A *stereotype* is a hasty generalization about a group. Here are a few examples.

STEREOTYPES

Women are bad bosses.

All politicians are corrupt.

Athletes are never strong students.

Stereotyping is common because of our tendency to perceive selectively. We tend to see what we want to see; we notice evidence confirming our already formed opinions and fail to notice evidence to the contrary. For example, if you have concluded that all politicians are corrupt, this stereotype will be confirmed by news reports of legislators being indicted—even though every day the media describe conscientious officials serving the public honestly and well.

Academic English Many hasty generalizations contain words such as *all*, *ever*, *always*, and *never*, when qualifiers such as *most*, *many*, *usually*, and *seldom* would be more accurate.

Drawing analogies

An analogy points out a similarity between two things that are otherwise different. Analogies can be an effective means of arguing a point. Our system of judicial decision making, or case law, which relies heavily on previous decisions, makes extensive use of reasoning by analogy. One lawyer may point out, for example, that specific facts or circumstances resemble those from a previous case and will thus argue for a similar result or decision. In response, the opposing lawyer may maintain that such facts or circumstances bear only a superficial resemblance to those in the previous case and that in legally relevant respects they are quite different and thus require a different result or decision.

It is not always easy to draw the line between a reasonable and an unreasonable analogy. At times, however, an analogy is clearly off base, in which case it is called a *false analogy*.

FALSE ANALOGY

If we can send a spacecraft to Pluto, we should be able to find a cure for the common cold.

7 Evaluating arguments

In your reading and in your own writing, evaluate all arguments for logic and fairness. Many arguments can stand up to critical scrutiny. Sometimes, however, a line of argument that at first seems reasonable turns out to be illogical, unfair, or both. Recognizing flawed arguments as you read can help you avoid such problems in your own writing.

7a Distinguish between reasonable and fallacious argumentative tactics.

A number of unreasonable argumentative tactics are known as *logical fallacies*. Most of the fallacies—such as hasty generalizations and false analogies—are misguided or dishonest uses of legitimate argumentative strategies. The examples in this section suggest when such strategies are reasonable and when they are not.

Generalizing (inductive reasoning)

Writers and thinkers generalize all the time. We look at a sample of data and conclude that data we have not observed will most likely conform to what we have seen. From a spoonful of soup, we conclude just how salty the whole bowl will be. After numerous unpleasant experiences with an airline, we decide to book future flights with a competitor.

When we draw a conclusion from an array of facts, we are engaged in inductive reasoning. Such reasoning deals in probability, not certainty. For a conclusion to be highly probable, it must be based on evidence that is sufficient, representative, and relevant. (See the chart on p. 104.)

The fallacy known as *hasty generalization* is a conclusion based on insufficient or unrepresentative evidence.

HASTY GENERALIZATION

In a single year, scores on standardized tests in California's public schools rose by ten points. Therefore, more children than ever are succeeding in America's public school systems.

Data from one state do not justify a conclusion about the whole United States.

The writer has falsely assumed that because two things are alike in one respect, they must be alike in others. Exploring the outer reaches of the solar system and finding a cure for the common cold are both scientific challenges, but the problems confronting medical researchers are quite different from those solved by space scientists.

Testing inductive reasoning

Though inductive reasoning leads to probable and not absolute truth, you can assess a conclusion's likely probability by asking three questions. This chart shows how to apply those questions to a sample conclusion based on a survey.

CONCLUSION The majority of students on our campus would volunteer at least five hours a week in a community organization if the school provided a placement service for volunteers.

EVIDENCE In a recent survey, 723 of 1,215 students questioned said they would volunteer at least five hours a week in a community organization if the school provided a placement service for volunteers.

1. Is the evidence sufficient?

   That depends. On a small campus (say, 3,000 students), the pool of students surveyed would be sufficient for market research, but on a large campus (say, 30,000), 1,215 students are only 4 percent of the population. If that 4 percent were known to be truly representative of the other 96 percent, however, even such a small sample would be sufficient (see question 2).

2. Is the evidence representative?

   The evidence is representative if those responding to the survey reflect the characteristics of the entire student population: age, sex, race, field of study, overall number of extracurricular commitments, and so on. If most of those surveyed are majors in a field like social work, however, the researchers would be wise to question the survey's conclusion.

3. Is the evidence relevant?

   Yes. The results of the survey are directly linked to the conclusion. Evidence based on a survey about the number of hours students work for pay, by contrast, would not be relevant because it would not be about *choosing to volunteer*.

Tracing causes and effects

Demonstrating a connection between causes and effects is rarely simple. For example, to explain why a chemistry course has a high failure rate, you would begin by listing possible causes: inadequate preparation of students, poor teaching, lack of qualified tutors, and so on. Next you would investigate each possible cause. Only after investigating the possible causes would you be able to weigh the relative impact of each cause and suggest appropriate remedies.

