after death, just as the *person* directs the use of his or her personal property.)

A second sense of *theory* refers to a set of general—but not vague—interrelated claims about the nature of society or the physical world. Einstein's theory of relativity and Darwin's theory of evolution are two examples. Such theories often refer to things, such as subatomic particles, that cannot be directly observed. Statements about these theoretical entities form the basis for other statements that can be confirmed or disconfirmed by observing the behavior of relevant features of the world. Frequently, scientists take a term from ordinary language, or from another theory, and redefine it for some new theoretical purpose. For example, in classical mechanics, *work* is defined as "the product of force and distance" and *momentum* is defined as "the product of mass and velocity." In classical mechanics, as in many physical theories, these terms are defined explicitly by means of other terms in the theory.

However, other terms, such as *force*, are not explicitly defined. Although classical mechanics tells us how to calculate force (mass times acceleration), no expression synonymous with *force* is presented in the theory. Instead of being defined explicitly, the meanings of such terms are given implicitly in the fundamental generalizations (or *laws*) of the theory. Sir Isaac Newton's three laws of motion all say something about how forces act on bodies: They



describe the effects of forces with respect to such other theoretical features as mass, acceleration, momentum, and distance. In a sense, we can say that the theory tells us what force is insofar as it tells us how forces operate under various circumstances.

**Theoretical definitions** are similar to precisifying definitions in that both reduce vagueness. However, in addition to reducing vagueness, theoretical definitions connect the term being defined with other terms in the theory. A complete understanding of the theoretical meanings of explicitly defined terms, such as *work*, and implicitly defined terms, such as *force*, is gained only through an understanding of the theory.

### Exercise Set 2.5

1. The following argument, used by John Rock, who was a principal designer of the Pill, depends on the meaning of *natural*. What theoretical considerations enter into the definition of *natural*?

In nature, during pregnancy, progesterin is produced to block the release of additional eggs.

The Pill is progesterin in tablet form.

Therefore, the Pill is a natural method of birth control.

2. Formulate a definition of either "liberal" or "conservative" in the political sense of those terms, and discuss the theoretical significance of your definition. (You may use a dictionary.)

### v. Definitions Designed to Transfer Emotive Force

**Persuasive definitions** are definitions designed to transfer emotive force, such as feelings of approval or disapproval. Like other explicit intensional definitions, a persuasive definition should state the properties that a thing must possess for the term to apply. However, persuasive definitions also convey an attitude toward what is being defined. For example, the definition

"Homosexual" means "one who has an unnatural desire for those of the same sex"

conveys, through use of the term *unnatural*, a negative or disapproving attitude toward homosexuals. An attitude of approval—although more subtle than the disapproving attitude in the definition of *homosexual*—is conveyed by the following definition:

"Democracy" means "the acceptance and practice of the principle of equality of rights, opportunities, and treatment; lack of snobbery."

An attitude of approval is present in this definition because most people place a positive value on equality of rights and lack of snobbery. Perhaps,

the emotive force of this definition of *democracy* can be seen more clearly if we contrast it with the definition

"Democracy" means "rule by majority."

Most people would not regard this definition as persuasive. Its emotive force is fairly neutral. "Rule by majority" does not engender the same degree of approval as appeals to equality of rights and lack of snobbery. If, however, some people associate rule by majority with mob rule, then the definition of *democracy* that equates it with "rule by majority" may convey negative emotive force to them.

As often happens when more than one definition of the same term is offered, these two definitions of *democracy* differ in their statement of intension as well as in their emotive force. "Rule by majority" and "the acceptance and practice of the principle of equality of rights, opportunities, and treatment; lack of snobbery" do not refer to the same properties of a democracy.

Whether persuasive definitions are appropriate depends on the context in which a definition is offered. Nothing is intrinsically wrong with trying to persuade others to share our attitudes. Insofar as the attitudes themselves are immoral or inappropriate in some way, however, trying to persuade others to share these attitudes may deserve punishment, blame, or milder forms of criticism.

Persuasive definitions are often presented in a humorous context. For example, *philosophy* has been defined as "a doubt which lives in one like a hookworm, causing pallor and lack of appetite." In this persuasive definition, as in many definitions proposed for humorous purposes, the intension of the term—the properties a thing must have if the term is to apply—is partially or completely ignored. When the purpose of a definition is entertainment, this is acceptable. But if we are seeking the definition of an emotionally neutral term for the purpose of making its standard use known, then a persuasive definition is probably inappropriate and can be deceptive or misleading.

Familiarity with the technique of persuasive definitions increases our awareness that words that refer to the same objects may differ sharply in emotive force. It does not require much sensitivity to recognize the difference in attitudes carried or conveyed by the terms *woman* and *bitch* or *black* and *nigger* or *white* and *honky*. Objectionable slang terms that are disrespectful to various ethnic, racial, and religious segments of the population are regrettably all too common.

Sometimes, the negative emotive force of an expression is less obvious. Calling an airplane race in which the pilots are women a "Powder-Puff Derby" conveys the attitude that such races are to be taken less seriously than races in which men are the pilots. Calling a woman who writes poetry a "poetess" suggests that she is not quite up to the standards of a poet.

We should be especially sensitive to the emotive force of any expressions used in arguments, for emotively charged terms can lead us to accept or reject conclusions when this is not warranted by the evidence.

### Exercise Set 2.6

1. Discuss the different emotive force (if a difference exists) for each of the following pairs of terms.

Aside from emotive force, do both members of each pair have the same intensional meaning (does each member of the pair refer to the same things)?

- a. Fragile—weak
  - b. Public servant—bureaucrat
  - c. Native American—Indian
  - d. Sweat—perspire
  - e. Chairman—chairperson
  - f. Cop—police officer
  - g. Boy—young man
  - h. Waiter—waitress
  - i. House—home
  - j. Estate tax—death tax
  - k. College—university
  - l. Psychiatrist—shrink
  - m. Man—gentleman
  - n. Tolerance—"anything goes"
2. Give a persuasive definition of some form of popular music (for example, rap, swing, hard rock, etc.).
  3. The following is taken from the work of W. McDonough, a "green" architect. Comment on the difference in emotive force between Ralph Waldo Emerson's statement about his return voyage and McDonough's characterization of the voyage:  
In the 1830's, when [Emerson's] wife died, he went to Europe on a sailboat and returned in a steamship. He remarked on the return voyage that he missed the "Aeolian connection."\* If we abstract from this, he went over on a solar-powered recyclable vehicle operated by craftpersons, working in the open air, practicing ancient arts. He returned in a steel rust bucket, spilling oil on the water and smoke into the sky, operated by people in a black dungeon shoveling coal into the mouth of a boiler. Both ships are objects of design. Both are manifestations of our human intention.
  4. Discuss the persuasive force of "natural foods" and "natural medicines." What is the intension of these terms?

\*Aeolus was the Greek god of the wind.

5. The governor of California once called his critics "girlie men." How would you define this term? Is the definition a persuasive definition?

### 4. SYNTACTIC DEFINITIONS AND IMPLICIT DEFINITIONS

Thus far, with the exception of implicit theoretical definitions, we have defined terms by giving their intensions or extensions in an explicit manner. For the most part, the terms defined in this way have been common nouns and adjectives. Some words, such as prepositions, articles, and conjunctions, do not have an intension or an extension: They do not refer to things, events, persons, or activities, although they do have meanings and play an essential role in language.

The meanings of these terms are primarily grammatical or **syntactic**. Examples of such words are *and*, *or*, and *if . . . then*. We can sometimes define them explicitly, by presenting synonyms that have the same grammatical function ("*and*" means "also; in addition to; moreover; as well as"). More often, however, the definition states the grammatical function of the term, along with examples of contexts in which the term occurs. For example, one dictionary implicitly defines *or* as "a *coordinating conjunction* that introduces an alternative, as in 'I'll offer him beer or wine.'" Another implicit definition of *or* is "a word that connects sentences in such a way that the compound sentence that is formed is true whenever either of the sentences it connects is true, but is false otherwise." Truth-table definitions of the logical connectives are implicit definitions of this type.