Because cause-and-effect reasoning is so complex, it is not surprising that writers frequently oversimplify it. In particular, writers sometimes assume that because one event follows another, the first is the cause of the second. This common fallacy is known as *post hoc*, from the Latin *post hoc, ergo propter hoc*, meaning "after this, therefore because of this."

POST HOC FALLACY

Since Governor Cho took office, unemployment of minorities in the state has decreased by 7 percent. Governor Cho should be applauded for reducing unemployment among minorities.

The writer must show that Governor Cho's policies are responsible for the decrease in unemployment; it is not enough to show that the decrease followed the governor's taking office.

Weighing options

Especially when reasoning about problems and solutions, writers must weigh options. To be fair, a writer should mention the full range of options, showing why one is superior to the others or might work well in combination with others.

It is unfair to suggest that there are only two alternatives when in fact there are more. When writers set up a false choice between their preferred option and one that is clearly unsatisfactory, they create an *either . . . or* fallacy.

***EITHER . . . OR* FALLACY**

Our current war against drugs has not worked. Either we should legalize drugs or we should turn the drug war over to our armed forces and let them fight it.

Clearly there are other options, such as increased funding for drug abuse prevention and treatment.

Making assumptions

An assumption is a claim that is taken to be true — without the need of proof. Most arguments are based to some extent on assumptions, since writers rarely have the time and space to prove all the conceivable claims on which an argument is based. For example, someone arguing about the best means of limiting population growth in developing countries might well assume that the goal of limiting population growth is worthwhile. For most audiences, there would be no need to articulate this assumption or to defend it.

There is a danger, however, in failing to spell out and prove a claim that is clearly controversial. Consider the following short argument, in which a key claim is missing.

ARGUMENT WITH MISSING CLAIM

Violent crime is increasing. Therefore, we should vigorously enforce the death penalty.

The writer seems to be assuming that the death penalty deters violent criminals — and that most audiences will agree. The writer also assumes that the death penalty is a fair punishment for violent crimes. These are not safe assumptions; the writer will need to state and support both claims.

When a missing claim is an assertion that few would agree with, we say that a writer is guilty of a *non sequitur* (Latin for "it does not follow").

NON SEQUITUR

Christopher gets plenty of sleep; therefore he will be a successful student in the university's pre-med program.

Few people would agree with the missing claim — that people with good sleep habits always make successful students.

Deducing conclusions (deductive reasoning)

When we deduce a conclusion, we — like Sherlock Holmes — put things together. We establish that a general principle is true, that a specific case is an example of that principle, and that therefore a particular conclusion about that case is a certainty. In real life, such absolute reasoning rarely happens. Approximations of it, however, sometimes occur.

Deductive reasoning can often be structured in a three-step argument called a *syllogism*. The three steps are the major premise, the minor premise, and the conclusion.

1. Anything that increases radiation in the environment is dangerous to public health. (Major premise)
2. Nuclear reactors increase radiation in the environment. (Minor premise)
3. Therefore, nuclear reactors are dangerous to public health. (Conclusion)

The major premise is a generalization. The minor premise is a specific case. The conclusion follows from applying the generalization to the specific case.

Deductive arguments break down if one of the premises is not true or if the conclusion does not logically follow from the premises. In the following argument, the major premise is very likely untrue.

UNTRUE PREMISE

The police do not give speeding tickets to people driving less than five miles per hour over the limit. Dominic is driving fifty-nine miles per hour in a fifty-five-mile-per-hour zone. Therefore, the police will not give Dominic a speeding ticket.

The conclusion is true only if the premises are true. If the police sometimes give speeding tickets for driving less than five miles per hour over the limit, Dominic cannot safely conclude that he will avoid a ticket.

In the following argument, both premises might be true, but the conclusion does not follow logically from them.

CONCLUSION DOES NOT FOLLOW

All members of our club ran in this year's Boston Marathon. Jay ran in this year's Boston Marathon. Therefore, Jay is a member of our club.

The fact that Jay ran the marathon is no guarantee that he is a member of the club. Presumably, many marathon runners are nonmembers.

Assuming that both premises are true, the following argument holds up.

CONCLUSION FOLLOWS

All members of our club ran in this year's Boston Marathon. Jay is a member of our club. Therefore, Jay ran in this year's Boston Marathon.

7b Distinguish between legitimate and unfair emotional appeals.