Contextual definitions offer yet another implicit way to define syntactic terms. For example, *unless* is contextually defined in the following: "We'll have a picnic unless it rains" means the same as "If it doesn't rain, then we'll have a picnic." In this sort of contextual definition, no single expression synonymous with *unless* is presented. Instead, the defining expression is synonymous with the whole expression in which *unless* occurs, and it does not contain *unless*.

### Exercise Set 2.7

1. Give a syntactic definition of *and*, and give an example that shows how it is used.
2. Give a syntactic definition of *but*, and give an example that shows how it is used.
3. Give an implicit contextual definition of *Neither . . . nor . . .* by providing an expression in which it occurs and another equivalent expression in which it does not occur.

### 5. OPERATIONAL DEFINITIONS

In addition to ostensive definition, one other type of nonverbal definition, called **operational definition**, is especially important to scientific studies.

A Nobel physicist P. W. Bridgman (*The Logic of Modern Physics*, 1927) first introduced the technique. Bridgman was aware that words could cause confusion because of their ability to carry various emotive and referential meanings. As a scientist, he was concerned about variations in the meanings of *scientific* terms as a result of different associations and contexts of use. He wanted to establish the meanings of scientifically important terms in a way that guaranteed that any scientist who used these terms would employ them in exactly the same way. Bridgman proposed fixing the meanings of scientifically important terms by specifying public and repeatable operations, with specific outcomes, to determine whether a term was applicable in a particular situation.

### Example

"Each side of my table is three feet long" means that when a standard yardstick is lined up with a side of my table (the operation), the ends of the yardstick coincide with the ends of my table (the outcome).

The technique of operational definition is not intended to offer verbal definitions of abstract terms, such as *length*. Instead, a public and repeatable physical operation (such as laying a standard yardstick along the edge of a table) is specified for determining whether or not a sentence containing specific expressions such as "is three feet long" can be applied correctly to a situation. Nothing is lost, Bridgman believed, by refusing to consider *length* in the abstract, because scientists use the concept of length only in specific contexts. Once we understand how to use sentences in which expressions like "three feet long" occur, then we understand what such expressions mean. Since the operation of measuring with a standard yardstick is public and repeatable, this operational definition guarantees that scientists will all use the expression "three feet long" in exactly the same way.

With suitable scientific instruments, many of the terms used by scientists can be defined operationally. For example, "This flame is blue" can be operationally defined as meaning that when subjected to analysis by a spectrometer, the flame registers between 4,240 angstrom units (of wave length) and 4,912 angstrom units. (Notice that this operational definition also eliminates any borderline cases of application of the color term.) Operations other than measurement can also be used in operational definitions. For example, "The liquid in this jar is acid" means that when a piece of litmus paper is placed in this liquid, the litmus paper turns (or remains) pink. All that is required is a high degree of agreement among various observers as to the outcome of the operation and that the operation be repeatable.

The technique of operational definition has problematic features. For example, when we refer to the temperature of a body, we tend to ignore the fact that there are several different types of instruments and operations available for measuring temperature and no operation for coordinating the various results. In such cases, we cannot, strictly speaking, refer to "the temperature" of a particular object but only, for example, to "the mercury thermometer

reading" or "the alcohol thermometer reading." In addition, some measuring instruments cannot be used throughout the full range of a quantity. For example, alcohol thermometers cannot be used to measure extremely hot things. These problems about instruments of observation and measurement introduce some awkwardness into scientific discourse. However, many scientists are willing to pay this price in order to specify the meanings of terms by tying them to observations and measurements.

Additional, more serious problems arise in trying to define operationally some of the more highly theoretical terms used by scientists. *Electron*, for example, does not refer to anything that can be directly observed or measured. Electrons are unobservable entities that scientists invoke to account for the certain kinds of observed behavior. Scientists infer the existence and behavior of electrons on the basis of highly sophisticated ideas about the causes of reactions in various physical experiments. Electrons play a fundamental role in high-level physical theories about the nature of matter. Attempts to *reduce* terms such as *electron* to terms that can be operationally defined have not been successful.

As things stand now, in light of the various difficulties surrounding operational definition, the program offers little hope for providing such definitions for *all* of the important terms used by physical scientists. Nevertheless, this form of definition is regarded as important in standardizing meanings of many scientific terms by establishing operational criteria for their application.

Even though operational definitions were first proposed for the physical sciences and have encountered serious difficulties there, many social scientists remain enthusiastic about the possibility of constructing operational definitions for the terms that occur in their own disciplines. Behavioral psychologists, for example, believe that operational definitions are the best way to handle so-called mental terms, such as *intelligence*, *belief*, *anxiety*, and *fear*. They have tried to specify publicly observable features of behavior or physiology in order to define particular concrete uses of such terms.

### Examples

"John Jones is afraid of the dark" means that whenever Jones is in a dark place, he breaks out in a cold sweat and begins to tremble.

"Maria Garcia is very intelligent" means that Garcia scored above 135 on the Stanford-Binet (IQ) test.

Although Bridgman admitted the importance of symbolic operations (such as pencil-and-paper operations that have test scores as their outcomes) along with physical operations, attempts to define mental terms operationally are highly controversial. Two types of objections prevail. One has to do with the obvious difficulty in trying to quantify concepts such as *intelligence*. Measuring someone's intelligence is much less straightforward than measuring that person's height, just as monitoring the movement of the electrons in a body is less closely tied to direct

observation than measuring a body's temperature. Critics claim that intelligence tests are dependent on specific cultural backgrounds and that they ignore many features that we believe make up intelligence in a human being. Similarly, physiological manifestations of fear, anxiety, and other mental states vary from person to person and culture to culture, making the specification of publicly observable criteria for determining the presence of such states problematic.

A second objection cuts deeper into the program of operational definition. An operational definition of a mental property equates that property with the outcome of some operation. Many people claim, however, that even if we devised satisfactory tests for measuring intelligence, intelligence itself could not be the score on the test. The test score, these objectors say, might be a good *indicator* of the degree of intelligence possessed by a person, but it would not be the *same thing* as intelligence. In other words, critics of operationalism claim that the *meaning* of someone's being in a particular mental state cannot be equated with the outcome of any measurement.

Despite these difficulties, some strong supporters of operational definition claim that a term is scientifically meaningful only insofar as it can be operationally defined. They hold that terms that cannot be defined operationally are of no use to science or that things amenable to operational definition are the only suitable objects for scientific study. Others take the more moderate view that although operational definitions play an important role in any science, their usefulness is limited, and it is inappropriate to demand operational definitions for *every* term used in a discipline.

### Exercise Set 2.8

1. Try to formulate *operational definitions* for each of the following:
  - a. The term "sour" in "This lemon tastes sour."
  - b. The expression "weighs 120 pounds" in "Joan weighs 120 pounds."
  - c. The expression "believes that he will win a scholarship next year" in "Frank believes that he (Frank) will win a scholarship next year."
  - d. The term "elastic" in "These bandages are elastic."
2. Social scientists often use questionnaires to formulate operational definitions. For example, they might be interested in arriving at an operational definition for the term *alcoholic* if they wanted to correlate alcoholism with some other social phenomenon, such as working in a particular profession or being subjected to the stresses of student life. Try to formulate a questionnaire (using about ten questions) that would operationally define whether or not the person who answers the questionnaire is an alcoholic. Mention any difficulties involved in devising such a questionnaire.

## V. USE AND MENTION — Not 2.0 3.00 etc.

Careful readers of this chapter will have noticed that when we mention words (that is, talk about the words themselves) rather than use the words to refer to other objects in the world, we either enclose the word that is mentioned in quotation marks or we italicize it. These are two standard conventions for forming the name of a word so that we can talk about it, and they signal when a word is being mentioned rather than used.

### Example

Consider the difference between the following two sentences:

"Alcoholism" has ten letters.

Alcoholism is a serious social problem in the United States.

Normally, as in the above example, the context makes it clear whether a term is being used or mentioned, but using the name of a word to talk about the word adds a degree of clarity. We should be careful to use the quotation names of words (or the italic names) when we want to emphasize that we are mentioning (not using) inappropriate words, such as ethnic slurs. For example, in discussions of the book *Huckleberry Finn*, we can use quotation names to refer to any objectionable language, making it clear that we are mentioning the language for purposes of critical discussion.