There is nothing wrong with appealing to readers' emotions. After all, many issues worth arguing about have an emotional as well as a logical dimension. Even the Greek logician Aristotle lists *pathos* (emotion) as a legitimate argumentative tactic. For example, in an essay criticizing big-box stores, writer Betsy Taylor has a good reason for tugging at readers' emotions: Her subject is the decline of city and town life. In her conclusion, Taylor appeals to readers' emotions by invoking their national pride.

LEGITIMATE EMOTIONAL APPEAL

> Is it anti-American to be against having a retail giant set up shop in one's community? Some people would say so. On the other hand, if you board up Main Street, what's left of America?

As we all know, however, emotional appeals are frequently misused. Many of the arguments we see in the media, for instance, strive to win our sympathy rather than our intelligent agreement. A TV commercial suggesting that you will be thin and sexy if you drink a certain diet beverage is making a pitch to emotions. So is a political speech that recommends electing a candidate because he is a devoted husband and father who serves as a volunteer firefighter.

The following passage illustrates several types of unfair emotional appeals.

UNFAIR EMOTIONAL APPEALS

> This progressive proposal to build a ski resort in the state park has been carefully researched by Western Trust, the largest bank in the state; furthermore, it is favored by a majority of the local merchants. The only opposition comes from narrow-minded, hippie environmentalists who care more about trees than they do about people; one of their leaders was actually arrested for disturbing the peace several years ago.

Words with strong positive or negative connotations, such as *progressive* and *hippie*, are examples of *biased language*. Attacking the people who hold a belief (environmentalists) rather than refuting their argument is called *ad hominem*, a Latin term meaning "to the man." Associating a prestigious name (Western Trust) with the writer's side is called *transfer*. Claiming that an idea should be accepted because a large number of people (the majority of

merchants) are in favor is called the *bandwagon appeal*. Bringing in irrelevant issues (the arrest) is a *red herring*, named after a trick used in fox hunts to mislead the dogs by dragging a smelly fish across the trail.

7c Judge how fairly a writer handles opposing views.

The way in which a writer deals with opposing views is revealing. Some writers address the arguments of the opposition fairly, conceding points when necessary and countering others, all in a civil spirit. Other writers will do almost anything to win an argument: either ignoring opposing views altogether or misrepresenting such views and attacking their proponents.

In your own writing, you build credibility by addressing opposing arguments fairly. (See also 6f.) In your reading, you can assess the credibility of your sources by looking at how they deal with views not in agreement with their own.

Describing the views of others

Writers and politicians often deliberately misrepresent the views of others. One way they do this is by setting up a "straw man," a character so weak that he is easily knocked down. The *straw man* fallacy consists of an oversimplification or outright distortion of opposing views. For example, in a California debate over attempts to control the mountain lion population, pro-lion groups characterized their opponents as trophy hunters bent on shooting harmless lions and sticking them on the walls of their dens. In truth, such hunters were only one faction of those who saw a need to control the lion population.

During the District of Columbia's struggle for voting representation, some politicians set up a straw man, as shown in the following example.

STRAW MAN FALLACY

Washington, DC, residents are lobbying for statehood. Giving a city such as the District of Columbia the status of a state would be unfair.

The straw man wanted statehood. In fact, most District citizens lobbied for voting representation in any form, not necessarily through statehood.

Quoting opposing views

Writers often quote the words of writers who hold opposing views. In general, this is a good idea, for it assures some level of fairness and accuracy. At times, though, both the fairness and the accuracy are an illusion.

A source may be misrepresented when it is quoted out of context. All quotations are to some extent taken out of context, but a fair writer will explain the context to readers. To select a provocative sentence from a source and to ignore the more moderate sentences surrounding it is both unfair and misleading. Sometimes a writer deliberately distorts a source by using ellipsis dots. Ellipsis dots tell readers that words have been omitted from the original source. When those words are crucial to an author's meaning, omitting them is unfair. (See 39d.)

ORIGINAL SOURCE

Johnson's *History of the American West* is riddled with inaccuracies and astonishing in its blatantly racist description of the Indian wars.

— B. R., reviewer

MISLEADING QUOTATION

According to B. R., Johnson's *History of the American West* is "astonishing in its . . . description of the Indian wars."

EXERCISE 7–1 Explain what is illogical in the following brief arguments. It may be helpful to identify the logical fallacy or fallacies by name. Answers to lettered sentences appear in the back of the book.

a. My roommate, who is an engineering major, is taking a course called Structures of Tall Buildings. All engineers have to know how to design tall buildings.

b. If you're old enough to vote, you're old enough to drink. Therefore, the drinking age should be lowered to eighteen.

c. If you're not part of the solution, you're part of the problem.

d. Whenever I wash my car, it rains. I have discovered a way to end all droughts — get all the people to wash their cars.

e. Ninety percent of the students oppose a tuition increase; therefore, the board of trustees should not pass the proposed increase.