### Exercise Set 2.9

1. Using quotation marks to form the names of linguistic expressions, punctuate each of the following in such a way that the resulting sentence is true.
  - a. John is a very popular name.
  - b. Premiss is sometimes spelled with an e instead of the final s.
  - c. You can find the definition of stereotype in any college dictionary.
  - d. Engravers use burin differently from archaeologists.
  - e. Bury the hatchet means the same as settle a disagreement.
2. Numerals are linguistic expressions that are the names of numbers. Bearing this in mind, and using quotation marks to form the names of linguistic expressions, punctuate each of the following in such a way that the resulting sentence is true. (Some of the sentences may not need further punctuation.)
  - a. The Roman numeral M represents one thousand.
  - b. The winning number is 77777.
  - c. Only two distinct symbols, 0 and 1, are used in binary numerals.
  - d. The Arabic decimal, Roman, and binary representations of the number three are, respectively, 3, III, and 11.
  - e.  $7 + 4 = 11$ .

## VI. REVIEW

Stating our beliefs, opinions, and judgments clearly enough to be understood, and evaluating ordinary-language arguments, requires recognizing that meaning has many aspects—extensional, intensional, grammatical (or syntactical), and operational. Intensional meanings can be further subdivided by considering various purposes for which language is used: transferring information, transferring attitudes, introducing new terms, reducing vagueness, and constructing theories. Various types of verbal and nonverbal definitions capture these different aspects of meaning. It is important to know how to use definitions to achieve the degree of clarity that is required in a given context. Most definitions are verbal, but two important types of definition (ostensive and operational) are nonverbal. Both are especially important for providing a link between language and the world. New terms introduced in this chapter include the following:

**Ambiguous** An expression is ambiguous when it has several distinct, nonoverlapping meanings. Words with more than one distinct meaning are ambiguous. Ambiguities can also arise in larger units of language as a result of grammatical structure (**amphiboly**) or shifts in emphasis (**accent**).

**Equivocation** Equivocation is the use of an ambiguous expression in more than one of its senses in a single context. When an argument depends on equivocation to establish a conclusion, the fallacy of equivocation is committed.

**Extension** The set of objects to which a term refers.

**Implicit Definition** An implicit definition is a form of definition in which terms are defined by showing how they are used in a given situation or situations. Examples include implicit definitions of theoretical terms and definitions that present an expression in which the defined term occurs, along with a synonymous expression in which it does not.

**Intension** The intension of a term is the set of all and only those properties a thing must possess for the term to apply to it.

**Intensional Definition** Defining a term by stating the properties a thing must possess for the term to apply to it is intensional definition. All intensional definitions are verbal. Further distinctions among intensional definitions take into account the various purposes of definition:

**Lexical Definition** To present the accepted standard use of a term is the purpose of lexical definition.

**Stipulative Definition** To introduce a new term into the language is the purpose of stipulative definition.

**Persuasive Definition** The purpose of persuasive definition is to express or evoke an attitude, such as approval or disapproval, toward things referred to by the term.

**Precising Definition** Precising definitions reduce the vagueness of a term.

**Theoretical Definition** To construct a theory is the purpose of a theoretical definition. These definitions may be explicit, in which case terms are defined by giving synonymous expressions formulated in the vocabulary of the theory, or implicit, in which case terms are defined according to their use in the laws or generalizations of the theory.

**Operational Definition** This type of definition specifies a publicly observable and repeatable operation with a specified outcome that determines whether a sentence containing the expression is correctly applicable to a given situation.

**Ostensive Definition (or nonverbal extensional definition)** This type of definition is a nonverbal form of definition in which pointing or some other way of indicating the extension of a term is used to give the meaning of the term.

**Syntactic Definition (or grammatical definition)** Terms without an intension or extension are sometimes defined by indicating their syntactic or grammatical role in a language. These definitions are often supplemented by presenting a context in which the term occurs. (Example: *A* is an indefinite article used in such expressions as “A dog ran out into the road.”)

**Vagueness** A term is vague if there are borderline areas in which it is unclear whether or not the term applies, or if it has several overlapping meanings. *Vague* also refers to language that is general rather than specific. Vagueness is a useful feature of language, but definitions that reduce vagueness are required in some circumstances.

**Verbal Extensional Definition** Defining a term by listing or naming members of its extension is verbal extensional definition.

## Exercise Set 2.10

Part One. Classify each of the following definitions as to type:

1. “Communism” means “an economic theory or system of ownership of all property by the community as a whole.”
2. “Communism” means “a form of government characterized by rigid state planning and control of the economy, ruthless suppression of all opposing political parties, suppression of individual liberties under a dictatorship, and expansion by military action and subversion.”

3. "Embryonic stem cell" means "unspecialized cell extracted from 4 to 5-day-old embryos that have the capacity to develop into almost any type of tissue in the body."
4. "The Big Ten" means "University of Illinois, Indiana, Iowa, Michigan, Michigan State, Minnesota, Northwestern, Ohio State, Penn State, Purdue, and Wisconsin."
5. "Monotreme" means "platypuses and echidnas."
6. "Monotreme" means "egg-laying mammal."
7. "Naturalistic" means "glorifying all the meanness of human nature and the sordidness of human existence, emphasizing the disgusting, crude, animal part of human nature."
8. "Overweight" means "exceeds the U.S. government's standard chart's recommended weight per height by at least 10 percent."
9. In order to save space in the written reports of the curriculum committee, we will let "FLC" mean "first-year logic course."
10. It's just as "I believe in God" often means "I prefer not to think," so does "I love you" often mean "I want to own you."  
—John Fowles, *Daniel Martin*
11. "Water freezes *only* if it has a temperature of 32° F or lower" means the same as "If water freezes, *then* it has a temperature of 32° F or lower."
12. Two psychiatrists and a sports scientist (in the June 2005 issue of *The Physician and Sportsmedicine*) use the term "obligatory exerciser" to refer to those "who feel obligated or compelled to continue exercising despite the risk of adverse physiologic or psychological consequences, such as social isolation and injuries caused by overtraining. For obligatory exercisers, exercise is an addiction not a free choice."
13. "Superfluous" means "unnecessary."
14. "The" is a definite article that is used to refer to a particular person, place, or thing.
15. "Lecturing" means "a boring way of teaching in which the teacher drones on for nearly an hour while the students try to stay awake."
16. "Properly dressed for dining at local restaurants" means "wearing shoes and a shirt."
17. "The best age of a person" means "the age at which the person is old enough to know what's what and not old enough to show it."
18. Some anthropologists define "culture" as "a set of attributes and products of human societies, and therewith of humans, that are extrasomatic and transmissible by mechanisms other than biological heredity."

19. "State university" means "an institution of higher learning that grants advanced degrees and is supported by taxes."
20. "Abortion" means "the deliberate murder of a human fetus."

Part Two. What sort of definition is needed to settle each of the following issues?

1. Should a travel trailer or camper be assessed as a mobile home?

If the camper and travel trailers are considered to be mobile homes, the property tax must be paid in the same year that they are assessed. If the assessor considers the camper to be a recreational device and actually a part of the owner's personal property, the camper is considered in the same category as a boat or an automobile, and the tax is not paid until the year after it is assessed.

There is widespread inconsistency in assessing campers. Lawrence County is assessing them as mobile homes. Several other southern Indiana counties, including Monroe, are considering them personal property.

It seems to us that this amounts to discrimination, and there should be a uniform rule regarding the assessing of campers. It also seems to us that when a camper is owned by a permanent resident, who lives in a house and parks the camper or travel trailer on the premises, the trailer is truly no more than a recreational device and should be considered as personal property.

—Editorial, *The Indianapolis Star*

2. According to some philosophers, the ideal or ethical law is grounded in nature, and the various interpretations that have been placed on *nature* have generated different forms of natural-law theory. A serious problem, then, is how to define *nature*.

Part Three

1. The definition of "abortion" in Part One, Exercise 20, has negative emotive force. Can you find a definition of "abortion" that is neutral with respect to emotive force?
2. Business people and advertisers recognize that the name of a company can have a positive or negative influence on the success of the company. For example, the owners of a recently formed start-up airline in India deliberated very carefully before choosing "IndiGo" as its name. Choose some company that you believe has a "success-inducing" name, and discuss why that is so.